

# PIONEER AND INNOVATIVE STUDIES IN SOCIAL, HUMAN AND ADMINISTRATIVE SCIENCES



All Sciences Academy



*PIONEER AND  
INNOVATIVE  
STUDIES IN  
SOCIAL, HUMAN  
AND  
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SCIENCES*

Editor

Prof. Dr. Osman YILMAZ





*Pioneer and Innovative Studies in Social, Human and Administrative Sciences*

*Editor: Prof. Dr. Osman YILMAZ*

**Design:** All Sciences Academy Design

**Published Date:** December 2024

**Publisher's Certification Number:** 72273

**ISBN:** 978-625-5954-10-7

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International Trade

*Metehan ORTAKARPUZ*

# **Enhancing Employees' Green Motivation Through Internal Green Marketing: A Case Study of Shore-Based Employees within the Maritime Industry in Türkiye**

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## ABSTRACT

This study investigates the nexus between internal green marketing strategies and employees' green motivation. Data were collected via a questionnaire administered to 146 employees selected randomly from a maritime organization operating in Türkiye, utilizing a Five-point Likert Scale. The IBM SPSS Statistics 24 package was employed for data analysis, encompassing reliability and validity assessments of both internal green marketing variables and employees' green motivation. Correlation analysis was conducted to explore associations between these variables. Findings reveal a statistically significant positive correlation at the 1% significance level between internal green marketing efforts and employees' green motivation.

*Keywords – Internal Green Marketing, Employees' Green Motivation, Maritime Business.*

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## INTRODUCTION

Contemporary organizations recognize the significance of environmental consciousness both for their workforce and clientele. In response to the environmental degradation stemming from the industrial revolution (Jabbour et al., 2008) and epidemics (Selamzade et al., 2023), nations are increasingly prioritizing concerns regarding forthcoming environmental challenges. Li et al. (2020) highlights the growing importance of integrating environmental, social, and economic considerations into organizational management and philosophy. This imperative stems from mounting pressure exerted by stakeholders and scholars, urging firms to align their operational strategies with these multifaceted outcomes. While the managers and consumers within the maritime industry demonstrate receptivity towards green marketing initiatives, the perspective of personnel directly engaged in operational execution remains pivotal for the efficacy of such strategies. Presently, environmentally attuned business leaders acknowledge the finite nature of natural resources, departing from erstwhile paradigms neglectful of resource efficiency, and the consequent environmental degradation stemming from production activities. Consequently, enterprises are progressively embracing approaches that prioritize waste recycling, adoption of eco-friendly production technologies, and the integration of environmental stewardship as a fundamental ethos, transcending mere regulatory compliance. Notably, managerial endorsement of green marketing practices within enterprises does not ensure their successful implementation. Realizing success necessitates the active engagement of employees across the organization in embracing green marketing strategies. Hence, employee training programs need to underscore

the imperative of eco-friendly practices for organizational and global welfare. Furthermore, granting employees participatory roles in decisions concerning green marketing activities may augment effectiveness (Yetiş, 2019). Thus, elucidating the interplay between internal green marketing initiatives and employees' environmental motivation within the maritime sector holds considerable relevance for both academic inquiry and practical application.

### ***Employees' Green Motivation***

Within organizational contexts, employees assume central roles as catalysts for various operational processes, spanning from product manufacturing to marketing activities. Scholarly literature has extensively examined the physical and psychological dimensions of employee well-being, with a particular emphasis on motivational states. Effective management practices necessitate adept handling of these motivational factors. Notably, when employees are motivated to embrace environmentally sustainable practices within the organizational milieu, the organization stands to attain a competitive edge in the marketplace (Ambec et al., 2008). The study further elucidated the noteworthy influence of managerial support on employees' motivation towards environmentally sustainable practices. Indeed, managerial support emerges as a crucial determinant of employees' green motivation. In green literature, green extrinsic motivation refers to the provision of rewards due to adherence to green policies. Implementation of green Human Resources (HR) practices within organizations serves to enhance employees' green extrinsic motivation, as they may become eligible for rewards through green compensation schemes and performance appraisal plans focused on environmental performance (Jerónimo et al., 2020). Consequently, extrinsic motivation entails the inclination to engage in activities driven by the anticipation of rewards and reinforcements.

Heightened extrinsic motivation among employees correlates with increased sensitivity towards environmental performance. Eisenberger et al. (1986) underscored the advantageous outcomes derived from organizational recognition of employees' contributions and attentiveness to their well-being concerns. Ho et al. (2009) discovered that prioritizing innovative and creative management practices within an organization correlates positively with employees' propensity to embrace environmentally sustainable approaches. Moreover, a profound sense of commitment among employees towards the organization fosters motivation to align their behaviours with the organization's goals, values, and initiatives related to sustainability and environmental stewardship. Additionally, employees' motivation towards engaging in environmentally responsible behaviour within a company is shaped by various factors. These include their environmental concerns, expectations of organizational support, initiatives directed towards environmental objectives, a positive organizational commitment, perceived

support from the organization for employees' environmental behaviours, affective organizational commitment, organizational social responsibilities pertaining to environmental conduct, and the extent of time devoted to the organization (Ar, 2012).

### ***Internal Green Marketing***

Internal Green Marketing Orientation (IGMO) entails the dissemination of environmental values throughout the organization to cultivate a comprehensive corporate green culture (Papadas et al., 2019). These initiatives encompass employee training programs, strategies to foster environmental consciousness within the organizational milieu (Charter & Polonsky, 1999), and the implementation of environmental leadership activities (Ramus, 2001). Dibrell et al. (2008) asserted that environmental consciousness among top management has become ingrained within the organizational culture of many firms, thereby expanding opportunities for the organization. This integration of environmental concern at the managerial level enables organizations to monitor customer perceptions and competitors' strategic endeavors pertaining to environmentally sustainable practices.

Internal green marketing orientation (IGMO) underscores the imperative for firms to synchronize their green marketing strategy with the behaviours of their employees, who are entrusted with its execution. Essentially, it represents an internal green marketing approach geared towards fostering a pervasive environmental culture throughout the organization. Overall, IGMO serves as a barometer of the degree to which corporate environmental values are embraced by all internal stakeholders. Consistent with the findings of this study, when employees possess the requisite knowledge pertaining to environmentally sustainable practices, their behaviours concerning green performance demonstrate enhancement. Consequently, both the organization and its employees are positively influenced and motivated by the favourable implications of environmental ethics (Papadas et al., 2017). Several studies have investigated the relationship between environmental/green strategy and competitive advantage; however, they have not adequately addressed the role of strategic green marketing or integrated any internal green marketing initiatives aimed at employees (Sharma & Vredenburg, 1998). Furthermore, Chen (2008) defines green human capital as the cultivation of knowledge, skills, innovation, and employees' capabilities aimed at achieving organizational objectives related to environmental protection. Gupta and Kumar (2013) advocate for the establishment of a green corporate culture, providing opportunities across various organizational functions such as production, human resources, and marketing to enhance environmental performance. Consequently, internal green initiatives enable managers to involve every employee in adopting green actions, leading to cost reductions and increased



profits (Bansal and Roth, 2000; Menguc et al., 2010). Current study examines the relationship of the institutional internal green marketing and employees' green motivation within the maritime industry in Türkiye.

## **PURPOSE AND HYPOTHESIS OF THE RESEARCH**

Marketing, as a social process, extends beyond external interactions to encompass internal organizational dynamics. The evolution of the service sector has prompted novel perspectives and marketing methodologies, among which internal marketing has emerged as a significant paradigm (Yeniçeri et al., 2020). While traditional green marketing primarily targets external customers, internal green marketing pertains to the cultivation of environmental awareness, education, and advocacy among employees within the organizational context (Vilkaite-Vaitone et al., 2022). Amangala and Wali (2013) demonstrated a positive correlation between internal marketing and employees' internal motivation in the banking sector, indicating the potential for internal green marketing to foster employee motivation towards environmentally conscious practices. Junsheng et al. (2020) corroborated this assertion in their study within the food production industry, wherein managerial support for environmental initiatives positively influenced employees' internal motivation and subsequently engendered ecological behaviors. In line with this information, the following hypothesis has been proposed:

H: There is a positive relationship between internal green marketing and employees' green motivation.

## **METHOD**

The present study utilized the questionnaire method as the principal means of data collection. Drawing upon the findings of prior literature, the Green Internal Marketing Scale developed by Papadas et al. (2019) and the Employee Green Motivation Scale adapted from Junsheng et al. (2020) were incorporated. The research sample was constituted of onshore-based employees randomly selected from a maritime organization. Data were gathered from 146 participants through convenience sampling techniques conducted between June 15, 2021, and July 2, 2021, following consultations with relevant company officials. The questionnaire's initial section comprised 20 inquiries rated on a 5-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The study adhered to the stipulated criterion for the minimum sample size, as per Tabachnik and Fidell (2007) and Çelik and Özkara (2017), ensuring robustness in statistical analyses. Subsequently, the second segment of the questionnaire encompassed

inquiries pertaining to participants' demographic characteristics, detailed in Table 1.

Table 1: Table 1. Demographic Characteristics

<b>Education</b>	<b>N</b>	<b>%</b>	<b>Gender</b>	<b>N</b>	<b>%</b>
Primary Education	10	6.8	Female	39	26.7
High School	35	24	Male	107	73.3
University	84	57.6	<b>Marital Status</b>	<b>N</b>	<b>%</b>
Graduate	17	11.6	Married	77	52.7
<b>Age</b>	<b>N</b>	<b>%</b>	Single	69	47.3
18-26	24	16.4	<b>Experience (Age)</b>	<b>N</b>	<b>%</b>
27-35	62	42.5	5 or less	43	29.5
36-44	45	30.8	5-10	51	34.9
45+	15	10.3	11-15	25	17.1
<b>Total</b>	146	100	16-20	16	11
			20+	11	7.5

Table 1 illustrates the demographic profile of the study participants, revealing a predominance of male representation. This distribution aligns with the gender ratio observed within the maritime sector workforce. A notable observation is that 52.7% of participants are married, while the majority (34.9%) have tenure ranging from 5 to 10 years within the surveyed organization. Furthermore, a significant proportion (57.6%) of participants hold university degrees, with the majority falling within the age bracket of 27 to 35 years. Consequently, the demographic analysis underscores the prevalence of male participants, along with a predominance of university-educated individuals and those with 1 to 10 years of professional experience within the study cohort.

ANALYSIS OF DATA

*Reliability and Validity*

The data underwent analysis using the IBM SPSS Statistics 24 package program. Reliability analysis was initially conducted to assess the consistency of the questionnaire items, following the guidance of Yaşlıoğlu (2017), which recommends evaluating reliability separately for each factor before considering the overall measure. In accordance with this approach, reliability analysis was performed on all items within the scope of the research. The resulting overall Cronbach's Alpha coefficient was determined to be 0.955, indicating high internal consistency. Subsequently, factor analysis was employed to ascertain the validity of the scales. Consistent with Yaşlıoğlu (2017: 77) recommendations, factor values exceeding 0.50 were

deemed acceptable, while items below this threshold were excluded from further analysis. The Cronbach's Alpha coefficient and factor analysis outcomes for each scale are delineated in Table 2.

Table 2. Result of Reliability and Validity Analysis					
Variable	Question	Factor Load	Eigen Value	Variance%	Cronbach's Alpha Coefficient
Internal Green Marketing	IGM1	0.857	7.596	69.055	0.951
	IGM2	0.808			
	IGM3	0.851			
	IGM4	0.859			
	IGM5	0.801			
	IGM6	0.611			
	IGM7	0.731			
Employees' Green Motivation	EGM1	0.748	1.066	9.690	0.910
	EGM2	0.771			
	EGM3	0.810			
	EGM4	0.914			
KMO: 0.923	Bartlett's Test of Sphericity: 1583.701			p: 0,000	

As indicated in Table 2, Bartlett's Test of Sphericity yielded a statistically significant result ( $p=0.00<0.05$ ), indicating an adequate level of correlation for factor analysis. Moreover, the Kaiser-Meyer-Olkin (KMO) measure demonstrated a commendable level of sampling adequacy (Kaiser, 1974: 35). Factor loadings for each scale surpassed the threshold of 0.50, indicating satisfactory construct validity. Collectively, the items comprising the scales accounted for 78.745% of the total variance, signifying a substantial degree of variability explained by the factors extracted through factor analysis.

### RESULTS

Within the scope of the research, the relationship between internal green marketing and the employees' green motivation and the direction of the relationship was examined by correlation analysis. The analysis result is presented in Table 3.

Table 3. Result of Correlation Analysis

Mean	Std. Deviation	Internal Green Marketing	Employees' Green Motivation
3.68	1.085	Internal Green Marketing	0.753
3.47	0.984	Employees' Green Motivation	1

Correlation is significant at the 0.01 level (2-tailed)

As it is shown in Table 3, correlation analysis reveals a statistically significant positive relationship between internal green marketing and employees' green motivation at the 1% significance level. Specifically, a strong positive correlation coefficient of 0.753 indicates a robust association between internal green marketing practices and employees' green motivation. Consequently, the findings of the analysis provide support for the research hypothesis, indicating that internal green marketing initiatives positively influence employees' motivation towards environmentally friendly behaviours.

## CONCLUSION

In recent times, the International Maritime Organization (IMO) has placed significant emphasis on the implementation of environmentally sustainable practices within industries, particularly within the maritime sector. In organizational contexts, employees play pivotal roles in driving production processes, encompassing both product or service generation and marketing endeavours. Consequently, cultivating and sustaining high levels of employee motivation are paramount for organizations seeking competitive advantages and long-term viability. Internal marketing, oriented towards understanding and fulfilling employees' needs to engender motivation and satisfaction, assumes significance within the framework of the service profit chain. While extant literature has explored the linkages between internal marketing and employee motivation across various sectors, studies focusing on the maritime industry, particularly within the domain of green internal marketing and employees' environmentally oriented motivation, remain scarce. Against this backdrop, this study aims to assess the nexus between internal green marketing practices and employees' green motivation within a maritime business context. Findings from the research reveal a statistically significant positive relationship, at the 1% significance level, between internal green marketing activities targeted at internal stakeholders and

employees' motivation towards environmentally sustainable practices. Notably, the motivation of employees towards green initiatives is posited to wield substantive influence on organizational success. Accordingly, organizations prioritizing the cultivation of their employees' green motivation are urged to accord due importance to internal green marketing initiatives directed at internal stakeholders. The implementation of environmental strategies within the maritime industry necessitates the establishment of clear and comprehensive environmental policies aligned with international standards set forth by the International Maritime Organization. Moreover, allocating sufficient budgets for environmental protection initiatives is imperative. These measures are poised to foster employees' motivation towards environmentally sustainable practices and facilitate the adoption of corporate green behavior within maritime organizations. Furthermore, such initiatives contribute to enhancing the reputation of maritime organizations on the global stage, bolstering their competitiveness in the industry.

## **ACKNOWLEDGEMENTS**

This study is derived from a conference proceeding titled “Employees' Green Motivation with Internal Green Marketing: An Application for Onshore Based Employees of Maritime Business Organizations in Türkiye” which was presented at Al Farabi 11th International Conference on Social Sciences– Erzurum / Türkiye, August 19-20, 2022.

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# **Analysis of The Mediating Role of Ethical Marketing on the Impact of Human Resource Management on Internal Marketing**

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## ABSTRACT

The aim of this study was to examine how ethical marketing functions as a moderator in the relationship between the performance of HRM and internal marketing. The aim of this study was applied, and the method used was a descriptive survey. The statistical population of the research was 160 employees of Sepah Bank branches in Salmas and Khoy. Structural equation method and PLS and SPSS19 software were used to test the research hypotheses. Data analysis showed that human resource management performance has an effect on internal marketing with the mediating role of ethical marketing. The performance of human resources management has a positive and meaningful effect on ethical marketing. Ethical marketing has a positive and meaningful effect on internal marketing. Internal marketing profits significantly from the efficiency of human resources management.

*Keywords – Ethical Marketing, Human Resource Management, Internal Marketing.*

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## INTRODUCTION

Today, in the global economy, customers determine the survival of the organization. Customers are the only source of return on the money invested by customers, thus organizations can no longer ignore their expectations and demands and must focus all of their efforts and resources on serving them. As a result, establishing customer-friendly values is an essential component in today's corporate environment, and the most crucial approach to do this is to give ethical components careful thought (Nikbakht et al., 1400).

In today's competitive market, in order to maintain customers and their loyalty, service quality is very important. The concept of internal marketing was first presented in the 1970s with this objective in thoughts, aiming to improve service quality. Internal marketing places a strong focus on the idea that happy employees are necessary for happy consumers, and treating staff members as internal customers is the best way to accomplish this (Younes Fer et al., 2013).

According to the concept of internal marketing, a successful service business must first make its employees feel satisfied and sell them on the opportunity to work for the company. One of the main and most important methods used by many service organizations nowadays is internal marketing. It can then provide services to clients after that (Fattahi et al., 2018). Internal marketing is an approach that considers the organization's employees as internal customers (Abou rob et al., 2011).

Internal marketing's fundamental idea is that considering staff members like internal customers and viewing them as the company's most important asset will provide the business with a competitive edge (Yung et al., 2008). The overall objective of internal marketing is to ensure that all

employees of the company must cooperate fully to meet the needs of the customers in order to achieve the company's goals.

The most important principle in this process is how a company cooperates with its customers in identifying, predicting and satisfying their needs to obtain and maintain customs and capital (Stiri, Mehrdad et al., 1400). Unfortunately, business managers rarely have complete mastery of all areas of the business that directly or indirectly affect customers, and are often limited in sales and sales support. In any business, every person, from the company's CEO to the service forces, should know that collective cooperation affects the perception of customers and ultimately the customer is the provider of the organization's income (Dama Ahmadian et al., 2018).

In internal marketing, customers' attitudes toward a company are based on the customer's experience with the organization as a whole, not just its products. As a result, the customer experience is shaped by every individual who interacts with a client, whether directly or indirectly, and the effectiveness of a company's employees has a significant impact on customer satisfaction. (Parsa et al., 2017). Through the application of the marketing strategy to the management of interaction activities within the business, internal marketing fosters an effective internal environment by increasing workers' customer orientation (Mei Ying et al., 2011).

In recent years, internal marketing has been the focus of many managers and researchers; Many studies have confirmed the positive relationship between internal marketing, job satisfaction and the performance of employees and human resources (Estiry et al., 1400). Human resource management includes the effective guidance of people in the work environment, and the important issue that is emphasized by its implementation is that employees are the valuable assets of an organization. Human resource management deals with the effective use of human assets to achieve organizational goals, the continuity of life and success of the organization.

According to a different definition, human resource management is a unique method of managing employees that aims to gain a competitive edge through the strategic development of a dedicated and highly effective staff (Yiliang et al., 2021). In short, human resource management involves employing people for It is the achievement of organizational goals and explicitly states the importance of human resources functions in organizations. Basically, among all production factors, it is human resources that really make the difference in an organization.

It is the human ability and commitment that distinguishes successful organizations from other organizations, and therefore, logically, human resources is a special resource that deserves more attention and time. The main functions related to human resources management include recruitment process (planning, recruitment and selection), human resources development (education and training, efficient planning and development, performance

evaluation), compensation and rewards, safety and health, and employee and labor relations. It is effective (Dehghan et al., 1400).

One of the key elements influencing the standard of services is the organization's employees. The main variable in providing value to the service and influencing the customer's opinion of the quality of the service is the employee who interacts directly with the consumer during the service process. Consequently, it is essential to provide the employees of the company with your full focus. Employees who carry the burden of competitive advantage for all organizations today. Employers can set themselves apart from rivals by drawing in and keeping service- and customer-focused personnel (Khoshdel et al., 2019).

On the other hand, the organizational environment shapes ethical behavior by adjusting ethical standards and norms. Ethics, as a branch of moral philosophy, deals with judgments, standards and rules of moral behavior and consists of moral codes of behavior governing individuals and societies in determining good or bad (Ratensari, 2021).

An overview of the history of the application of marketing principles in organizations shows that marketing has always been accused in societies of using lies, fraud, violating people's privacy, environmental pollution, promoting consumerism, etc., and its main cause is neglect. The majority of businesses are focused on the ethical and social aspects of marketing, which has led to significant transgressions and departures from marketing principles in an effort to boost revenue. Thus, every business and marketing manager should have an attitude based on social responsibility and adherence to ethical standards and develop an insight beyond what is regarded as legal and acceptable to avoid the previously mentioned complaints.

Internal marketing is fundamentally built on the idea that delivering effective services requires employees who are both motivated and attuned to the needs of customers (Nikbakht et al., 1400). In service-oriented organizations, employees play a pivotal role in attracting customers and maintaining strong relationships with them. Internal marketing, therefore, represents an organization's deliberate effort to manage its human resources effectively to enhance the quality of service provided to customers. At its core, internal marketing emphasizes that employees are the key drivers shaping the internal market of any organization. Consequently, it may be stated that by meeting the needs of internal customers, the business is able to meet the needs of external customers (Safari et al., 1400).

Based on this, according to the changing expectations of customers, having a successful performance in the marketing system of companies is one of the big and growing concerns for researchers and marketing managers, so that marketing efficiency and ranking of performance criteria are always among the priorities of the research institute. It has been marketing. In this regard, recently, most companies have accepted

professional standards related to ethics and social beliefs, which are focused on specific laws, and pay attention to compliance with marketing ethics as one of the most challenging areas in the marketing performance evaluation system (Sherafat et al., 2017).

In the current work environment, all organizations focus on retaining the talent and awareness of the workforce. All organizations try to reduce employee turnover and improve their awareness. Hiring new workers not only incurs high costs, but also increases the risk of people coming in who cannot fill the position of someone who previously worked in that position. The human resource management department tries to reduce the risk of losing awareness by offering attractive benefits to employees (Mohammadi et al., 2016).

All things considered, it can be stated that internal marketing provides companies that provide services the skills and talents they need to take advantage of chances in the environment and perform effectively. To answer the basic question, what is the mediating role of ethical marketing on the impact of human resource management on internal marketing?

## **THEORETICAL FOUNDATIONS AND RESEARCH BACKGROUND**

***Functions of human resource management:*** Human resource management is the use of people to achieve organizational goals and explicitly state the importance of human resource functions in organizations (Dehghan et al., 1400). By providing the necessary training to the workforce, setting up a fair method for assessing worker efficiency, and establishing salary and benefit structures as well as performance-based reward programs, it is an approach that seeks to foster empathy between managers and staff in order to achieve employee goals while also ensuring that they are in line with organizational objectives and boosting human resource productivity (Fattahi et al., 2018).

***Internal marketing:*** A successful work environment and satisfying the requirements of key personnel are the key components of internal marketing, a strategic management concept that draws in, nurtures, inspires, and keeps notable and significant personnel (Fattahi et al., 2018). Internal marketing is an approach that considers the organization's employees as internal customers (Abou rob et al., 2011).

***Ethical marketing:*** Ethical marketing represents the approach that brands are pursuing in order to protect the rights of their consumers in the communities (Nikbakht et al., 1400). A marketing plan is not the only thing that is influenced by the concept of ethical marketing. Through this kind of marketing, employers aim to promote commitment, fairness, and integrity. It is highly complex and difficult to discuss this because the idea of ethics is so nebulous (Sherafat et al., 2017).

***Human resource performance management:*** Human resource management is the use of people to achieve organizational goals and explicitly state the importance of human resource functions in organizations (Dehghan et al., 1400). It is an approach that seeks to encourage empathy between employees and supervisors to achieve employee goals while also aligning them with organizational objectives and boosting human resource productivity. Examples of this approach include providing the necessary training to the workforce, establishing a fair system for evaluating employee performance, and establishing salary and benefit structures as well as performance-based reward programs (Fattahi et al., 2018).

To find out the impact of Islamic leadership and internal marketing on employee productivity, Ratensari (2021) performed research. The sample for this study, in accordance with Islamic Shari'ah, consisted of 107 official workers who worked in Islamic banks in East Java, Indonesia, doing marketing operations for at least five years, or from 2015 to 2019. (Momelat Bank and Siariyeh Mandiri Bank) and in banks They worked Islamically. The study's findings demonstrate the impact of Islamic leadership and internal marketing on worker performance. The well-being of employees is impacted by their performance. The welfare of Islamic bank personnel is unaffected by internal marketing. Employee wellbeing at Islamic banks is positively and significantly impacted by Islamic leadership.

Yildiz (2021) did a study to look into the connection between unethical behavior and internal marketing. The study's data were gathered from employees of Turkish companies that offer sports services. Internal marketing and unethical activities are significantly and negatively correlated, according to correlation and regression research. The findings of this study demonstrated that internal marketing strategies might be highly successful in thwarting potential unethical behavior among employees.

The impact of strategic human resource management and internal marketing on organizational performance was studied by Yiliang et al. in 2021. The performance of public firms is examined in this study in relation to strategic human resource management and internal marketing. The results suggest that there is a positive correlation between internal marketing and organizational performance and that there is little evidence of a mediating role between internal marketing and strategic human resource management.

Hong (2020) conducted a study titled Internal Marketing and Internal Customer (Human Resource Management Practice): Review, Reconceptualization, and Development. The term "internal marketing" describes the use of the external marketing concept inside a business. Wider human resource procedures that affect workers, the company, and the consumer can be examined using this idea. Researchers interested in empirical studies that aim to assess the effectiveness of human resource management may find this article helpful, as it provides a framework for

analysis that will be helpful to professionals who create internal marketing processes.

Souza and Banaz (2018) conducted research with the aim of identifying "internal marketing and its effect on the fulfillment of organizational commitment" from the perspective of employees of the Faculty of Management and Economics of Sulaymaniyah University. The results showed that there is a significant moral influence in the internal marketing sector in the examination of organizational commitment. It is recommended that faculty members improve their dedication to using the aspects of internal marketing, such as selective recruitment, training, motivation, and communication, and developing innovative ways to satisfy customers' material and spiritual requirements to foster internal loyalty. Guerri et al. (2015) explored how human resource management practices aimed at fostering ethical marketing influence the ethical climate within organizations, focusing on benevolent, principled, and selfish dimensions.

The study conducted by Sinshik Karik et al. (2009) examined how internal marketing philosophy is determined by internal communication, human resource management, and marketing principles. Human resource management, internal communication, and internal marketing are examined concurrently in this article. These three ideas' ranges, intersections, and distinctions are examined. The important takeaway is that the relational marketing theory, which does not exclusively rely on conventional marketing concepts and techniques and has synergy in three functional domains, provides the foundation for the holistic internal marketing philosophy.

## **METHODOLOGY**

### ***Research Conceptual Model***

In this research, human resources performance management indicators are the independent variable and internal marketing is the dependent variable. Ethical marketing is a mediating variable. The following is the research's conceptual model:

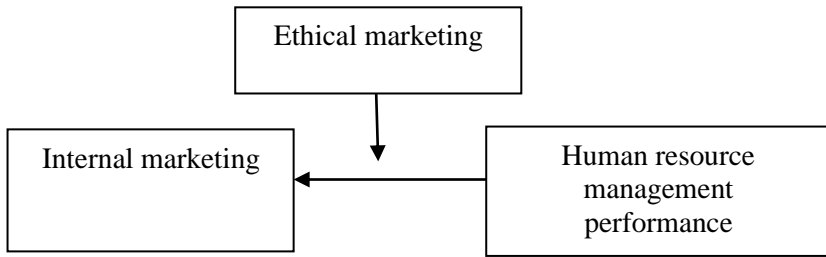


Figure 1: Conceptual Model of Research Taken from Hong (2020), Ratensari (2021) And Malmarogan (2008)

### ***Research hypotheses***

- The main hypothesis:
- The performance of human resource management has an effect on internal marketing with the mediating role of ethical marketing.
- The performance of human resource management has an effect on ethical marketing.
- Ethical marketing has an impact on internal marketing.
- The performance of human resource management has an effect on internal marketing.

### ***Research Methodology***

The purpose of this research is practical, and it is survey-style research in nature. The research method is descriptive and correlation type and the relationship between the variables will be measured. This research investigates the current situation by using the field study method. The information needed to conduct this study will be collected from library sources (magazines, articles, authoritative sites and books) and then collected by the field method.

### ***Population and Statistical Sample***

The statistical population of the research is all the employees of Sepah Bank branches in Salmas and Khoy, numbering 160. Using Morgan's table, 113 employees of Sepah banks in Khoy and Salmas cities were selected as the statistical sample of this research.

### ***Data Collection Measurement Tool***

The tool of the current research is also a questionnaire.  
Internal marketing questionnaire (Mooney and Forman; 1995)

Mooney and Forman (1995) questionnaire were used to collect data about internal marketing. This questionnaire has three dimensions: vision, development and reward. In this questionnaire, the highest score is 75 and the lowest score is 15.

Ethical marketing questionnaire (Safari et al., 2016) - 16 questions

Ethical marketing questionnaire was designed and compiled by Safari et al. (2016) in order to measure ethical marketing.

Ethical marketing questionnaire has 16 questions and 5 components of honesty, fairness, responsibility, confidentiality and adherence to obligations.

Standard questionnaire of human resource management performance

This questionnaire is used to evaluate and analyze the performance of managers of organizations. These criteria by Andrey. Oh you. Deval (2004) is designed. which has three structural, behavioral and communication dimensions. (Quoted by Fattahi et al., 2019).

### ***Analysis of Information***

The data obtained from the research will be analyzed at both descriptive and inferential levels. Descriptive statistics like mean, variance, and standard deviation were employed at the descriptive level and in inferential statistics, in order to test the hypotheses while respecting the assumptions, the structural equation method and PLS and SPSS19 software will be used in the descriptive statistics section of the research. Along with a discussion of the information the users' age and gender demographics, frequency indicators, frequency percentages, and cumulative frequency percentages are computed. In this research, the data obtained from the questionnaires were entered into the SPSS software and analyzed Necessary has been done on them.

## **RESULTS**

### ***Inferential Analysis of Research Data***

Measurement model validation (confirmatory factor analysis)

Confirmatory factor analysis, a fundamental statistical technique, examines the relationships between observed variables (like questionnaire items) and latent variables (the primary constructs). It also serves as a representation of the measurement model (Burn, 1994). To evaluate the measurement models' validity, we came up with the following values. If Table (1)'s requirements are satisfied, then the measurement model is useful and acceptable.



Table 1: Requirements to Determine Convergent Validity and Reliability

<b>Indicator</b>	<b>Limit</b>	<b>Source</b>
<b>Reliability</b>	<i>Combined reliability and Cronbach's alpha should be above 0.7.</i>	
<b>Validity convergent</b>	<i>Factor loadings are expected to be significant (<math>t &gt; 1.96</math>), and standardized factor loadings should exceed 0.4. <math>CR &gt; AVE</math> <math>AVE &gt; 0.4</math> <math>Rho_A &gt; 0.6</math></i>	(Joseph et al. 2016)
<b>Validity divergent</b>	<i><math>AVE &gt; MSV</math></i>	
<b>Indexes of model fit</b>	<i>"<math>GOF &gt; 0.36</math>" "<math>SRMR &lt; 0.1</math>"</i>	

“\*AVE: Average variance Extracted, CR: Construct Reliability, MSV: Maximum Shared Squared variance, GOF; Goodness of fit”

### ***Reliability of measurement tools***

The researchers found that if the model used for reflective measurement is homogeneous, then every variable observed absolute factor loading value corresponding to the hidden variable in that model must have a value of at least 0.7. The values of factor loading were investigated for this aim. If eliminating the reflected observed variable increases the composite reliability of the relevant reflective measurement model, some recommended deleting it from the measurement model if its value is less than 0.4. (Hair et al., 2017).

Significance of factor loadings: The table presents the findings on the external factor loadings' relevance. A relationship or hypothesis is confirmed if the obtained value exceeds the critical statistic at the specified confidence level. The minimum t statistics of 1.64, 1.96, and 2.58, accordingly, are compared with this result at 90%, 95%, and 99% significance levels.

Diagram 1: Factor Load Values in the Case of Standard Coefficients

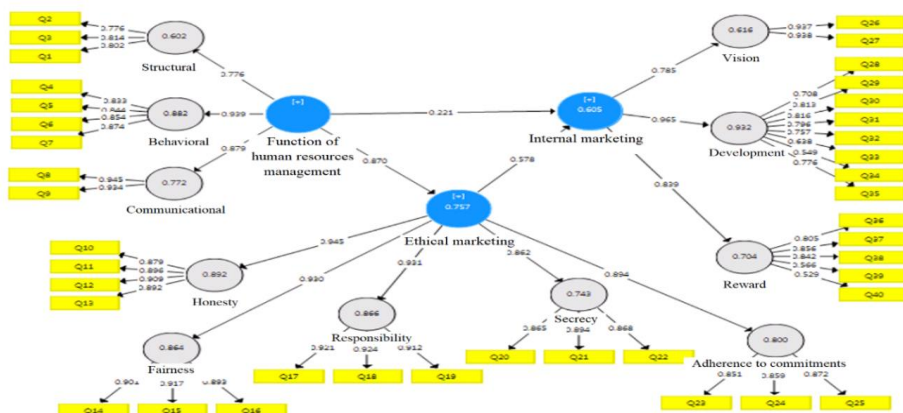
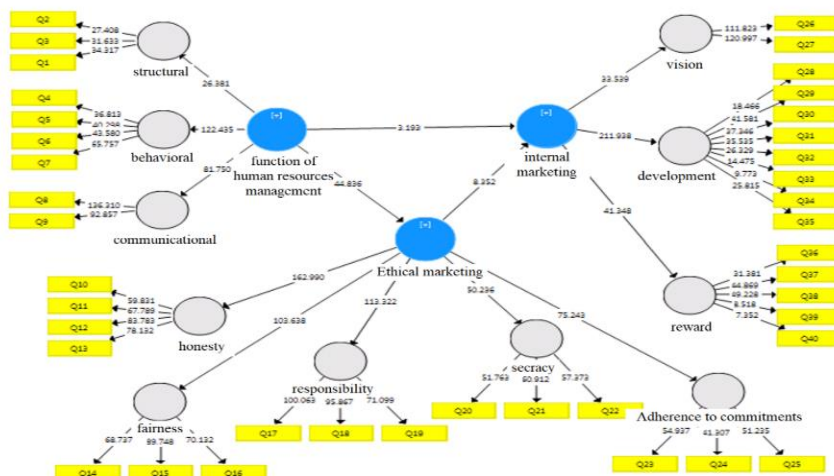


Diagram 2: Significance of Factor Load Values (T Statistic)



The fact that all item factor load values are above 0.4 indicates that the measurement model is homogenous and the factor load values are reasonable, as shown by the results of Graph (3).

The meaning of the t-statistic values in graph (4) revealed that all of the items' t-statistic values were reported to be larger than 2.58, according to the results. Consequently, the relationship between the items and the associated variable is confirmed at a 99% confidence level [ $P\text{-Value} \leq 0.01$ ].

The significant number of correlations between variables and their dimensions for all components is greater than (2.58). It means that, at the 99% confidence level, there is a significant link between the elements and the primary variable [ $P\text{-Value} \leq 0.01$ ]. The value of the path coefficient for

all relationships was reported to be greater than 0.80, which shows the high correlation between the components and the corresponding variable.

Cronbach's alpha and composite reliability are used to evaluate the internal consistency of measurement tools, such as tests or questionnaires designed to measure different attributes. The Cronbach's alpha index really equates the relative importance of the observable variables in each measurement model by assuming that they have the same weights. This problem is solved by applying the composite reliability index, which Verts et al. (1974) suggested. The composite reliability values are displayed by this index more accurately than Cronbach's alpha since factor loadings of the items are considered in the computation.

Table 2: Cronbach's Alpha And Composite Reliability

		<i>Cronbach's alpha</i>	<i>Reliability</i>	<i>Composite Reliability</i>
<b>Function of human resources management</b>	Communicational	0.899	0.911	0.919
	Structural			
	Behavioral			
<b>Internal marketing</b>	Vision	0.913	0.930	0.925
	Development			
	Reward			
<b>Ethical marketing</b>	Fairness	0.966	0.967	0.969
	Secrecy			
	Honesty			
	Responsibility			
	Adherence to commitments			

The analysis of Cronbach's alpha and composite reliability coefficients in Table 2 revealed that the values for all latent variables exceeded 0.7, confirming the reliability of the measurement instruments based on these two indices.

*Validity of measurement tools*

**Convergent validity:** The degree to which the unknown variable can be described by its apparent variables is measured using the convergent validity index (Barkley et al., 1995). A minimum of 0.5 for the extracted average variance index is considered acceptable; this means that at least 50% of the variance of the hidden variable can be explained by the observable variables.

Table 3: *Average Variance Extracted*

		<i>AVE</i>	
		Dimensions	Total
<b>Human resource management performance</b>	Communicational	0.883	0.561
	Structural	0.636	
	Behavioral	0.724	
<b>Internal marketing</b>	Vision	0.879	0.565
	Development	0.543	
	Reward	0.538	
<b>Ethical marketing</b>	Fairness	0.816	0.664
	Secrecy	0.767	
	Honesty	0.800	
	Responsibility	0.845	
	Adherence to commitments	0.741	

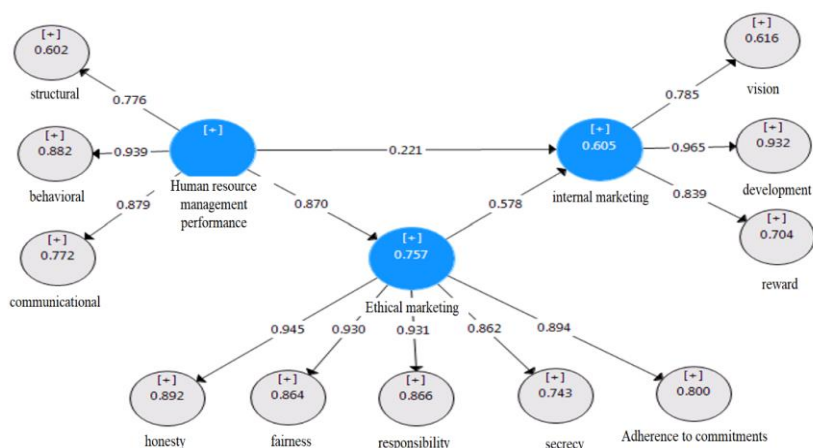
### *Test of Structural Models*

In this section, the general framework of the conceptual model is examined to determine whether the theoretical relationships between the variables are supported by the results of the first-order factor analysis of the measurement of endogenous and exogenous variables. This analysis confirmed that all constructs meet the necessary validity and reliability criteria. At the stage of developing the conceptual framework, the researcher assessed whether it was supported by the data. Three key issues are considered in relation to this matter:

Whether the computed parameters confirm the postulated relationships is indicated by the signs (positive or negative) of the parameters that reflect the interactions between the latent variables. The estimated parameter value demonstrates how robust the correlations between the variables are. In this case, the estimated parameters must be significant. In other words, the absolute value of the t-value should be greater than 1.96.

The multiple correlation square indicates the proportion of variance in each internal (dependent) latent variable that is explained by the external (independent) latent variables. The variance's ability to explain variation increases with increasing squared multiple correlation.

Diagram 4: Chart of Standard Path Coefficients



The route coefficients graph in graph (4) looks at the relationship between the independent variables and the dependent variable as well as their respective effects on one another. The path coefficient has a value between -1 and 1, in the range. The stronger the positive value of this indicator, the more the independent variable has an impact on the dependent variable.

The coefficient of determination shows how much each of the independent variables contributes to the variation of the dependent variable. Some researchers choose to use a different index called the adjusted coefficient of determination instead of the coefficient of determination since it takes more account of the number of independent variables and sample size while also overestimating the success rate of the model (Saroukhani, 1382). The results of the determination coefficients are given in table (4).

Table 4: Coefficient of Determination

	<i>Coefficient of determination</i>	<i>Adjusted coefficient of determination</i>
<b>Ethical marketing</b>	0.757	0.756
<b>Internal marketing</b>	0.605	0.603

For example, the adjusted coefficient of internal marketing is 0.603, which indicates that 60% of internal marketing changes are influenced by

research variables and the rest are factors that are not considered in the model.

Analyzing the effect size's structural model is an additional requirement. Cohen (1988) values have been classified as weak, medium, and strong, respectively, at 0.02; 0.15; and greater than 0.35.

Table 5: Effect Size

	<i>Ethical Marketing</i>	<i>Internal Marketing</i>
<b>Ethical marketing</b>		0.206
<b>Human resource management performance</b>	3.110	0.030

Based on a study of the effect size values in Table (5), this value was determined for all effects in the weak to above-average range.

The significance of path coefficients (beta) in the structural model confirms the importance of the relationships between variables. The magnitude and direction of the beta coefficient reflect the strength and significance of the corresponding path. If the observed value exceeds the minimum statistic for the confidence level, the relationship or hypothesis is considered confirmed. This value is compared to the minimum t statistics of 1.64, 1.96, and 2.58 at the 90%, 95%, and 99% significance levels, respectively.

Diagram 5: Significance of Path Coefficients

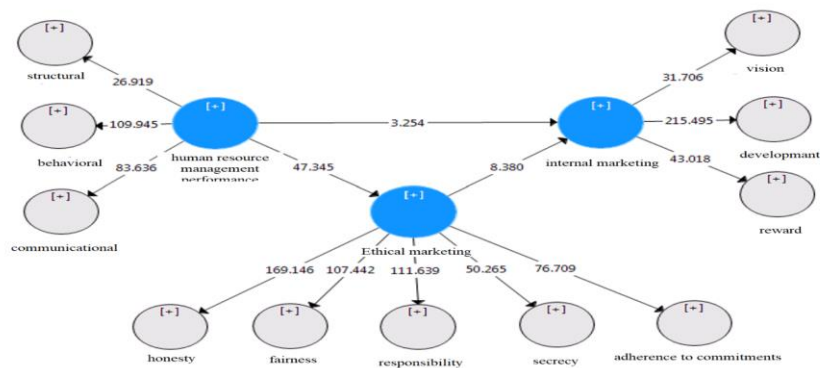


Diagram (5) shows the significance of path coefficients. The results obtained from this graph are explained in the hypothesis results.

Model predictive power or shared redundancy is another important criterion for evaluating the structural model. This index assesses the model's ability to predict outcomes in a meaningful way. The most widely recognized criterion for measuring predictive ability is the Q<sup>2</sup> index. According to this criterion, the model should be able to predict the indicators of the reflective endogenous variables.

Positive test results suggest that the structural model is sufficiently good (Henseler et al., 2009). Three values have been added for this index: 0.02, 0.15, and 0.35, which correspond to weak, medium, and high predictions for the model's ability to forecast endogenous latent variables (Hensler et al., 2009).

Table 6: Model's Predictive Power

	<i>SSO</i>	<i>SSE</i>	<i>Q<sup>2</sup> (=1-SSE/SSO)</i>
<b>Ethical Marketing</b>	5,088.000	2,714.346	0.467
<b>Internal Marketing</b>	4,770.000	3,569.563	0.252
<b>Human Resource Management Performance</b>	2,862.000	2,862.000	

The results in Table 6 indicate that the predictive power of the model is strong for ethical marketing and moderate for internal marketing. These results are also depicted in Figure 8-4.

#### ***4-2-3- General fitting of the structural equation model***

For instance, when examining models using a variance-oriented method, Smart PLS does not provide a general index that can be used to view the model as a whole at once. In contrast to the covariance-based technique, there is no index to evaluate the entire model. However, it was noted in numerous studies in this area that Tenenhaus et al. have presented an index named GOF. This index evaluates the effectiveness of both structural and measurement models at the same time. This index is manually

$$GOF = \sqrt{\text{communalities} \times \overline{R^2}}$$

generated using average shared values and average R<sup>2</sup>.

The coefficient of determination and the square of the two average common value indices together form this index. Since this value depends on the two mentioned indices, the range of this index lies between zero and one. Wetzels et al. (2009) defined three thresholds for GOF (Goodness of Fit): 0.01, 0.25, and 0.36, which correspond to weak, medium, and strong values, respectively.

Table 7: Results of Fitting the General Model

	<i>Coefficient of determinatio n</i>	$\sqrt{\text{Coefficientofdetermination}}$	<i>common values</i>	$\sqrt{\text{Com.values}}$	<i>GOF</i>
<b>Human resource management performance</b>	0.687	0.677	0.561	0.595	0.403
<b>Ethical marketing</b>	0.757		0.664		
<b>Internal marketing</b>	0.605		0.565		
<b>Standardized Root Mean Square Residual (SRMR)</b>					0.079

The measured GOF value of 0.403 is in close agreement with the value suggested by Wetzles et al. (2009), which is 0.36. This indicates the strength of the model and, consequently, confirms the adequate fit of the entire model. The ideal square root index number for the average. The squared standardized residual is at most 0.1. It is validated that the overall model fits the data appropriately because the index's value has been determined to be 0.077, which is a good number.

#### 4-2-4- Hypothesis test results

1) The performance of human resources management has an effect on internal marketing with the mediating role of ethical marketing.

To check the significance of the mediation effect, the results of the Sobel test were used.

$$Z - \text{value} = \frac{a \times b}{\sqrt{(b^2 \times s_a^2) + (a^2 \times s_b^2) + (s_a^2 \times s_b^2)}}$$

In this regard:

a: The mediator and the independent variable's path coefficient

B: The mediator-dependent variable path coefficient

Sa: The mediator's and the independent variable's standard error of path

Sb: The mediator and dependant variable's standard error of path

$$\begin{aligned} Z - \text{value} &= \frac{0.870 \times 0.578}{\sqrt{(0.578^2 \times 0.081^2) + (0.870^2 \times 0.042^2) + (0.081^2 \times 0.042^2)}} \\ &= 5.415 \end{aligned}$$



Considering that the obtained Z-value is higher than 1.96, therefore, the mediating role of ethical marketing in influencing the performance of human resources management on internal marketing is significant at the confidence level of 95% [P-Value  $\leq 0.05$ ]. Based on this, the hypothesis of the research is confirmed in the sense that the performance of human resources management has an effect on internal marketing with the mediating role of ethical marketing.

To check the amount and intensity of mediation, the calculated variance statistic (VAF) was calculated. If the VAF value was less than 20%, it can be concluded that mediation did not take place. Alternatively, complete mediation may be claimed if the VAF number is exceptionally high, greater than 80%. A situation where VAF between 20% and 80% should be described as partial mediation. According to the value obtained from the VAF statistic, which is equal to 0.75, it can be said that partial mediation has taken place.

Table 8: Summary of the Results of the Main Hypothesis

<i>Hypothesis</i>	<i>Path coefficient</i>	<i>t-statistics</i>	<i>p-value</i>	<i>VAF</i>	<i>Sobel</i>	<i>Result</i>
Human resource management function -> Ethical marketing > Internal marketing				0.69	5.415	
Direct impact	0.221	3.254	0.001			Accepted
Indirect effect	0.503	8.498	0.000			
Total effect	0.724	26.481	0.000			

**Results of sub-hypotheses**

*The performance of human resources management has an effect on ethical marketing.*

The findings of this hypothesis test showed that there is a positive and immediate relationship between these two variables, with the path coefficient of HRM performance on ethical marketing equal to 0.870.

Table 9: Summary of the Results of Sub-Hypothesis 1

<i>Hypothesis</i>	<i>Path coefficient</i>	<i>t-statistics</i>	<i>P-Value</i>	<i>Result</i>
<b>Human resource management function - &gt; Ethical marketing</b>	0.870	47.345	0.000	Accepted

***Ethical marketing has an effect on internal marketing.***

The results of the hypothesis test indicated a positive and direct relationship between the two variables, with the path coefficient for ethical marketing to internal marketing equal to 0.578. The t-statistic for this relationship was significant at the 99% confidence level [P-Value  $\leq 0.01$ ]. Based on these findings, the research hypothesis is confirmed. Thus, internal marketing is positively and significantly impacted by ethical marketing.

Table 10: Summary of the Results of Sub-Hypothesis 2

<i>Hypothesis</i>	<i>Path coefficient</i>	<i>t-statistics</i>	<i>P-Value</i>	<i>Result</i>
<b>Ethical marketing -&gt;Internal marketing</b>	0.578	8.380	0.000	Accepted

***The performance of human resource management has an effect on internal marketing.***

The internal results of this hypothesis test revealed that the path coefficient for human resource management performance on ethical marketing is 0.221, a positive value indicating a direct relationship between the two variables. The t-statistic for this relationship was significant at the 99% confidence level [P-Value  $\leq 0.01$ ]. In light of this, the study hypothesis is validated. In this way, internal marketing benefits greatly from the effectiveness of human resources management.

Table 11: Summarizes the Results of Sub-Hypothesis 3

<i>Hypothesis</i>	<i>Path coefficient</i>	<i>t-statistics</i>	<i>P-Value</i>	<i>Result</i>
<b>Human resource management function -&gt; Internal marketing</b>	0.221	3.254	0.001	Accepted

## CONCLUSION

The obtained results are in line with the following research: Safari et al. (1400) showed that individual, organizational, specific environmental and general environmental factors had a direct and positive effect on ethical marketing and ethical marketing on the company's marketing performance. Additional results highlight the mediating role of ethical marketing in the relationship between factors influencing the marketing performance of pharmaceutical companies. Fattahi et al. (2018) showed that the performance of human resources management has an effect on internal marketing in the moral atmosphere of the tax affairs organization of Sari city.

According to Parsa et al. (2017), internal marketing is significantly impacted by organizational honesty. Internal marketing is significantly impacted by organizational responsibility. Internal marketing is significantly impacted by organizational commitment. A key factor influencing internal marketing is organizational trust. Yildiz (2021) showed how internal marketing strategies might be highly successful in deterring potential unethical behavior among employees. Malmarogan (2008) examined the relationship between internal marketing-based ethical marketing strategies and higher employee satisfaction.

In explaining the obtained results, it should be stated that considering that human capital, as one of the most important intangible assets, is considered the main source of maintaining sustainable value for organizations, it bears the burden of gaining a competitive advantage. By assuring the employees that the managers are concerned about their organizational life and take action to ensure their interests, internal marketing has led to the formation of extra-role behaviors in the bank employees and the satisfaction of the needs of the internal customers of the organization, who are the bank employees themselves.

In addition, through positive face-to-face behavior, bank employees gain access to their target market, which is customer attraction, and in this way, it has a tremendous impact on customer satisfaction and support, and the ethical behavior and good reputation of bank employees in the field of service. The bank focuses on improving performance and achieving goals, which in turn enhances internal marketing through a strategic effort to overcome organizational resistance to change. This involves balancing, inspiring, and coordinating inter-task activities, as well as aligning employees towards the successful implementation of corporate and task strategies.

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# **How Inflation and Productivity are Related in the Long-run?: The Case of Turkey**

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## ABSTRACT

The inflation variable, which already has an important place, has become uncontrollable all over the world, especially in recent years. Although there are many reasons for this situation, factors such as labor force participation and labor productivity, along with the changing world order and increasing population, can be considered as priorities. This study analyzes the relationship between labor productivity and inflation. The sample of the study was made with the data of Turkey for the years 1993-2020. The analysis method used in the study is the ARDL analysis method.

*Keywords - Inflation, Productivity, Labo, Ardl Analysis, Long Run.*

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## INTRODUCTION

Today, a new concept called effective working has emerged. The main point on which this concept is based is productivity. It is clear that growth will be affected as productivity increases. In macroeconomic terms, two types of productivity are considered. One of these is labor productivity and the other is labor productivity. In this study, labor productivity is examined. It should not be ignored that productivity in the labor market is affected by inflation. How inflation, which is among the most important macroeconomic variables, affects productivity in the long run is the main objective of this study. This section of the study summarizes some of the studies on productivity and inflation in the literature.

First of all, some of the studies on productivity are discussed. For example; In the study on labor productivity, inflation and wage variables in developing economies, causality analysis was conducted between 1995-2018. As a result of this analysis, it is observed that there is no causality between the three variables (Kara et al., 2020:461). There are many similar analyses on labor productivity. In some of them, productivity has been studied with variables such as globalization, temperature affect, imports and exports (Koyuncu and Yilmaz, 2010:161; Oksak, 2018:215; Koyuncu and Unver, 2018:32; Yildirim et al., 2009:29; Koyuncu and Yilmaz, 2006a:147). In addition, different macroeconomic indicators have been analyzed together with productivity. In some of these studies, the relationship between FDI, expenditure education, openness variables and productivity has been analyzed (Unal and Koyuncu, 2021:45; Oksak and Koyuncu, 2021:253; Ozen and Koyuncu, 2020:33).

Panel data analysis has been the reference method of analysis and the analysis method frequently encountered in the literature in studies on Productivity. In some of these Panel data analysis, the relationships between



productivity-internet penetration, privatization-productivity, expenditure-productivity have been examined (Yilmaz and Yalcinkaya Koyuncu; 2018:257; Yalcinkaya Koyuncu et al.,2017:59; Yilmaz, 2022:65). In another analysis with panel data, labor productivity and labor force participation variables were analyzed.(Yalcinkaya Koyuncu et al.,2016:237). In another analysis with panel data, labor productivity and labor force participation variables were analyzed.(Yalcinkaya Koyuncu et al.,2016:237)

The other important variable of the study, inflation, is a variable that is constantly addressed and is used in almost all economic variables. In a study, inflation and productivity variables were analyzed by time series analysis with data obtained from 12 OECD countries (Yalcinkaya Koyuncu and Oksak,2022:7; Freeman and Yerger, 2000:315). In a similar study, real wage and productivity variables were analyzed together with inflation(Kumar et al.,2011:1; Koyuncu and Oksak,2021:7). There are many more similar studies in the literature and in most of them the main variables are inflation and productivity(Jarrett and Selody, 1982:361;Clark ,1982:149; Koyuncu and Yilmaz, 2006b:93).

Some examples from the literature have guided our study in both the method of analysis and the choice of variables. Building on this foundation, the data and methodology section analyzes inflation and productivity with more recent data.

## **DATA AND METHODOLOGY**

In this study we attempt to reveal the long-run nexus between inflation and labor productivity in Turkey by employing a sample covering the years between 1990 and 2023 and ARDL estimation technique. Labor productivity (LABPROD) variable is given by labor productivity per person employed (In 2022 international dollars, converted using purchasing power parities). Inflation (INFLATION) variable is inflation of consumer prices (annual %). Also we added two control variables (i.e., investment (INVESTMENT) and working hours (WORKHOUR) variables) into the model. INVESTMENT variable is measures as gross capital formation (% of GDP) and WORKHOUR variable is given by labor productivity per person employed (In 2022 international dollars, converted using purchasing power parities). The data for LABPROD and WORKHOUR variables were obtained from Total Economy Database of The Conference Board whereas the data for INFLATION and INVESTMENT variables were gathered from WDI of the World Bank. Meantime we used logarithmic forms of all variables in the analyses.

Increases in inflation, which deteriorate economic and politic stability and also worsen purchasing power of workers, may reduce labor productivity; hence we expect to see negative coefficient estimation for

INFLATION variable. Since higher level investment means higher level of per labor physical capital and higher level of production capacity, it is anticipated to get positive coefficient estimation for INVESTMENT variable. Excessive working hours, which make workers tired and decrease their concentrations, may drop labor productivity; thus negative coefficient estimation for WORKHOUR variable was expected.

The following model for ARDL bounds test (i.e., for co-integration analysis) was estimated:

In Equation 1:  $\theta_0, \theta_1, \theta_2$ , and  $\theta_3$  stand for long-term coefficients;  $\delta_i, \phi_i, \gamma_i$ , and  $\lambda_i$  reflect short-term coefficients;  $\Delta$  represents first degree difference operator;  $\alpha_0$  shows intercept term of the model, and  $\varepsilon_t$  is white noise error term of the model.

The notational representation of the null hypothesis of ARDL bounds test is  $H_0: \theta_0=\theta_1=\theta_2=\theta_3=0$  and it points out the absence of co-integrating association among labor productivity, inflation, investment, and working hours variables. The notational representation of the alternative hypothesis of ARDL bounds test is  $H_1: \theta_0 \neq \theta_1 \neq \theta_2 \neq \theta_3 \neq 0$  and the alternative hypothesis hints the presence of co-integrating association among labor productivity, inflation, investment, and working hours variables. As long as the F-statistic value obtained from ARDL bounds test pass over the critical value of upper limit for at a given significance level, then it can be concluded that labor productivity, inflation, investment, and working hours variables are co-integrated and hence they move together in the long-run. On the other hand if the F-statistic value gathered from ARDL bounds test is less than the critical value of lower limit at a given significance level or falls in somewhere between lower and upper limit critical values then we are unable to say that labor productivity, inflation, investment, and working hours variables are co-integrated.

The following model was estimated to get short-run and long-run coefficients:

$$\begin{aligned} \Delta LABPROD_t = & \alpha_0 + \sum_{i=1}^p \delta_i \Delta LABPROD_{t-i} + \sum_{i=0}^q \phi_i \Delta INFLATION_{t-i} + \sum_{i=0}^r \gamma_i \Delta INVESTMENT_{t-i} + \sum_{i=0}^s \lambda_i \Delta WORKHOUR_{t-i} + \theta_0 LABPROD_{t-1} \\ & + \theta_1 INFLATION_{t-1} + \theta_2 INVESTMENT_{t-1} + \theta_3 WORKHOUR_{t-1} + \varepsilon_t \end{aligned} \quad (1)$$

$$LABPROD_t = \beta_0 + \sum_{i=1}^p \alpha_i \Delta LABPROD_{t-i} + \sum_{i=0}^q \mu_i \Delta INFLATION_{t-i} + \sum_{i=0}^r \pi_i \Delta INVESTMENT_{t-i} + \sum_{i=0}^s \omega_i \Delta WORKHOUR_{t-i} + \gamma ECM_{t-1} + \varepsilon_t \quad (2)$$

In the equation2 above:  $\alpha_i$ ,  $\mu_i$ ,  $\pi_i$ , and  $\omega_i$ , represent dynamic coefficients bringing the model back to the balance in the long run; ECM term reflects error correction term of the model;  $\gamma$  stands for the speed of adjustment at which the model returns back to long run in response to a shock occurred in short-run. By the way a negative and statistically significant coefficient for the speed of adjustment term must be obtained.

## **ESTIMATION RESULTS**

Augmented Dickey-Fuller (ADF) unit root test was conducted to check the integration order of our variables. As can be deduced from Table 1, LABPROD, INFLATION, INVESTMENT, and WORHHOUR variables are stationary at first differences; thus LABPROD, INFLATION, INVESTMENT, and WORHHOUR variables are integrated order one (i.e.,  $I(1)$ ). The compulsory condition in ARDL bounds test is that the series must be integrated order zero, one or mixed. Since our LABPROD, INFLATION, INVESTMENT, and WORHHOUR variables are integrated order, we are able to perform ARDL bounds test for co-integration analysis.

Table 1. ADF Unit Root Test

Null Hypothesis: LABPROD has a unit root		
	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic	-0.605703	0.8560
Test critical values: 1% level	-3.646342	
5% level	-2.954021	
10% level	-2.615817	
Null Hypothesis: D(LABPROD) has a unit root		
	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic	-7.173054	0.0000
Test critical values: 1% level	-3.65373	
5% level	-2.95711	
10% level	-2.617434	
Null Hypothesis: INFLATION has a unit root		
	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic	-1.128592	0.6926
Test critical values: 1% level	-3.646342	
5% level	-2.954021	
10% level	-2.615817	
Null Hypothesis: D(INFLATION) has a unit root		
	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic	-4.885441	0.0004
Test critical values: 1% level	-3.65373	
5% level	-2.95711	

	10% level	-2.617434	
Null Hypothesis: WORKHOUR has a unit root			
	Augmented Dickey-Fuller test statistic	t-Statistic	Prob.
		-0.74661	0.8208
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	
Null Hypothesis: D(WORKHOUR) has a unit root			
	Augmented Dickey-Fuller test statistic	t-Statistic	Prob.
		-5.911399	0.0000
Test critical values:	1% level	-3.65373	
	5% level	-2.95711	
	10% level	-2.617434	
Null Hypothesis: INVESTMENT has a unit root			
	Augmented Dickey-Fuller test statistic	t-Statistic	Prob.
		-2.637375	0.0959
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	
Null Hypothesis: D(INVESTMENT) has a unit root			
	Augmented Dickey-Fuller test statistic	t-Statistic	Prob.
		-8.708065	0.0000
Test critical values:	1% level	-3.65373	
	5% level	-2.95711	
	10% level	-2.617434	

Next we identified the best ARDL model with respect to optimal lag length by using AIC criterion. After evaluation of 192 distinct models by AIC criterion, Figure 1 and Table 2 below imply that ARDL(2,0,0,0) model is the best model in terms of optimal lag length. Therefore we conducted all of our analyses by utilizing ARDL(2,0,0,0) model.

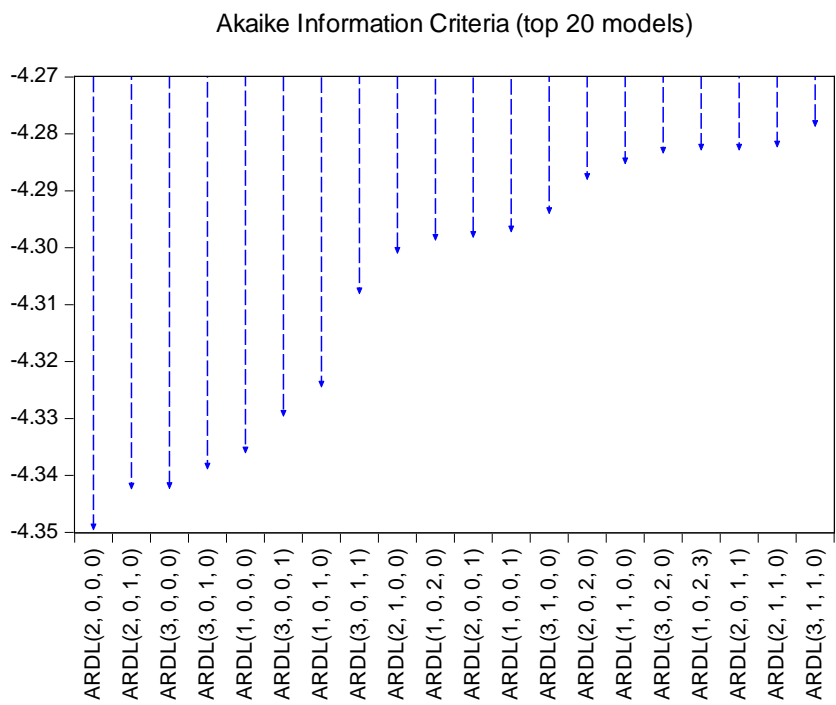


Figure 1. Top 20 ARDL Models Based on AIC Criterion

Table 2. ARDL Models Evaluated

Model	AIC*	Specification	Model	AIC*	Specification
	-	<b>ARDL(2, 0,</b>		-	ARDL(1, 0,
128	<b>4.348956</b>	<b>0, 0)</b>	177	4.234233	3, 3)
		ARDL(2, 0,		-	ARDL(2, 0,
124	-4.34177	1, 0)	116	4.230942	3, 0)
	-	ARDL(3, 0,		-	ARDL(2, 0,
64	4.341701	0, 0)	119	4.228882	2, 1)
	-	ARDL(3, 0,		-	ARDL(2, 1,
60	4.338301	1, 0)	104	4.228421	2, 0)
	-	ARDL(1, 0,		-	ARDL(1, 3,
192	4.335455	0, 0)	135	4.228028	2, 1)
	-	ARDL(3, 0,		-	ARDL(3, 1,
63	4.329018	0, 1)	40	4.223605	2, 0)
	-	ARDL(1, 0,		-	ARDL(2, 3,
188	4.323867	1, 0)	76	4.221121	1, 0)
	-	ARDL(3, 0,		-	ARDL(1, 1,
59	4.307504	1, 1)	165	4.220574	2, 3)
	-	ARDL(2, 1,		-	ARDL(2, 0,
112	4.300399	0, 0)	117	4.220294	2, 3)
	-	ARDL(1, 0,		-	ARDL(2, 2,
184	4.298101	2, 0)	92	4.219475	1, 0)
	-	ARDL(2, 0,		-	ARDL(2, 1,
127	4.297595	0, 1)	107	4.219417	1, 1)
	-	ARDL(1, 0,		-	ARDL(1, 3,
191	4.296609	0, 1)	144	-4.21919	0, 0)
	-	ARDL(3, 1,		-	ARDL(1, 0,
48	4.293405	0, 0)	182	4.219039	2, 2)
	-	ARDL(2, 0,		-	ARDL(2, 0,
120	4.287423	2, 0)	122	4.217726	1, 2)
	-	ARDL(1, 1,		-	ARDL(2, 0,
176	4.284656	0, 0)	121	4.214058	1, 3)
	-	ARDL(3, 0,		-	ARDL(3, 2,
56	4.282806	2, 0)	28	4.213652	1, 0)
	-	ARDL(1, 0,		-	ARDL(1, 1,
181	4.282252	2, 3)	171	4.209487	1, 1)
	-	ARDL(2, 0,		-	ARDL(3, 1,
123	4.282237	1, 1)	46	4.208834	0, 2)
	-	ARDL(2, 1,		-	ARDL(3, 0,
108	4.281691	1, 0)	61	4.207489	0, 3)
	-	ARDL(3, 1,		-	ARDL(3, 0,
44	4.278097	1, 0)	51	4.206351	3, 1)
	-	ARDL(1, 0,		-	ARDL(1, 1,
187	4.273858	1, 1)	169	4.203304	1, 3)
	-	ARDL(3, 0,		-	ARDL(3, 2,
62	4.271996	0, 2)	31	4.202873	0, 1)



	-	ARDL(1, 0,		-	ARDL(1, 3,
185	4.267684	1, 3)	143	4.202219	0, 1)
	-	ARDL(3, 1,		-	ARDL(2, 3,
47	4.264961	0, 1)	80	4.200433	0, 0)
	-	ARDL(1, 3,		-	ARDL(2, 1,
140	4.263758	1, 0)	110	4.199378	0, 2)
	-	ARDL(1, 1,		-	ARDL(3, 1,
172	-4.26287	1, 0)	36	4.197522	3, 0)
	-	ARDL(3, 0,		-	ARDL(3, 0,
52	4.261067	3, 0)	54	-4.19749	2, 2)
	-	ARDL(1, 0,		-	ARDL(1, 3,
186	4.256819	1, 2)	131	4.193555	3, 1)
	-	ARDL(3, 0,		-	ARDL(2, 3,
55	4.254294	2, 1)	75	4.192839	1, 1)
	-	ARDL(1, 3,		-	ARDL(1, 2,
139	4.253587	1, 1)	159	4.192482	0, 1)
	-	ARDL(2, 0,		-	ARDL(1, 1,
126	4.253209	0, 2)	170	4.192428	1, 2)
	-	ARDL(1, 0,		-	ARDL(1, 2,
183	4.247902	2, 1)	152	4.192204	2, 0)
	-	ARDL(3, 0,		-	ARDL(3, 1,
58	4.246373	1, 2)	39	4.189961	2, 1)
	-	ARDL(1, 0,		-	ARDL(1, 3,
189	4.243577	0, 3)	138	4.189645	1, 2)
	-	ARDL(3, 1,		-	ARDL(1, 2,
43	4.243352	1, 1)	155	4.187645	1, 1)
	-	ARDL(1, 0,		-	ARDL(2, 1,
180	4.242364	3, 0)	109	4.185644	0, 3)
	-	ARDL(1, 0,		-	ARDL(1, 1,
190	4.241472	0, 2)	173	4.185235	0, 3)
	-	ARDL(2, 1,		-	ARDL(1, 0,
111	4.240217	0, 1)	179	4.184299	3, 1)
	-	ARDL(1, 2,		-	ARDL(1, 1,
160	4.239735	0, 0)	167	4.184238	2, 1)
	-	ARDL(1, 1,		-	ARDL(2, 3,
168	4.239191	2, 0)	72	4.184089	2, 0)
	-	ARDL(1, 2,		-	ARDL(3, 1,
156	4.238902	1, 0)	42	4.183897	1, 2)
	-	ARDL(1, 3,		-	ARDL(3, 0,
136	4.237553	2, 0)	57	4.182695	1, 3)
	-	ARDL(1, 3,		-	ARDL(1, 1,
132	4.236467	3, 0)	174	4.179886	0, 2)
	-	ARDL(2, 2,		-	ARDL(1, 1,
96	4.236202	0, 0)	164	4.179249	3, 0)
	-	ARDL(2, 0,		-	ARDL(3, 2,
125	4.236093	0, 3)	27	4.178967	1, 1)
	-	ARDL(1, 1,		-	ARDL(2, 2,
175	4.234979	0, 1)	95	4.175715	0, 1)

32	- 4.234389	ARDL(3, 2, 0, 0)	68	- 4.174011	ARDL(2, 3, 3, 0)
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113	-4.173109	ARDL(2, 0, 3, 3)	26	-4.119949	ARDL(3, 2, 1, 2)
16	-4.17206	ARDL(3, 3, 0, 0)	41	-4.119569	ARDL(3, 1, 1, 3)
12	-4.170549	ARDL(3, 3, 1, 0)	49	-4.112508	ARDL(3, 0, 3, 3)
161	-4.17005	ARDL(1, 1, 3, 3)	97	-4.108593	ARDL(2, 1, 3, 3)
100	-4.167927	ARDL(2, 1, 3, 0)	145	-4.108185	ARDL(1, 2, 3, 3)
115	-4.167371	ARDL(2, 0, 3, 1)	14	-4.106594	ARDL(3, 3, 0, 2)
103	-4.166549	ARDL(2, 1, 2, 1)	84	-4.104471	ARDL(2, 2, 3, 0)
118	-4.164963	ARDL(2, 0, 2, 2)	99	-4.103948	ARDL(2, 1, 3, 1)
88	-4.16439	ARDL(2, 2, 2, 0)	114	-4.103566	ARDL(2, 0, 3, 2)
71	-4.163635	ARDL(2, 3, 2, 1)	87	-4.103107	ARDL(2, 2, 2, 1)
134	-4.16355	ARDL(1, 3, 2, 2)	102	-4.102123	ARDL(2, 1, 2, 2)
24	-4.160301	ARDL(3, 2, 2, 0)	34	-4.101093	ARDL(3, 1, 3, 2)
149	-4.158692	ARDL(1, 2, 2, 3)	141	-4.099772	ARDL(1, 3, 0, 3)
91	-4.158335	ARDL(2, 2, 1, 1)	70	-4.099136	ARDL(2, 3, 2, 2)
79	-4.158054	ARDL(2, 3, 0, 1)	77	-4.09696	ARDL(2, 3, 0, 3)
53	-4.15773	ARDL(3, 0, 2, 3)	150	-4.096054	ARDL(1, 2, 2, 2)
101	-4.157393	ARDL(2, 1, 2, 3)	3	-4.095891	ARDL(3, 3, 3, 1)
178	-4.157278	ARDL(1, 0, 3, 2)	85	-4.094614	ARDL(2, 2, 2, 3)
11	-4.155244	ARDL(3, 3, 1, 1)	90	-4.093845	ARDL(2, 2, 1, 2)
106	-4.155191	ARDL(2, 1, 1, 2)	37	-4.093628	ARDL(3, 1, 2, 3)
166	-4.154561	ARDL(1, 1, 2, 2)	162	-4.092859	ARDL(1, 1, 3, 2)
50	-4.151882	ARDL(3, 0, 3, 2)	10	-4.091175	ARDL(3, 3, 1, 2)

105	-4.151852	ARDL(2, 1, 1, 3)	69	-4.088919	ARDL(2, 3, 2, 3)
133	-4.151394	ARDL(1, 3, 2, 3)	89	-4.088663	ARDL(2, 2, 1, 3)
78	-4.148617	ARDL(2, 3, 0, 2)	29	-4.081865	ARDL(3, 2, 0, 3)
15	-4.148224	ARDL(3, 3, 0, 1)	19	-4.08107	ARDL(3, 2, 3, 1)
153	-4.146413	ARDL(1, 2, 1, 3)	73	-4.078869	ARDL(2, 3, 1, 3)
142	-4.146248	ARDL(1, 3, 0, 2)	147	-4.076137	ARDL(1, 2, 3, 1)
30	-4.146061	ARDL(3, 2, 0, 2)	22	-4.071137	ARDL(3, 2, 2, 2)
35	-4.145444	ARDL(3, 1, 3, 1)	66	-4.065031	ARDL(2, 3, 3, 2)
154	-4.145223	ARDL(1, 2, 1, 2)	65	-4.063708	ARDL(2, 3, 3, 3)
45	-4.144656	ARDL(3, 1, 0, 3)	6	-4.057849	ARDL(3, 3, 2, 2)
137	-4.13984	ARDL(1, 3, 1, 3)	25	-4.055624	ARDL(3, 2, 1, 3)
151	-4.139149	ARDL(1, 2, 2, 1)	33	-4.050162	ARDL(3, 1, 3, 3)
38	-4.135637	ARDL(3, 1, 2, 2)	81	-4.045316	ARDL(2, 2, 3, 3)
148	-4.135019	ARDL(1, 2, 3, 0)	13	-4.042139	ARDL(3, 3, 0, 3)
94	-4.134876	ARDL(2, 2, 0, 2)	83	-4.040734	ARDL(2, 2, 3, 1)
20	-4.133503	ARDL(3, 2, 3, 0)	2	-4.040516	ARDL(3, 3, 3, 2)
4	-4.133459	ARDL(3, 3, 3, 0)	98	-4.039686	ARDL(2, 1, 3, 2)
74	-4.12979	ARDL(2, 3, 1, 2)	86	-4.038809	ARDL(2, 2, 2, 2)
130	-4.129112	ARDL(1, 3, 3, 2)	18	-4.036609	ARDL(3, 2, 3, 2)
67	-4.129074	ARDL(2, 3, 3, 1)	146	-4.034877	ARDL(1, 2, 3, 2)
8	-4.129072	ARDL(3, 3, 2, 0)	5	-4.03152	ARDL(3, 3, 2, 3)
158	-4.129045	ARDL(1, 2, 0, 2)	21	-4.030586	ARDL(3, 2, 2, 3)
157	-4.126146	ARDL(1, 2, 0, 3)	9	-4.02666	ARDL(3, 3, 1, 3)
23	-4.125684	ARDL(3, 2, 2, 1)	1	-3.999922	ARDL(3, 3, 3, 3)
93	-4.121709	ARDL(2,	17	-3.986169	ARDL(3,

		2, 0, 3)			2, 3, 3)
		ARDL(1,			ARDL(2,
129	-4.121347	3, 3, 3)	82	-3.976715	2, 3, 2)
		ARDL(1,			
163	-4.120251	1, 3, 1)			
		ARDL(3,			
7	-4.120034	3, 2, 1)			

Table 3 below reports co-integration test results of ARDL bounds test. As can be concluded from Table 3, F-statistic values of 19.19608 goes beyond the upper limit critical values at all significance levels and sample sizes, thus we say that labor productivity, inflation, investment, and working hours variables are co-integrated and they move together in the long-run.

Table 3. ARDL Bounds Test

Test Statistic	Signif.	I(0)/Lower Limit	I(1)/Upper Limit
F-statistic: <b>19.19608</b>			
		Asymptotic: n=1000	
	10%	2.97	3.74
k: 3	5%	3.38	4.23
	2.5%	3.8	4.68
	1%	4.3	5.23
Actual Sample Size: 32		Finite Sample: n=35	
	10%	3.29	4.176
	5%	3.936	4.918
	1%	5.654	6.926
		Finite Sample: n=30	
	10%	3.378	4.274
	5%	4.048	5.09
	1%	5.666	6.988

We reported long-run coefficient estimations of ARDL(2,0,0,0) model in Table 4. We got negative and statistically significant coefficient estimations for INFLATION and WORKHOUR variables whereas we obtained positive and statistically significant coefficient estimation for INVESTMENT variable. If inflation level augments by 1% then labor

productivity declines by 0.0182% in Turkey for the years of 1990-2023. Also if working hours goes up by 1% then labor productivity drops by 0.3408% while an increase in investment level expands labor productivity by 0.3234% in Turkey during the estimation period.

Table 4. Long-run Coefficient Estimations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLATION	-0.0182	0.0062	-2.9290	0.0072
WORKHOUR	-0.3408	0.1148	-2.9672	0.0065
INVESTMENT	0.3234	0.0550	5.8824	0.0000
TREND	0.0268	0.0019	13.8885	0.0000
EC=LABPROD-(-0.0182*INFLATION-0.3408*WORKHOUR+0.3234*INVESTMENT+0.0268*TREND )				

In Table 5 below we displayed the estimation results of error correction model. Short-run coefficient estimation of LABPROD variable is positive but statistically insignificant. In parallel to the expectation, coefficient estimation of ECM term is negative and statistically significant.

Table 5. ECM Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	12.1701	1.1504	10.5792	0.0000
D(LABPROD(-1))	0.1436	0.0890	1.6125	0.1194
ECM(-1)	-0.9083	0.0861	-10.5517	0.0000
R-squared	0.8068	Mean dependent var.		0.0255
Adjusted R-squared	0.7935	S.D. dependent var.		0.0500
S.E. of regression	0.0227	Akaike info criterion		-4.6405
Sum squared resid.	0.0150	Schwarz criterion		-4.5031
Log likelihood	77.2475	Hannan-Quinn criter.		-4.5949
F-statistic	60.5610	Durbin-Watson stat		1.9847
Prob(F-statistic)	0.0000			

Finally we conducted several diagnostic tests (i.e., Jerque-Bera normality test, Breusch-Godfrey serial correlation LM test for autocorrelation, Harvey test for heteroskedasticity, Ramsey RESET test for model specification error, and CUSUM and CUSUM-square tests for parameter stability) to see if our ARDL(2,0,0,0) model suffers from any problem. Figure 2 shows the results of normality test, Table 6 exhibits the findings of autocorrelation test, Table 7 reports the results of heteroscedasticity test, Table 8 displays the findings of model misspecification test, and the findings of parameter stability test are given in Figure 3 and 4. As can be seen from the results of all tests, ARDL(2,0,0,0) model does not experience any problem in terms of non-normality, model misspecification, autocorrelation, heteroscedasticity, and parameter instability.

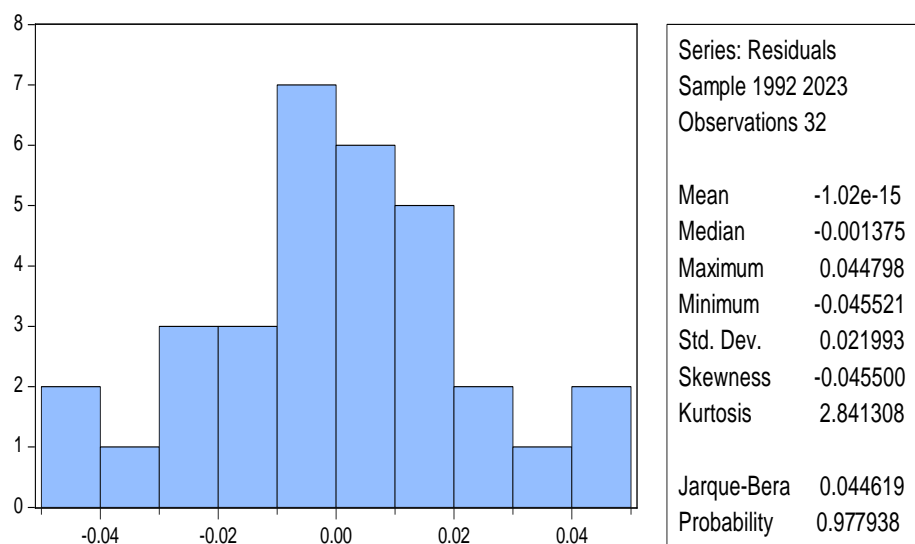


Figure 2. Jarque-Bera Normality Test

Table 6. Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.14774	Prob. F(2,23)	0.8635
Obs*R-squared	0.405887	Prob. Chi-Square(2)	0.8163

Table 7. Harvey Heteroskedasticity Test

F-statistic	1.129087	Prob. F(6,25)	0.3744
Obs*R-squared	6.822595	Prob. Chi-Square(6)	0.3376
Scaled explained SS	8.46074	Prob. Chi-Square(6)	0.2063

Table 8. Ramsey RESET Test

	Value	df	Probability
t-statistic	1.601102	24	0.1224
F-statistic	2.563526	(1, 24)	0.1224



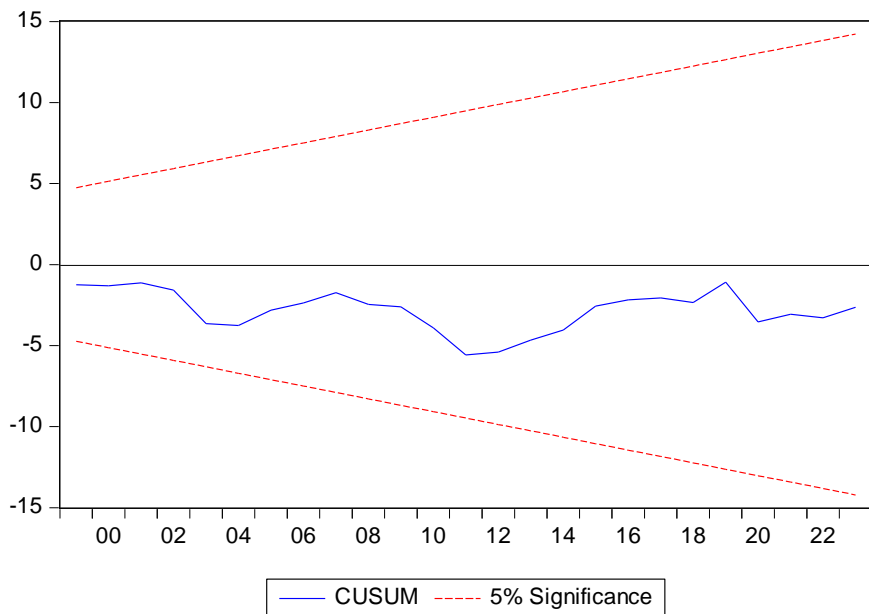


Figure 3. CUSUM Test for Parameter Stability of ARDL(2,0,0,0) Model

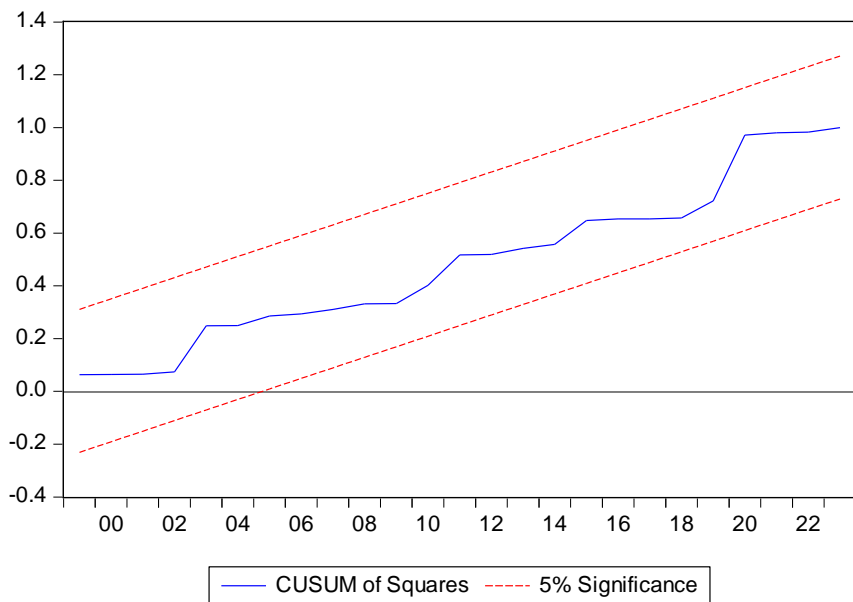


Figure 4. CUSUM-square Test for Parameter Stability of ARDL(2,0,0,0) Model

## CONCLUSION

This study tries to investigate the short-run and long-run relationship between inflation and labor productivity in Turkey for the period of 1990-2023 via ARDL estimation technique. ADF unit root test was implemented to find out the integration orders of the variables used in the analyses. The results of ADF unit root test indicate that labor productivity, inflation, investment, and working hours variables are stationary at first differences and hence they are integrated order one. Given the integration order one for each variable, we conducted co-integration analysis by employing ARDL bounds test. ARDL bounds test results imply that labor productivity, inflation, investment, and working hours variables are co-integrated and thus move together in the long-run in Turkey. We obtained statistically significant negative coefficient estimations for inflation and working hours variables while we got statistically significant positive coefficient estimation for investment variable. . An increase in inflation level by 1% leads to a decrease in labor productivity by 0.0182% in Turkey during the period of 1990-2023. Moreover if working hours jumps by 1% then labor productivity lessens by 0.3408% whereas an increase in investment level by 1% enlarges labor productivity by 0.3234% in Turkey in years between 1990 and 2023. Finally the findings of several diagnostic tests conducted disclose that our ARDL(2,0,0,0) model is not exposed to problems of non-normality, model misspecification, autocorrelation, heteroscedasticity, and parameter instability.

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# **The Effects of Competitive Strategies on Airline Financial Performance<sup>\*</sup>**

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<sup>\*</sup> This study is an expanded version of the paper presented at the 2nd International Çankaya Scientific Studies Congress on 28-29 September 2023.

## ABSTRACT

The air transport sector is one of the sectors in which the intensity of competition can be felt. Profitability in the industry is affected by high environmental uncertainties, the use of high-tech equipment, and the high cost of the equipment used. Airlines use different market positioning strategies when operating in such an environment. Differentiation and low-cost strategies are the most used positioning strategies. This study aims to compare the aviation-specific financial ratios of airlines operating in Turkey using two strategies and reveal their efficiency. In this context, data from the financial reports and annual reports of Turkish Airlines Inc. and Pegasus Air Transport Inc. were collected and analyzed. The financial data of the companies covers the data from 2019, when COVID-19 was established, until 2023. The results of the analysis showed that in 2019, when the pandemic emerged but did not yet affect air transport, the two airlines achieved similar financial success. Still, in 2020, when the effects of the pandemic were felt at the highest level, Turkish Airlines Inc. made 1.35\$ ¢ more profit per seat kilometer than Pegasus Air Transport Inc. In 2021 and 2022, the air transport sector started to recover and revenue per seat kilometer increased. In 2021, Turkish Airlines Inc. earned 1.96 \$ ¢ per seat kilometer, while Pegasus Air Transport Inc. earned 0.04 \$ ¢ . In 2022, Turkish Airlines Inc. earned a profit of 2.26 \$ ¢ per seat kilometer while Pegasus Air Transport Inc. earned a profit of 1.46 \$ ¢ . However, in 2023, Pegasus had a more efficient process per seat km than Turkish Airlines.

*Keywords – Aviation, Airline, Financial Performance, Competitive Strategies, Financial Ratios.*

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## INTRODUCTION

The air transportation sector is one of the most competitive sectors (Damgacı, 2023). The high environmental uncertainties, the need to constantly change the equipment and hardware used to include higher technology, and the high cost of these equipment and hardware make competition even more difficult (Işıklar et al., 2021). While airline companies try to achieve sustainable competitive advantage with the various strategies they implement, they also try to reduce environmental uncertainties and overcome the difficulties inherent in the sector. In this context, one of the strategies implemented by airline companies is the position school or position approach, proposed by Harvard University professor M. Porter.

The position school approach suggested by Porter (1985) generally addresses how companies should develop a competitive strategy against their

competitors, and claims that businesses can gain a competitive advantage by adopting one of the strategies of cost leadership, differentiation, and focus (Barca & Saban, 2012). Airline companies try to gain a sustainable competitive advantage against other airline companies by adopting one or more of these strategies. An airline company implementing a differentiation strategy differentiates its product with products such as wider seat distances in the cabin, free catering, free multi-media system service, and comfort kits that will increase flight comfort while offering services such as privileged lounge services, separate counter opening, priority boarding, and extra baggage allowance at the airport. In addition, they offer privileged services to their passengers by offering extra services in city-airport transportation. In addition, airline companies following a differentiation strategy try to meet customer expectations thanks to the wide flight networks they offer to their customers and the operations they conduct to primary airports. In this context, the passenger perceives the flight service, which is the same service offered by other airlines, as more privileged and is willing to pay more for this privileged service (Gerede, 2017). The low-cost strategy is designed to provide the cost of the flight service to be provided by the airline company at a lower cost than other airline companies and thus to make a profit above the sector average. Airlines that follow the low-cost strategy can carry more passengers with narrower seat distances in the cabin on a flight, can provide catering services for a fee, and can charge a fee for multimedia systems. However, passengers are not offered privileged services at airports. In other words, airline companies that follow this strategy provide a lean service. The decision to receive or not receive services that are not included in the ticket price is left to the passenger. These carriers generally perform short and medium-distance flights with point-to-point (non-stop) flight networks and with a single aircraft type in their fleet and to secondary airports. Flight costs are lower due to such factors. The basic argument of the low-cost strategy implemented by airline companies is not to reach more passengers by keeping the ticket price low, but to obtain more profit than the sector average by keeping the costs at a minimum level (Ülgen & Mirze, 2010). Since the service is produced at a lower cost thanks to the lean service, it is possible to be more flexible in determining the ticket price compared to other airline companies. If the ticket prices of two airline companies that follow the differentiation and low-cost strategies are at similar levels, the passenger will choose the company that he thinks will provide more benefit (value). In this context, the thing that the airline company that follows the low-cost strategy should do is of course reduce the ticket price in a way that will create value for the passenger. The efforts of airline companies that follow the low-cost strategy to reduce their costs mostly cover issues related to passenger comfort. In matters related to flight safety and security, they should provide the same standards as airline companies that follow the differentiation strategy. The last strategy suggested by the position school is the focus

strategy. The focus strategy is the narrower application of the differentiation or low-cost strategy. Operating in a specific market, targeting a specific passenger type or a specific cargo type can be considered within the scope of the focus strategy (Savaş & Duran, 2020).

Airline companies try to gain a competitive advantage over their competitors and achieve above-average profits with the competitive strategies they implement. Achieving competitive advantage and above-average profits also requires companies to be efficient. While there are many efficiency indicators for airline companies (number of flights, block time, on-time departure, load factor, aircraft cycle time, etc.), one of these indicators is financial efficiency indicators. When the financial ratios of airline companies are examined, it is seen that some values specific to aviation are used. The most frequently used aviation-specific efficiency indicators are available seat kilometers (ASK) and revenue passenger kilometers (RPK) (Vasigh & Rowe, 2019). Although it is seen that the mile measurement value is also used instead of kilometers (km) in the sector, it is seen that the km value is mostly used. In this study, the km value was used in this context. ASK expresses how many km a seat is moved on a flight, regardless of whether it is occupied or empty (Doganis, 2013). For example, if we assume that there is a 180-seat capacity aircraft on a 1000 km flight,  $ASK=1000 \times 185=185000$  for that flight. In RPK, the seat must be sold for its price (Doganis, 2013). If we continue with the same example, a 180-seat capacity aircraft flies for 1000 km, but there are 160 seats purchased for its price. In this case,  $RPK=160 \times 1000=160000$ . The passenger load factor (LF) rate is calculated by comparing these two values (RPK/ASK) (McLean, 2006). In this context, LF in the example  $=160,000/185,000=0.864$ . In other words, the passenger load factor is 86.4%. However, it is not correct to calculate efficiency only based on ASK, RPK, and LF. Because the ticket price determined by the company is not included in this calculation. For example, an airline company can increase its RPK and therefore its occupancy rate by keeping its ticket prices low. However, this does not mean that the profit per seat will be high. Therefore, an efficiency comparison made only based on these indicators will not give the correct result. On the other hand, reasons such as the number of aircraft in the fleets of airline companies and the range differences of the operations performed may cause errors when making the comparison. Therefore, values such as total revenue (R), total cost (TC), break-even load factor (Break-even-B/E LF), available seat per km revenue (RASK), and available seat per km cost (CASK) should be included in the calculations.

RASK expresses how much income a seat generates per km. R and ASK values are used in calculating RASK. In this context, the formula is as follows;

$$RASK= R/ASK \quad (1)$$



For example, ABC Airlines has an annual ASK of 120,000,000 and a total revenue of 8,875,000 \$. In this context, the revenue per seat km of the relevant airline is;

$RASK = 8,875,000 / 120,000,000 = 0,073$  \$, in other words, it is 7.3 cents. When this seat is moved 1000 km away, it creates an income of  $1000 \times 7.3 = 7300$  cents, in other words, 73 \$.

CASK indicates how much a seat costs per km. TC and ASK values are used to calculate CASK. In this context, the formula is as follows;

$$CASK = TC / ASK \quad (2)$$

For example, ABC airline has an annual ASK of 120,000,000 and a total cost of 6,875,000 \$. In this context, the cost per seat km of the relevant airline is;

$$CASK = 6,875,000 / 120,000,000 = 0.057$$
 \$, in other words, 5.7 cents.

When this seat is moved 1000 km away, it costs  $1000 \times 5.7 = 5700$  cents, in other words, 57 \$.

RASK-CASK represents the total profit of the airline company based on the seat km offered. When the data from the examples given above are used;  $RASK - CASK = (7.3) - (5.7) = 1.6$  cents. This figure shows the total profit generated by a seat in one km. However, it should also be noted that when  $RASK - CASK < 0$ , it cannot be said that the airline company has made a loss. Because the RASK calculation does not include revenues such as cargo revenues and other financial revenues. In this context, when  $RASK - CASK < 0$ , the airline company may have made a profit.

Another ratio used in calculating the efficiency of airline companies is Revenue per Revenue Passenger Kilometers (RY). R and RPK values are used in calculating RY. In this context, the formula is as follows;

$$RY = R / RPK \quad (3)$$

For example, ABC airline's annual RPK is 100,000,000 and its total revenue is 8,875,000 \$. In this context;

$$RY = 8,875,000 / 100,000,000 = 0.088$$
 \$, in other words, 8.8 cents.

Another efficiency indicator for airlines is the load factor. Load factor (LF) is an indicator of how many of the seats an airline has offered on a flight and sells them for a fee. In this context, the load factor formula is  $RPK / ASK$ . For example, according to the data of ABC airline in the example above, the load factor is  $100,000,000 / 120,000,000 = 0.833$ , in other words, 83.3%. However, using the load factor alone is not a very correct decision. For the load factor to be used as an efficiency indicator, the airline's breakeven load factor must also be known. The breakeven load factor refers to the load factor at which the company achieves zero profit and zero loss. The following formula is used in calculating the breakeven load factor;

$$BE-LF = CASK / RY \quad (4)$$

Using the above sample data, the BE-LF of ABC airline is calculated as follows;

$$BE-LF = \frac{CASK}{RY} = \frac{5,7}{8,8} = 0,647 \text{ in other words } 64.7\%.$$

ABC airline company needs to have at least 64.7% occupancy to cover all its costs on the relevant flight. However, when we look at the values in the example, it is seen that it has reached 83.3% occupancy. Therefore, it can be said that ABC airline company has covered its costs for this flight and made a profit. However, as mentioned before, cargo revenues and other financial revenues are not included in the RY value. In this context, even if BE-LF is greater than LF, the airline company can declare a profit.

When the literature is examined, a limited number of studies were encountered in which specific ratios of airline companies were evaluated, and airline companies were compared. In the study conducted by Köse (2021), the financial success of THY and Pegasus airline companies was measured by comparing the data of 2014-2019. In this study, THY was found to be more successful financially than Pegasus airline company. In the study conducted by Keleş and Özulucan (2020), the financial data of THY and Pegasus were analyzed with the ratio method. In this study, it was concluded that the financial data of Pegasus airline company was more successful than THY, therefore it would be more appropriate to invest in Pegasus airline company. In the study conducted by Barbot et al. (2008), the financial efficiencies of 39 differentiation and 10 low-cost strategies were compared. According to this study, airline companies following a low-cost strategy were found to be more efficient. In a study conducted by Barros and Peypoch (2009), the financial efficiencies of European airlines were compared, and it was concluded that low-cost carriers were more efficient. There are various studies in the literature on the decrease in the financial efficiency of airlines due to the crises experienced (Pires & Fernandes, 2012; Wang et al., 2017). In this context, it is thought that a financial efficiency analysis should be conducted for the post-COVID-19 period, which is the biggest crisis experienced by modern aviation. Although a similar analysis was conducted by Köse (2021), the data examined in this study covers the years 2014-2019. In other words, no analysis was conducted on the data related to the COVID-19 period and after. In this context, this study aims to compare the financial efficiencies of airlines with business model differences during and after the COVID-19 period. When previous studies were examined, it was claimed that low-cost carriers were more efficient. However, COVID-19 has caused many dynamics to change in the sector, especially increasing the cargo revenues and other financial revenues of airlines that follow a differentiation strategy. Therefore, it is important to re-compare the financial efficiency within the framework of the changing conditions to reveal the current situation.

## METHOD

This study aims to analyze the financial efficiency of airline companies that have adopted different strategies in the air transportation sector because of the changing conditions after COVID-19, through aviation-specific financial data. In this context, the universe of the study was determined as airline companies in the Turkish airline sector. In the study, THY and Pegasus airline companies, whose financial data are publicly available, were included in the research sample by using the purposive sampling method. The study data were obtained from the financial and activity reports of the relevant companies (Pegasus, 2023; THY, 2023). The study data covers the years 2019-2023. The raw data obtained from the financial and activity reports were analyzed and the necessary financial ratios were reached, and these ratios were standardized, and the findings were interpreted. The financial data in the study are presented in US dollars due to the inflation experienced in our country.

## FINDINGS AND COMMENTS

The findings obtained from the financial and activity reports of airline companies are shown in Table 1 and Table 2. The tables created for airline companies include ASK, RPK, RASK, CASK, R, TC, RY, LF, and BE-LF values.

Table 1. THY Findings

Indicator	2019	2020	2021	2022	2023
ASK (Km)	187.713.170	74.960.299	127.768.987	201.734.516	234.839.318
RPK (Km)	153.202.555	53.221.812	86.701.053	162.665.250	193.931.722
RASK (\$ ¢ )	7,05	8,87	8,6	9,31	8,91
CASK (\$ ¢ )	5,82	8,33	6,64	7,05	7,23
RASK-CASK (\$ ¢ )	1,23	0,54	1,96	2,26	1,68
R (\$)	13.245,521	6.632,207	10.996,082	18.800,389	20.942,832
TC (\$)	10.939,307	6.249,108	8.495,432	14.230,267	16.060,213
RY (\$ ¢ )	8,64	12,46	12,68	11,55	10,7
LF %	81,6	71	67,9	80,6	82,5
BE-LF %	67,4	66,9	52,4	61	67,5

In the table, total revenue and total cost values are expressed in Thousand \$.

Source: Created by the author using Turkish Airlines Inc. Financial and Activity reports.

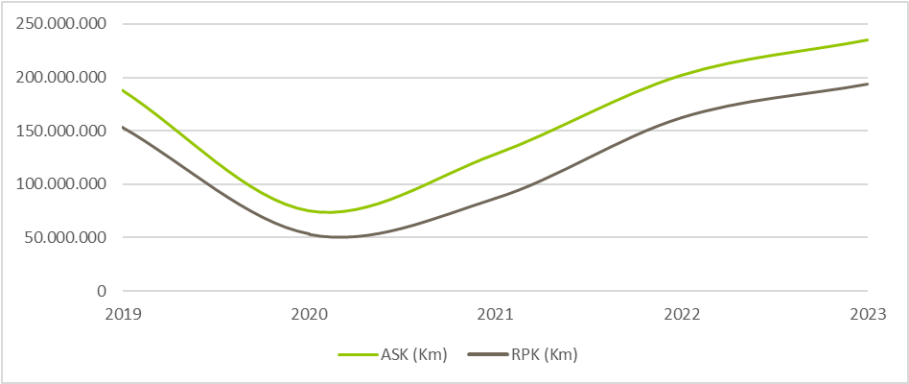
Table 2. Pegasus Airline Company Findings

Indicator	2019	2020	2021	2022	2023
ASK (Km)	38.555.000	22.278.000	33.052.000	47.643.000	58.217.000
RPK (Km)	34.159.730	17.755.566	25.549.196	39.829.548	49.368.016
RASK (\$ ¢)	5,04	3,07	3,64	5,41	7,32
CASK (\$ ¢)	3,8	3,88	3,6	3,95	5,59
RASK-CASK (\$ ¢)	1,24	-0,81	0,04	1,46	1,73
R (\$)	1.944.073	685.890	1.204.242	2.581.820	4.261.723
TC (\$)	1.468.151	865.617	1.190.969	1.882.372	3.254.506
RY (\$ ¢)	5,69	3,86	4,71	6,48	8,63
LF %	88,6	79,7	77,3	83,6	84,8
BE-LF %	66,7	100	76,4	60,9	64,7

In the table, total revenue and total cost values are expressed in Thousand \$.

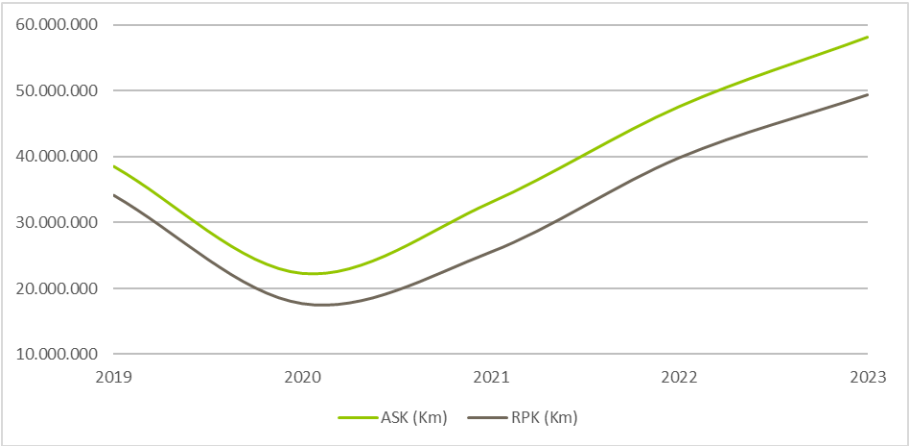
Source: Created by the author using Pegasus Airlines Financial and Activity reports.

As seen in Table 1 and Table 2, THY and Pegasus Airlines experienced a significant decrease in all financial data in 2020, when the effects of COVID-19 were most intensely felt. While THY's ASK decreased by approximately 60% in the relevant year, Pegasus' ASK decreased by 42%. It can be said that this difference between THY and Pegasus emerged in the context of the business model. While there were closures all over the world during the COVID-19 period, significant decreases were observed especially in Asian flights. For this reason, it can be said that THY's ASK decreased more. In 2021, it is seen that both companies entered the recovery process. While THY increased its ASK by approximately 70% in 2021, Pegasus increased it by 48%. 2022 indicates that the effect of the pandemic has completely disappeared. In fact, in 2022, THY generated traffic above 2019 statistics and increased its ASK by 7.4% compared to 2019. Similarly, Pegasus increased by 23.5% in 2022 compared to 2019 ASK. When the 2023 statistics are examined, it is observed that there are increases in the ASK of both airlines. While THY's ASK increased by approximately 16% compared to the previous year, Pegasus' ASK increased by approximately 22%. Graph 1 and Graph 2 show the annual changes in the ASK and RPK values of THY and Pegasus Airlines.



Graph 1. THY ASK-RPK has changed over the years

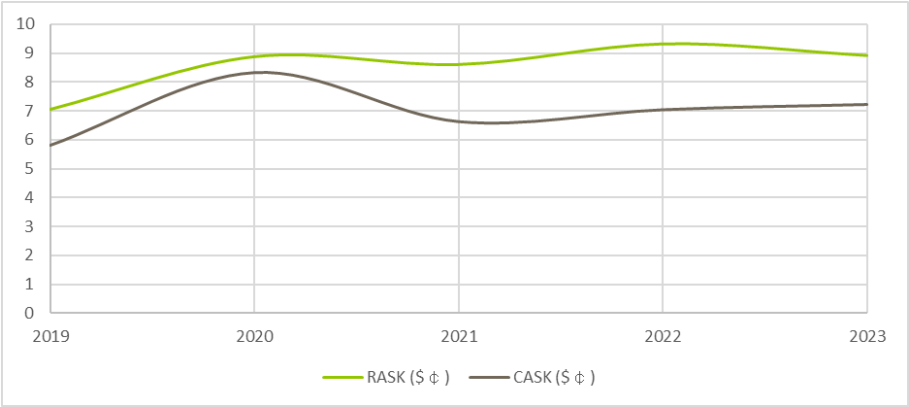
Source: Created by the author.



Graph 2. Pegasus ASK-RPK has changed over the years

Source: Created by the author.

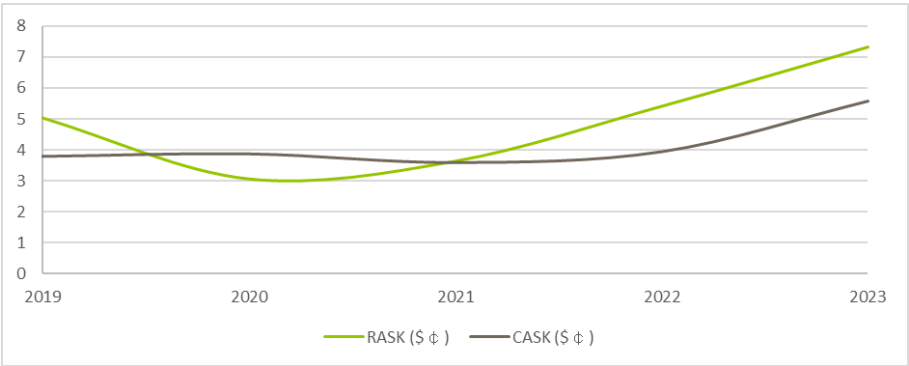
As seen in Graphs 1 and 2, the ASK and RPK values of both airlines decreased dramatically in 2020, and a recovery process has begun since 2021. However, when both graphs are examined, it is observed that the gap between the ASK and RPK values has widened since 2021. This situation shows that airlines have offered more seats to the market than demand during the COVID-19 recovery process. When the five-year LF values of the companies are examined, it is seen that the lowest occupancy rate occurred in 2021 and that they increased the occupancy rate in 2022 and 2023. Graphs 3 and 4 show the RASK and CASK values of airlines by year.



Graph 3. THY RASK and CASK changed over the years

Source: Created by the author.

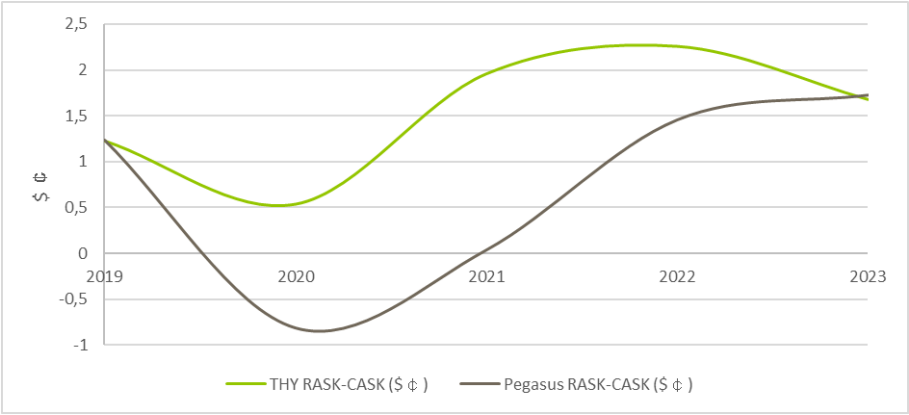
As seen in Graph 3, THY's RASK and CASK values were very close to each other in 2020, but the difference between them opened up positively in 2021. In 2022, the gap widened even more. In 2023, it is seen that the RASK value decreased slightly. Just by looking at this graph, it can be said that THY has increased its profitability by getting rid of the effects of the pandemic.



Graph 4. Pegasus RASK and CASK have changed over the years

Source: Created by the author.

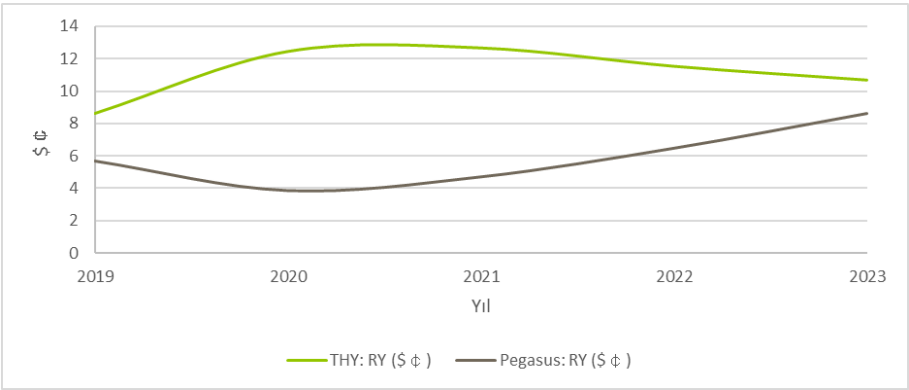
As seen in Graph 4, Pegasus Airlines produced a negative value in 2020, while it almost equalized its revenues and costs in 2021. In 2022, the difference opened positively and differentiated to create profit. In 2023, it increased its profitability by increasing its RASK value even more. Graph 5 shows the RASK-CASK values of THY and Pegasus Airlines comparatively.



Graph 5. THY and Pegasus RASK-CASK changes

Source: Created by the author.

As can be seen in Graph 5, in 2020, THY earned a profit of \$ 0.5 per seat km, while Pegasus lost \$ 0.8 per seat km in the same period. In 2021, THY earned a profit of \$ 1.96 per seat km, while Pegasus earned a profit of \$ 0.04. In 2022, the rate of increase in THY's profit per seat km slowed down and increased to \$ 2.26. In the same period, Pegasus achieved a higher momentum and increased its earnings per seat km to \$ 1.46. In 2023, while THY earned a profit of \$ 1.68 per seat km, Pegasus started to earn a profit of \$ 1.73 per seat km in the same year. In this context, it can be said that Pegasus Airlines had a more successful year than THY in 2023. Graph 6 shows the RY values of both airlines.

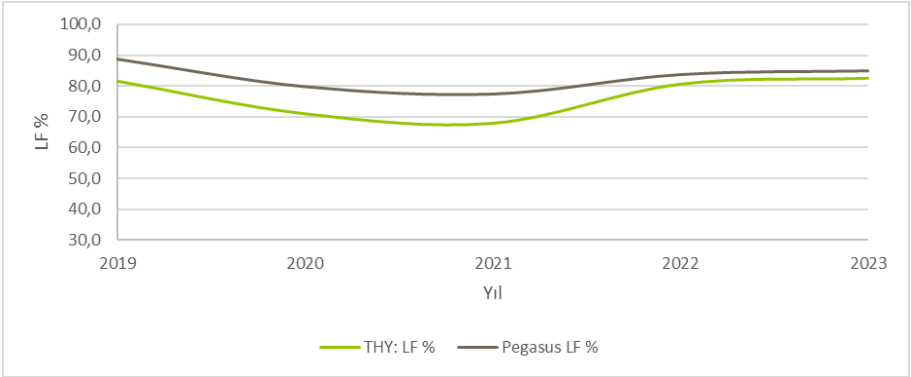


Graph 6. THY and Pegasus RY values.

Source: Created by the author.

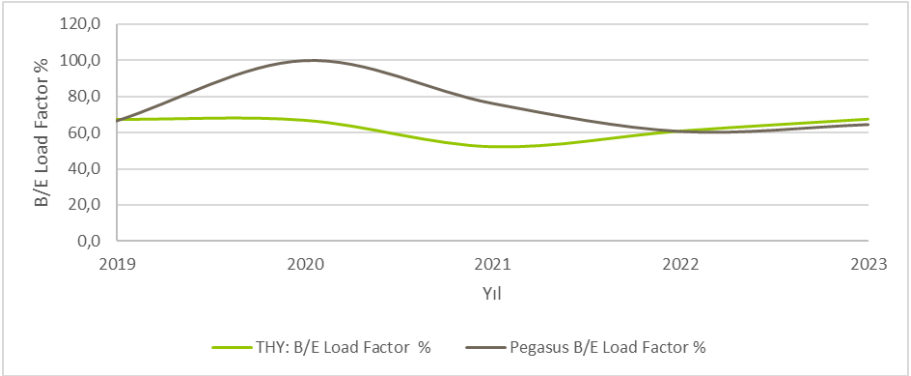
As seen in Chart 6, THY increased its efficiency even during the pandemic period and generated a profit of \$ 12.46 per seat km. Pegasus' efficiency

decreased in 2020 and generated a profit of \$ 3.86 per seat km. In 2021, THY's efficiency increased to \$ 12.68, while Pegasus' efficiency increased to \$ 4.71. THY's efficiency decreased slightly in 2022, falling to \$ 11.55, while Pegasus' efficiency continued to increase, reaching \$ 6.48. Finally, in 2023, THY's efficiency continued to decrease and fell to \$ 10.7, while Pegasus' efficiency continued to increase and rose to \$ 8.63. In this context, it can be said that THY performed better in times of crisis, while Pegasus was more efficient in the post-crisis period. Graphs 7 and 8 show the occupancy rates (LF) and break-even occupancy rates (BE-LF) percentages of airline companies.



Graph 7. LF percentages of THY and Pegasus.

Source: Created by the author.



Graph 8. BE-LF percentages of THY and Pegasus.

Source: Created by the author.

When graphs 7 and 8 are examined, while THY's BE-LF rate was 66.9% in 2020, its realized LF was 71%. In the same year, Pegasus' BE-LF was 100%, and its realized LF was 79.7%. In this context, it would not be wrong to say that Pegasus Airlines will only break even if it achieves a 100% occupancy rate in the relevant year, and therefore it is inevitable that it will incur losses



in terms of passenger revenues in this period. In 2021, THY's BE-LF was 52.4%, while its realized LF was 67.9. Pegasus' BE-LF was 76.4 in the relevant year, while its realized LF was 77.3%. In 2022, THY's BE-LF was 61%, while its realized LF was 80.6%. Pegasus' BE-LF was 60.9% in the relevant year, while its realized LF was 83.6%. Finally, in 2023, THY's BE-LF was 67.5, while its realized LF was 82.5, and Pegasus' BE-LF was 64.7, while its realized LF was 84.8. In this context, it can be said that airline companies increased the difference between their break-even point load rates and their realized load rates as the impact of the pandemic disappeared.

## **DISCUSSION AND CONCLUSION**

This study aims to compare the efficiency of airlines operating in Turkey and adopting different business models through specific aviation-specific ratios. In this context, THY and Pegasus Airlines operating in Turkey and whose financial data can be accessed were included in the research sample. Data compiled from the financial and activity reports of airlines were analyzed and relevant tables were created. The research findings show that the pandemic that emerged in 2019 had serious effects on the financial data of airlines. However, it is seen that the profitability of airlines has increased due to the recovery in the sector. It was revealed because of the analysis that THY did not incur any losses in terms of annual performance, including the pandemic period, and was more efficient than the airline company compared to 2022. However, it can be said that the Pegasus Airlines company showed a more successful performance than THY in terms of both load factor and revenue per seat km in 2023. It was observed that Pegasus made a loss in 2020, and that the load factor should have been at least 100% according to the revenue it earned during this period, but the load factor was 79.7. It would not be wrong to say that THY was more efficient than Pegasus in terms of revenue per seat km between 2019 and 2022, and therefore the differentiation strategy contributed to the airline making more profit in these years, but the situation reversed in 2023 and Pegasus, which adopted the low-cost strategy, was more successful. However, the results obtained from this study are in the context of two Turkish carriers. More comprehensive studies are needed to make a more accurate comment on which is more efficient, the differentiation strategy and the low-cost strategy. In this context, in future studies, it will be more accurate to include European and US carriers (carriers following the differentiation strategy and the low-cost strategy) in the analysis and make a comparison.

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# **New Marketing Tools of the Digital Universe: Mathematical Methods and Strategic Analysis at the Intersection of Metaverse and Artificial Intelligence**

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## ABSTRACT

There are new possibilities emerging as a result of our growing reliance on digital technology, particularly in the areas of artificial intelligence (AI) and the metaverse. In this study, we look at how mathematical methods and AI may work together to improve digital marketing techniques in the modern day. The research delves into the complex mathematical methods used to assess strategies, the revolutionary impacts of AI marketing, and the part AI played in the metaverse's construction.

By enhancing virtual experiences, AI provides consumers with a deeper chance for involvement. Through the use of real-time adaptation and predictive modeling, AI further enhances the already remarkable metaverse characteristics and makes it possible to build dynamic, individualized user experiences. Studying consumer behavior, optimizing resource allocation, and developing advertising tactics also make use of sophisticated mathematical and computer methods. These tactics provide a solid plan for dealing with the difficulties of making decisions in today's dynamic digital landscape.

AI-powered marketing solutions are radically changing traditional approaches. By automating processes, segmenting audiences more precisely, and developing data-driven campaigns, it enables businesses to implement more effective, targeted, and flexible strategies. These developments enable companies to remain relevant in a rapidly changing digital world. This study contributes to academic research and practical applications by offering new ideas to overcome the barriers to digital marketing. It also highlights the revolutionary potential of AI as a catalyst for long-term, customer-centric, and strategic growth in the digital age.

*Keywords – Digital Marketing, Mathematical Methods, Metaverse, Artificial Intelligence, AI Marketing.*

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## INTRODUCTION

Human-engineered robots are now capable of performing a wide array of labor-intensive tasks. In several instances, motivated by the pursuit of increased productivity and possibly mere curiosity, humans have endeavored to integrate human intellect into machines, which is the foundational impetus for AI. Numerous definitions of artificial intelligence exist. The Turing test defines AI as the capacity of machines to interact with people via electronic output devices without disclosing their non-human identity, with the fundamental evaluative criteria being binary. The diverse explanations of AI generally converge on the premise that its essence lies in the study of ideas,

methodologies, technologies, and applications aimed at replicating, augmenting, and enhancing human intellect (Jiang et al., 2022).

The marketing industry has been profoundly impacted by artificial intelligence, and this trend is expected to continue. More and more complex and scalable algorithms are powering marketing methods including digital advertising and search, social media engagement, smartphone monitoring, online shopping, and in-store experiences. These algorithms are supported by major technology companies such as Google and Amazon, in addition to a large number of smaller MarTech companies (Ma & Sun, 2020).

AI and the metaverse may assist organizations in more efficiently executing their digital marketing plans by offering data-driven insights and analyses that enhance understanding of client demands and preferences. Predictive marketing analytics with AI and the Metaverse can assist organizations in designing and optimizing their marketing efforts while identifying the most lucrative consumer categories. Furthermore, AI-driven consumer segmentation and targeting algorithms enable organizations to manage budgets and resources more effectively. Ultimately, AI and Metaverse automation functionalities enable enterprises to automate marketing tasks like customization, customer segmentation, incentives, and promotions, hence enhancing the customer experience (Rathore, 2023).

AI is the key to industrial change, allowing intelligent equipment to self-monitor, interpret, diagnose, and analyze. AI-driven techniques, particularly machine learning and deep learning, assist industries and manufacturers in anticipating maintenance requirements and minimizing downtime. In order to explain AI system data and decisions, explainable AI (XAI) researches and creates techniques, algorithms, and tools (Ahmed et al., 2022).

The word "metaverse" was first used in 1992 in a book called *Snow Crash* by Neal Stephenson. The book described a dystopian spherical universe where anyone may take on the persona of an avatar using VR terminals. Prominent technological companies such as Facebook (now Meta), Microsoft, and Nvidia Corporation are investing substantial financial resources to create a digital world that aligns with the concept of the metaverse (Stephenson, 1992; Barrera & Shah, 2023).

First, meta-universe is a space to share results and co-create, co-share, and co-govern the world with brands and customers. Additionally, a meta-universe provides an immersive experience that does not need physical travel, allowing individuals to have a personal encounter even if they are unable to physically be there. The next battleground for consumer attention and business growth is metaverse marketing. Companies are encouraging customers to create virtual personas for more interaction and communication. Together with metaverse technology, this increasing virtual identity-creating power can be an endorsement, symbol, or logo to convey the brand image and explain the brand (Jing et al., 2024).

## AI FOR METAVERSE

A virtual environment's value and functionality are lessened if its users are unable to engage with it and utilize it to achieve certain goals. As a result, interaction is essential inside the metaverse, connecting individuals in the real world to the virtual domain. Human-computer interaction has long been a focus of study in this field. It serves as a key framework for facilitating human-computer interactions. In recent years, there has also been a lot of attention in the field of brain-computer interaction. AI is essential to research fields, allowing for the improvement and advancement of these methodologies. AI and the metaverse are critical technologies of the twenty-first century. Both technologies have the potential to enhance individuals' lives, revolutionize industries, and increase job efficiency. The metaverse integrates virtual, augmented, and physical realms. Although the term "metaverse" has a lengthy history, it continues to represent an emerging technology that is frequently cited in daily conversations. The metaverse will eventually provide unmatched opportunities in work, education, commerce, entertainment, and social interactions. Machine learning enables software systems to enhance their predictive capabilities autonomously, rendering several metaverse experiences unattainable without it (Aydin & Nalbant, 2023).

Through the integration of AI with technologies such as AR/VR, blockchain, and networking, the metaverse is possible to construct virtual worlds that are scalable, realistic, trustworthy, and run constantly. The seven-layer metaverse platform unequivocally acknowledges the critical role of AI in ensuring infrastructure dependability and enhancing performance to date. A lot of complex machine learning algorithms have been built into 5G and soon to be released 6G systems. These algorithms use supervised and reinforcement learning to do things like efficiently monitor the spectrum, automatically assign resources, estimate channels, offload traffic, protect against attacks, and find network faults. Sensor-based wearable devices and other human-machine interface technologies enable the analysis and recognition of both basic human motions and complicated activities using machine learning and deep learning models. As a result, these devices translate users' physical actions into virtual environments, empowering them to skillfully navigate their avatars and interact with various elements within the metaverse (Huynh-The et al., 2023).

When people can't accomplish their objectives in a virtual environment, it loses all of its value and importance. Consequently, the metaverse's fundamental function is to facilitate interaction between the virtual environment and actual individuals. In this domain, human-computer interaction has been a prominent research area for a long time, offering essential functionalities that facilitate effective interaction. The metaverse has garnered significant attention recently. It seeks to create a virtual



environment that enables individuals to engage with the world and collaborate with one another (Guo et al., 2022).

## **MATHEMATICAL METHODS AND STRATEGIC ANALYSIS**

A branch of AI called machine learning (ML) uses mathematical models to increase machine intelligence. A dataset trains an ML model to predict any test sample without task programming. Deep learning, the most common type of machine learning, mimics the brain's data and pattern processing to aid decision-making (Minh et al., 2022).

In dynamic markets with rapid changes due to technological advances, globalization, and consumer preferences, mathematical models are vital for understanding and forecasting consumer behavior. These models quantify market parameter relationships to help enterprises and governments forecast trends, adjust pricing, and adapt marketing to boost profits and consumer satisfaction. Due to advances in computational methodologies, big data analytics, and consumer data availability, mathematical models for consumer behavior prediction have gained popularity in the previous decade. Neural networks, decision trees, and support vector machines have become important consumer behavior-predicting tools in the previous decade. Mathematical models employ various mathematical and statistical methods to analyze and predict consumer decision-making. These models examine how price, income, desires, and external factors like advertising affect customer behavior (Iyappan et al., 2024).

Organizations need marketing to link output (production) to sales (marketing). It also makes it easier to get complete and accurate client information and allows an unbiased market evaluation by looking at all internal (controlled) and external (uncontrolled) factors, such as micro- and macroenvironmental elements that affect resource attraction, technology integration, infrastructure development, and smart managerial decisions (Mandych et al., 2018).

## **AI MARKETING**

The growing utilization of AI has catalyzed the next wave of business disruption in enterprises through the digital transformation. Among the many industries experiencing this change, marketing is one of the most noticeable. Modern marketing has begun to utilize advanced technology, such as artificial intelligence, and integrate them into mainstream operations to achieve rapid success (Chintalapati & Pandey, 2022).

AI marketing is a method that utilizes customer data to predict the customer's subsequent actions and enhance the customer experience. AI facilitates the integration of data science and execution by efficiently processing and analyzing vast quantities of data that were previously

unmanageable (Thiraviyam, 2018). Enterprises may now monitor real-time data for analysis and rapid reaction to customer demands thanks to AI, a prevalent and emerging technology. AI provides critical insights into consumer behavior—vital for attracting and retaining customers (Verma et al., 2021).

Using AI for advertising may be very beneficial. The development of sophisticated algorithms, better software data management abilities, and an explosion of data and information sources are all aided by this. The way businesses and individuals interact is changing due to AI. The website's and business's characteristics significantly impact the utilization of this technology. Marketers may now pay closer attention to customers and respond to their needs instantly. With the data collected and generated by its algorithms, companies can quickly determine the best channel to employ and the content to target customers with. Users feel more comfortable and buy more when AI customizes their experiences. AI may also assess a competitor's marketing and customer expectations (Haleem et al., 2022).

AI is currently revolutionizing the marketing industry and will likely influence it in the near future. Early adopters are recognizing the utility of AI, despite the fact that marketing is one of the most fundamental commercial applications. AI can be employed by marketing managers to customize user experiences, manage social media, conduct market research, and generate leads. Global business has become exceedingly prosperous and efficient as a result of AI (Shaik, 2023).

A number of digital marketing subfields are increasingly using AI. Applications of AI in marketing include speech, text, picture, and decision-making, as well as autonomous robots. AI has the ability to make judgments as well. The most well-known names in technology, like Amazon, Google, Apple, and Microsoft, employ voice recognition as an AI application. In the end, they will have a far better experience and be much more satisfied with the digital marketing platform. Improved user response might lead to happier customers in the end if artificial intelligence (AI) technologies like speech recognition, VR/AR, automated content generation, etc. are used (Nalbant & Aydin, 2023).

## **RESULTS AND DISCUSSION**

This study highlights how AI is revolutionizing marketing strategies in the dynamic digital environment of the metaverse. Data-driven decision-making, operational efficiency optimization, and user experience enhancement depend on AI technologies. Businesses can use AI-driven solutions that enable more immersive and individualized interactions with diverse audiences in virtual environments.

Complex consumer behavior can be effectively understood, and marketing plans can be developed by combining advanced analytical and

mathematical tools. With the help of these quantitative approaches, marketers can effectively manage resources, predict trends, and evaluate the success of their campaigns. These insights are crucial for negotiating the fiercely competitive and ever-changing environment of the digital ecosystem.

Businesses can increase their efficiency and scalability by automating and optimizing marketing tasks. Machine learning algorithms, real-time data, and natural language processing techniques increase the responsiveness and relevance of campaigns. These technologies help businesses reduce their operational expenses while also providing the ability to adapt to rapidly changing market demands. While there are tactical advantages to AI-powered strategies, it is important to be aware of the disadvantages, such as ethical issues, data security concerns, and the need for transparent governance structures. The development and integration of AI into marketing strategies represents a major shift that presents both opportunities and responsibilities for sustainable, customer-centric growth.

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# **Development of Temperamental Values Scale: Validity and Reliability Study**

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## ABSTRACT

In this study, a scale of innate temperamental values of the individual was developed and the validity and reliability analysis findings were discussed. The aim of the study is to develop a valid and reliable measurement tool for values that determine an individual's perception, evaluation style, behavior, attitude, and interpersonal relationship style inherent in temperament. The research employed both quantitative research methods, utilizing the survey technique, and relational scanning technique. The sample group of the research consists of 304 university students studying at Istanbul Health Sciences University. In the validity and reliability study, the scope and structure validity of the scale were examined. The expert opinion was obtained for content validity, and Exploratory and Confirmatory Factor Analyses were conducted for structural validity. SPSS 28 software was used for Exploratory Factor Analysis, and AMOS 28 software was employed for CFA. The reliability analysis, utilizing Cronbach's Alpha with a value of 0.814 and McDonald's Omega with a value of 0.954, indicates that the scale is highly reliable. The research resulted in obtaining a scale named Innovative-Exploratory, Compassionate-Supportive, Humble-Accommodating, Managerial-Resolute, Responsible-Planned, Cautious-Avoiding Harm, Aesthetic-Original, Internal Motivation-Goal Setting, and Self-Sufficient-Rational, which consists of 9 factors and 18 items, explaining 77.167% of the variance. As a result of CFA, the GFI was found to be 0.941, NFI 0.869, CFI 0.935, CMIN/DF 1.786, and RMSEA value was 0.051. The results of the validity and reliability analyzes indicate that this scale is suitable for determining values related to temperament.

*Keywords – Enneagram, Temperament, Values, Validity and Reliability, CFA.*

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## INTRODUCTION

Values are closely related to the emotional, cognitive, and behavioral dimensions of individuals. Social scientists emphasize the fundamental importance of values in explaining human behavior (Kulaksızoglu & Dilmaç, 2000). Studying values is often more functional than examining attitudes and behaviors. Starting from values to reach attitudes is considered a more reliable and valid approach than starting from attitudes to reach values. Therefore, when starting from observable and measurable values, it is easier to discuss attitudes. This process implies that examining values is necessary for understanding an individual's attitudes and behaviors (Yapıcı & Zengin, 2003). One of the main objectives of research on values is to determine the orientations of value perceptions in individuals, revealing their attitudes, behaviors, social experiences, and roles (Mehmedoğlu, 2006). Values not only influence attitudes in individuals but also play a crucial role

in shaping and directing the attitudes and behaviors people possess by affecting all our perceptions and behavioral patterns (Kulaksızoglu & Dilmaç, 2000). Values aim to bring out the best in an individual and to enhance their personality fully, leading to excellence. On the other hand, value expresses judgment given based on needs and ideals about facts and objects. Belief is predominant in values. People, often unconsciously, translate various values in their minds into behavior in every aspect of their lives. Therefore, values are closely related to attitudes and behaviors, guiding and directing them (Aydın & Gürler, 2012).

Scientific studies offer various definitions of the concept of value. For instance, Doğan (2000) defines value as the way of being or acting that an individual or community idealizes. Halstead and Taylor (2000) expressed values as principles and fundamental beliefs that generally guide behaviors, standards by which actions are judged as good or desirable. Çağlar (2005) suggests that values can be described as cultural elements that emerge as standards in individuals' thoughts, attitudes, and actions. According to another definition, value is defined as the sensitivity individuals demonstrate towards any person, entity, event, situation, etc. (Yaman & Peker, 2012). Robbins (1995) emphasized that values serve as guides for decision-making, while Erdem (2003) described values as understandings that underlie behaviors and direct them.

The concept of value refers to the way of existence or action adopted by a person or a community. Value is a measure that renders encountered entities and behavioral styles desirable and respectable (Kulaksızoglu & Dilmaç, 2000). The fact that the concept of value is included in a wide variety of disciplines has made the definition of this concept complicated. Each field of science has chosen and examined the aspect of this concept that falls within its scope of interest, often neglecting other aspects. For this reason, there is no consensus on a generally accepted definition of the concept of value (Erdem, 2003).

To determine the importance and significance of something, a certain measure is indicated. In this case, value is a measure. Value is a measure used to distinguish between the current state and the desired state of something, and it often carries a positive or negative quality. However, all values can be subject to debates regarding the style of the valuer and the accuracy of the valued. This is because the relationship between the valuing subject and the object or situation does not imply the absolute correctness of the evaluation, making it a continually controversial subject (Sagiv et al., 2017).

The concept of value is a philosophical inquiry that generally examines events and objects in terms of the values they possess or represent in philosophy. The main problems of the philosophy of values include issues such as whether values exist or not, if so, what kind of existence they have, the structure and source of values, what makes a value valuable. Among the



major types of values are moral values, artistic or aesthetic values, and religious values. The discipline that deals with the first type of values is moral philosophy or ethics, while the one that addresses the second type of values is aesthetic or art philosophy. As for the third type of values, these are the values that are preferably studied in philosophy of religion, moral philosophy and philosophy of values (Güngör, 2000).

In philosophy, the concept of objectivity in the structure of values is generally defined as being associated with or belonging to the object. Those who argue that values are objective and unchangeable are undoubtedly aware that they can change by different people and cultures, and that different things are seen as valuable at different times. However, they interpret this as changes in evaluations rather than changes in values. Accordingly, our way of perceiving and responding to value, which is evaluation, is considered entirely distinct from the value itself. Evaluations can vary, be subjective, and are always contingent; however, the value itself is timeless and immutable, transcending any particular context. If color blindness hinders a person from distinguishing colors, similarly, individuals may be prevented from perceiving objective values due to their diverse backgrounds, inclinations, and circumstances. However, this does not imply that values are not objective (Güngör, 2000). Value not only serves as a fundamental element of our cognitive structure but also represents a dimension of consciousness that is reflected in our actions and personal characteristics, contributing to the essence of human existence (Aslanbay, 2006). The structure of values in temperament is objective since these values belong to the innate nature of the individual (Kuçuradi, 2013). The structure of values holds a central position in various fields of social and human sciences. In the last two decades, a series of research has been conducted on personality values in psychology and cultures (Acarkan, 2020).

In 1928, one of the first studies in the field of psychology on the concept of values was conducted by Spranger. The aim of the study was stated as "to create a new method for distinguishing human types" (Sagiv et al., 2017). Psychology emphasizes the role of values in guiding human behaviors (Erdem, 2003). Akıncı (2005) suggests that values contribute to the formation of individuals' personalities. Loss of values is stated to shake one's personality and self-esteem, as a result affecting one's self-worth. Additionally, there are studies examining the roles values play in the psychological functioning of individuals and how they are related to the essence of human nature (Cevizci, 2006).

According to Acarkan (2020), the Enneagram personality theory indicates that individuals possess unique values inherent in their temperament, shaping their perception, evaluative style, behavior, attitude, and interpersonal relationship patterns from birth. Enneagram is a temperament and personality model that has been the subject of scientific studies since the early 1970s and explains in detail the nine basic personality

types of human nature. Temperament represents innate, biologically and genetically structured attitudes. Enneagram evaluates individuals in three centers: emotional, mental, and instinctive, resulting in a total of nine basic personality types. While there are three personality types in each center, each type has two wings and one of these two wings is used dominantly by the individual. An individual's personality is shaped by the combination of the core personality type and the wing personality traits (Acarkan, 2020; Riso & Hudson, 2020). For example, if the core personality type is 1, it will have either the 9 wing or the 2 wing (See Figure 1).

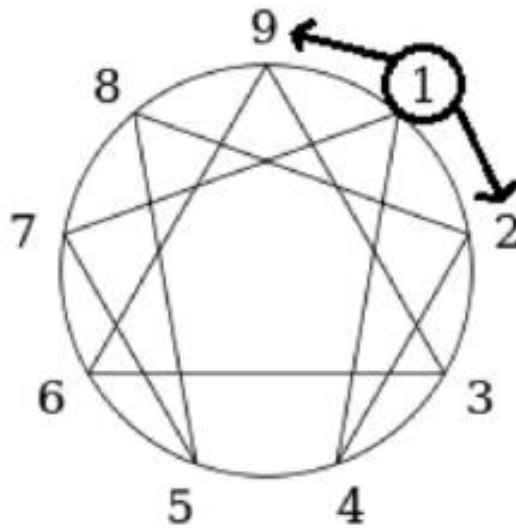


Figure 1: Enneagram temperament types and wings (Acarkan, 2020)

No one is a pure type. In fact, in some cases, they can exhibit the characteristics of both wings. Typically, most people have only one dominant wing (Yaman & Peker, 2012). Human beings have three centers: emotion, mind, and instinct (physical). The temperament types in these centers are as follows;

In the Emotion Center: Type 2-Helping, Type 3-Achiever, Type 4-Original;

In the Mind Center: Type 5-Observer, Type 6-Questioner, Type 7-Adventurer;

In the Instinctive Center: Type 8-Chief, Type 9-Compromising, Type 1-Perfectionist

are defined (Riso & Hudson, 2020). Among these centers, the emotional center has the function of feeling, the mind center represents the thinking function, and the instinct center fulfills the function of preserving

its existence (Riso & Hudson, 2020). In this context, each temperament has unique values inherent from birth. These values include:

Type 1: Honest, fair, moral, principled, disciplined, logically consistent, responsible, dutiful, able to control oneself, able to keep promises;

Type 2: Helpful, friendly, compassionate, merciful, sincere, open to communication, supportive, trustworthy, possessing feelings of shame and gratitude, directed towards goodness, imaginative;

Type 3: Successful, goal-oriented, self-motivated, industrious, open to development, results-oriented, popular, awe-inspiring, image-conscious, makes itself noticed;

Type 4: Aesthetic, personally independent, free-spirited, individualistic, deep-feeling, authentic, attaches importance to friendship, has kindness;

Type 5: Gives importance to information, has a detailed and holistic understanding, is foresighted, produces rational solutions, is an expert, observes, and is self-sufficient;

Type 6: Loyal, open to collaboration, seeking clarity, adaptable, respectful, sensitive to danger, risk-averse, questioning, cautious, accountable;

Type 7: Cheerful and enthusiastic, does not think about the negatives, optimistic, practical analysis, open to experience, curious, exploratory, practical intelligence, acts naturally;

Type 8: Strong and effective, independent, determined, in control, self-confident, self-protective, protective of those around you, generous;

Type 9: Peaceful and flexible, accommodating, patient and harmonious, balanced and moderate, content with little, preserving the peace, calm and cool-headed, humble, accepting, forgiving, pluralistic (Kuçuradi, 2013; Saeidi et al., 2020; Komasi et al., 2019; Daniels et al., 2019; Wagner, 2018; Riso & Hudson, 2020; Subaşı, 2017).

Values are at the center of many fields in the social sciences and humanities. The values scales used worldwide are diverse and employed for various purposes and disciplines. The studies on measuring values began in the 1920s and evolved over time into a trend of inventory development. Study of Values Test (SVT) was developed in 1931 to assess the personality structure of individuals (Çalışkur & Arslan, 2013). Schwartz's (1992, 1996) value theory provides an important model that has been used as a basis in psychology research over the last 30 years. The Schwartz Values Inventory (SVI) is a scale that measures individuals' basic values and classifies them into 10 fundamental values (Du et al., 2024). The Rokeach Value Survey (RVS) aims to identify individuals' instrumental and teleological values as two distinct dimensions (Hannes et al., 2024).

Unlike Rokeach, Schwartz aimed not only to identify cross-cultural value differences but also to create a 'list of human values'. To overcome the

limitations of the Schwartz Value Survey (SVS) and to measure value orientations more effectively, Schwartz and his colleagues (2001) developed the Portrait Values Questionnaire (PVQ). The Short Schwartz's Value Survey (SSVS) measures each of the 10 values with one item, while the original SVS measures these values with three to nine items (Lindeman & Verkasalo, M., 2005). The Psychometric Properties of the Values Scale PPVS scale was also developed to emphasize the basic values of human development (Gull, 2020). The Chinese Cultural Values Scale in Tourism (CCV-T) was conducted to determine the values of Leisure and Life Enjoyment (LLE), Filial Piety and Relationship (FPR), Self-fulfillment, Righteousness, and Humanity in the relationship between Chinese cultural values and tourist behaviors (Huang S. S. & Wen J., 2021). Another value-focused study is Kluckhohn and Strodtbeck's "Value Orientations" study. In this study, they revealed that past, present and future time orientation is the central dimension of culture (Kluckhohn, 1950).

The Portrait Values Questionnaire (PVQ) scale was developed by S. H. Schwartz. This scale is used to understand and classify individuals' fundamental value systems such as power, achievement, universalism, tradition, tolerance, trust, stimulation, hedonism, benevolence, conformity, commitment, and independence (Castillo et al., 2024). The Valued Living Questionnaire (VLQ) aims to identify individuals' values within the context of acceptance and commitment therapy and evaluate whether they are living according to these values in their lives (Macías J et al., 2023).

The main purpose of this study is to test the validity and reliability of the tool called "Temperamental Values Scale", which we developed to determine the values of the enneagram temperament structure, which is considered as the psychological genetics of the individual, by using a different approach from previous scales. In addition, it is to introduce a scale associated with innate temperament to the literature.

## METHOD

This section outlines the steps taken in the development process of the measurement tool and provides information about the research group.

### ***Research Group***

The sample size for the study was determined using the G\*Power software package. Using the G\*Power program, the number of samples was calculated as a minimum of 225 individuals with 90% confidence, 0.3 sensitivity and 90% power (G\*Power Manual, 2017). Another method used to find the sample size is that, as a general rule in scale development studies, the sample size should be at least 5 times or even 10 times the number of items (Altunışık et al., 2005). This study included 304 students aged between 18-60 years who were enrolled in the 2021-22 academic year at the

Health Sciences University. Information about the participants is provided in Table 1.

Table 1: Age groups of participants

Age range	f	%	Cumulative %
18-24 (Young Adult)	207	68,1	68,1
25-40 (Adult)	59	19,4	87,5
41-60 (Middle Age)	38	12,5	100,0
TOTAL	304	100,0	

According to Table 1, it is observed that the majority of participants are young adults aged between 18-24 (207), while the least are from the middle-aged group aged between 41-60 (38).

**Data Collection Tools**

The draft scale of Temperamental Values was applied through an online survey based on convenience sampling and voluntary participation. The survey form consisted of 27 questions including the age of the participants and Temperamental Values.

*Development of Temperamental Values Scale:* The item pool of the Temperamental Values Scale (TVS) was created by reviewing Acarkan's (2020) book 'Personality DNA' and relevant articles in the field by the researchers. The draft scale, consisting of 27 items, was subjected to expert opinion inventory, and the opinions of five experts were obtained. Additionally, each item was reviewed and edited for writing and grammar, taking into account the comments provided by the experts. After reviewing expert opinion, the draft scale consisting of 27 items was rated on a five-point Likert scale as "Not at all", "Not really", "Sometimes", "Usually" and "Always". Subsequently, the scale performed analyzes for content validity, construct validity, discriminant validity, and internal consistency reliability.

**Data Analysis**

The data collected for the study were analyzed using the SPSS 28 and AMOS 28 software packages. Content validity involves examining whether the items included in the scale, and whether these items serve the intended purpose (Tekin, 2007). This ensures that expressions unrelated to the research topic are prevented from appearing in the scale. In other words, content validity aims to include items in the scale that highly represent the research topic (Ayre & Scally, 2014; Basham & Sedlacek, 2009; Brinkman, 2009; Wilson et al., 2012). Critical Exact Values (CVR) were used to assess content validity. This method is often used to determine whether the items in the measurement tool adequately and appropriately measure a specific topic.

Construct validity is the power of the draft scale to accurately measure the desired phenomenon (Tavşancıl, 2001). The relationship

between scale items can be explained by construct validity (Seçer, 2015). The construct validity of the draft scale was evaluated using Exploratory Factor Analysis (EFA). Factor analysis is a statistical study that aims to reveal new variables and bring together variables that are related to each other (Özdamar, 2016). Prior to analysis, Bartlett test and Kaiser-Meyer-Olkin (KMO) test were applied to determine whether the data set was suitable for factor analysis. Three stages were used to determine the factor structure. In the first stage, only factors with eigenvalues exceeding 1 were considered according to the Kaiser-Guttman criterion (Guttman, 1954; Kaiser, 1960).

Next, according to Cattell's (1964) scree plot criterion, the point at which the difference between two ordered eigenvalues decreased was determined and it was checked whether this point overlapped with the factor structure. In the analysis regarding the reliability of the scale, Cronbach's alpha, McDonald's Omega, Spearman-Brown and Guttman Split Half methods were used. The validity of the structure obtained through EFA was tested using the AMOS 28 program by conducting Confirmatory Factor Analysis (CFA). The conformity indices considered for interpreting the results of CFA include "CMIN/DF( $\chi^2/df$ ), GFI, AGFI, CFI, NFI, IFI, TLI, RMSEA".

## **FINDINGS**

### ***Content Validity***

In the research, content validity was used in the Lawshe technique and five experts in the field were consulted. The CVR critical value should be at least 1 for the  $p < 0.05$  significance level of the opinions received from 5 experts (Ayre and Scally 2014). In this regard, the Content Validity Ratio (CVR) of the 24-item draft scale was found to be 1 and the Content Validity Index (CVI) was found to be 1. According to this calculation, there was no need to remove any items from the scale draft. From here, operations will be carried out according to the 27 items of the scale.

### ***Construct Validity***

EFA and CFA were applied to the data obtained as a result of the application of the draft temperament values scale applied to the participants for construct validity. The findings regarding these are given below.

### ***Temperamental Values Scale Exploratory Factor Analysis (EFA)***

For the construct validity of the TVS, data obtained from 304 university students were analyzed. In order to perform factor analysis, Bartlett's test and Kaiser-Meyer-Olkin (KMO) test, which allows testing sample adequacy, were performed. The results regarding these are given in Table 2.

Table 2: Bartlett's test and Kaiser–Meyer–Olkin test values

Kaiser–Meyer–Olkin Test for Sample Adequacy	.679
Bartlett's Test of Sphericity	
Approx. Chi-square	1314.769
df	153
Sign.	.000

According to Table 2, Bartlett's Test of Sphericity,  $\chi^2=1314,769$ ,  $p<0.001$  and KMO coefficient is 0.679. The KMO values for each item are between 0.6 and 0.7, indicating that all items are medium adequate for factor analysis. These results suggest that data are satisfactory to continue with the data reduction technique.

In order to determine the sub-dimension coverage of the scale, dimension reduction was first performed using principal component analysis (PCA) as part of exploratory factor analysis (EFA). After the result after varimax rotation, the total variance explained by the nine factors was found to be 77.167%. Factor analysis results related to this are given in Table 3.

Table 3: Factor analysis results

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Sum	% Var.	Cum. Var.	Sum	% Var.	Cum. Var.	Sum	% Var.	Cum. Var.
1	3.32	18.45	18.45	3.32	18.45	18.45	1.728	9.60	9.600
	2	8	8	2	8	8		0	
2	2.32	12.91	31.37	2.32	12.91	31.37	1.637	9.09	18.69
	5	7	4	5	7	4		7	6
3	1.96	10.89	42.26	1.96	10.89	42.26	1.614	8.96	27.66
	1	2	6	1	2	6		4	1
4	1.33	7.410	49.67	1.33	7.410	49.67	1.570	8.72	36.38
	4		7	4		7		3	4
5	1.25	6.943	56.61	1.25	6.943	56.61	1.558	8.65	45.03
	0		9	0		9		5	9
6	1.14	6.353	62.97	1.14	6.353	62.97	1.539	8.54	53.58
	3		2	3		2		8	7
7	1.04	5.776	68.74	1.04	5.776	68.74	1.486	8.25	61.84
	0		8	0		8		7	4
8	.778	4.321	73.06	.778	4.321	73.06	1.404	7.79	69.64
			9			9		7	2
9	.738	4.098	77.16	.738	4.098	77.16	1.355	7.52	77.16
			7			7		5	7

When the factor structure of the draft scale is examined. it is seen that the common variances of the items vary between 3.322 and 0.738 and none of the items show overlap.

As a result of the analysis, the rotated factor structure obtained by the Varimax vertical rotation method is given in Table 4.



Table 4: Varimax vertical rotation method

Factors	Item Num.r	Items	Componentler								
			1	2	3	4	5	6	7	8	9
innovative-explorative	D20	I am an innovative person.	.820								
	D21	I am someone who loves to explore.	.829								
compassionate-supportive	D5	I am a merciful person.		.817							
	D6	I am someone who supports selflessly.		.799							
humble-accommodating	D26	I am a humble person.			.850						
	D27	I am a peaceful and conciliatory person.			.796						
managerial-resolute		I am someone who can control and manage those around person				.898					
	D22	I'm a determined person.				.661					
responsible-planned	D3	I am a person who is sensitive to responsibilities.					.880				
	D1	I am a planful person.					.725				
cautious-risk-averse	D16	I am someone who tries to avoid danger and harm.						.868			

aesthetic-original	D18	I am a cautious person.	.790
	D11	I am someone who seeks aesthetic harmony.	.869
	D10	I am someone who seeks originality and uniqueness.	.793
internal motivation-goal setting	D8	I am a self-motivator.	.826
	D7	I am someone who sets goals for myself.	.784
self-sufficient-rational	D14	I am a self-sufficient person without expectations.	.924
	D13	I am someone who finds rational solutions to events, not emotional ones.	.560

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According to Table 4, it is observed that the common variances of all items are above 0.50. As a result of examinations and repeated applications, nine items with variances below 0.50 have been removed from the scale. This exclusion of nine items may be attributed to the limited impact of wing temperaments on the core temperament. Thus, the number of items in the draft scale has been reduced from 27 to 18. According to the results of factor analysis, it has been determined that the Personality Values Scale, consisting of 18 items, is distributed into nine different factors. These factors are named as follows; innovative-explorative, compassionate-supportive, humble-accommodating, managerial-resolute, responsible-planned, cautious-risk-averse, aesthetic-original, internal motivation-goal setting, and self-sufficient-rational.

According to Tabachnick and Fidell (2015), the scree plot test, while not exact in determining where the cut in the eigenvalues occurs and is perceived as a somewhat subjective evaluation, is a method used to determine the number of factors. Figure 2 presents the Scree Plot depicting the distribution of factors.

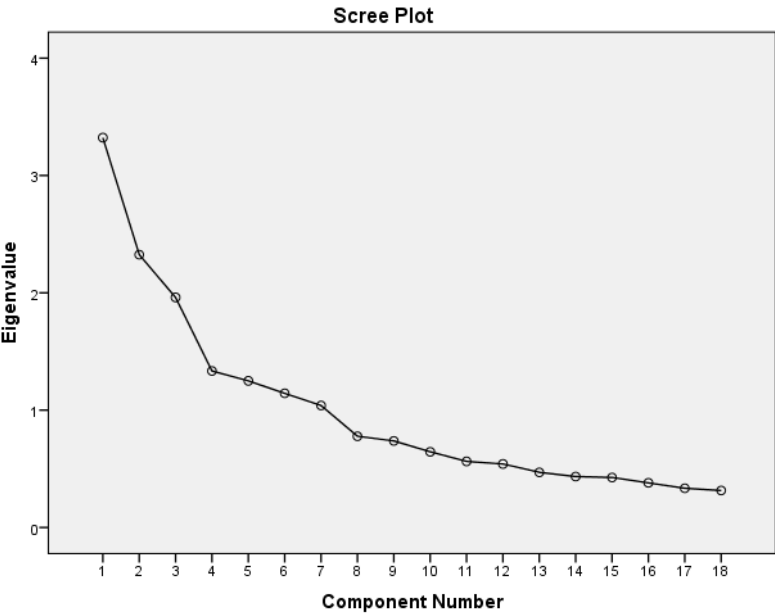


Figure 2: The scree plot of the factors in the scale

When examining the above Scree Plot Chart, it is observed that the scale with nine factors is confirmed. The purpose of internal consistency analysis is to calculate how well each item on a test measures the same characteristic. The reliability of the draft scale was assessed using Cronbach's Alpha for internal consistency and Spearman-Brown and

Guttman Split-Half reliability coefficients obtained through the scale splitting method. The Cronbach's Alpha internal consistency coefficient of the scale was found to be 0.814, and McDonald's Omega was determined as 0.954. According to these values, it is observed that the scale has high reliability.

It is noted that in scales with multiple factors, reliability calculations should be done separately for each sub-dimension (Field, 2018). Therefore, the reliability analysis was conducted by finding the Cronbach's Alpha internal consistency coefficient for each sub-dimension. As a result of this analysis, the reliability coefficients for each sub-dimension were found to be as follows; innovative-exploratory (.777), compassionate-supportive (.730), humble-accommodating (.678), manager-decisive (.719), responsible-planned (.627), cautious-avoiding harm (.639), aesthetic-original (.629), internal motivation-goal setting (.661), and self-sufficient-rational (.639).

### ***Confirmatory Factor Analysis (CFA) for the Values Scale of Personalities***

In the second stage of the study, Confirmatory Factor Analysis (CFA) was employed to test the congruence of the factors identified through Exploratory Factor Analysis (EFA) with the factor structures determined by the hypothesis. The sub-dimensions of the Personality Values Scale are named as follows in the structural model: Type1 "Innovative-Exploratory (M)", Type2 "Compassionate-Supportive (Y)", Type3 "Internal Motivation-Goal Setting (B)", Type4 "Aesthetic-Original (O)", Type5 "Self-Sufficient-Rational (BI)", Type6 "Cautious-Avoiding Harm (G)", Type7 "Innovative-Explorative (I)", Type8 "Managerial-Resolute (R)", and Type9 "Humble-Accommodating (H).

Skewness and kurtosis values of the variables in the scale, being between -1 and +1, suggest that the variables have a normal distribution (Büyüköztürk et al., 2017). The statistical graph of the structural model for the CFA of the TVS was conducted using AMOS28, and the calculations are presented in Figure 3 (Holmes, 2016).

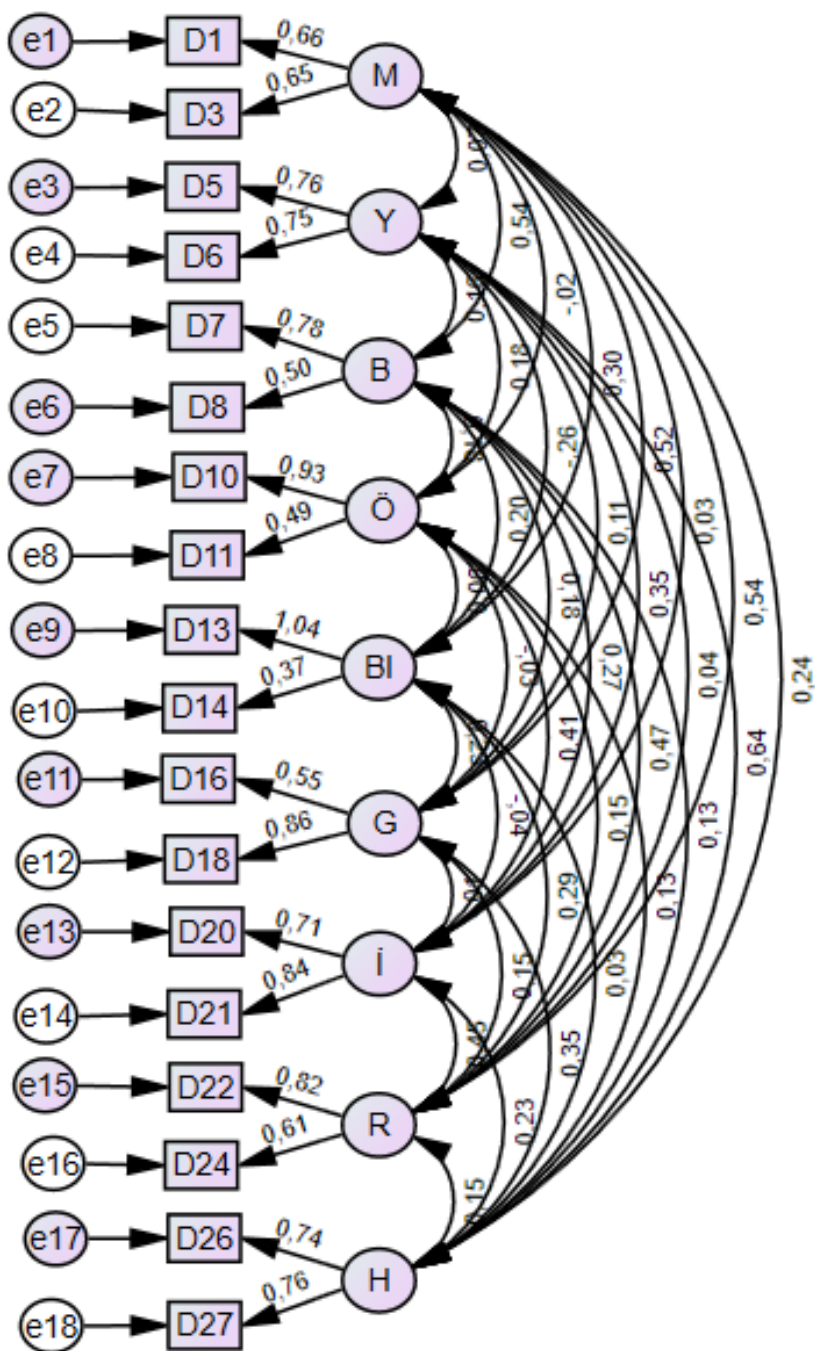


Figure 3: CFA Values and fit indices

The goodness-of-fit values for the CFA of the TVS according to the structural model are presented in Table5.

Table 5: CFA of the TVS According to the Structural Model Goodness-of-Fit Values

	Value	Perfect Fit Value	Acceptable Fit Value	Result
CMIN/DF( $\chi^2$ /sd)	1.786	$\leq 3$	$\leq 4-5$	Perfect
GFI(Goodness of Fit)	.941	$>0.90$	0.80-0.89	Perfect
AGFI(Adjusted Goodness of Fit)	.898	$>0.90$	0.80-0.89	Acceptable
CFI(Comparative Fit Index)	.935	$>0.90$	0.80-0.89	Perfect
NFI(Normed Fit Index)	.869	0.90-0.94	0.85-0.90	Acceptable
IFI(Incremental Fit Index)	.938	0.90-0.94	0.85-0.90	Perfect
TLI(Tucker&Lewis Index)	.924	0.90-0.94	0.85-0.90	Perfect
RMSEA	.051	$\leq 0.05$	0.05-0.10	Acceptable

According to Table 5, when examining the goodness-of-fit values for the structural model of the CFA conducted on the TVS, it can be observed that the obtained values fall within the excellent and acceptable range. These results confirm the 9-factor structure of the scale (Barret, 2007; Byrne et al., 1989; Jöreskog, 2004; Kline, 2011; Tabachnick & Fidell, 2007). The path parameters of the structural model are given in Table 6.

Table 6: Path Parameters of the CFA for the TVS

	Factor	$\beta$	S.E.	C.R.	P
D1	M	1.00			
D3	M	.815	.111	7.331	***
D5	Y	1.000			
D6	Y	1.061	.114	9.273	***
D7	B	1.593	.322	4.948	***
D8	B	1.000			
D10	Ö	1.000			
D11	Ö	.563	.153	3.689	***
D13	Bİ	1.00			
D14	Bİ	.359	.120	2.998	.003
D16	G	1.000			
D18	G	1.555	.295	5.279	***
D20	İ	1.000			
D21	İ	1.198	.138	8.708	***
D22	R	1.000			
D24	R	.820	.108	7.581	***
D26	H	1.000			
D27	H	1.049	.122	8.578	***

When examining the path parameters of the Temperamental Values Scale and confirmatory factor analysis in Table 6, it is observed that the paths from items to latent variables are statistically significant. Therefore, the structural validity of the scale has been confirmed.

## RESULTS AND DISCUSSION

In this study, the validity and reliability test of the tool called "Temperamental Values Scale (TVS)", which was developed to define the values of the enneagram temperament structure, which is considered as the psychological genetics of humans, was conducted. The Schwartz Value Scale (SVS) measures values that determine an individual's basic needs, whereas the Portrait Values Questionnaire (PVQ) encompasses instrumental and terminal values (Schwartz, 1994: 22-33; Roccas et al., 2002; Maio, 2017; Çekici et al., 2018). The item pool of the TVS, unlike the content of the SDA and PDA scales, is composed of sentences indicating values potentially inherent in an individual's temperament from birth.

In the validity and reliability study of the TVS scale, EFA (Exploratory Factor Analysis) and DFA (Confirmatory Factor Analysis) were conducted. In the reliability and validity study of the CCV-T scale,

both EFA and CFA were applied (Huang S. S. & Wen J., 2021). In the initial "Rokeach Values Survey (RVS)," reliability and validity were assessed using the test-retest method, and construct validity was established through EFA (Rokeach, 1973). In the context of the reliability and validity study of the Rokeach Values Survey adapted for use in Turkey, Çalışkur (2013) employed the test-retest method. In the first stage, the relationship between the value scores obtained with SSVS and SVS and PVQ, and whether the values partially circular structure could be found with SSVS were examined. In the second stage, a more heterogeneous sample was used to construct the partially circular structure. The third stage investigated the test-retest reliability of SSVS, and the fourth stage compared the time efficiency of SSVS to SVS (Lindeman, 2005).

For the content validity of the TVS, expert opinions were taken and it was decided to create the draft scale with 27 items. This draft scale is designed as a five-point Likert type. This research's sample size was calculated using the G\*Power software package, indicating that a minimum of 225 individuals was necessary to achieve 90% confidence, 0.3 sensitivity, and 90% power. After this calculation, data was collected from 304 students studying at the University of Health Sciences between the ages of 18-60. Similar to the TVS, Marin and Stuart (2005) conducted a validity and reliability study of "The validity and reliability of the Tertiary Student Values Scale (TSVS)," developed in alignment with the Kluckhohn and Strodtbeck value orientation model. This study included 364 students from four different dental schools in Australia, aged between 18 and 50 years old. In the third step of SSVS, the test-retest method was applied to 112 students aged between 15 and 41 (Mean = 20.77, Standard Deviation = 4.77) at two-week intervals (Lindeman & Verkasalo, M., 2005). In the validation and reliability study of the Psychometric Properties of the Values Scale (PPVS) conducted to reveal the fundamental values of individuals in Eastern countries, 300 university students aged between 18 and 35 participated (Gull, 2020). The sample of the CCV-T scale consists of 3500 individuals from 15 cities. Among the participants, 50.8% are male and 48.5% are female. Additionally, 61.7% of the participants are between the ages of 18 and 35. Approximately half of these individuals (46.8%) hold a bachelor's degree (Huang S. S. & Wen J., 2021).

In addition, as a result of the Kaiser-Meyer-Olkin (KMO) test, it was determined that the sample consisting of 304 data was moderately sufficient. Then, exploratory factor analysis of the scale (EFA) was performed and it was determined that there were nine factors with eigenvalues above 1. It was confirmed with the ScreePlot Chart that the scale has nine factors. The CCV-T scale, as a result of the EFA analysis, was found to consist of 17 items and five factors, namely Leisure and Life Enjoyment, Filial Piety and Relationship, Self-fulfilment, Righteousness, Humanity, and Sociality and Fame (Huang S. S. & Wen J., 2021). The Kaiser-Meyer-Olkin (KMO) value



for the PPVS scale was found to be 0.83, indicating that the sample is adequate. The Varimax rotation was performed to evaluate the factor structure of the scale. To determine the number of factors, two criteria were used: the Kaiser Criterion, which is determined by eigenvalues greater than one, and Cattell's Scree plot. Thus, it was determined that the scale consists of 7 factors and 25 items (Gull, 2020). The Rokeach Value Survey (RVS), developed by Milton Rokeach in 1967, consists of two factors: "terminal" and "instrumental" values, each containing 18 values (Çalışkur, 2013). TSVS includes 45 items and 15 factors of value orientation (Marino & Stuart, 2005).

The reliability analysis yielded the following results: Cronbach's Alpha coefficient was calculated as 0.814, McDonald's Omega as 0.954, Spearman-Brown as 0.753, and Guttman Split-Half as 0.753. These findings indicate that the scale is highly reliable. However as a result of this analysis, Cronbach's Alpha coefficients for each sub-dimension were found to be as follows; innovative-exploratory (.777), compassionate-supportive (.730), humble-accommodating (.678), manager-decisive (.719), responsible-planned (.627), cautious-avoiding harm (.639), aesthetic-original (.629), internal motivation-goal setting (.661), and self-sufficient-rational (.639). In the TSVS study conducted by Marin and Stuart (2005), the Cronbach's Alpha values for each subscale ranged from .40 to .80.

After the result obtained as a result of Varimax rotation, the total variance explained by nine factors was found to be 77.167%. The common variances and factor loadings of the items obtained as a result of the analysis were examined. As a result of the analysis, it was seen that the common variance of all items was above .50. Nine items were removed from the scale and the number of items in the scale was obtained as 18. It was determined that the CCV-T scale has five factors explaining 63.331% of the total variance (Huang S. S. & Wen J., 2021) and the PPVS scale has seven factors explaining 59.48% (Gull, 2020). In the TSVS scale, it was determined that 15 factors explained 65.5% of the total variance. Its items which correlated at least .30 with an oblimin rotated factor were used to interpret those factors (Marino & Stuart, 2005). Adapted to Turkish conditions, the factor analysis of the Rokeach Values Survey yielded seven factors, explaining a total of 43.336% of the variance in the variable of values that the test aims to measure (Çaykur, 2013). The factor analysis results for the original form of the Rokeach Value Survey revealed a total variance percentage of 40.8% (Rokeach, 1973).

The statistical graph of the structural model of the confirmatory factor analysis for TVS was plotted, and the goodness-of-fit indices were calculated as follows: CMIN/DF( $\chi^2/df$ )=1.786<3 (excellent), GFI=.941 >.90 (excellent), CFI=.935>.90 (excellent), .85<NFI=.869<.90 (acceptable), IFI=.938>.90 (excellent), TLI=.924>.90 (excellent), and .05<RMSEA=.051<.10 (acceptable). The excellent and acceptable range of

the goodness-of-fit indices obtained confirms that the scale is appropriately divided into nine factors. The model fit indices of the CCV-T scale (chi-square = 615.338, df = 174; RMSEA = .059; GFI = .925; NFI = .904; IFI = .929; TLI = .914; CFI = .929 ) indicated that the model fit relatively well with the data (Huang S. S. & Wen J., 2021). Additionally, the confirmatory factor analysis (CFA) of the PPVS scale indicated that the seven-factor solution proposed in the EFA showed good fit indices:  $\chi^2/df = 2.11$ ; AGFI = .834; CFI = .851; RMSEA = .061; RMR = .026; TLI = .823. It was determined that the Values Scale demonstrated acceptable levels of reliability, validity, and factorial structure support (Gull, 2020). In the TSVS scale, acceptable fit was found by calculating the maximum likelihood estimation model with values of  $\chi^2(451) = 505.66$ ,  $P < .05$  (Marino & Stuart, 2005).

Thus, the TVS consists of 18 items and 9 sub-dimensions: Type 1, responsible and organized; Type 2, compassionate and supportive; Type 3, internally motivated and goal-oriented; Type 4, aesthetic and original; Type 5, self-sufficient and rational; Type 6, cautious and risk-averse; Type 7, innovative and exploratory; Type 8, decisive and assertive; Type 9, humble and accommodating.

As a result, in this study, which can be seen as a new approach to values in the literature, a TVS scale was developed for individuals' temperament values. This scale demonstrates that it can be tested on different groups of individuals as a social category. High scores from the scale indicate that the individual's temperament value measured by the relevant factor is strong.

## ACKNOWLEDGEMENT

The author would like to thank İsmail Acarkan, Ömer Yanartaş, Aysel Yılmaz and Emel Yenilmez for their support while preparing the study.

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# **Female Labor Force Participation and Economic Growth in Türkiye**

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## ABSTRACT

The integration of women into the workforce is now recognized as a key driver of economic development in both developed and developing countries. This dynamic is of particular importance for Türkiye, where the issue of women's participation in the workforce is the subject of intense debate and analysis. Indeed, despite the progress made over the last few decades, Turkish women's participation rate in the workforce remains relatively low compared to other similar economies. Understanding the factors influencing this participation and its potential impact on the country's economic growth is crucial to considering effective and inclusive economic policies. In this study, we explore the short-run and long-run association between female labor force participation and economic growth in Türkiye by utilizing an annual data set for the years between 1991 and 2023 and the ARDL estimation method. Long-run coefficient estimation findings show that female labor force participation and investment have a statistically significant positive impact on economic growth. If female labor force participation increases by 1%, then economic growth will be enhanced by 1.781% in Türkiye from 1991-2023. Moreover if investment goes up by 1% then economic growth enlarges by 2.585% in Türkiye during the estimation period. Meantime, diagnostic test results point out that ARDL(1,0,1) does not contain autocorrelation and heteroscedasticity problems and has stable parameters.

*Keywords – FLFP, Growth, ARDL, Female Labor.*

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## INTRODUCTION

Although women constitute almost half of the population, female labor force participation has not reached the expected levels (Ozen and Yalçinkaya Koyuncu, 2022:29). In the second half of the last century, most countries recorded a significant increase in the participation rate of women in the workforce, i.e., Female Labor Force Participation (FLFP). This growth in the FLFP can be explained by a range of policies implemented, namely improved access to education for women, initiatives to promote gender equality and support women in the workplace, and changes in social and cultural norms enabling the acceptance of women in various professional sectors.

Female labor force participation (FLFP) is essential to economic and social progress. In recent years, gender equality has gained prominence in public policies and economic discussions, especially regarding labor-related initiatives. In Türkiye, a developing country, the relationship between female labor force participation and economic growth is particularly critical. Addressing this issue is a matter of justice and a necessary step toward



achieving economic transformation that empowers women and enhances our national wealth.

Female Labor Force Participation, or FLFP, is the percentage of the working-age female population that is economically active in the labor market, either through employment or seeking employment. The relationship between FLFP and economic growth has been described as complex and U-shaped. In the early stages of economic development, women frequently work out of necessity, mainly in agriculture or the informal sectors. With structural transformation and industrialization, FLFP tends to fall in the face of gender-specific barriers and changing family structure. However, as development gains steam, increasing education levels, reduced fertility rates, and the growth of service-oriented sectors create opportunities for increases in women's participation, immense productivity spillovers, and GDP growth. Evidence from regions like Latin America and East Asia shows that targeted policies, like education and childcare access, go a long way in enhancing FLFP.

Economic theory suggests that the relationship between FLFP and economic growth follows a U-shaped curve. At low levels of development, women's participation in the labor market is high; at higher levels of economic development, as economies industrialize, FLFP usually falls because of a lack of opportunities in sectors such as manufacturing, which may be thought unsuitable for women. However, as economies mature and the service sector expands, FLFP tends to increase again (Cavalcanti and Tavares, 2011:168; Tam, 2011:141). In Türkiye, the evidence supporting this hypothesis is mixed, reflecting the country's unique socio-economic and cultural context (Lechman and Kaur, 2015:255).

Over the last three decades, Türkiye has undergone enormous economic transformations: urbanization, trade liberalization, and sectoral changes in employment. Despite such transformations, FLFP in Türkiye has either been static or falling compared to the rising global trends in female employment. From 34.1% in 1990 to 30.4% in 2016, FLFP in Türkiye declined, while the OECD and EU averages continued to rise during this time (World Bank, 2021:7). This divergence highlights systemic issues in the realm of sociocultural norms, lack of childcare support, and labor market structures that limit access to employment for women (Buğra and Yakut-Çakar, 2010:527; Gündüz-Hoşgör and Smits, 2001:114-116).

Analyzing the sectoral distribution of female employment in Türkiye provides essential revelations. While the proportion of women engaged in agriculture has markedly decreased, from 77.4% in 1991 to 31.1% in 2015, this transition has not been entirely taken up by either the industrial or service sectors, which failed to grow enough to integrate the workforce that had been displaced (Tansel, 2002:30-32). On the other hand, women continue participating in informal or unpaid domestic labor, particularly in

rural areas, which further restricts their economic contribution (Özer and Biçerli, 2003:50-52).

Educational attainment and skill development have been known to influence FLFP significantly. In Türkiye, female literacy rates and educational attainment improvements have favorably influenced urban women's FLFP. However, less educated rural women still suffer substantial disadvantages in finding formal employment (Gündüz-Hoşgör and Smits, 2001:111). The fact that the gap between urban and rural FLFP has persisted brings to the fore the need for targeted policies to address regional disparities.

Since the 1990s, several studies have explored Türkiye's economic growth determinants. However, few of them have specifically focused on the role played by the female labor force. In a context where the modernization of the Turkish economy and the integration of women into the workforce are perceived as potential drivers of growth, understanding this relationship becomes crucial.

In general, FLFP in Türkiye is highly responsive to the factors of religion, culture, and societal norms. Deep-rooted gender roles, combined with a deficit in childcare facilities and enabling mechanisms, create high opportunity costs for women who consider a formal work life. Fertility rates and household responsibilities further curtail FLFP without enabling policies such as childcare subsidies (Dayioglu and Kirdar, 2010:47-48). These socio-cultural constraints are more pronounced than those of OECD and EU counterparts, thus exacerbating the challenges of integrating women into the labor force.

Empirical studies indicate that a higher FLFP contributes to economic growth by increasing the labor supply and promoting gender diversity in workplaces, stimulating innovation and better decision-making. The World Bank highlights, for example, how mobile childcare in Burkina Faso increased women's employment by a remarkable margin and their resilience to economic shocks. On the other hand, restrictive social norms and a lack of institutional support restrain FLFP, limiting economic potential in regions such as South Asia and the Middle East. In conclusion, overcoming structural and cultural impediments and investment in education and social infrastructure is essential to unlock the economic benefits of increased FLFP.

The remaining paper is structured as follows. Section 2 reviews the earlier literature. The model construction and methodologies covered in the paper are the focus of Section 3. The main findings and results of the analysis are presented in Section 4. Section 5 explains the main findings as it wraps up the paper. This study investigates the adept relationship of FLFP with Türkiye's short- and long-term economic growth. The dataset ranges over 3 decades (1991 — 2022) and applies rigorous methodology based on the ARDL model, extensively used to examine long-run co-integration among macroeconomic variables.

## LITERATURE REVIEW

The relationship between FLFP and economic growth has been widely examined. This is a diverse phenomenon, often described by economists as taking the form of a U-shaped curve as we mentioned before. In subsistence-based economies, FLFP is high, followed by a decline with industrialization and then an increase as economies mature and shift towards service-oriented industries. Lechman and Kaur (2015:255-256) confirmed this thesis in a sample of 162 countries, proving that a movement toward a service-based economy, enhanced education, and lower fertility usually leads to an increase in the FLFP for middle- and high-income countries. Low-income economies, however, commonly cannot follow this pattern because the sociocultural barriers to females entering formal employment are too deeply engrained.

The integration of women into the workforce is now recognized as a key driver of economic development in both developed and developing countries. This dynamic is of particular importance for Türkiye, where the issue of women's participation in the workforce is the subject of intense debate and analysis. Indeed, despite the progress made over the last few decades, Turkish women's participation rate in the workforce remains relatively low compared to other similar economies. Understanding the factors influencing this participation and its potential impact on the country's economic growth is crucial to considering effective and inclusive economic policies.

The importance of issues such as Religious, Linguistic, Ethnic and Cultural Diversity for FLFP (Özen and Koyuncu, 2018) is examined and provides a valuable empirical field of investigation for researchers both in the world and in Turkey. In Türkiye, FLFP remains below global averages despite significant economic transformation. Between 1990 and 2016, FLFP in Türkiye declined from 34.1% to 30.4%, whereas global averages rose steadily (World Bank, 2021:7). Researchers attribute this anomaly to structural issues such as insufficient childcare support, societal norms emphasizing domestic roles for women, and limited opportunities in industrial and service sectors (Buğra and Yakut Çakar, 2010:114-116). Koyuncu and Özen (2017:87) empirically analyzed the effect of religion, ethnicity, language and cultural diversity on FLFP using cross-sectional data from 109 countries; results supporting their hypotheses emerged for religion, ethnicity and language, excluding culture. In another study (Özen, 2017:5), while remarkable results were obtained, especially regarding religion, as a result of the analyses, it was observed that socio-demographic factors, especially cultural differentiation, had no effect. Furthermore, rural-to-urban migration, historically shifting female labor from agriculture to other

industries, has not effectively absorbed women into formal jobs, leaving many in informal or unpaid domestic labor (Tansel, 2002:30-32).

Several empirical studies have sought to establish the links between women's participation in the workforce and economic growth. One of the seminal research in this field is that of Koyuncu, Yılmaz, and Ünver (2016:240-241), who show that an increase can positively influence labor productivity in female participation. Their panel data analysis highlights that when women are more involved in the economy, they contribute to a more diverse workforce and an overall increase in productivity. This result aligns with international research associating women's economic integration with faster, more sustained growth.

Other studies, such as that by Okşak and Koyuncu (2017:385), highlight the impact of globalization on women's participation in the labor market. According to their analysis, trade liberalization and economic openness facilitate women's access to new employment opportunities, particularly in export sectors. Globalization, by diversifying economic activities and increasing the demand for labor, therefore seems to play a stimulating role in female employment, a finding particularly relevant to Türkiye, a transitional economy integrated into international trade networks.

However, women's participation in the Turkish workforce depends not solely on economic factors. Studies such as those by Özen and Koyuncu (2018:1159) reveal that political factors, such as institutional stability, influence women's ability to enter and remain in the labor market. Political instability or insufficient reforms to the legal framework can deter employers from hiring women, not least due to a lack of legal guarantees and protections. In this sense, improving political and legal stability could play a key role in increasing women's participation.

In parallel, the impact of business regulation on economic growth and, indirectly, on female employment has been explored by Koyuncu (2011), who highlights the importance of legal structures and regulatory simplification in encouraging entrepreneurship and stimulating the economy. More favorable regulations could thus promote greater female participation, particularly in the formal sectors of the economy.

However, broader macroeconomic factors, such as inflation, influence Türkiye's economic growth dynamics, as shown by Koyuncu and Unal (2020). While inflation may have a negative short-term effect on growth, it is essential to understand its long-term impact, particularly on female participation in the labor market, due to the economic adjustments it entails.

Despite these advances in understanding the factors affecting female employment, much remains to be discovered about the direct impact of female participation on economic growth in Türkiye. This article, therefore, takes an in-depth look at the relationship between these two variables, drawing on existing empirical work and placing it in the specific context of the Turkish economy. Drawing on research such as that of Koyuncu (2016,

2022), which examines structural economic variables such as privatizations and military spending, we will analyze how the integration of women into the labor market could contribute to more sustainable economic growth.

Table 1 provides the reader with the opportunity to examine other studies that are closely related to the subject, which we believe are closely related to this study.

Table 1: Literature Summary

Author(s)	Results
Koyuncu (2016)	This research investigates the nexus between privatization and economic growth; testing the hypothesis that privatization enhances economic performance in transition economies using a panel dataset from 1990 to 2008 across 21 nations. The findings reveal a statistically significant positive correlation between privatization and economic growth, supporting the assertion that privatization fosters economic advancement while accounting for other contributory factors.
Koyuncu, Yilmaz and Ünver (2016)	This study analyzes the correlation between female labor force participation metrics and labor productivity using a panel dataset from 1985 to 2010 across 111 countries, revealing a positive association. This statistically significant finding, applicable across three distinct productivity and female labor force participation indicators, indicates that increased participation of women in the labor force positively influences labor productivity while accounting for other contributing factors.
Okşak and Koyuncu (2017)	They empirically investigate the effect of globalization on the woman's participation to labor force for four distinct globalization indicators (i.e., economic globalization, social globalization, politic globalization, and overall globalization index). An unbalanced dataset spanning 1990-2014 for 101 countries was analyzed, revealing a statistically significant positive correlation between economic, social, and overall globalization and female labor force participation, while a negative significant association was identified between political globalization and female labor force participation.
Özen and Yalçinkaya Koyuncu (2018a)	This study empirically examines whether political stability affects women's labor market participation. As a sample, African, Asian and Islamic countries with high political instability are considered separately. The data set used is unbalanced panel data and covers the period between 2002-2014. In the light of the estimation results obtained, it is observed that the higher the level of political stability in a country, the higher the participation of women in the labor market in that country. This finding is statistically significant for Asian and Islamic countries, but not for African countries.
Özen and Yalçinkaya Koyuncu (2018b)	This study analyzes the impact of poverty on female labor force participation using unbalanced panel data using the African sample. Panel analyses using six different poverty indicators show that as poverty increases, female labor force participation increases. This finding remains statistically significant for four of the six different poverty indicators in both single and multiple regression models.
Yalçinkaya Koyuncu and Özen (2018a)	This study empirically examines whether women's participation in the labor market is higher in countries where freedom of expression is advanced. As a result, it has been found that there was a statistically significant relationship between the freedom of expression and female labor force participation for the Asian and Islamic countries with both sample and single regression models. No meaningful relationship was found for the sample of African countries.
Yalçinkaya Koyuncu and Özen (2018b)	The study examines the impact of the informal economy on economic growth. Unbalanced panel data covering the period 1999-2013 is used for the analysis. The findings of the analysis show that as the

	underground economy grows in an economy, economic growth also increases.
Yalçinkaya Koyuncu and Unver (2022)	The study conducts a long-term analysis to investigate the long-term nexus between military spendings and economic growth in Türkiye by employing a data set spanning the years of 1961-2018. The long term estimation finds that military expenditure possesses a negative and statistically significant impact on economic growth.
Yalçinkaya Koyuncu (2023a)	This investigation endeavors to assess the influence of human rights and economic advancement by employing two indicators of economic development for emerging nations and a non-uniform dataset extending from 1961-2017. Estimation findings suggest that nations striving to attain elevated economic growth, in addition to the other factors influencing economic progression, must prioritize human rights protection and enact policies that elevate human rights safeguarding.
Yalçinkaya Koyuncu (2023b)	The investigation examines the influence of judicial independence, impartial courts and integrity of legal system on economic growth for the least developed nations by employing an unbalanced dataset and two distinct measures of economic growth for the duration of 2000-2018. According to the estimation results, a positive statistically significant effect on economic growth was ascertained for the variables of hudicial independence, impartial courts, integrity of legal system, and physical capital investment across all models, whereas a negative statistically significant impact on economic growth was observed for the variable of inflation in certain models.
Tiago V. De V. Cavalcanti, José Tavares (2011)	The paper explores the link between female labor force participation and government size, showing that higher participation increases demand for public services. Using a growth model and cross-country data with instrumental variables, it finds a robust causal relationship: as women enter the workforce, government spending on services like childcare expands.
Lechman, E., and Kaur, H. (2015)	The paper analyzes the U-shaped relationship between female labor force participation (FLFP) and economic growth in 162 countries (1990–2012). It finds that FLFP declines in early development stages but rises as economies transition to services, confirming the U-shape for high- and middle-income countries. However, this pattern is absent in low-income countries, where socio-cultural factors dominate.
Buğra, A. and Yakut Çakar, B. (2010)	The article explores the decline in female employment in Türkiye, driven by limited economic opportunities, patriarchal social policies, and a welfare system emphasizing women's dependency. Despite global trends of increased female workforce participation, Türkiye's structural and cultural barriers hinder progress, reflecting a conflict between traditional gender roles and economic goals.
Gündüz-Hoşgör, A. and Smits, J. (2001).	This study explores how paid work impacts women's empowerment in Türkiye, showing that employment reduces dependency on patriarchal norms. Only 35% of married women work, with many in agriculture. Those in formal jobs tend to be more educated, live in urban areas, and have more progressive gender attitudes. Ethnic women face additional barriers. The study supports the U-curve hypothesis, where female employment initially declines with modernization but later increases, though patriarchal ideologies still limit progress. Education is key to overcoming these constraints.

Tansel and Aysit (2002)	The study examines female labor force participation in Türkiye, finding evidence of a U-shaped relationship with economic development, where participation initially declines but may rise as development progresses. Using provincial data from 1980, 1985, and 1990, it highlights that higher education boosts participation, while unemployment discourages it. Urban female unemployment is underestimated, with a significant discouraged-worker effect noted.
Özer, M. and Biçerli, M. K. (2003).	This study compares gender inequality in the labor markets of Türkiye and OECD countries using key indicators such as labor force participation, employment rates, part-time work, managerial roles, and unemployment rates. The analysis, based on 2019 data, shows that Türkiye stands out in terms of female employment, with significant disparities compared to other OECD countries. However, for male labor force indicators, Türkiye's position is more similar to countries like Spain, Italy, and France. The study highlights how gender inequality continues to shape women's access to the labor market, particularly in Türkiye.
Dayioglu, M. and Kirdar, M. G. (2010)	The paper analyzes the low and declining labor force participation of women in Türkiye, highlighting urbanization, educational disparities, and demographic shifts as key factors. It finds rural-to-urban migration and a shift away from agricultural employment have reduced overall participation rates, while younger and better-educated women show increased urban workforce entry. However, gender disparities persist, influenced by education levels, marital status, and childcare responsibilities, necessitating targeted policy interventions.

**Reference:** Created by the author.

## DATA AND METHODOLOGY

This study explores the short-run and long-run association between female labor force participation (FLFP) and economic growth in Türkiye by utilizing a data set running from 1991 to 2023 and ARDL method. FLFP variable is measured as female labor force participation rate (% of female population ages 15+) (modeled ILO estimate). Economic growth variable (GROWTH) is given by GDP growth (annual %). We also added a control variable into the model, namely investment variable (INVESTMENT) given by the gross fixed capital formation (constant 2015 US\$). Increases in female labor force participation, which enhance labor input in production process, may lead to experience a higher rate of economic growth; and hence we expect to see positive coefficient estimation for FLFP variable. Since higher level investment means higher level capital accumulation, it is anticipated to get positive coefficient for INVESTMENT variable. We gathered all data from WDI of the World Bank and used logarithmic forms of all variables in the analyses.

We implemented ARDL bounds test for co-integration analysis by estimating the following model:



$$\Delta GROWTH_t = \alpha_0 + \sum_{i=1}^p \delta_i \Delta GROWTH_{t-i} + \sum_{i=0}^q \phi_i \Delta FLFP_{t-i} + \sum_{i=0}^r \gamma_i \Delta INVESTMENT_{t-i} + \theta_0 GROWTH_{t-1} + \theta_1 FLFP_{t-1} + \theta_2 INVESTMENT_{t-1} + \varepsilon_t \quad (1)$$

In Equation 1 above:  $\theta_0$ ,  $\theta_1$ , and  $\theta_2$  notations show long-term coefficients;  $\delta_i$ ,  $\phi_i$ , and  $\gamma_i$  notations stand for short-term coefficients; symbol  $\Delta$  is first degree difference operator; represents intercept term of the model, and reflects white noise error term of the model.

Examining the short and long-term dynamic relationships between series using the ARDL bounds testing approach is carried out in several stages (Okşak and Özen, 2020:238). The null hypothesis of ARDL bounds test given by  $H_0: \theta_0 = \theta_1 = \theta_2 = 0$  claims the non-existence of co-integrating relationship among economic growth, female labor force participation, and investment variables. On the other hand, the alternative hypothesis of ARDL bounds test given by  $H_1: \theta_0 \neq 0, \theta_1 \neq 0, \theta_2 \neq 0$  asserts the existence of co-integrating relationship among economic growth, female labor force participation, and investment variables. As long as the F-statistic value of ARDL bounds test exceeds the critical value of upper limit at a significance level, then it can be deduced that economic growth, female labor force participation, and investment variables are co-integrated. However if the F-statistic value of ARDL bounds test is below the critical value of lower limit at a significance level or if the F-statistic value of ARDL bounds test falls in somewhere between the critical values of lower and upper limits, then we say that economic growth, female labor force participation, and investment variables are not co-integrated.

The following model was estimated to obtain short-run and long-run coefficient estimations:

$$GROWTH_t = \beta_0 + \sum_{i=1}^p \alpha_i \Delta GROWTH_{t-i} + \sum_{i=0}^q \mu_i \Delta FLFP_{t-i} + \sum_{i=0}^r \pi_i \Delta INVESTMENT_{t-i} + \gamma ECM_{t-1} + \varepsilon_t \quad (2)$$

In Equation 2 above:  $\alpha_i$ ,  $\mu_i$ , and  $\pi_i$  symbols show dynamic coefficients returning the model back to the balance in the long run; ECM represents error correction term of the model;  $\gamma$  symbol indicates the speed of adjustment at which the model goes back to long run in response to a shock taken place in short-run. By the way negative and statistically significant coefficient estimation for the speed of adjustment term is required.

## ESTIMATION RESULTS

We performed Kwiatkowski-Phillips-Schmidt-Shin (KPSS) stationarity test to find out the integration order of the variables used in the analyses. As seen from Table 2, FLFP and GROWTH variables are integrated order zero while INVESTMENT variable is integrated order one.

As it is known ARDL bounds test requires the series to be integrated order zero, one or mixed. Since our variables are integrated order no more than one, we are eligible to use ARDL bounds test for co-integration analysis.

Table 2: KPSS Stationarity Test		
Null Hypothesis: FLFP is stationary		
Kwiatkowski-Phillips-Schmidt-Shin		
test statistic		0.249989
	1%	
critical values:	level	0.739000
	5%	
	level	0.463000
	10%	
	level	0.347000
Null Hypothesis: GROWTH is stationary		
Kwiatkowski-Phillips-Schmidt-Shin		
test statistic		0.194077
	1%	
critical values:	level	0.739000
	5%	
	level	0.463000
	10%	
	level	0.347000
Null Hypothesis: INVESTMENT is stationary		
Kwiatkowski-Phillips-Schmidt-Shin		
test statistic		0.645246
	1%	
critical values:	level	0.739000
	5%	
	level	0.463000
	10%	
	level	0.347000
Null Hypothesis: D(INVESTMENT) is stationary		
Kwiatkowski-Phillips-Schmidt-Shin		
test statistic		0.070724
	1%	
critical values:	level	0.739000
	5%	
	level	0.463000
	10%	
	level	0.347000

AIC criterion was utilized to figure out the optimal lag lengths of the ARDL model. As seen from Figure 1 and Table 3 below, after evaluation of alternative 18 models, AIC criterion picks ARDL(1,0,1) model as the best model in terms of optimal lag length. Therefore all analyses was conducted by using ARDL(1,0,1) model.

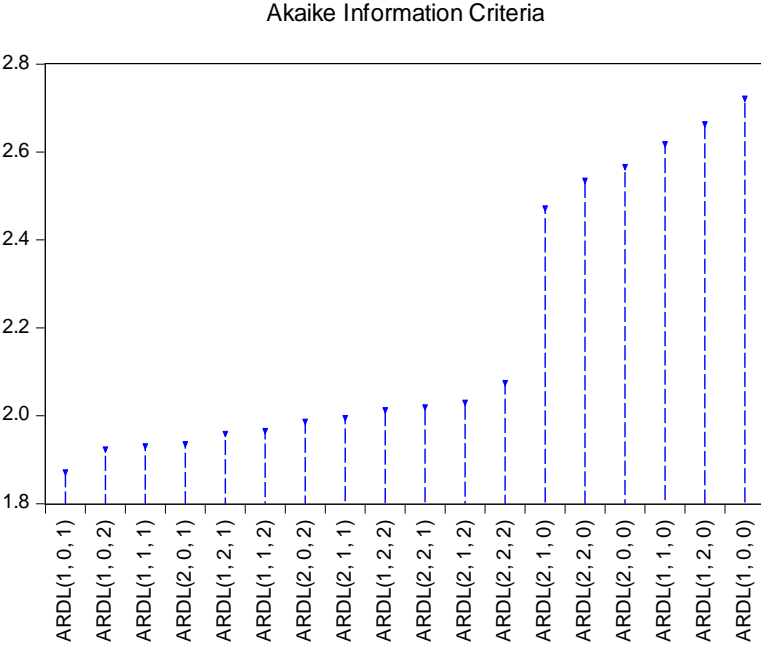


Figure 1. Optimal Lag Length Selection for the ARDL Model

Table 3: ARDL Models Evaluated

Model	AIC*	Specification
17	<b>1.871531</b>	<b>ARDL(1, 0, 1)</b>
16	1.923681	ARDL(1, 0, 2)
14	1.930817	ARDL(1, 1, 1)
8	1.935819	ARDL(2, 0, 1)
11	1.959162	ARDL(1, 2, 1)
13	1.965673	ARDL(1, 1, 2)
7	1.987157	ARDL(2, 0, 2)
5	1.995300	ARDL(2, 1, 1)
10	2.012986	ARDL(1, 2, 2)
2	2.019565	ARDL(2, 2, 1)
4	2.030168	ARDL(2, 1, 2)
1	2.075035	ARDL(2, 2, 2)
6	2.472332	ARDL(2, 1, 0)
3	2.535321	ARDL(2, 2, 0)
9	2.566338	ARDL(2, 0, 0)
15	2.618385	ARDL(1, 1, 0)
12	2.663785	ARDL(1, 2, 0)
18	2.721975	ARDL(1, 0, 0)

Co-integration test results obtained from ARDL bounds test are exhibited in Table 4. As seen from the results of Table 4, F-statistic values of 36.86112 exceeds the upper limit critical values at all significance levels, hence this finding confirms that economic growth, female labor force participation, and investment variables are co-integrated and they move together in the long-run.

Table 4: ARDL Bounds Test

Test Statistic	Signif.	I(0)/Lower Limit	I(1)/Upper Limit
F-statistic: <b>36.86112</b>			
Asymptotic: n=1000			
k: 2	10%	3.38	4.02
	5%	3.88	4.61
	2.5%	4.37	5.16
	1%	4.99	5.85
Actual Sample Size: 32		Finite Sample: n=35	
	10%	3.698	4.42
	5%	4.433	5.245
	1%	6.328	7.408
		Finite Sample: n=30	
	10%	3.77	4.535
	5%	4.535	5.415
	1%	6.428	7.505

Long-run coefficient estimations of ARDL(1,0,1) models are displayed in Table 5. In parallel to our prior expectations, we obtained positive and statistically significant coefficient estimation for FLFP and INVESTMENT variables. If female labor force participation goes up by 1% then economic growth augments by 1.781% in Türkiye during the period of 1991-2023. Moreover if investment increases by 1% then economic growth expands by 2.585% in Türkiye during the estimation period.

Table 5: Long-run Coefficient Estimations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LFP	1.781422	0.77934	2.285809	0.0307
INVESTMENT	2.584596	0.645813	4.002079	0.0005
TREND	-0.14225	0.04098	-3.471056	0.0018
EC = GROWTH - (1.7814*FLFP + 2.5846*INVESTMENT - 0.1422*TREND)				

Table 6 shows the error correction model estimation results. Short-run coefficient of INVESTMENT variable is positive and statistically significant. Coefficient of ECM term is negative and statistically significant as anticipated.

Table 6: ECM Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	-79.4537	6.1582	-12.9022	0.0000
D(INVESTMENT)	8.8651	0.6874	12.8962	0.0000
ECM(-1)	-1.1633	0.0907	-12.8241	0.0000
R-squared	0.9208	Mean dependent var		0.0144
Adjusted R-squared	0.9154	S.D. dependent var		1.8223
S.E. of regression	0.5301	Akaike info criterion		1.6576
Sum squared resid	8.1498	Schwarz criterion		1.7951
Log likelihood	-23.5222	Hannan-Quinn criter.		1.7032
F-statistic	168.6516	Durbin-Watson stat		1.7605
Prob(F-statistic)	0.0000			

Meanwhile several diagnostic tests (i.e., Jerque-Bera normality test, Breusch-Godfrey serial correlation LM test for autocorrelation, ARCH test for heteroskedasticity, Ramsey RESET test for model misspecification, and CUSUM and CUSUM-square tests for parameter stability) The test results for normality are given in Figure 2, the test findings of autocorrelation are provided in Table 7, the test results of heteroscedasticity are displayed in Table 8, the findings of model specification test are exhibited in Table 9, the test findings of parameter stability are shown in Figure 3 and 4. Except the normality test and model specification test, we can say that ARDL(1,0,1) model is not exposed to autocorrelation and heteroscedasticity problems and possesses stable parameters.

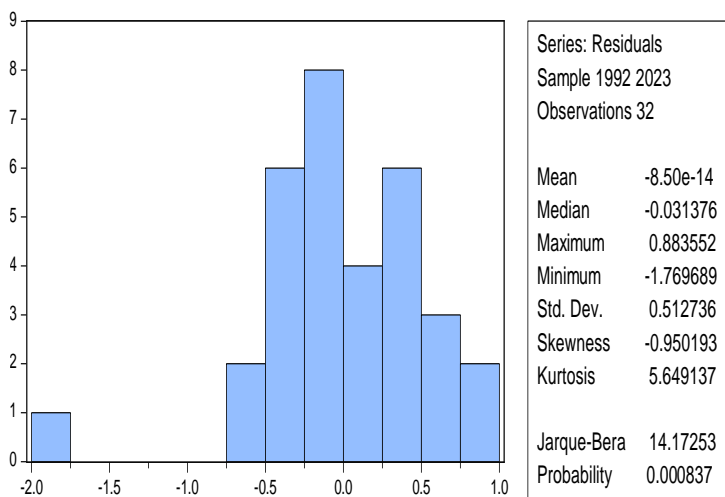


Figure 2: Jarque-Bera Normality Test

Table 7: Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.625374	Prob. F(2,24)	0.2178
Obs*R-squared	3.817287	Prob. Chi-Square(2)	0.1483

Table 8: ARCH Heteroskedasticity Test

F-statistic	0.501165	Prob. F(1,29)	0.4846
Obs*R-squared	0.526627	Prob. Chi-Square(1)	0.468

Table 9: Ramsey RESET Test

	Value	df	Probability
t-statistic	10.14386	25	0.0000
F-statistic	102.8980	(1, 25)	0.0000

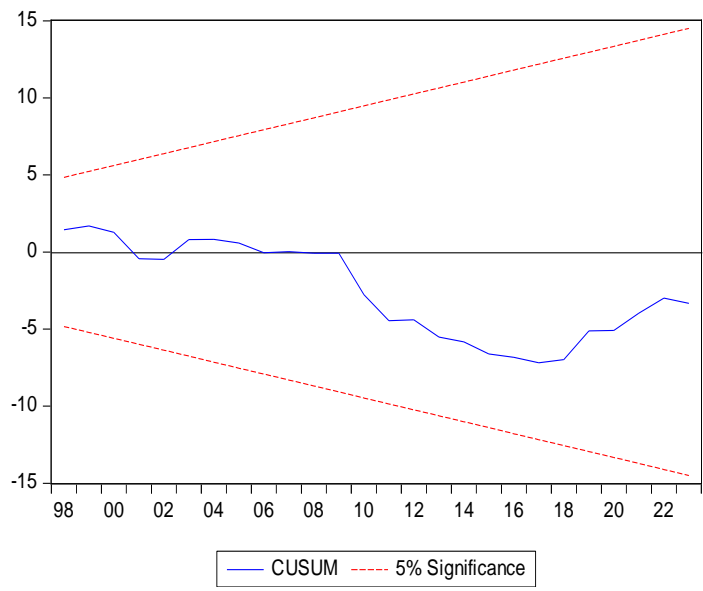


Figure 3: CUSUM Test for Parameter Stability of ARDL(1,0,1) Model

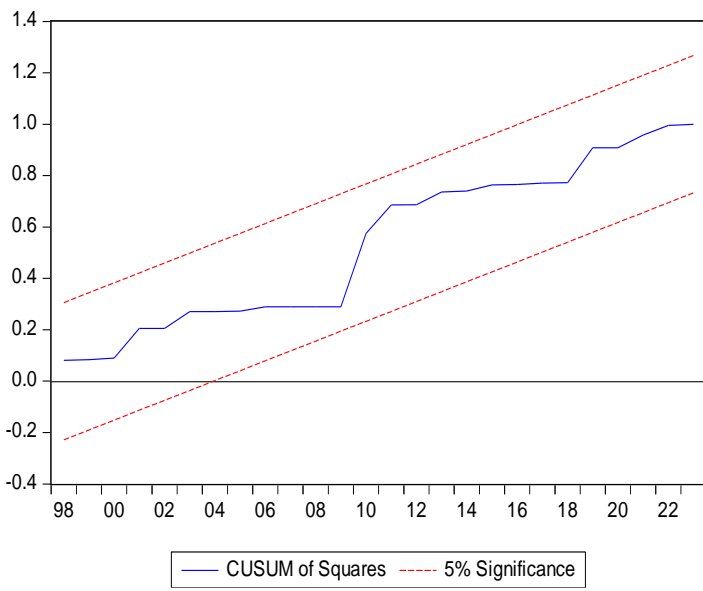


Figure 4: CUSUM-square Test for Parameter Stability of ARDL(1,0,1) Model



## CONCLUSION

In this study we attempt to explore the short-run and long-run association between female labor force participation and economic growth in Türkiye by utilizing annual data set for the years between 1991 and 2023 and ARDL estimation method. Firstly we conducted stationarity analysis for the variables used in the model via KPSS stationarity test. The findings of KPSS test disclose that economic growth and female labor force participation variables are stationary at levels but investment variable is stationary at first difference. Secondly co-integration analysis was implemented via ARDL bounds test. ARDL bounds test findings reveal that there exists co-integration relationship among economic growth, female labor force participation, and investment variables; and thus this result confirms that economic growth, female labor force participation, and investment variables move together in the long-run. Long-run coefficient estimation findings show that female labor force participation and investment have statistically significant positive impact on economic growth. If female labor force participation increases by 1% then economic growth enhances by 1.781% in Türkiye during the period of 1991-2023. Moreover if investment goes up by 1% then economic growth enlarges by 2.585% in Türkiye during the estimation period. Meantime diagnostic test results points out that ARDL(1,0,1) does not contain autocorrelation and heteroscedasticity problems and has stable parameters.

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# **A Research on Environmental, Social and Governance (ESG) Performance of OECD Countries**

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## ABSTRACT

The purpose of this study is to examine the average environmental, social and governance (ESG) scores of companies in OECD countries at the country level. For this purpose, 2315 companies in 28 OECD member countries were determined based on country averages of ESG performances within the framework of 6 different dimensions, namely ESG score, ESG environmental score, ESG social score, ESG governance score, ESG discussion score and Combined ESG score, between 2014-2022. According to the study results, when we look at the countries with high ESG performance, it was determined that Spain and France are the first two countries with the highest environmental, social, combined ESG and ESG scores; Sweden is the 3rd best country in terms of social, corporate governance, combined ESG and ESG scores. When the countries with low ESG performance are examined: Australia has the lowest performance in terms of environmental, social, combined ESG and ESG scores; The Republic of Korea has the lowest performance in terms of social, combined ESG and ESG scores; Israel has been found to be among the countries with the lowest performance in terms of corporate governance, ESG discussion and combined ESG score. When the results are evaluated for Turkey, it is noteworthy that Turkey's environmental, social, ESG discussion, combined ESG and ESG score performance is at medium levels, while its corporate governance performance is fall behind. All these results are important in terms of identifying and comparing the high or low sustainability performances of OECD countries with up-to-date data and a large sample group.

*Anahtar Kelimeler – Sustainability, Environmental, Social Governance (ESG), OECD Countries.*

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## INTRODUCTION

The rapid increase in demand for consumption today and the change in people's consumption habits have caused to the rise of the concept of sustainability, which is related to economic, environmental, social and governance issues and addresses the issue of transferring resources to future generations. The concept of sustainability covers issues such as renewable energy production and the cost allocated for these resources, the protection of water resources, and the prevention of the release of toxic gases into nature (Kaya and Altuntaş, 2023:59). The concept of sustainability has developed over time and one of the latest points reached today is environmental, social and governance, in other words, the term ESG, was first included in the United Nations' "Who Care Wins" report in 2004 (Gao, Meng, Gu, Liu and Farrukh, 2021:1-2). With the emergence of the ESG concept, environmental (E), social (S) and governance (G) activities can be

monitored in determining the future financial performance of companies, and according to the results obtained from these activities, a general performance rises regarding the company's interaction with the environment, employee rights, respect for human rights and corporate governance (Mollaahmetoğlu, 2023:180). Sustainability is a multidimensional and dynamic concept, so it is difficult to measure it properly. However, despite this difficulty, it is possible to select important indicators to evaluate and analyze the concept of sustainability, which includes economic, social, environmental and corporate governance factors (Alpdoğan, 2023:1100). As a result of the need to determine the sustainability performance of companies, organizations such as Thomson Reuters, Bloomberg and MSCI etc. have started to measure the performance of companies through ESG scores. Refinitiv, one of the organizations that measure ESG scores, offers one of the most comprehensive ESG databases with more than 630 different ESG criteria for more than 12,000 public and private companies, covering 85% of international markets. ESG score is measured with 3 main dimensions: environmental, social and governance, and 10 sub-dimensions: emissions, innovation and resource use (sub-dimensions of environmental performance); society, human rights, product responsibility and labor (sub-dimensions of social performance); corporate social responsibility strategies, management and shareholders (sub-dimensions of corporate governance performance). In addition, companies are evaluated within the scope of the combined ESG score and ESG discussion score (Gedik Göçer and Şahin Kerimoğlu, 2024:97). In more detail; ESG environmental dimension includes energy management, greenhouse gas, efficient and effective use of resources, carbon footprint, environmental legal regulations, water and air pollution, ESG social dimension; It includes education and gender equality, data security, social project investments, human rights, supply chain and working conditions, and the ESG governance dimension includes issues related to board independence, business ethics, transparency, accounting, tax, reporting and financial policies (Kaya and Altuntaş, 2023:45). Apart from these issues, concepts such as corporate trust, human capital, reputation, supply chain, business and risk management strategy, which are evaluated within the scope of intangible assets that constitute a significant part of the market value of today's businesses, represent the value of businesses as a whole. Therefore, companies are no longer content with disclosing only financial results and voluntarily report sustainability disclosures (Aras and Hacıoglu Kazak, 2022:3). ESG performance; Whether companies are responsible to society in terms of social, environmental and corporate governance issues (Erben Yavuz, 2023:2688); provides information about creating value in the long term, maintaining business strategies and fulfilling their responsibilities to society. Since the ESG score is related to the company's solvency, a high ESG score is positive for the company; while a low ESG score is seen as negative (Gedik Göçer and

Şahin Kerimoğlu, 2024:93-110). Although the ESG score is not only related to the company's ability to pay; According to Mollaahmetoğlu (2023:180), it is claimed that companies with high ESG performance are companies with high environmental sensitivity, efficient energy and waste policies, thus the reputation of the company in the eyes of investors and its profitability increases. According to Keçeli and Çankaya (2020:37), with the disclosure of the ESG score of the companies; it has increased independence in auditing, minimized information asymmetry, encouraged corporate governance, ensured that investments gained long-term weight, contributed positively to return and risk management, increased management performance, positively affected brand value, facilitated the sharing of decisions taken by the management, contributed to corporate communication, and facilitated direct access to capital. Sustainable goals called "ESG Performance of the Country", which are environmental, social and governance performance within the scope of the ability to protect the needs of not only companies but also future generations in their countries, cause differences in economic growth between countries. In other words, it is seen that natural resources are used more efficiently and social and administrative policies are implemented more effectively and quickly in countries with high ESG performance (Diaye, Ho and Oueghlissi, 2022:100). This study also aimed to evaluate the ESG performance of OECD countries within the scope of country ESG performance and OECD countries were selected to determine the countries to be compared with Turkey. The reason for choosing OECD countries within the scope of the study is that OECD countries consist of industrialized, developed and developing countries in the world and issues such as migration, climate change, unequal distribution of opportunities, depletion of resources, aging of the population and security risks may cause negative consequences for future generations and endanger the general sustainability performance of OECD countries. Under these pressures, OECD countries need to create adaptable and dynamic policies in order to adapt to sustainable policies (Senir, 2024:145). Sustainability was accepted as an important priority by OECD countries with the 1998 Council of Ministers Meeting Declaration and sustainability indicators; climate change, environmental effects of subsidies and technological development issues were listed as important priorities in the sustainable development strategy of OECD (Alpdoğan, 2023:1084). When the literature on the subject is examined, it is seen that ESG research is extremely limited in developing countries where it is conducted on more developed countries. In addition, since OECD countries consist of industrialized, developed and developing countries, the issue of sustainability is important in these countries since the countries examined within the scope of the research continue to industrialize and use different production techniques and are already struggling with economic, social and environmental problems. For this reason, there is a much greater demand and



privilege for ESG practices in OECD countries compared to other countries. Based on this, the aim of the study is to compare the environmental, social and governance (ESG) performances of OECD countries. For this purpose, the ESG performance of 2315 companies in these countries, including 28 OECD member countries whose data can be fully accessed; Turkey, the United States, Germany, Australia, Austria, Belgium, Denmark, Finland, France, Republic of Korea, Netherlands, England, Ireland, Spain, Israel, Sweden, Switzerland, Italy, Japan, Canada, Colombia, Mexico, Norway, Poland, Portugal, Chile, New Zealand and Greece, between the years 2014-2022 was investigated. For this purpose, the ESG performance of companies with fully accessible data in 28 OECD member countries was examined and compared in 6 different dimensions, namely ESG score, ESG environmental score, ESG social score, ESG governance score, ESG discussion score and combined ESG score. The study focuses on OECD countries and provides new evidence for the extremely limited ESG performance. Since the studies conducted in the literature generally include old data and this study uses a sample of 2315 companies from 28 countries, together with the latest and up-to-date ESG scores obtained from Refinitiv, it contributes to the literature in many ways in terms of making comparisons with current data and a wide sample group. Within the scope of the study, studies conducted on the subject in the literature are included after the introduction section. Then, the data set is explained; the findings obtained are presented and interpreted. The conclusion section includes the results and recommendations.

## **LITERATURE**

In the literature section, previous international and national studies on the concept of ESG in OECD countries are included and the findings are briefly summarized.

In their study where Kim, Kim and Chae (2014) developed a performance analysis using statistical data to evaluate the environmental performance of 30 OECD countries, they determined that natural capital and quality of life indices were high in countries with high environmental performance, but trade, consumption and production activities were low. Therefore, they underlined the need to become more environmentally friendly and efficient in economic processes in order to be more sustainable. In their study, Capelle-Blancard, Crifo, Diaye, Oueghlissi and Scholtens (2019) tried to determine whether ESG performance is a factor that can affect government borrowing costs within the scope of OECD countries. They found that ESG environmental performance in particular does not have much financial impact, but social and governance performance has a stronger and more significant impact, as countries with high ESG performance have less default risk. Kaufmann and Lafarre (2021) investigated whether countries with higher governance quality have higher corporate social performance within

the OECD countries. They found a positive relationship between governance performance and corporate social performance. In other words, they underlined the need to make efforts to improve management quality and stakeholder participation as well as to increase management quality in order to transition to a more sustainable society. Aras and Hacıoglu Kazak (2022) examined the relationship between ESG performance and firm value on a sample of banks operating in OECD countries. They found that ESG performance had a positive and significant effect on price earnings, while it did not have a significant effect on Tobin Q. Diaye et al. (2022) analyzed how important good ESG performance is in terms of GDP per capita in 29 OECD countries. They found that although there was a positive relationship between ESG and GDP per capita in the long term, this relationship was not seen in the short term. Hamad and Cek (2023) tried to determine the reasons for the change in financial performance of corporate social responsibility disclosures on non-financial sector firms in OECD countries. They found that all features except audit board participation within the scope of governance performance had significant positive effects on financial performance. In other words, it has been revealed that corporate social responsibility improves the corporate governance performance of firms, thus increasing financial performance, and firms that give priority to both corporate governance and corporate social responsibility show better financial performance. In his research, Heo (2024) aimed to determine the relationship between the ESG performance of firms in OECD countries and commercial loan receipts. He found that firms with better environmental performance can receive more commercial loans, but high social and corporate governance performance is not a sufficient factor in commercial loan receipts. In other words, he revealed that those who provide funds to firms take into account the publicly available ESG scores of firms. Köninger (2024) investigated how technological progress affects ESG performance by comparing OECD and non-OECD countries in his study. He found that technological developments increase ESG in both country groups. In other words, it has been revealed that it is important to invest in digital infrastructure and research and development in order to effectively continue sustainable practices, that non-OECD countries may have problems in having the financial resources and infrastructure necessary for large investments, and therefore, if technological progress remains low, firms may become more defenseless to environmental, social and corporate governance problems. Long and Feng (2024) aimed to investigate the effect of ESG performance on greenhouse gas emissions in OECD countries and to examine the role of environmental policies on this effect in their study, they found that increasing environmental, social and corporate governance performance in OECD countries with higher economic levels, in other words, tightening environmental policies, suppresses greenhouse gas emissions.

When the findings are evaluated within the scope of national literature, Baki (2022) conducted a study in order to make inferences about the socio-economic sustainability performance, which is the basic dimension of ESG, in the context of OECD countries, among developed and developing countries and to encourage change in countries in line with sustainable development goals. He determined that the countries with the highest performance according to socio-economic criteria were Korea and Japan, while the countries with the lowest performance were Colombia and Mexico. Şeker and Şengür (2022) examined the averages of ESG scores of companies in 35 different countries at the country level in their research and found that the countries with the highest ESG performance were countries in the European Union, while the countries with the lowest ESG performance were Far Eastern countries. Doğan, Kevser and Tarakçıoğlu Altınay (2023) examined the relationship between ESG performance and firm value and profitability in Brazil, Russia, India, China and South Korea and they found that the ESG performance of countries has increased over the years, the lowest score is environmental and the highest score is corporate governance, and ESG and its sub-dimensions have a significant and positive effect on firm profitability and value. Kaya and Altuntaş (2023) aimed to compare the sustainable development performances of 13 countries, namely Germany, Austria, Belgium, Denmark, Finland, France, Netherlands, Ireland, Spain, Sweden, Italy, Portugal and Greece, which are members of the European Union, with the sustainable performance (ESG) of enterprises and they found no significant relationship between the sustainability performances of countries and their corporate sustainability performances. When the findings are evaluated within the scope of national literature, Baki (2022) conducted a study in order to make inferences about the socio-economic sustainability performance, which is the basic dimension of ESG, within the scope of OECD countries, among developed and developing countries and to encourage change in countries in line with sustainable development goals, he determined that the countries with the highest performance according to socio-economic criteria were Korea and Japan, while the countries with the lowest performance were Colombia and Mexico. Şeker and Şengür (2022) examined the averages of ESG scores of companies at the country level within the scope of 35 different countries in their research. and found that the countries with the highest ESG performance were countries in the European Union, while the countries with the lowest ESG performance were Far Eastern countries. Doğan, Kevser and Tarakçıoğlu Altınay (2023) examined the relationship between ESG performance and firm value and profitability within the scope of Brazil, Russia, India, China and South Korea and found that the ESG performances of countries increased over the years. They found that the lowest score is environmental and the highest score is corporate governance, and that ESG and its sub-dimensions have a significant and positive effect on firm profitability and value. Kaya and

Altuntaş (2023) aimed to compare the sustainable development performances of 13 countries, namely Germany, Austria, Belgium, Denmark, Finland, France, Netherlands, Ireland, Spain, Sweden, Italy, Portugal and Greece, which are members of the European Union, with the sustainable performances (ESG) of enterprises and they found no significant relationship between the sustainability performances of countries and their corporate sustainability performances. Alpdoğan (2023) aimed to determine how effective the economic, environmental and social performances of OECD countries are within the framework of sustainability in his research. He revealed that the countries with the highest performance in sustainable development policies are New Zealand, Korea and Iceland; while the countries with the lowest performance are the USA, Canada and Turkey. Yalçın and Güneş (2023) examined the relationship between sustainability performance and earnings management on firms other than financial companies within the scope of OECD countries. They concluded that there is a statistically significant relationship between sustainability performance and earnings management and that sustainability performance reduces earnings management. Kahreman (2024) examined the economic, social, environmental, financial and governance performances of European Union countries after the global crisis in his research and found that the countries with the highest sustainable development performance are Luxembourg and Germany, while the countries with the worst sustainable development performance are Romania and Bulgaria. Senir (2024) aimed to analyze the sustainable management performance of OECD countries in his study and revealed that Switzerland, Finland and New Zealand have the highest sustainable performance, while Turkey ranks 24th.

## **DATASET and METHODOLOGY**

The purpose of this study is to compare the environmental, social and corporate governance (ESG) performances of OECD countries. For this purpose, the average ESG scores of 2315 companies in 28 OECD member countries, Turkey, United States, Germany, Australia, Austria, Belgium, Denmark, Finland, France, Republic of Korea, Netherlands, United Kingdom, Ireland, Spain, Israel, Sweden, Switzerland, Italy, Japan, Canada, Colombia, Mexico, Norway, Poland, Portugal, Chile, New Zealand and Greece, were examined at the country level between 2014-2022 and ESG performance was investigated. The reason for choosing OECD countries within the scope of the research is; As stated by Yalçın and Güneş (2023:367), the duty of the OECD is to follow developments in environment, trade, agriculture, technology and financial policies, to seek solutions to common problems and to coordinate international and national policies by making the best problem-specific determinations and to assist OECD member countries. Therefore, OECD countries, of which Turkey is among

the founding members, constitute a natural sample in terms of sustainability and ESG research due to their founding purpose, duties and activities. For this purpose, the ESG performance of 2315 companies with fully accessible data in 28 OECD member countries was examined and compared within the scope of 6 different dimensions, namely ESG score, ESG environmental score, ESG social score, ESG governance score, ESG discussion score and combined ESG score. For ESG performance, scores obtained from Refinitiv's Thomson Reuters Datastream, Eikon and ASSET4 databases were used. The reason for choosing the Thomson Reuters database is that it provides more comprehensive data on ESG compared to other databases and is highly preferred. The reason for starting the dataset in 2014 is that the importance given to ESG increased after 2010, but since there were many deficiencies between 2010-2014, the years 2014-2022 were preferred. Since there were no ESG scores for 2023, the analysis was carried out within the scope of the most up-to-date data based on 2022. In addition, if there are fewer than 7 firms in a country, the firms in that country are not included in the scope of the review. ESG scores obtained from Refinitiv range from 0 to 100, with 100 indicating the best performance and 0 indicating the worst performance. In addition to environmental, social and corporate governance dimensions, combined ESG score and ESG discussion score scoring are used in calculating the ESG score. These sub-dimensions are listed in Table 1.

Table 1: ESG scores and sub-dimensions

Basic Dimensions	Categories	Definition	Themes
ENVIRONMENTAL	Resource Utilization Score	It reflects a company's performance and capacity to find more eco-efficient solutions by improving supply chain management to reduce the use of materials, energy or water and to save the natural resources used by the company in production stages.	Water Energy Sustainable packaging Environmental supply chain
	Emissions Score	It measures a company's commitment, determination and effectiveness in reducing waste and environmental emissions released into nature during production and operational processes.	Emissions Waste Biodiversity Environmental management systems
	Innovation Score	It reflects a firm's competence in developing technologies that reduce environmental costs incurred during production and its capacity to reduce the burden on customers. Thus, the firm creates new market opportunities and eco-designed products through new environmental technologies and eco-	Product innovation Green revenues Research and development (R&D) Capital

		designed products.	expenditures
<b>SOCIAL</b>	<b>Labor Force Score</b>	It measures the effectiveness of a company in providing job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities, employee commitment, increasing well-being and fairness in working conditions, and development opportunities for the workforce.	Diversity and inclusion Career development Training and working conditions Health and safety
	<b>Human Rights Score</b>	It measures a company's effectiveness in respecting fundamental human rights conventions.	Human Rights
	<b>Community Score</b>	It measures a company's commitment to being a good citizen, protecting public health, protecting household health, sensitivity to business ethics, and respect for business ethics.	Equally important groups for all sectors.
	<b>Product Responsibility Score</b>	It reflects the honesty capacity of a company by taking into account customer and data security competence in the production phase. It reflects the capacity to produce quality goods and services by taking into account the health and safety of customers and data privacy.	Responsible marketing Product quality Data privacy
<b>CORPORATE GOVERNANCE</b>	<b>Management Score</b>	It is a measure of a firm's compliance with best corporate governance principles and measures a company's management's commitment and effectiveness to follow best practice corporate governance principles.	Independence Diversity Committees Compensation
	<b>Shareholder Score</b>	It measures a firm's effectiveness in treating its stakeholders equally and using anti-takeover tools.	Shareholder rights Takeover defenses
	<b>CSR Strategy Score</b>	It reflects practices that inform a firm's integration of economic (financial), environmental and social dimensions into its daily decision-making processes.	CSR strategy Reporting and transparency

**Source:** Refinitiv (2022: 25) and Refinitiv (2023:10)

As seen in Table 1, ESG scores are first collected in 10 subcategories and then in 3 basic dimensions: environmental, social and corporate governance. The environmental dimension consists of 3 sub-dimensions: resource use, emissions and innovation, and covers the efficient

and effective use of resources, waste management, environmental practices and legal regulations, greenhouse gas, energy efficiency and management, carbon footprint, water and air pollution. The social dimension consists of 4 sub-dimensions: labor, human rights, society and product responsibility, and includes issues such as education, gender and equal opportunities, healthy and safe working conditions, human rights, supply chain, data privacy, consumer relations and social project investments. The corporate governance dimension consists of 3 sub-dimensions: management, shareholders and CSR strategy, and includes issues related to board independence and structure, business ethics, tax and accounting practices, executive rights and compensation, financial policies and reporting and transparency (Kaya and Altuntaş, 2023:46). Additionally, Refinitiv provides the ESG Score, ESG Controversies Score and ESG Combined Score. ESG Score; It represents the total score of the company and is obtained from 3 basic dimensions: environmental, social and corporate governance (Şeker, 2020:32). Combined ESG Score; It provides a comprehensive scoring of ESG performance (Bătae, Dragomir and Feleagă, 2020:489) and indicates a value between 0 and 100. Combined ESG score is determined based on the relationship between ESG score and ESG discussion score. If ESG discussion score is less than ESG score and less than 50; combined ESG score is equal to the average of ESG discussion score and ESG score. If the ESG discussion score is 50 and above and the ESG discussion score is greater than the ESG score but less than 50, the ESG score is equal to the combined ESG score (Şeker, 2020:37). The ESG discussion score arises from negative news in the global media on issues such as employee health and safety, employee rights, wages and working conditions, public health, tax fraud, customer satisfaction, privacy and security, business ethics, human rights, shareholder rights, accounting, strikes, intellectual property, environment, management, regulatory disputes, fines and lawsuits that are the subject of global media and news, or negative developments in the company regarding these issues and their announcement (Bătae et al., 2020:489). According to the Refinitiv ESG discussion score, companies about which there is no negative news and no news are heard receive 100 points (Luo, 2021).

## **FINDINGS**

In order to examine the development status of ESG scores over the years, the average ESG scores, environmental scores, social scores, corporate governance scores, ESG discussion scores and combined ESG scores of companies at the OECD country level were calculated. This information is given in the following tables, Table 2, Table 3, Table 4, Table 5, Table 6 and Table 7, respectively.

Table 2: Country level ESG score averages

Country Level ESG Score Averages												
Country	Number of Companies	2014	2015	2016	2017	2018	2019	2020	2021	2022	9 Year Ave.	Ranking According to 9 Year Average
Spain	25	66,03	68,04	69,69	70,2	73,8	75,17	76,91	77,96	78,24	72,89	1
France	77	61,37	63,92	66,61	68,93	72,67	74,21	75,09	75,49	75,32	70,40	2
Sweden	40	58,78	62,17	64,30	65,64	67,13	69,19	71,22	72,77	74,77	67,33	3
Finland	23	57,33	60,1	61,79	64	67,93	70,51	73,11	73,55	73,51	66,87	4
Portugal	7	69,62	66,08	69,24	66,14	65,01	64,56	66,75	67,04	66,67	66,79	5
Netherlands	26	56,93	61,64	62,79	65,12	68,1	68,11	69,78	69,89	69,67	65,78	6
Germany	71	56,23	58	59,94	63,66	65,88	67,48	70,01	69,29	69,08	64,40	7
Italy	33	55,43	57,12	58,35	62,24	64,85	66,94	70,89	70,8	71,79	64,27	8
Switzerland	53	52,06	54,30	55,68	58,56	62,61	65,88	69,20	72,30	70,30	62,32	9
Austria	13	52,06	53,2	56,58	60,17	65,07	65,72	67,83	68,77	69,28	62,08	10
Norway	18	52,84	55,38	56,41	60,16	63,52	65,76	68,05	67,61	66,37	61,79	11
England	209	50,85	54,56	55,74	57,11	58,58	60,89	63,19	64,47	63,8	58,80	12
Denmark	25	51,67	53,81	54,68	56,73	58,61	60,96	63,4	64,31	63,81	58,66	13



<b>Turkey</b>	11	43,82	49,40	51,68	54,42	56,03	58,50	67,97	70,38	72,60	58,31	14
<b>Colombia</b>	7	46,95	51,52	55,99	58,36	58,61	62,51	62,02	58,02	55,37	56,59	15
<b>Chile</b>	19	36,79	42,6	49,71	57,88	61,77	62,7	63,22	65,05	67,43	56,35	16
<b>Mexico</b>	22	44,92	47,5	49,15	52,58	53,82	55,75	58,11	59,98	61,56	53,71	17
<b>Greece</b>	10	48,79	51,8	51,23	53,34	53,71	55,02	55,54	56,3	56,15	53,54	18
<b>Belgium</b>	21	41,78	45,85	46,56	49,49	55,19	59,01	59,86	60,12	61,4	53,25	19
<b>Ireland</b>	8	39,78	42,68	46,19	52,95	53,43	58,47	61,57	61,85	61,11	53,11	20
<b>Poland</b>	19	36,28	39,48	42,3	51,99	55,85	59,53	60,13	61,87	62,2	52,18	21
<b>United States</b>	809	43,88	46,36	47,9	49,09	50,53	52,19	53,75	55,16	55,75	50,51	22
<b>New Zealand</b>	13	37,92	42,97	45,89	49,14	50,77	52,33	52,96	57,83	58,05	49,76	23
<b>Japan</b>	324	42,11	43,6	45,05	46,86	49,16	51,61	53,49	54,71	56,57	49,24	24
<b>Israel</b>	8	40,62	46,04	47,32	48,13	49,22	50,76	49,4	50,75	53,51	48,42	25
<b>Canada</b>	163	38,26	39,52	41,36	43,7	45,67	50,99	53,7	55,33	56,42	47,22	26
<b>Republic of Korea</b>	29	36,03	37,69	39,63	42,03	48,23	50,24	52,45	54,13	57,35	46,42	27
<b>Australia</b>	232	34,14	36,08	37,46	39,18	40,69	42,65	44,81	46,68	47,19	40,99	28

Table 2 shows country-level ESG scores. Country averages were obtained by taking the average of the ESG scores of firms in a country used in the study. It can be said that the ESG score increased in all countries between 2014 and 2022, and therefore the awareness and importance on this issue increased. According to the ESG score, which represents the total score of firms, it can be said that OECD countries generally attach great importance to environmental, social and corporate governance issues, in other words, the sustainable performance of countries in terms of resource use, emissions, innovation, labor, human rights, society, product responsibility, management, shareholders and CSR strategy has increased and they have taken more responsibility in these issues. It was determined that the highest average scores were in Spain, France and Sweden, and the lowest scores were in Canada, the Republic of Korea and Australia. Turkey ranks 14th among 28 countries in terms of general ESG score. When similar studies in the literature are examined, Kahreman (2024) obtained similar results in his study evaluating the general sustainability performance of countries. It has been determined that the fact that Spain and Sweden are at the top of the rankings is reflected in positive sustainable performance because they have a relatively better economic, social and governance structure compared to other countries. Kaya and Altuntaş (2023) obtained similar results in their research within the scope of the most sustainable countries. They linked France's sustainability performance to the high level of renewable freshwater resources. İşeri and Özen (2012) compared Turkey's sustainability performance in their study and similarly determined that many regulations were made to increase the production, use and efficiency of Turkey's renewable energy resources and to reduce the consumption of fossil resources. However, they explained that the reason why Turkey did not rank at the top was due to the inadequacy of these regulations. Another result obtained within the scope of the study was that Australia was the country with the lowest sustainable performance. Similarly, Alpdoğan (2023) found that Australia and Canada were at the bottom in his research examining the performance ranking of OECD countries according to general criteria. The results were analyzed in terms of environmental score, one of the basic sub-dimensions of the ESG score, and are given in Table 3.

Table 3: Country level ESG environmental score averages

Country Level Environmental Score Averages												
Country	Number of Companies	2014	2015	2016	2017	2018	2019	2020	2021	2022	9 Year Ave.	Ranking According to 9 Year Average
France	77	67,12	69,59	72,21	74,49	74,69	76,81	76,56	76,83	77,49	73,98	1
Spain	25	69,99	71,26	73,16	73,72	71,36	73,08	76	76,47	77,94	73,66	2
Finland	23	65,65	69,04	71,21	71,64	73,3	72,93	75,05	73,43	73,31	71,73	3
Portugal	7	69,27	69,92	71,4	66,4	62,11	66,79	69,5	71	69,11	68,39	4
Sweden	40	61,05	63,29	65,40	66,84	65,31	68,30	69,15	71,12	73,12	67,07	5
Netherlands	26	58,71	61,74	63,44	66,86	65,7	67,67	69,6	68,88	68,49	65,68	6
Italy	33	58,31	62,07	62,28	66,94	62,44	66,27	68,91	69,57	71,69	65,39	7
Austria	13	55,56	57,02	63,82	64,85	62,88	63,56	67,07	66,95	70,28	63,55	8
Germany	71	56,12	58,3	60,55	63,66	63,39	64,49	66,96	65,58	65,8	62,76	9
Norway	18	53,13	53,04	53,97	59,36	60,2	62,57	64,12	63,86	62,18	59,16	10
Switzerland	53	46,70	48,92	51,19	54,58	54,86	57,37	59,91	70,18	71,18	57,21	11
Turkey	11	39,99	50,20	53,28	55,11	52,91	55,79	67,23	68,97	71,10	57,18	12
Colombia	7	49,66	49,96	61,07	63,05	52,3	61,02	60,28	55,43	56,18	56,55	13
Denmark	25	51,28	53,99	54,2	56,12	51,83	55,37	58,07	60,5	62,25	55,96	14

<b>England</b>	209	48,42	51,13	52,24	51,76	49,8	53,35	55,43	58,2	58,8	53,24	15
<b>Chile</b>	19	32,42	40,73	47,34	53,83	54,14	57,22	58,25	62,78	67,44	52,68	16
<b>Belgium</b>	21	41,33	44,53	44,79	47,41	51,27	58,09	60,3	61,8	61,02	52,28	17
<b>Japan</b>	324	45,49	46,82	48,64	50,3	50,62	53,98	55,79	58,04	60	52,19	18
<b>Greece</b>	10	53,22	53,39	53,82	54,61	43,68	45,08	50,13	50,08	54,09	50,90	19
<b>Mexico</b>	22	40,93	44,54	46,56	48,59	49,96	53,04	55,63	58,73	59,45	50,83	20
<b>Ireland</b>	8	36,11	40,09	48,44	52,14	43,48	48,31	52,02	52,72	53,32	47,40	21
<b>Poland</b>	19	26,06	31,81	37,85	50,52	46,18	53,32	56,49	62,47	61,55	47,36	22
<b>Republic of Korea</b>	29	34,81	35,6	36,93	42,45	46,27	47,02	51,53	55,09	60,42	45,57	23
<b>Israel</b>	8	39,25	44,88	50,84	49,02	37,76	41,07	40,51	42,57	50,4	44,03	24
<b>Canada</b>	163	31,33	32,76	34,81	38,04	38,23	44,48	48,54	50,73	52,45	41,26	25
<b>United States</b>	809	35,7	37,31	38,04	38,39	38,41	41,77	44,01	45,69	46,85	40,69	26
<b>New Zealand</b>	13	28,87	29,65	32	37,51	40,37	43,03	42,64	49,12	49,63	39,20	27
<b>Australia</b>	232	21,11	22,96	24,8	25,67	25,74	28,69	32,12	35,09	36,02	28,02	28

Table 3 shows the environmental scores at the country level. When we look at the country level in general, it is seen that environmental performance has increased in all countries for 9 years and that countries are acting responsibly in environmental issues. When the general increase in environmental performance is taken into account, it can be said that companies in all countries have increased their awareness in environmentally friendly activities such as water, energy, sustainable packaging, environmental supply chain, emissions, waste, biodiversity, environmental management systems, product innovation, green income, research and development (R&D), capital expenditures, using renewable energy sources, reducing emissions, and giving importance to waste and recycling practices and are acting more responsibly. When we look at the environmental score averages, it is seen that the countries with the highest environmental scores are France, Spain and Finland, while the countries with the lowest are the USA, New Zealand and Australia, and Turkey is in 12th place. Similar to the study results, as stated by Öktem (2009), the reason why Finland's environmental ESG performance is at the top is that Finland has developed an environmental program called clean-technology. In addition, Finland has solved the urban waste problem, increased its investments in renewable energy, made investments in clean technology, water quality, environmental management, and predicted that electricity consumption, especially obtained from renewable energy sources, will increase fivefold by 2030. Another result obtained within the scope of the study is that New Zealand is at the bottom of the environmental performance, similar to the study of Alpdoğan (2023). The results were analyzed in terms of the social score, which is one of the basic sub-dimensions of the ESG score, and are given in Table 4.

Table 4: Country level ESG social score averages

Country Level Social Score Averages												
Country	Number of Companies	2014	2015	2016	2017	2018	2019	2020	2021	2022	9 Year Ave.	Ranking According to 9 Year Average
Spain	25	73,39	75,04	77,76	78,98	82,45	85,52	86,01	86,56	87,91	81,51	1
France	77	65,16	69,62	72,98	76,6	79,05	80,54	80,95	81,72	81,35	76,44	2
Sweden	40	62,10	67,20	70,50	72,98	73,41	72,96	73,61	75,81	77,81	71,82	3
Portugal	7	71,08	70,01	74,85	70,86	70,16	70,65	71,06	71,28	72,22	71,35	4
Netherlands	26	58,84	66,83	67,29	71,35	73,95	74,28	76,84	76,16	74,52	71,12	5
Italy	33	58,29	61,53	64,07	68,82	71,76	74,6	76,52	77,37	77,7	70,07	6
Finland	23	57,59	63,55	66,11	68,52	71,69	74,53	74,45	74,91	75,46	69,65	7
Germany	71	59,72	62,56	64,68	69,22	69,98	71,53	73,02	73,69	73	68,60	8
Norway	18	56,17	62,08	62,43	65,24	65,78	69,71	71,09	72,51	72,34	66,37	9
Switzerland	53	55,10	58,47	60,99	63,44	68,99	66,16	69,99	73,16	80,96	66,03	10
Colombia	7	54,55	64,63	64,85	65,09	67,4	71,83	70,39	68,6	66,19	65,95	11
Turkey	11	44,99	53,43	55,93	60,11	60,05	63,16	74,76	80,35	85,85	64,29	12
Austria	13	48,97	51,33	54,92	63,89	66,73	67,34	71,23	75,66	73,9	63,77	13
Denmark	25	53,96	58,53	60,86	63,59	64,66	66,06	67,57	68,28	67,38	63,43	14

<b>England</b>	209	50,94	54,79	56,5	59,34	60,83	61,86	63,14	63,53	62,94	59,32	15
<b>Chile</b>	19	34,4	41,99	46,84	58,91	65,36	67,02	69,27	70,11	73,48	58,60	16
<b>Greece</b>	10	49,64	54,9	54,71	58,14	61,25	62,97	62,76	60,99	61,42	58,53	17
<b>Israel</b>	8	47,6	52,89	54,21	56,86	59,72	61,33	60,09	60,45	63,95	57,46	18
<b>Ireland</b>	8	41,77	46,55	46,14	57,35	55,89	60,96	65,33	67,33	69,31	56,74	19
<b>Belgium</b>	21	39,92	48,17	51,08	55,57	59,37	61,09	63,32	63,97	65,27	56,42	20
<b>Mexico</b>	22	42,91	47,21	49,73	53,3	55,64	58,1	60,87	62,64	65,38	55,09	21
<b>United States</b>	809	45,83	48,12	49,56	50,81	52,22	54,08	56,56	57,85	57,94	52,55	22
<b>Poland</b>	19	30,78	34,77	39	52,87	57,83	61,79	62,97	64,02	66,45	52,28	23
<b>New Zealand</b>	13	33,7	36,17	42,22	47,93	49,68	52,55	54	59,73	59,87	48,43	24
<b>Canada</b>	163	37,42	38,98	41,74	44,61	46,74	51,42	53,35	54,91	56,46	47,29	25
<b>Republic of Korea</b>	29	32,92	34,97	36,78	41,73	45,06	47,52	50,3	54,63	56,76	44,52	26
<b>Japan</b>	324	33,35	36,21	38,49	41,7	44,93	48,38	50,91	52,07	54,3	44,48	27
<b>Australia</b>	232	33,7	36,72	38,26	40,88	42,02	44,54	47,25	49,61	50,21	42,58	28

When looking at the country-level social dimension scores in Table 4, it is seen that they are higher than the environmental and governance scores over the years and have been continuously increasing between 2014 and 2022. In this case, it can be said that there has been an improvement in the social performance of the countries, and their performance has increased in reporting occupational health and safety, human rights, socially responsible marketing, customer health, diversity and participation, occupational health and safety, career development, education and working conditions, health and safety, human rights, socially responsible marketing, product quality, data privacy, customer health, business ethics and similar social issues. Another comment that can be made according to Table 4 is that when we look at the ranking of the social performances of the countries, Spain, France and Sweden are seen to be in the first places, while the Republic of Korea, Japan and Australia are in the last places. Turkey is ranked 12th in the ESG social performance average. Similar to the study results, Alpdoğan (2023) found that when social criteria were evaluated in his study, the countries with the lowest performance in sustainable development policies were Korea and Japan. The results were analyzed in terms of the corporate governance score, which is one of the main sub-dimensions of the ESG score, and are presented in Table 5.



Table 5: Country level ESG corporate governance score averages

Country Level Corporate Governance Score Averages												
Country	Number of Companies	2014	2015	2016	2017	2018	2019	2020	2021	2022	9 Year Ave.	Ranking According to 9 Year Average
England	209	54,26	58,73	59,14	60,13	62,23	65,41	68,91	70,5	68,86	63,13	1
New Zealand	13	52,63	66,24	66,28	64,98	63,74	60,04	60,25	63,46	63,65	62,36	2
Sweden	40	52,34	55,07	55,67	55,12	60,81	65,67	70,54	70,89	72,89	62,11	3
Spain	25	54,17	57,53	57,51	56,88	61,49	61,47	63,59	65,65	63,87	60,24	4
Norway	18	50,75	52,22	52,71	55,88	64,61	64,42	69,82	66,34	64,08	60,09	5
Germany	71	50,7	50,94	52,47	55,71	61,74	64,3	68,71	67	66,35	59,77	6
France	77	50,49	51,2	52,78	53,34	61,65	62,39	65,1	65,08	64,54	58,51	7
Netherlands	26	51,93	54,62	55,57	55,59	62,59	60,21	59,64	61,6	62,89	58,29	8
Austria	13	53,81	53,97	54,23	52,52	61,94	63,05	62,04	60,34	60,78	58,08	9
Chile	19	47,61	48,83	60,26	64,23	62,2	60,72	58,55	59,33	58,01	57,75	10
Finland	23	48,02	46,64	46,96	50,3	56,13	62,19	68,76	70,58	69,73	57,70	11
Poland	19	53,64	55,45	54,25	56,26	59,26	61,05	60,13	60,41	58,08	57,61	12
Portugal	7	68,82	57,71	60,04	57,49	56,11	49,82	53,88	53,84	53,66	56,82	13
Switzerland	53	47,02	46,87	46,07	46,20	55,60	59,73	67,52	68,36	69,36	56,30	14

<b>Italy</b>	33	50,6	49,35	50,46	52,05	54,9	56,34	65,13	63,27	62,57	56,07	15
<b>United States</b>	809	48,92	52,65	54,8	56,18	56,51	56,62	56,47	57,94	58,74	55,43	16
<b>Canada</b>	163	50,26	51,41	51,56	51,62	52,96	57,95	60,24	60,52	60,71	55,25	17
<b>Ireland</b>	8	43,76	41,63	51,36	53,6	57,86	64,65	64,15	61,66	56,21	54,99	18
<b>Denmark</b>	25	48,28	47,72	47,85	49,55	54,11	57,34	60,67	61,2	60,47	54,13	19
<b>Mexico</b>	22	51,07	50,11	51,37	55,11	53,11	53,47	55,41	55,08	55,97	53,41	20
<b>Turkey</b>	11	48,59	46,78	48,26	50,18	54,13	54,96	58,68	56,94	53,44	52,44	21
<b>Australia</b>	232	47,77	48,79	49,26	50,36	51,63	52,11	52,45	52,75	52,76	50,88	22
<b>Belgium</b>	21	46,32	44,48	43,63	44,66	52,54	57,79	55,7	54,26	57,83	50,80	23
<b>Japan</b>	324	49,83	49,54	49,47	49,32	49,89	50,41	51,47	52,13	53,76	50,65	24
<b>Republic of Korea</b>	29	42,81	44,78	46,04	46,3	51,73	54	52,78	50,05	53,48	49,11	25
<b>Greece</b>	10	46,95	49,5	48,2	49,89	48,85	49,44	47,36	52,29	48,72	49,02	26
<b>Colombia</b>	7	42,09	43,91	48,62	51,68	49,95	51,77	52,97	45,52	40,68	47,47	27
<b>Israel</b>	8	35,22	41,08	40,8	42,52	40,96	41,08	38,91	41,61	40,44	40,29	28

When looking at the country averages in the corporate governance dimension in Table 5 over the years, it is pointing out that the average score is generally low compared to the other basic sub-dimensions, environmental and social score. The governance score consists of the dimensions of management, shareholders, CSR strategy. It also consists of the themes of independence, diversity, committees, compensation, shareholder rights, takeover defenses, CSR strategy, reporting and transparency and provides ideas on issues such as corporate governance, shareholder rights, preparation of sustainability reports, etc. The fact that the governance scores of the companies are lower than the environmental and social dimensions in all years and that their corporate scores are regularly increasing is due to the fact that the companies in OECD countries engage in more governance activities. It is also interpreted as the need to report more on administrative issues and take more responsibility for the protection of shareholder rights, regular reporting and presentation of equal and fair management and sustainability activities, and developments in the categories of corporate governance, shareholders and corporate social responsibility. When we look at the 9-year average: England, New Zealand and Sweden have the highest; Greece, Colombia and Israel are seen to have the lowest values. Turkey ranked 21st among 28 countries in terms of corporate governance and showed lower performance in terms of environmental and social performance. Similar to the results obtained in the study, Senir (2024) found that New Zealand ranked third in the top three OECD countries in terms of sustainable management performance, while Turkey ranked 24th among OECD countries. Also similar to the results obtained in the study, Aytekin and Gündoğdu (2021) aimed to examine the differences in sustainable governance levels of OECD and EU countries, and found that Sweden had the highest performance in terms of the principles of rule of law and executive accountability, while Turkey was among the countries with the lowest performance. The results were analyzed in terms of the ESG discussion score, which is one of the important scores calculated within the scope of the ESG score, and are given in Table 6.

Table 6: Country-Level ESG Discussion Score Averages

Country-Level ESG Discussion Score Averages												
Country	Number of Companies	2014	2015	2016	2017	2018	2019	2020	2021	2022	9 Year Ave.	Ranking According to 9 Year Average
Greece	10	100	94,47	90,88	100	100	84,725	100	97,52	100	96,40	1
Colombia	7	100	98,35	99,02	94,05	95,71	88,99	94,36	100	92,66	95,90	2
Poland	19	100	98,42	100	96,55	97,28	92,64	94,62	91,35	90,95	95,76	3
Chile	19	97,86	92,94	94,24	93,83	98,55	94,04	93,09	100	95,6	95,57	4
Mexico	22	93,18	98,78	95,56	95,53	94,65	96,2	93,69	95,87	94,18	95,29	5
New Zealand	13	95	100	95	91	100	88	92	93	97	94,56	6
Japan	324	93,02	93,34	94,3	93,57	95,05	94,4	93,91	97,2	91,46	94,03	7
Belgium	21	91,75	96,26	92,86	95,5	96,03	93,73	90,09	95,07	93,21	93,83	8
Canada	163	95,87	96,4	93,85	95,41	93,52	94,15	94,98	92,52	86,92	93,74	9
Australia	232	90,74	93,99	95	95,61	96,38	92,97	92,31	92,03	90,61	93,29	10
Switzerland	53	92,48	98,75	98,23	90,36	91,54	95,67	88,82	92,36	91,33	93,28	11
Republic of Korea	29	85,81	98,28	93,15	95,09	91,48	93,25	92,18	95,22	89,85	92,70	12
Turkey	11	93,20	85,46	93,22	95,33	93,62	96,52	93,62	92,50	90,00	92,61	13
Austria	13	90,93	100	84,4	96,47	85,05	85,69	91,74	96,88	90,64	91,31	14
Denmark	25	94,44	98,95	93,79	92,08	90,5	87,12	92,41	90,35	82,08	91,30	15

<b>Finland</b>	23	93,74	94,93	96,17	84,49	94,87	87,03	95,81	87,18	81,67	90,65	16
<b>Sweden</b>	40	96,49	92,72	88,16	86,20	91,22	84,17	91,60	87,82	89,82	89,80	17
<b>Ireland</b>	8	90,89	88,15	97,19	95,07	95,83	88,25	80,83	82,47	77,41	88,45	18
<b>Spain</b>	25	94,84	95,26	90,37	91,74	87,2	83,49	80,73	85,59	78,67	87,54	19
<b>Portugal</b>	7	95,54	90	100	92,54	99,25	77,88	70,89	80,68	80,17	87,44	20
<b>Norway</b>	18	90,64	97,12	82,57	94,62	86,31	76,4	85,72	85,76	83,87	87,00	21
<b>England</b>	209	85,04	91,3	88,06	89,56	86,84	83,93	84,41	88,01	82,16	86,59	22
<b>United States</b>	809	80,92	89,83	87,6	89,66	87,19	88,06	86,1	87,16	74,82	85,70	23
<b>Netherlands</b>	26	82,19	91,82	88,66	85,82	79,78	79,78	85,09	91,15	83,28	85,29	24
<b>France</b>	77	87,97	94,64	89,03	91,36	82,22	83,52	79,99	85,16	72,77	85,18	25
<b>Germany</b>	71	84,75	87,49	75,41	80,71	81,32	80,42	78,18	82,74	77,56	80,95	26
<b>Israel</b>	8	70,27	90,46	88,51	73,89	68,07	82,91	78,5	89,49	82,29	80,49	27
<b>Italy</b>	33	90,67	91,84	76,82	85,92	80,46	72	66,82	80,06	70,51	79,46	28

When the ESG discussion score in Table 6 is examined by country averages over the years, it is underlying that the ESG discussion score is generally high compared to the environmental, social and corporate governance scores, which are other basic sub-dimensions. This result shows that companies in OECD countries are less subjected to disputes, scandals, lawsuits and abuse news in the global media or news, as they are cautious against negative news on issues such as employee health and safety, accounting, employee rights and wages, regulatory disputes, fines and lawsuits, public health, tax fraud, working conditions, customer satisfaction, privacy and security, shareholder rights, human rights, intellectual property, business ethics, strikes, environment and governance, etc. as stated by Bătae et al. (2020). It is interpreted that negative news about these issues is less in the global media and their performance is high because they act responsibly in experiencing and announcing negative developments. According to Table 6, the highest performance in terms of ESG discussion score belongs to Greece, Colombia and Poland, while the lowest performance belongs to Germany, Israel and Italy. Turkey is ranked 13th in terms of ESG discussion score. The results were analyzed in terms of the combined ESG score, which is one of the other important scores calculated within the scope of the ESG score, and are given in Table 7.

Table 7: Combined ESG score averages at country level

Combined ESG Score Averages at Country Level												
Country	Number of Companies	2014	2015	2016	2017	2018	2019	2020	2021	2022	9 Year Ave.	Ranking According to 9 Year Average
Spain	25	64,22	66,47	66,75	68,54	69,95	70,36	71,1	73,56	71,16	69,12	1
France	77	58,52	62,72	63,58	66,84	67,66	69,04	68,22	71,33	66,83	66,08	2
Sweden	40	58,36	60,87	61,64	62,20	65,42	65,20	68,90	69,30	71,30	64,80	3
Finland	23	55,1	58,27	61,08	60,31	66,44	67,4	71,65	69,13	68,57	64,22	4
Portugal	7	69,62	64,29	69,24	65,57	65,01	59,16	62,41	59,48	62,68	64,16	5
Switzerland	53	51,82	53,69	54,36	56,45	62,34	64,89	68,36	70,96	75,32	62,02	6
Netherlands	26	52,39	58,81	58,75	60,12	61,39	62,06	65,79	66,82	64,97	61,23	7
Austria	13	51,38	53,2	54,1	60,17	61,99	62,18	65,6	68,38	66,21	60,36	8
Germany	71	52,15	54,77	53,46	58,01	60,34	60,81	62,79	63,92	62	58,69	9
Norway	18	50,43	54,49	51,36	58,8	59,77	59,2	64,72	65,04	63,41	58,58	10
Turkey	11	43,82	48,73	51,68	54,42	56,03	58,50	67,70	70,38	72,60	58,21	11
Italy	33	53,21	55,34	52,94	57,19	59,58	57,55	60,23	64,41	62,36	58,09	12
Denmark	25	51,05	53,81	54,12	55,54	57,12	57,75	61,38	62,05	59,78	56,96	13
Colombia	7	46,95	51,52	55,99	57,12	58,51	59,09	62,02	58,02	55,37	56,07	14
Chile	19	36,79	41,24	48,96	56,62	61,73	62,32	61,09	65,05	66,36	55,57	15

<b>England</b>	209	47,74	52,65	53,23	54,29	55,32	56,96	58,75	61,1	59,33	55,49	16
<b>Mexico</b>	22	43,99	47,5	48,29	52,26	53,65	55,29	57,59	59,29	59,83	53,08	17
<b>Greece</b>	10	48,79	49,91	48,2	53,34	53,71	52,42	55,54	55,94	56,15	52,67	18
<b>Ireland</b>	8	39,78	42,58	46,19	52,95	53,43	56,99	58,01	58,94	58,22	51,90	19
<b>Belgium</b>	21	40,38	45,15	45,69	48,26	54,2	57,62	58,44	58,47	58,87	51,90	20
<b>Poland</b>	19	36,28	39,48	42,3	51,72	55,85	58,74	59,23	61,09	61,66	51,82	21
<b>United States</b>	809	40,61	45,32	47,61	50,6	51,83	53,94	55,5	57,56	54,75	50,86	22
<b>New Zealand</b>	13	37,92	42,97	45,89	48,1	50,77	49,22	51	56,97	58,05	48,99	23
<b>Japan</b>	324	41,05	42,34	44,1	45,54	48,25	50,41	52,03	54,1	54,82	48,07	24
<b>Canada</b>	163	37,7	39,14	40,43	43,16	44,37	49,95	52,59	53,7	53,84	46,10	25
<b>Republic of Korea</b>	29	34,12	37,07	37,95	40,48	45,89	48,06	50,44	53,2	53,92	44,57	26
<b>Israel</b>	8	33,43	44,27	43,3	42,7	40,88	44,99	41,7	47,55	46,95	42,86	27
<b>Australia</b>	232	32,66	35,29	36,33	38,13	39,59	41,15	42,8	44,86	44,9	39,52	28



When looking at the country averages over the years in terms of the combined ESG score in Table 7, it is shown that it is lower than the ESG score, although not much different. The combined ESG score is determined based on the relationship between the ESG score and the ESG discussion score, as stated by Şeker (2020). The countries with the highest performance in terms of ESG score were Spain, France and Sweden, while the countries with the lowest performance were Canada, the Republic of Korea and Australia. Similar to ESG performance, Spain, France and Sweden are the countries with the highest performance in terms of combined ESG score, while the countries with the lowest performance are the Republic of Korea, Israel and Australia. Turkey ranks 14th in terms of overall ESG performance and 11th in terms of combined ESG score.

## CONCLUSION

Today, companies, investors, public authorities, in other words, the people who demand information, not only demand financial information, but also non-financial and non-mandatory sustainability data. Therefore, this process that started with the concept of sustainability has now come to the concept of ESG. Based on this, in this study, the 28 OECD member countries with a minimum of 7 companies whose data can be accessed completely are Turkey, the United States, Germany, Australia, Austria, Belgium, Denmark, Finland, France, Republic of Korea, Netherlands, England, Ireland, Spain, Israel, Sweden, Switzerland, Italy, Japan, Canada, Colombia, Mexico, Norway, Poland, Portugal, Chile, New Zealand and Greece. The ESG performance of 2315 companies from these countries between 2014-2022 was investigated. For this purpose, the ESG performance of the companies was examined and compared within the scope of 6 different dimensions, namely ESG score, ESG environmental score, ESG social score, ESG corporate governance score, ESG discussion score and combined ESG score, respectively. The study contributes to the literature in many ways, as it focuses on OECD countries and the fact that ESG studies are mostly conducted on a single country basis in the literature, and the fact that the study is limited to national OECD countries, provides new evidence on the extremely limited ESG performance, the studies in the literature generally include old data, and in this study, a sample of 2315 companies from 28 countries, together with the latest and up-to-date ESG scores obtained from Refinitiv, is created, allowing comparisons to be made with current data and a large sample group. Although OECD country markets have a large place in the world, the number of studies referring to the ESG performance of countries is not sufficient, not only nationally but also internationally. For this reason, the aim of the research is to fill the gap

in the literature by comparing the performance of OECD countries in all dimensions of ESG. According to the results of the study, there are differences between countries in terms of ESG score, environmental, social, governance, ESG discussion score and combined ESG score. When the annual change is examined, it is determined that ESG performances have generally increased from 2014 to 2022. This is an indication that there have been improvements in environmental, social and corporate governance, ESG discussion and combined scores of companies in countries with an increasing trend over the years, that companies are acting more responsibly and that their performance has increased within the scope of all dimensions of ESG. When the results are examined collectively; According to the ESG score; it was determined that the highest average scores were in Spain, France and Sweden, while the lowest scores were in Canada, the Republic of Korea and Australia. Turkey is ranked 14th among 28 countries in terms of overall ESG score. When looking at environmental score averages, the highest countries are France, Spain and Finland, while the lowest countries are the USA, New Zealand and Australia, with Turkey ranked 12th. When examining the social performance rankings of the countries, it was determined that Spain, France and Sweden were in the first places, while the Republic of Korea, Japan and Australia were in the last places. Turkey is ranked 12th in ESG social performance average. When the results are examined in terms of corporate governance performance; England, New Zealand and Sweden have the highest values; Greece, Colombia and Israel have the lowest values. Turkey, on the other hand, is ranked 21st among 28 countries in terms of corporate governance, exhibiting lower performance in terms of environmental and social performance. When the results are examined in terms of ESG discussion score; it is determined that the highest performance belongs to Greece, Colombia and Poland, while the lowest performance belongs to Germany, Israel and Italy. Turkey is ranked 13th in terms of ESG discussion score. When the results are examined in terms of combined ESG score; it is revealed that Spain, France and Sweden are the highest performing countries; while the Republic of Korea, Israel and Australia are the lowest performing countries. Turkey is ranked 11th in terms of combined ESG score. When the results are examined collectively for Turkey; It is noteworthy that it ranks 14th in terms of ESG score, 12th in terms of environmental score, 12th in terms of social score, 21st in terms of corporate governance score, 13th in terms of ESG discussion score and 11th in terms of combined ESG score. These results can be interpreted as the fact that the scores other than the corporate governance score are at medium levels, and the performance in corporate governance performance is low, and that they need to act more responsibly in terms of corporate social responsibility projects, shareholder rights and sustainability reporting. It is noteworthy that sustainability reports in Turkey are based on a voluntary basis and that ESG disclosures have accelerated since 2015, and that there

are no sufficient legal regulations and audits at this level. It is emphasized that more importance should be given to sustainability performance. In addition, the fact that Turkey's general, environmental, social, discussion and combined ESG score performance are at medium levels, and its corporate governance performance is behind, as Senir (2024) stated, in order for Turkey's sustainable performance to reach the desired higher levels, it is possible to encourage the use of renewable energy, energy efficiency, carbon reduction, waste management, and the use of environmentally friendly fuels, the widespread use of electric vehicles, the development of infrastructure and the formation of a sustainable understanding in all institutions, corporate and individual investors. Another important result that draws attention is that Spain and France are the top two countries in terms of ESG, environmental score, social and combined ESG score. Sweden is the 3rd best country in terms of ESG, social performance, corporate governance and combined ESG score. When looking at countries with high ESG performance, it is noteworthy that they have a better economic, social and governance structure and high renewable energy investments. As Alpdoğan (2023) stated, when considering countries with high ESG performance; it is noteworthy that high quality of life, climate change, environmental awareness, education level, sustainable environmental policies, protection of environmental resources, waste management, carbon reduction, clean energy, sustainable agriculture and food, and sustainability of the ecosystem are priority issues in line with the development goal. Australia, on the other hand, is ranked last in terms of ESG, environmental, social and combined ESG scores. Similarly, the Republic of Korea; In terms of ESG, social and combined ESG scores, Israel is among the countries with the lowest performance in terms of corporate governance, ESG discussion and combined ESG scores. Similar to the findings obtained within the scope of the study, Spain and Sweden were determined to be the countries with the highest sustainable performance, as stated in Kahreman's (2024) study. As Kaya and Altuntaş (2023) stated in their study, the reason why France has a high sustainable performance is that it has high renewable freshwater resources, and as Öktem (2009) stated in his study, the reason why Finland's environmental ESG performance is at the top is that Finland has developed an environmental program called clean-technology. In addition, similar to the findings obtained in the study, Alpdoğan (2023) examined the performance ranking of OECD countries according to general criteria and found that Australia and Canada were the countries with the lowest performance. This study provided an important perspective in terms of determining and comparing the ESG performance of companies in OECD countries in all dimensions. It is thought that it will flash on the development policies implemented by countries with high sustainable performance and that these policies will be an example for developing countries. In order to increase ESG awareness and help companies increase their ESG performance, governments can organize

training programs on ESG issues in order to raise awareness in the business world, society, individual and institutional investors. They may take regulatory measures or offer incentives that will support efforts to achieve sustainable development goals while also contributing to economic growth. In the future, it is recommended that studies be conducted to further improve the analysis results with more data and different methods that can be compared with all countries in the world. It is thought that all these studies will contribute to companies achieving their ESG performance targets.

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# **The Current State of FDI Between the EU and Ukraine in the Context of War**

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## ABSTRACT

The relationship between Foreign Direct Investments (FDI) and conflict is a critical area of study, particularly in the context of Ukraine's ongoing war with Russia and its integration efforts with the European Union (EU). This article examines the current state of FDI flows between the EU and Ukraine, focusing on the challenges imposed by the conflict and the opportunities for economic recovery through strengthened cooperation with European markets. Despite the disruptions caused by the war, the study highlights the role of EU-Ukraine agreements, particularly the Deep and Comprehensive Free Trade Agreement (DCFTA), in fostering economic ties and mitigating some of the adverse effects of geopolitical instability. The research employs general scientific methods, including analysis, synthesis, and SWOT analysis, to evaluate Ukraine's investment environment and explore pathways for post-war reconstruction. Key findings suggest that long-term partnerships, policy reforms, and political stability are indispensable for regaining investor confidence and enabling Ukraine to capitalize on its economic potential. Additionally, the analysis underscores the strategic importance of aligning Ukraine's regulatory framework with EU standards to enhance its attractiveness to foreign investors. This paper provides critical insights into how FDI can serve as a catalyst for Ukraine's economic resilience and growth, emphasizing the need for collaborative efforts between Ukraine and the EU to navigate the complexities of post-war recovery and integration into the European economic framework.

*Keywords – Ukraine, EU, International Trade, FDI, SWOT, Conflict.*

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## INTRODUCTION

According to [1], Foreign Direct Investment involves the participation of an investor, company, or government from one country in a foreign enterprise or project. This includes investing capital in a foreign business, ensuring stable and long-term ties, granting the investor control over the investment, and receiving returns. Hayes' definition is particularly relevant to Ukraine's context, as it provides an understanding of FDI on two levels: macroeconomic and microeconomic. On a macroeconomic level, FDI represents a specific form of capital flow across countries or even continents, from investing nations to recipient nations, serving as a key component of international economic integration. On a microeconomic level, these processes may have varying motivations and interests but are focused on long-term networks and partnerships to achieve economic, innovative, social, and environmental progress while fostering stable ties between the economies of different countries.

The importance of FDI as a catalyst for economic growth and development, particularly in developing countries, has long been recognized. It involves foreign companies investing in the host nation's economy, resulting in job creation, technology transfer, and economic expansion across sectors (Hayes, 2023). Conflict, defined as disagreements between two or more parties based on differing beliefs, can range from minor disputes to international wars [2]. Decisions to initiate, respond to, or avoid conflict are often the most significant choices a nation's leader can make. Since the early 20th century, wars are estimated to have caused the deaths of at least 187 million people, averaging 1.52 million annually, equivalent to the population of Murcia [3].

The relationship between conflict and FDI has been a subject of extensive scholarly debate. Opinions vary regarding how conflict influences a country's FDI inflows and outflows. Many academics agree that increased risks and uncertainties associated with conflict negatively impact expected returns, reducing willingness to invest both domestically and internationally [4], [5], [6], [7], [8], [9], [10]. Conversely, some argue that conflict can create investment opportunities in certain sectors or regions [11], [12], [13]. Scholars [5], [14] demonstrate that statistical findings remain inconclusive, emphasizing the complexity of conflict and FDI interactions.

For Ukraine, building long-term partnerships is essential as the integration process requires time. Achieving sustainable development in the Ukrainian economy can only result from stable international cooperation focused on innovation and a true market economy.

## **MATERIALS AND METHOD**

The aim of this article is to examine the current state of Foreign Direct Investments between the EU and Ukraine, considering the ongoing war between Russia and Ukraine.

To achieve the primary objective of this scientific article, general scientific methods such as generalization, description, synthesis, analysis, and typology were employed. Our comprehensive research is based on the transparency and reliability of data sourced from credible organizations, including the International Trade Centre (ITC), national statistical offices, trade databases, and international organizations.

A SWOT analysis was also employed to achieve the objective, assessing FDI in Ukraine and evaluating the investment environment for foreign investors. SWOT analysis is a tool that helps identify strengths, weaknesses, opportunities, and threats within a specific context. This analysis provides a framework for better understanding the situation and making informed decisions [15]. A typical SWOT analysis involves creating a matrix with

four categories: positive aspects (Strengths), negative aspects (Weaknesses), external opportunities, external threats.

## **RESULTS AND DISCUSSION**

Every investment activity responds to developments in the host country, and this is particularly true for Ukraine, where historical dynamics have played a significant role. Figure 1 closely mirrors major events over time, especially in relation to the inflow of Foreign Direct Investment. In 2014, political instability significantly reduced FDI inflows to Ukraine, a trend that continued into 2015. However, the period from 2016 to 2019 marked a turning point, as the implementation of the Deep and Comprehensive Free Trade Agreement with the EU began to take effect, resulting in a renewed increase in FDI inflows, as reflected in the graph.

This upward trend was interrupted in 2020 by the COVID-19 pandemic, which impacted global economies. Nevertheless, 2021 emerged as the strongest year for FDI inflows to Ukraine, with net inflows reaching \$7.95 billion, according to the World Bank. The situation changed drastically in 2022 with the onset of the conflict in Ukraine, which led to a dramatic 32-fold decrease in FDI inflows compared to 2021.

An intriguing observation relates to the outflow of FDI from Ukraine, which remained relatively stable throughout the observed period from 2013 to 2022. This consistency highlights the resilience of Ukrainian investments abroad despite domestic challenges and geopolitical turmoil.

The analysis of Foreign Direct Investment in Ukraine can be approached from two perspectives: the ongoing war and conflict with Russia, and the role of the shadow economy. To fully understand the situation regarding FDI in Ukraine and answer the question of why FDI flows to the country are decreasing rather than increasing, it is crucial to distinguish between the dynamics of FDI before and after the war.

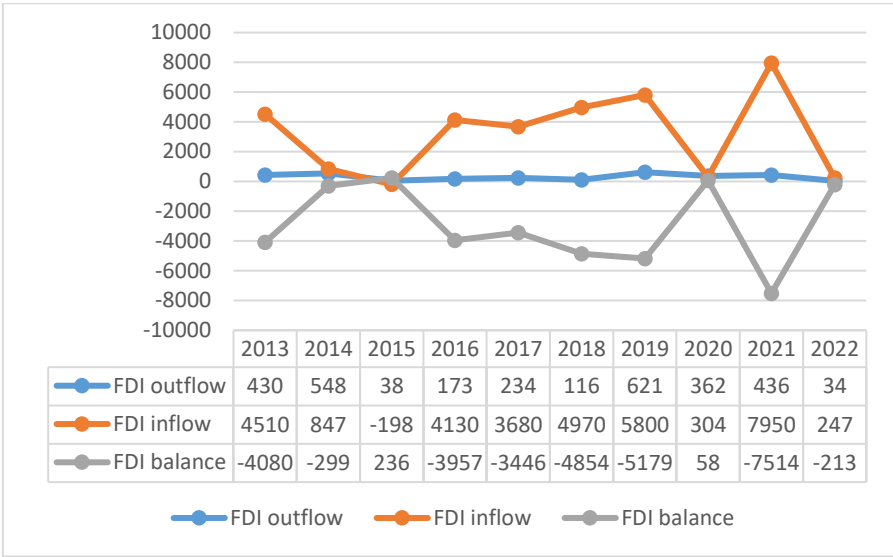


Fig. 1 Development of net inflows and outflows of FDI of Ukraine with the world in 2013-2022 (mill. USD)

Reference [16] highlights that prior to the war, most FDI flows entered Ukraine through special purpose entities (offshore companies). A notable aspect of pre-war FDI flows was their origin, predominantly from Ukrainian or Russian sources, a phenomenon referred to as "round-tripping" investments. This process involves Ukrainian residents transferring their capital to offshore entities to avoid taxes and gain security, only to reinvest it back into Ukraine as foreign direct investment. Such offshore structures are frequently used for illicit purposes, including money laundering and tax evasion.

Investors commonly utilize offshore entities in countries such as Cyprus and the Netherlands to reduce taxes, secure special status, and reinvest capital in Ukraine. Cyprus and the Netherlands are key offshore jurisdictions in Europe for facilitating these FDI flows. Cyprus, a member of the European Union (EU), attracts offshore investment due to its low corporate tax rates, straightforward bureaucratic procedures, and double taxation agreements with over 40 countries, including Ukraine, with which it signed a protocol in 2012. According to the Central Bank of Cyprus, FDI outflows from Cyprus in 2021 amounted to €232.6 billion for Europe and €72.5 billion for the United States. Similarly, the Netherlands, also an EU member, offers an advantageous legal framework for international tax opportunities and supports the use of Dutch companies in structuring such transactions. Key benefits of the Netherlands include robust legal infrastructure and investment protection.

To ensure the long-term success of Ukraine's investment policy, it is essential to conduct a clear SWOT analysis to develop a well-crafted

investment strategy. SWOT analysis is a specialized tool used to identify opportunities, threats, strengths, and weaknesses, enabling the creation of actionable plans to achieve strategic goals. Economic growth and becoming a reliable partner are Ukraine’s two primary strategic objectives.

As demonstrated in the following SWOT analysis (tables 1 and 2), the research highlights both the advantages and the challenges posed by the underdeveloped management of FDI in Ukraine. This analysis is vital for strategic planning in the implementation of investment programs in Ukraine, especially during and after the war.

Table 1. SWOT Analysis of FDI in Ukraine

Strengths:	Weaknesses:
Foreign capital supplements domestic resources, driving growth and recovery.	War has weakened liquidity, economy, and currency.
FDI brings modern technology, management expertise, and new knowledge.	FDI policies lack robust regulation.
Competition among local producers improves productivity.	No stable FDI policy aligned with international standards.
FDI can generate significant post-war employment opportunities.	Poor understanding of FDI processes in Ukraine.
Enhances export and logistics capabilities.	Regulations and financial obstacles hinder local investment.
Improves skills and workforce through investments in education and training.	
Opportunities:	Threats:
Revise investment policies to attract international capital.	Domestic companies may struggle to meet international standards.
Offer tax breaks, preferential rates, and investment benefits.	FDI could shift focus from domestic to foreign-controlled enterprises.
Develop war risk and investment insurance systems.	Ukraine lacks a unified and reliable FDI data source, complicating strategy planning.
Prioritize key sectors like tech, agriculture, and infrastructure.	
Modernize transport and storage facilities with global certifications.	
Stabilize the exchange rate to boost investor confidence.	
Use FDI for sustainable and eco-friendly development.	

Table 2. SWOT Analysis of FDI in Ukraine for Foreign Investors

<b>Strengths:</b>	<b>Weaknesses:</b>
Ukraine's location bridges East and West.	Ongoing conflict creates uncertainty.
Rich reserves of key resources.	Lack of consistent governance.
Extensive global aid, especially during the war.	Underdeveloped free-market structures.
Low-cost technologies and workforce.	Volatile currency and weak economic fundamentals.
A national strategy focused on increasing foreign investment.	Challenging environment for enterprises.
Investments are protected from expropriation.	Complex legal framework and poor enforcement of contracts.
Skilled labor at low costs.	Significant external liabilities.
Significant consumer base.	
<b>Opportunities:</b>	<b>Threats:</b>
Tax breaks, preferential tariffs, and other specific benefits.	Persistent governance challenges.
Opportunities to access untapped sectors.	Complicated administrative processes.
Agriculture, energy, and natural resources have high growth prospects.	Loss of workforce and businesses due to conflict.
Development of Ukraine as a logistics hub.	Absence of mechanisms to mitigate investment risks in war zones.
Reforms to enhance the investment climate and FDI strategy.	
Establishment of war and investment risk insurance.	

Reference [17] shows that identify agriculture, information technology, metals, and agriculture-related sectors as key areas of economic potential for the EU in Ukraine. Ukraine has already established itself as a globally competitive supplier of certain agricultural products, with yields for some commodities matching or surpassing those in EU member states. Ukraine's excellent soil quality is a significant advantage in agriculture. The challenge for the EU will not be managing the burden of these sectors but rather addressing their potentially high competitiveness.

The DCFTA between the EU and Ukraine is one of the most advanced trade agreements the EU has with any country. It has already facilitated Ukraine's integration into several areas, such as labor and energy markets, positioning the country well on its path toward the single market as it begins the EU accession process.

Economically, Ukraine is comparable to Hungary or Romania in terms of its share of the EU economy at the time of their accession. In terms of wealth, Ukraine aligns with Latvia, Lithuania, and Romania at the time they applied for EU membership. If Ukraine were to join the EU today, it would increase the bloc's GDP by approximately 1% and its population by about 9%, a contribution similar to Poland's accession in 2004

Ukraine's economic activity is relatively more focused on agriculture and mining and less on industry compared to most of its EU and Central and Eastern European peers. However, this was also the case for many Central and Eastern European countries at the time of their accession. Ukraine's economic structure and FDI potential are similar to those of Hungary and Romania during their EU accession.

EU membership would require Ukraine to undergo governance and institutional reforms to achieve deeper economic integration with the EU. Such reforms could result in an average trade increase of 40% (in constant prices) between 2030 and 2040, with a high-growth scenario projecting a 140% increase. Achieving this potential depends on securing a stable peace agreement, successful recovery efforts, and fundamental governance and institutional reforms in Ukraine.

According to [18], EU exporters looking to leverage Ukraine's potential should focus on sectors such as machinery, electrical energy, motor vehicles and parts, and pharmaceutical components. Machinery and electricity exhibit the largest absolute gap between potential and actual exports, representing an opportunity for additional exports valued at \$2.1 billion.

## CONCLUSION

The current state of foreign direct investment between the EU and Ukraine is significantly affected by the ongoing military conflict with Russia. The war's impact is most evident in the dramatic decrease in FDI inflows, which in 2022 dropped 32-fold compared to 2021. Conversely, FDI outflows from Ukraine remained relatively stable during the observed period from 2013 to 2022, indicating the ability of some investors to maintain their activities despite unfavourable conditions. Stabilizing economic conditions and implementing legislative reforms—particularly in investment protection, legal frameworks, and anti-corruption efforts—will be crucial for the future development of Ukraine's investment environment.

The SWOT analysis revealed that Ukraine has strengths such as a strategic location, abundant natural resources, and support from the EU, which can attract new investors in the post-war period. On the other hand, weaknesses like political instability, a weak legal framework, and high levels of corruption remain significant obstacles. Opportunities for Ukraine include improving investment policies, introducing economic incentives, and

developing a war risk insurance sector. However, threats are posed by the ongoing conflict, migration of companies and people, and the lack of clear political and economic reforms.

The DCFTA between the EU and Ukraine has proven to be an important tool for integrating Ukraine with the EU's single market, even amid conflict. The challenge for Ukraine will be to continue implementing necessary reforms to gain further access to the EU market and attract more foreign direct investment. Stable cooperation with the EU, modernization of infrastructure, and support for technological innovation will be key for Ukraine's sustainable development. In the long term, foreign direct investment will play a crucial role in Ukraine's post-war reconstruction and its economic integration into the EU.

## ACKNOWLEDGMEHENT

Project of the Ministry of Education, Research, Development and Youth of the Slovak Republic KEGA Nr. 025EU-4/2024: Textbooks on the EU Trade Policy for the Principally Innovated Study Programme International Trade Management.

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# **The Albanian Penal Policy Towards Corruption in Justice**

**Erisa Datja  
Fioralba Markja**

## ABSTRACT

Corruption is increasingly defined as an issue that affects the whole of society. This is because it affects sectors that are vulnerable and have an impact not only within Albania but also outside of it. The justice system remains one of the most sensitive areas that are directly affected by corruption.

The need to develop and implement some appropriate policies that fight corruption in the justice system has become increasingly imperative. It starts with justice seekers, for whom an impartial judicial system is a fundamental right, and with judges and prosecutors and other categories in the system, who are increasingly exposed to public criticism. One way is to fight corruption by investigating, arresting and punishing those involved in it. This requires increasing the investigative powers of the police and the prosecution, strengthening inspection and control mechanisms.

*Keywords: Criminal Policy, Justice System, Corruption.*

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## INTRODUCTION

Corruption is a widely used concept during the last few years in Albania and elsewhere, with an effective fight against the phenomenon considered as a prerequisite for the very existence of the rule of law as well as an indicator of good governance. Integrity in the public system, corruption and the fight against corruption are all phrases that represent a whole range of behaviors that have created their space in the common vocabulary of politicians, NGOs, the media or the general public, whose sensitivity to the phenomenon has increased significantly.

This is mainly due to the monitoring of the European Union, considering the integration of Albania in the key areas of the justice system in a broad sense. The predominance of the subject in the monitoring carried out by the European Commission is very clearly emphasized by the fact that two of the four standards were related to the fight against corruption, both at the central and local levels.<sup>1</sup>

More complicated ways of dealing with corruption are those aimed at preventing it. They are related to the construction and strengthening of institutions, systems and procedures that, on the one hand, reduce as much as possible the factors and incentives that push people, who work in them, to

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<sup>1</sup> United Nations Guide to Practical Anti-Corruption Measures for Prosecutors and Investigators, UN, Vienna, 2004, p. 23;

engage in corruption and, on the other hand, to increase as much as possible the incentives that push people to leave it. In other words, the prevention of corruption is related to good governance.

One way is to fight corruption by investigating, arresting and punishing those involved in it. This requires increasing the investigative powers of the police and the prosecution, strengthening inspection and control mechanisms.

An important factor of preventive strategies is the increasingly stable opposition to corruption by citizens as users of public services. This requires citizens to be provided with the opportunity to know, not only their rights and responsibilities, but also the consequences that corruption brings to society and to them as individuals<sup>2</sup>. Such a thing could be more effective, if it were part of a wider policy, which, in addition to the aim of creating a good citizenship, would have as an objective, especially in the field of education, that students to have the conviction that the opposition to corruption goes beyond their personal interest and is based on the common view of the features of this type of citizenship.

International standards for preventing and fighting corruption in justice. In today's world, threats across national borders to the rule of law continue to become more complex. Crime knows no borders and recent corruption and money laundering scandals in Europe show that even developed legal and law enforcement regimes do not always stop crime. There is a growing awareness that governments need to react quickly and take concerted action on a scale not seen in the past.

Corruption and money laundering, often left unchecked, have created instability in entire countries and regions. Southeastern Europe is particularly vulnerable to these threats due to its geographic location as a transit point for many international smuggling<sup>3</sup> routes.

## **UNITED NATIONS CONVENTION AGAINST CORRUPTION**

This convention was created with the aim of promoting and strengthening measures for the prevention and fight against corruption so that these measures are efficient and effective, encouraging, facilitating and supporting international cooperation and technical assistance in the prevention of the fight against corruption. The other purpose of this Convention is the promotion of

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<sup>2</sup> <http://www.thefreedictionary.com/favouritism> [access: 20.01.2016]

<sup>3</sup> United Nations Guide on Practical Anti-Corruption Measures for Prosecutors and Investigators, UN, 2004, p. 55.

integrity, responsibility and regular administration of public affairs and public<sup>4</sup> property.

Thus this convention started as an initiative of the states party to this convention based on some basic standards as well as starting from the seriousness of the problems and risks that come from corruption for the stability and security of societies, damaging institutions and the value of democracy, ethical values and justice and endangering essential development and the rule of law.

This convention was born as a need to see the connection that is created between corruption and other forms of crime, especially organized crime and economic crime, including money laundering.

Of great concern are cases of corruption involving large amounts of wealth, which can constitute an essential part of resources for states, and which threaten the political stability and healthy development of these states. Thus the States Parties were convinced that corruption does not continue to be an issue of one country, but a transnational phenomenon that affects all societies and economies, making international cooperation for its prevention and control essential.

Also, member states were convinced that a comprehensive and multifaceted approach is required to effectively prevent and fight corruption, also convinced that receiving technical assistance can play an important role in increasing the capacity of states, including strengthening capacity and building institutions, to prevent and fight corruption effectively.

Seen in this context, the illegal profiteering of personal wealth can be particularly harmful to democratic institutions, national economies and the rule of law, determined to prevent, detect and more effectively circumvent international transfers of ill-gotten wealth. illegal and to strengthen international cooperation for asset recovery.

Recognizing the basic principles of the fair application of the law in criminal trials and in civil and administrative trials for the recognition of property rights and bearing in mind that the prevention and eradication of corruption is a responsibility of all states and that they must cooperate with each other, with the support and involvement of individuals and groups outside the public sector, such as civil society, non-governmental organizations and community-based organizations, if their efforts in this area are more effective than anything else.

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<sup>4</sup> United Nations Convention against Corruption, 2006, p. 15.

The principles of orderly administration of public affairs and public wealth, justice, accountability and equality before the law, and the need to guarantee integrity and promote a culture to reject corruption as well as evaluating the work of the Commission for the prevention of crime and criminal justice and the United Nations Office on Drugs and Crime in preventing and fighting corruption.

More complicated ways of dealing with corruption are those aimed at preventing it. As in any other field, we can say that corruption is seen as one of the most threatening factors for society. Like many other countries, a part that can be affected the most is the justice system, from which all other areas are followed and influenced, since corruption in itself is a violation of any transparency with the law. Seen from this point of view, Albania, adhering to European standards, has ratified several conventions which already have the force of law. Some of them are:

**LAW NO. 8778, DATED 26.4.2001 ON THE RATIFICATION OF THE  
"CRIMINAL CONVENTION ON CORRUPTION"**

The "Criminal Convention on Corruption" has been ratified, made in Strasbourg on 27.1.1999<sup>5</sup>, which aims to take preventive measures against corruption that directly harms the rule of law, democracy and human rights, as well as lowers the level of good governance. , transparency and social justice by hindering competition, economic development and risking the sustainability of democratic institutions and the moral foundations of society.

This Convention provides for measures to be taken at the national level regarding corruption and its impact on society. The Convention provides that each Party shall adopt such legislative and other measures as are necessary to establish as a criminal offense under its national legislation, when committed for the purpose of promising, offering or giving, directly or indirectly, any advantage, which it does not belong to any public official of that party, for himself or for someone else, towards him/her<sup>6</sup>, to act or not to act in the exercise of his/her functions.

Such a definition is seen as the most necessary, not leaving behind the other definitions, but in itself and in practical cases, corruption is practiced by the majority of public officials and all of their subordinates. This is seen and proven by the cases presented to the court for violation of the basic rules in the workplace.

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<sup>5</sup> Criminal Law Convention on Corruption, Strasbourg, January 27, 1999, p.35.

<sup>6</sup> Criminal Law Convention on Corruption, Strasbourg, January 27, 1999, p.37

Also, another provision made in this convention is International Cooperation, which includes the parties in a cooperative relationship where they offer each other the widest measures of mutual assistance, through the rapid processing of requests by the authorities that, in accordance with the laws their national, have the right to investigate or prosecute criminal offenses established in accordance with this convention.

### **LAW NO. 8635, DATED 6.7.2000, ON THE RATIFICATION OF THE CIVIL CONVENTION "ON CORRUPTION"**

This Convention stipulates that each participating party must provide in national law effective regulations for persons who are harmed as a result of corrupt practices, give them opportunities to protect their rights and interests, including the opportunity to be compensated for the damage<sup>7</sup>.

This convention makes all the provisions regarding the self-determination of corruption, the compensation of the damages that come as a result of it, the reliability, the responsibility of the state, the protection of employees as well as the international cooperation.

### **PENAL CODE OF THE REPUBLIC OF ALBANIA**

Provides that the object of criminal offenses in the economic and financial field are the legal relationships established by law in this field and specially protected by the criminal law<sup>8</sup>. The objective side of criminal offenses in the field of economic and financial crimes is that this activity is generally carried out with illegal active actions such as corruption. The subject of criminal offenses in the economic and financial field can be any person who has reached the age of criminal responsibility and is responsible before the law. From the international recommendations and standards today, it is required to introduce responsibility for physical and legal persons (business partners), which can and will be subject to criminal offenses and punish the responsible persons, managers of legal entities, with fines or imprisonment. The characteristic subjective side is that for all criminal offenses in the economic and financial field, they are committed with direct and indirect intent. Violation of the activity of the economic and financial field does not only affect the interest of the state but also of the individual, □ as a result the legislation does not only protect the state but also the freedoms and rights of man. Criminal offenses against state activity committed by citizens are provided for in articles 244-246.

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<sup>7</sup> LAW No. 8635, "ON THE RATIFICATION OF THE CIVIL CONVENTION ON CORRUPTION" dated July 6, 2000, page 10

<sup>8</sup> Criminal Code of the Republic of Albania, 2014, page 56



Article 244 provides - Active corruption of persons exercising public functions and Article 244/a - Active corruption of foreign public servants (added by law no. 23/2012).

Article 245 provides - Active corruption of high state officials or local elected officials (Amended by law no. 9275, dated 16.9.2004, article 19). Article 245/1 provides - Exercising illegal influence on persons exercising public functions (added by law no. 9275, dated 16.9.2004, article 20) Amended by law no. 23/2012).

## **ANTI-CORRUPTION CODE OF CONDUCT FOR THE BUSINESS COMMUNITY**

Every day, businesses face new and previously unknown challenges and due to their inability to adapt, they cannot face these challenges<sup>9</sup>. As part of the global business community that is constantly and rapidly developing, businesses need to adapt to stay among the best and to be competitive in international and domestic markets. Enforcing fair competition practices and embracing high ethical standards are increasingly becoming key principles for any business. Commitment to the implementation of the Anti-Corruption Code of Conduct helps businesses to be in line with international best practices and is a good indicator of the values and culture that businesses want to embrace and implement.

The Anti-Corruption Code of Conduct and its guidelines derive extensively from international best practices and from other documents that have been used as reference, which have been adapted to the Albanian needs and context. Detailed interviews were conducted with actors from both the business community and the public sector in order to adapt international principles to the Albanian context. This document was also discussed with representatives from Albanian businesses, representatives of Albanian business associations and foreign ones operating in Albania and with representatives of the public administration.

The purpose of this document is to offer the Albanian business community a reference and guidance tool to deal with anti-corruption practices in accordance with the best international principles. The reader can obtain further information by reading the following documents which have been used.

### ***Innovation of the legal framework on corruption***

The reform of the legal framework of the justice system started in 2016. The first stage of this reform concerned the change of legal and constitutional

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<sup>9</sup> Anti-corruption code of conduct for the business community in Albania, 2017, p.45

provisions, which are directly related to the reform of the existing justice institutions and the creation of new justice bodies, such as vetting governing bodies, anti-corruption and organized crime institutions, vetting bodies. One of the main goals of this reform is to immunize the institutions of the justice system against the phenomenon of corruption, as well as to increase and strengthen the responsibility, professionalism and impartiality of the functionaries of these institutions, separating from them the political connections or influences, those of the crime of organized or any other type of illegal influence.

To achieve this, the legislator has provided two mechanisms, one medium and one long-term. The first medium-term reform mechanism is vetting, or transitory reassessment, which aims to clean up the judicial system, removing from it corrupt prosecutors and judges, those related to organized crime or who are professionally <sup>10</sup>incompetent. Judges of the Constitutional Court and the Supreme Court, judges of all levels, prosecutors of all levels, including the General Prosecutor, as well as other entities provided for in the constitution, will be subject to vetting.

The second reform mechanism that aims to guarantee the fight against corruption in the longer term is the establishment and operation of specialized institutions against corruption and organized crime, such as the National Bureau of Investigation, the Special Prosecutor's Office and the Court Against Corruption and Organized Crime. These institutions are responsible for the investigation and trial in a specialized manner of criminal offenses of corruption and organized crime, as well as criminal charges against officials and high officials, etc.

The fight against corruption cannot be successful without improving the practices and procedures of investigation, prosecution and trial of corruption cases, as well as measures to prevent it. Often times, in proceedings related to corruption, evidence is quite difficult to obtain. This is also the reason why, within the framework of the justice reform, it was deemed necessary to set up specialized institutions for the investigation and trial of criminal offenses in the field of corruption.

### ***Institutions***

According to our legislation, the prosecutor carries out the criminal prosecution and represents the charge in court on behalf of the state. He directs and controls the preliminary investigations and the activity of the judicial police, as well as performs any investigative action he deems necessary. Investigative acts are secret, until the defendant has learned about them. In

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<sup>10</sup> <https://mb.gov.al/2013/11/03/rezultatet-ne-betejen-anti-korrupsion/>

case of need for the continuation of the investigations, the prosecutor can order the preservation of secrecy for special acts until the end of the investigations.

The investigations carried out by the prosecutor's office, including cases of corruption or abuse of office, have been closed, therefore the public has not been able to receive the appropriate information about what has been reached at their conclusion. Specifically, the information is limited to those cases, for which the prosecutor's office has decided not to initiate investigations or dismiss the criminal case. As a result, the media, but also the public, were able to obtain information mainly about cases, for which the prosecutor has filed criminal charges against the defendant/s in court, given that court hearings are public, but also due to the fact that a part of courts publish court decisions on their official websites.

In conditions where the perception of corruption in our country is high among the citizens themselves, investigative media has played an important role in denunciation and public reporting of cases or corrupt practices. Often, many of the criminal cases investigated and tried with the criminal charge of corruption were initiated thanks to the public reporting of the investigative media.

Likewise, independent constitutional institutions or those established by law, which have audit or control powers, have played an important role in setting the prosecution body in motion. Here we single out the High State Control and the High Inspectorate of Declaration, Control of Assets and Conflict of Interest, whose annual reports are examined and discussed in the assembly, as well as published on their official websites.

A very important source of information to provide data or facts that evidence various forms of corruption, abuse of official position or fraud to the detriment of property or public goods are whistleblowers, who are otherwise known as whistleblowers. A more detailed information about the history, signaling models in the world, as well as the Albanian signaling model. Whistleblowers or whistleblowers are people who report corruption, tax fraud or other violations of legislation to the responsible institutions, often putting their work or safety at risk. Many states have found it difficult to identify fraudulent or corrupt practices and, among other things, have relied on citizens (natural persons) to report or denounce corruption, theft and wrongdoing in the public and private sectors.

## **CONCLUSIONS**

If large numbers of people in emerging democracies become disillusioned with the democratic experiment and begin to feel nostalgic for times of greater security, then the chances are that the old, failed remedies will be tried once again, impoverishing more beyond their lives. By adapting a holistic concept and raising the awareness of all key actors in the anti-corruption reform process, a country or community can increase its capacity to limit corruption at levels.

But none of this can be resolved without a conscious and determined political leadership, without high levels of public awareness and support, without a motivated and well-led private sector, and without the effective intervention of justice bodies in the war. against corruption. Corruption today appears openly in public administration sectors. The facts that speak of corruption in public administration are very current and measurable. Until recently, systematic measurements of corruption by state institutions were considered difficult. But today there are international structures for statistical measurement of corruption, such as: the World Bank, the World Organizations for crime studies, the World Economic Forum, Transparency International (TI), etc., which conduct annual periodic surveys to measure corruption at the national and international level.

It is advisable that state administration institutions systematically and periodically evaluate the progress of the services they offer to the public and see the effectiveness of the measures and instruments used to prevent abuses of office. The best selection of employees through the selection procedures, the evaluation criteria of their work, the study of the public opinion on the services and the correctness of the service of different agencies, the establishment of some indicators for measuring the performance of the employees, can be some of the instruments for minimizing abuses and increasing quality and transparency with the public.

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# **Evaluating Efficiency of The Installed Power Capacities in Renewable Energy Production for OECD Countries <sup>1</sup>**

**Ertuğrul DELİKTAS<sup>2</sup>**

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<sup>1</sup> First version of this study was presented in the Second International Conference at Nişantaşı University, 19-20 December 2024, Istanbul.

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## ABSTRACT

This study examines the relative production efficiency of installed renewable energy capacities—specifically hydropower (excluding pumped storage), solar, and wind energy—in electricity generation across OECD countries from 2000 to 2021. Data envelopment analysis is used to calculate the relative efficiency of renewable energy capacities. The key findings indicate that power plants experience a significant inefficiency in producing electrical energy, on average. However, efficiency scores vary regarding to types of renewable energy. While there is an overall inefficiency among OECD countries, some nations achieve full efficiency and establish best practice frontiers for various types of renewable energy sources. In terms of total renewable energy production, Iceland, Norway, and Switzerland set the best practice frontier from 2000 to 2021. These same countries also maintained full efficiency in hydro energy throughout the entire period. For solar energy, only Colombia achieved full efficiency on average. In wind energy, although different countries demonstrate full efficiency in various years, no single country maintained full efficiency over the entire period.

*Key Words: Renewable Energy, Technical Efficiency, Total Factor Productivity, Installed Power Capacities, OECD Countries.*

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## INTRODUCTION

Energy is a fundamental necessity for human life, essential in every aspect—from production and consumption to cultural activities and entertainment. However, while energy enables us to live more comfortably, the way it is produced, particularly through fossil fuels, comes with significant downsides. Fossil fuel-based energy production not only improves our quality of life but also negatively impacts it by contributing to pollution, greenhouse gas emissions, and global warming. As the World Future Council (2016) highlights, the extraction, transportation, refining, and use of fossil and nuclear fuels cause various environmental problems, including land degradation from mining, air and water pollution, excessive consumption of freshwater (especially for power plant cooling), loss of biodiversity, risk of nuclear accidents, and global climate change—all of which pose serious threats to human health. It is widely recognized that non-renewable, or fossil fuel-based energy production, has a detrimental impact on the environment. Currently, approximately 80% of the world's energy comes from fossil fuels, contributing to pollution and greenhouse gas emissions, while only 20% is



derived from renewable or green energy sources (IRENA, 2022). Given the finite nature of fossil fuels and their harmful environmental effects, interest in and investment in renewable energy resources have been steadily increasing worldwide in recent years. Governments are also taking action by implementing various policies, including taxes, subsidies, public expenditures, and quota restrictions, aimed at reducing pollution and protecting the environment. These measures are designed not only to improve public health but also to mitigate global warming. For instance, in Europe, policies target a reduction in greenhouse gas emissions by as much as 55% by 2030 (compared to 1990 levels), with the goal of achieving full carbon neutrality by 2050—an objective that is being echoed globally.

Renewable energy, encompassing sources such as solar, wind, geothermal, hydropower, biomass, wave, and hydrogen, is derived from naturally replenishing resources. While these energy sources are sustainable, generating electricity from them requires significant investment due to the high fixed costs involved (World Future Council, 2018). In 2021, the global weighted average installation costs for renewable energy were highest for concentrated solar power (\$4746/kW), followed by geothermal (\$3991/kW), offshore wind (\$2858/kW), bioenergy (\$2353/kW), hydropower (\$2135/kW), onshore wind (\$1325/kW), and photovoltaic solar (\$857/kW) (<https://dergipark.org.tr/tr/pub/muhendismakina>). Considering the significant costs involved, it is essential for renewable energy facilities to operate efficiently, optimizing energy output relative to their installed capacity. Achieving full efficiency is a critical objective for decision-makers, as it demonstrates a production unit's ability to generate maximum output with available inputs. Accordingly, this study seeks to measure the production efficiency of installed renewable energy capacities in OECD countries. In this context, the literature includes numerous studies that examine energy efficiency using data envelopment analysis (DEA) methodology. Fidanoski et al. (2021) conducted an in-depth review of the literature, classifying studies related to energy economics and efficiency measurement based on DEA. Additionally, several studies focus specifically on renewable energy and efficiency measurement within OECD countries, including works by Fidanoski et al. (2021), Küpeli and Bodur (2019), Sözen and Karık (2017), Woo et al. (2015), Xie et al. (2014), and Chren et al. (2007). These studies focus on renewable energy production, efficiency and the factors that determine production but, they differ from scope, input, output and period. Our study differs from period, which is (2001-2021), scope and input. Input includes installed power capacity and land areas of the OECD countries. Additionally, our study measures efficiency and Malmquist productivity indices in terms of total renewable installation capacity, hydrolic power installation capacity, solar power installation capacity, and wind power installation capacity in OECD countries.

Installed power capacity is the amount of energy that a facility such as a power plant can produce (<https://dictionary.cambridge.org/>). Installed power capacities or plants convert renewable energy into electrical energy. By the end of 2021, renewables installed power capacity accounted for 38 per cent of global installed capacity. The highest installed capacity among renewable energy sources in the world belongs to hydraulic energy. The share of hydraulic energy is 42.5 %. The second one is solar energy (26.7%). The third one is wind (25.8) then, bioenergy (4.5 %). The share of geothermal is 0.5% in the world (Renewable Capacity Statistics 2022). The global shift from fossil fuel-based energy production to renewable energy sources has driven significant growth in installed power capacities worldwide. When we look at world level, In 2021, the highest electricity generation from renewable energy sources in the world was obtained from hydraulic (4273.8 TWh), wind (1861.9 TWh), solar (1032.5 TWh), bioenergy (583.7 TWh) and geothermal energy (94.9 TWh), respectively. In Turkey, the highest electricity generation are obtained from hydraulic (55.7 TWh), secondly wind comes (31.1 TWh). Solar is (12.8 TWh), geothermal is (10.0 TWh) and bioenergy is (4.44 TWh). (T.C. Enerji ve Tabii Kaynaklar Bakanlığı, 2022).

## DATA AND VARIABLES

Data set includes renewable energy production or electricity generation in gigawatt- hours (GWh), electricity installed power capacities of plants in megawatt (MW), and land area (kilometer squares) for each OECD country over the period 2000-2021. Land area is considered as a proxy variable that indicates natural structure or natural capacity of each country to produce renewable energy. All data are obtained by MF and International Renewable Energy Agency (IRENA) (2022), Renewable Energy Statistics. And World Bank (WDI). In data envelopment analysis, electricity generation is considered an dependent variable and electricity installed power capacity and land area are independent variable. Average growth rates in renewable energy and installed power capacities are calculated long run annual average growth rate formula. As follows:

$$\text{Annual average growth rate: } AGR = \left( \frac{\text{the value of last year}}{\text{the value of first year}} \right)^{1/n} - 1.$$

## METHODOLOGY

In this study, we use the Data Envelopment Approach (DEA) based on the Malmquist TFP indices to measure energy use efficiency for different income group countries. The Malmquist indices introduced by Caves et al.,(1982b) allow for technical efficiency change and technological change indices by means of distance functions. Technical efficiency scores, which indicate the relative production ability of decision making units can be obtained with the DEA and SFA. However in this study, the DEA approach following , Coelli et al. (1998) and O'Donnell ve Rao (2008) is used to get efficiency scores of installed power capacities.

### DATA ENVELOPMENT ANALYSIS (DEA)

Data envelopment analysis is a non-parametric method based on linear programming techniques. Data envelopment analysis based on distance functions are used to measure efficiency levels of decision making units. DEA measures the relative efficiency of the decision making units as the ratio the sum of their weighted outputs to the sum of their weighted inputs. It is possible to define the input distance function on the input set as Coelli, Rao, and Battese did in 1998

A relative efficiency measure can be defined as follows (Coelli, Rao, and Battese 1998).

$$TE_j = \frac{u_1 y_{1j} + u_2 y_{2j} + u_3 y_{3j} + \dots + u_n y_{nj}}{v_1 x_{1j} + v_2 x_{2j} + v_3 x_{3j} + \dots + v_n x_{nj}} = \frac{\sum_{r=1}^n u_r y_{rj}}{\sum_{s=1}^m v_s x_{sj}}$$

$$\text{Subject to } \frac{\sum_{r=1}^n u_r y_{rj}}{\sum_{s=1}^m v_s x_{sj}} \leq 1$$

(1)

and  $u_r, v_j, \epsilon > 0$

where  $\epsilon$  is a very small constant, which is forces all inputs and outputs to have non-zero weights (El Mahgay and Lahdelma, 1995);  $TE_j$  is the technical

efficiency score of a given unit  $j$ ,  $x$  and  $y$  indicate input and output and  $v$  and  $u$  denote input and output weights, respectively;  $s$  is the number of inputs and  $r$  is the number of outputs and  $j$  shows  $j^{\text{th}}$  DMUs.

The output-oriented DEA model for a single output used in this study is closely related to Farrel (1957), Coelli et al., 1998. The model can be formalized as follows. Consider the situation for the  $N$  industries, each producing a single output by using  $K$  inputs. For the  $i$ -th industry  $x_{it}$  is a column vector of inputs, while  $y_{it}$  is a scalar representing the output.  $X$  denotes the  $K \times NT$  matrix of inputs and  $Y$  denotes  $1 \times NT$  matrix of output. The output-oriented DEA model is given by;

$$\begin{aligned}
 & \max \phi_{it} \\
 & \phi_{it}, \lambda_{it} \\
 & \text{S.t. } \phi_{it} y_{it} - y' \lambda_{it} \leq 0 \\
 & X \lambda_{it} - x_{it} \leq 0 \\
 & J' \lambda_{it} = 1 \text{ and } \lambda_{it} \geq 0
 \end{aligned} \tag{2}$$

Where,

$y_{it}$  is the output quantity for the  $i$ th country in the  $t$ th period;

$x_{it}$  is the  $N \times 1$  vector of input quantities for the  $i$ th country in the  $t$ th period;

$y$  is the  $L_k T \times 1$  vector of output quantities for all  $N$  countries in all  $T$  periods;

$X$  is the  $N \times L_k T$  matrix of input quantities for all  $N$  countries in all  $T$  periods;

$j$  is an  $L_k T \times 1$  vector of ones;

$\lambda_{it}$  is an  $L_k T \times 1$  vector of weights; and

$\phi_{it}$  is a scalar.

$\phi$  takes value between zero and one. One indicates full efficiency while zero indicates full inefficiency. On the other hand, efficiency score may changes in a time. The change in efficiency can be directly observed using malmquist productivity index approach.

## MALMQUIST PRODUCTIVITY INDEX

Malmquist productivity index based on the distance functions developed by Malmquist (1953). It measures the change in total factor productivity between two data points by calculating the relative distance ratios of each data point to a common technology. The decomposition of the Malmquist total factor productivity index into changes in technical efficiency and technological change helps determine the contribution of both factors to total factor productivity (TFP). Thus, changes in efficiency and technological change can be measured separately (Coelli et al., 1998). The index can be expressed by the following equations:

$$\text{Change in technical efficiency (TECH)} = \frac{d_0^{t+1}(y^{t+1}, x^{t+1})}{d_0^t(y^t, x^t)} \quad (3)$$

$$\text{Technical change (TCH)} = \left[ \left( \frac{d_0^t(y^{t+1}, x^{t+1})}{d_0^{t+1}(y^{t+1}, x^{t+1})} \right) x \left( \frac{d_0^t(y^t, x^t)}{d_0^{t+1}(y^t, x^t)} \right) \right]^{\frac{1}{2}}$$

Here, the change in technical efficiency is referred to as the "catching-up effect," while technical change is expressed as the "frontier effect" (the shift of the production frontier curve) (Mahadevan, 2002). On the other hand, technical efficiency change times technical change gives total factor productivity change between two consecutive periods. As follows:

$$\text{TFPCH} = \text{TECH} \times \text{TCH} \quad (4)$$

## EMPIRICAL FINDINGS

All empirical findings derived using DEAP Version 2.1 (Coelli 1996) are presented in tabular form for each type of renewable energy. Table 1 presents various metrics for OECD countries from 2000 to 2021, including the annual average growth rate (GR) of renewable energy production (or electricity production), the annual average growth rate of renewable installed power capacity, technical efficiency scores (TE), and components of total factor productivity change (TFPCH) indices. Specifically, it includes technical efficiency change (TECH) and technological change (TCH).

Table 1: Technical efficiency scores and components of total factor productivity changes in total renewable energy, 2000-2001

<b>Country</b>	<i>AGR in renewable energy Production</i>	<i>AGR in installed power capacity</i>	<i>TE</i>	<i>TECH</i>	<i>TCH</i>	<i>TFPCH</i>
<i>Australia</i>	6.5	8.91	0.310	0.975	1.004	0.979
<i>Austria</i>	0.89	2.63	0.931	0.998	0.992	0.991
<i>Belgium</i>	15.03	19.58	0.670	1.006	1.001	1.007
<i>Canada</i>	0.76	1.89	0.717	0.984	1.004	0.988
<i>Chile</i>	3.51	5.72	0.612	0.974	1.004	0.978
<i>Colombia</i>	3.14	1.88	0.686	1.009	1.004	1.013
<i>Costa Rica</i>	2.85	3.25	0.889	1.000	1.007	1.007
<i>Czech Rep.</i>	7.28	7.11	0.402	1.014	1.012	1.026
<i>Denmark</i>	7.27	6.64	0.714	1.039	0.991	1.030
<i>Finland</i>	2.25	3.53	0.716	0.984	1.008	0.991
<i>France</i>	2.72	4.29	0.522	0.998	1.001	0.998
<i>Germany</i>	8.89	11.84	0.631	1.012	0.993	1.004
<i>Greece</i>	7.44	6.23	0.335	1.026	1.008	1.034
<i>Hungary</i>	16.44	20.38	0.492	0.971	1.005	0.976
<i>Iceland</i>	4.36	3.92	1.000	1.000	1.011	1.011
<i>Ireland</i>	10.93	12.41	0.463	1.001	1.007	1.008
<i>Israel</i>	26.68	33.2	0.378	0.980	1.006	0.985
<i>Italy</i>	3.83	5.39	0.635	1.010	0.992	1.002
<i>Japan</i>	3.61	7.43	0.744	0.996	0.991	0.987
<i>Korea, Rep.</i>	10.58	13.82	0.405	1.009	1.012	1.022
<i>Latvia</i>	1.26	0.85	0.320	0.995	1.014	1.009
<i>Lithuania</i>	9.73	11.63	0.456	0.978	1.004	0.982
<i>Luxembourg</i>	8.32	10.78	0.490	1.007	1.008	1.015
<i>Mexico</i>	3.23	4.83	0.445	0.980	1.004	0.984
<i>Netherlands,</i>	12.6	16.71	0.812	1.019	1.002	1.020
<i>New Zeland</i>	1.14	1.37	0.768	0.989	1.014	1.003
<i>Norway</i>	0.43	1.53	1.000	1.000	0.995	0.995
<i>Portugal</i>	4.16	5.26	0.589	1.012	0.995	1.007
<i>Romania</i>	2.66	2.56	0.446	1.003	1.010	1.013
<i>Slovak Rep.</i>	1.76	1.63	0.529	1.003	1.006	1.009
<i>Slovenia</i>	1.53	3.15	0.799	0.993	0.999	0.992
<i>Spain</i>	6.06	5.80	0.476	1.020	0.999	1.019

<i>Sweden</i>	1.51	2.95	0.780	0.995	1.000	0.995
<i>Switzerland</i>	0.50	1.71	1.000	1.000	0.998	0.998
<i>Türkiye</i>	6.26	7.30	0.469	1.003	1.010	1.013
<i>United Kingdom</i>	12.06	13.71	0.646	1.021	1.012	1.033
<i>United States</i>	4.48	5.93	0.502	0.987	1.005	0.992
<i>Mean</i>	6.02	7.51	0.616	1.000	1.003	1.003

TE= technical efficiency, geometric mean; TECH=change in technical efficiency, geometric mean ;TCH=technical chnge, geometric mean; TFPCH= change in total factor productivity, geometric mean

The annual average growth rate of renewable installed power capacity for OECD countries is 7.51% over the period 2000-2021. The highest growth rate (33.20 %) is belong to Israel while the lowest growth rate is belong to Latvia (0.85%). Also, Hungary, Belgium, Netherlands, Korea Rep., United Kingdom, Ireland, Germany, Lithuania, and Luxembourg have a high growth rates which are over than 10 percent. It is seen that the annual average growth rate of renewable energy production for OECD countries is 6.02% over the period 2000-2021. On average, the electrical energy generation from renewable energy sources has an increasing trend in the OECD countries from 2000 to 2021. The highest average growth rate (26.68 %) is belong to Israel while the lowest growth rate is belong to Norway (0.43%). Also, Hungary, Belgium, Netherlands, United Kingdom have high growth rates which are which are 16.44 %, 15.03%, 12.60%, 12.06%, respectively. On the other hand, Switzerland, Canada, Austria and New Zeland have a low gorwth rates in renewable electricity production, which are 0.50%, 0.76%, 0.89% and 1.14%, respectiveley

According to efficiency scores in Table 1, the most efficient countries are Iceland, Norway, and Switzerland over the entire period regarding to renewable energy production. The mean scores of these countries are 1.000 indicating that they are relatively full efficient for entire period. In the other words, these countries determine *the best practice frontier*. The other high efficient countries are Austria (0.931), Costa Rica (0.889),and Netherlands (0.812) in renewable energy production. On the other hand, the least efficient countries are Australia (0.310), Latvia (0.320), Greece (0.335), and Israel (0.378). According Table 1, high efficient countries do not have high growth rates in electricity production and installed

power capacity. It seems that, although there is no causal relationship between electricity growth rates and technical efficiency, the high efficient counties have a low growth rates in terms of installed power capacities.

Technical efficiency change (TECH) index which is higher than one indicate improvement in technical efficiency or production efficiency and which is lower than one indicate decline in technical efficiency regarding to best practice frontier. If TECH is equal to one, it shows stability or no change in efficiency level, on average. Accordingly, Denmark (3.9%), Greece (2.6%), United Kingdom (2.1%), Netherlands (1.9%) Czech Rep. (1.4%), and Portugal (1.2%) have annual average improvement in technical efficiency, while Costa-Rica, Iceland, Norway, and Switzerland are stable. On the other hand, Australia, Chile, and Hungary have the highest degradation in production efficiency on average respectively.

Column 6 in Table 1 also gives technical change scores. If TCH is bigger than one, it indicates progress and if it is smaller than one, it indicates regress in technology or shift in the best practice frontier. It seems mean TCH index is slightly bigger than one (1.003), therefore there is a slightly progress in the level of technology, on average. Some countries have a significant technological progress, such as New Zealand (1.4 %), Latvia (1.4%), United Kingdom (1.2%), Czech Rep. (1.2%), Korea Rep. (1.2%), and Türkiye (1.0%) but some countries have technical regress on average. . The last column in the Table also gives total factor productivity change including TECH and TCH. The score which is bigger than one indicates growth in total factor productivity and smaller than indicates decrease in total factor productivity of the power plants. The mean index is 1.003. There is a slightly growth (0.3%) in TFPCH for OECD countries. In country base, Greece (3.4%), United Kingdom (3.3%), Denmark (3.0%), and Korea Rep. (2.2%) have high TFP growth rates, on average.



The annual average growth rate in total renewable energy production, the annual average growth rates in installed power capacities and the annual average technical efficiency scores (columns 2-4 in Table 1) of OECD countries are also given in Figure 1.

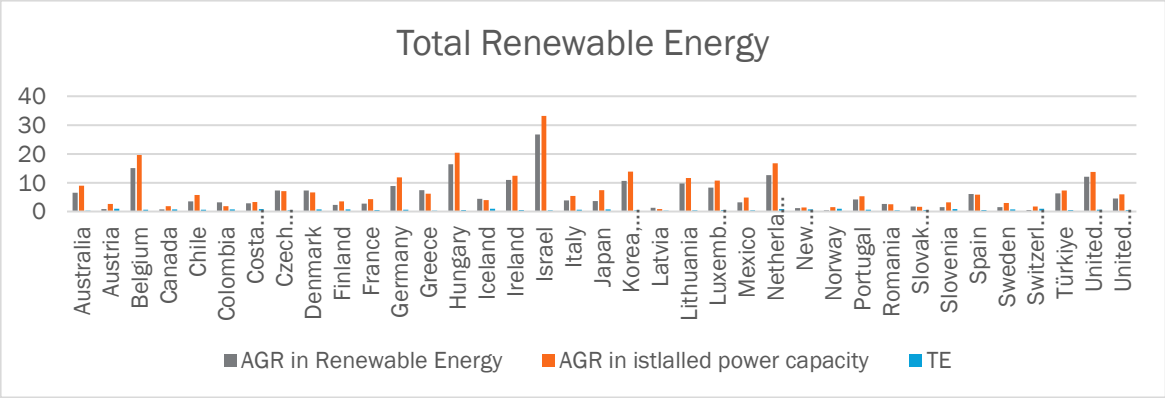


Figure 1: Annual average growth rates (AGR) in renewable energy production, installed capacity and technical efficiency (TE) levels for OECD countries,2001-2021.

## **HYDROPOWER ENERGY**

Hydro energy is a renewable energy source that utilizes the power of water. It is typically harnessed through dams built on rivers, where the potential energy of water is used to generate electricity via turbines in hydroelectric power plants (Koç and Kaya, 2015). Hydroelectric power plants are environmentally friendly, long-lasting, highly efficient, and have very low operational costs. They are a clean, renewable energy source with no fuel expenses (Şenel et al. (2023).

Electricity generated from hydropower, wind, and solar plants has been increasing each year, but renewable energy production can fluctuate due to natural conditions. Hydropower, in particular, is highly variable, often affected by droughts and changing water levels. In 2021, hydropower accounted for the largest share of electricity generation from renewable sources in OECD countries at 47.9%, followed by wind at 31.37%, and solar at 16.13%.

The annual average growth rates of hydropower (excluding pumped storage) energy production and installed hydropower capacity is given in Table 2 for OECD countries for 2000 – 2021 period. Additionally, it includes technical efficiency scores (TEF) and components of total factor productivity change (TFPCH) indices, specifically technical efficiency change (TECH) and technological change (TCH).

Table 2: Technical efficiency scores and components of total factor productivity changes in hydraulic power (excl. pumped storage) energy (2000-2021).

<i>Country</i>	<i>AGR in Hydraulic energy Production</i>	<i>AGR in installed power capacity</i>	<i>TE</i>	<i>TECH</i>	<i>TCH</i>	<i>TFPCH</i>
<i>Australia</i>	-0.47	0.59	0.330	0.985	1.004	0.989
<i>Austria</i>	-0.35	1.09	0.919	0.994	0.995	0.989
<i>Belgium</i>	-0.43	0.33	0.480	0.988	1.004	0.992
<i>Canada</i>	0.30	0.95	0.778	0.989	1.004	0.993
<i>Chile</i>	-0.19	1.97	0.641	0.974	1.004	0.978
<i>Colombia</i>	3.06	1.69	0.707	1.010	1.004	1.014
<i>Costa Rica</i>	2.26	3.06	0.827	0.996	1.003	0.999
<i>Czech Rep.</i>	1.44	0.71	0.324	1.002	1.006	1.008
<i>Denmark</i>	-2.74	-1.53	0.369	0.983	1.004	0.987
<i>Finland</i>	0.34	0.44	0.715	0.995	1.004	0.999
<i>France</i>	-0.38	0.24	0.515	0.996	0.999	0.994
<i>Germany</i>	-0.45	0.58	0.621	0.983	1.007	0.990
<i>Greece</i>	1.66	0.49	0.268	1.008	1.006	1.014
<i>Hungary</i>	0.80	1.02	0.631	0.993	1.004	0.998
<i>Iceland</i>	3.59	3.17	1.000	1.000	1.010	1.010
<i>Ireland</i>	-0.56	0.02	0.494	0.990	1.004	0.994
<i>Italy</i>	0.12	0.63	0.549	1.000	0.996	0.996
<i>Japan</i>	-0.29	1.12	0.685	0.993	0.994	0.987
<i>Korea, Rep.</i>	-1.23	0.79	0.350	0.972	1.007	0.979
<i>Latvia</i>	-0.18	0.22	0.327	0.991	1.006	0.997
<i>Lithuania</i>	0.55	0.58	0.569	0.995	1.004	1.000
<i>Luxembourg</i>	-0.66	0.16	0.487	0.986	1.006	0.992
<i>Mexico</i>	0.21	1.47	0.416	0.983	1.004	0.987
<i>Netherlands</i>	-2.16	-0.01	0.402	0.973	1.004	0.978
<i>New Zealand</i>	-0.04	0.21	0.760	0.989	1.009	0.998
<i>Norway</i>	0.07	0.88	1.000	1.000	0.995	0.995
<i>Portugal</i>	0.23	2.16	0.435	0.988	0.997	0.985

<i>Romania</i>	0.75	0.32	0.470	1.001	1.004	1.005
<i>Slovak Rep.</i>	-0.37	-0.19	0.526	0.996	1.002	0.998
<i>Slovenia</i>	0.94	1.51	0.835	0.999	0.997	0.997
<i>Spain</i>	0.22	0.37	0.357	0.997	1.002	0.999
<i>Sweden</i>	-0.28	-0.03	0.834	0.998	0.999	0.997
<i>Switzerland</i>	0.02	0.69	1.000	1.000	0.997	0.997
<i>Türkiye</i>	2.74	4.82	0.477	0.984	1.010	0.994
<i>United Kingdom</i>	0.35	0.94	0.410	0.990	1.004	0.994
<i>United States</i>	0.004	0.25	0.526	0.993	1.004	0.997
<i>Mean</i>	0.25	0.88	0.584	0.992	1.003	0.995

TE= technical efficiency, geometric mean ;TECH=change in technical efficiency, geometric mean;TCH=technical chnge, geometric mean

TFPCH= change in total factor productivity, geometric mean

The annual average growth rate of installed hydropower capacity (excluding pumped storage) for OECD countries is 0.88 percent between 2004 and 2021. Austria experienced the highest growth rate at 9%, while Ireland has the lowest at 0.02%. Türkiye, Iceland, and Costa Rica also have significant growth, with rates of 4.82 %, 3.17%, and 3.04%, respectively. In contrast, some countries, including Denmark, the Netherlands, Slovakia, and Sweden, have negative growth rates.

In terms of hydropower (excluding pumped storage) electricity production, the annual average growth rate for OECD countries is 0.25 percent between 2000 and 2021. However, some countries have significantly higher positive growth rates compared to the overall average. Iceland, Colombia, Türkiye, and Costa Rica have average growth rates of 3.59%, 3.06%, 2.74%, and 2.26%, respectively. However, some countries have negative growth, with Denmark seeing the largest decline at -2.76%, followed by the Netherlands with a -2.16% decrease in electricity production from wind installed power capacities. Iceland experiences the highest average growth rate, while Denmark has the steepest decline.

According to Table 2, the most efficient countries are Iceland, Norway, and Switzerland over the entire period regarding to hydro power (excl. pumped storage) energy production. The mean score of these countries are 1.000 indicating that they are relatively full efficient and they determine the best practice frontier in hydro power energy production. The other high efficient countries are Austria (0.919), Slovenia (0.835), and Sweden (0.834). On the other hand, the least efficient countries are Greece (0.268), Latvia (0.327, and Czech Rep. (0.324). Also, Iceland which is one of the highest efficient

countries, has also a highest growth rate (3.59%) in electricity production and in installed power capacity (3.17 %). Turkiye has the highest growth rate in installed hydro power capacity, but production efficiency of Turkiye is relatively low, which is 0.477. According to technical efficiency change (TECH) scores, Colombia, Greece, Czech Rep. , and Romania have a slightly annual average improvement in technical efficiency, Iceland, Norway and Switzerland are stable and the rest of countries have annual average decrease in technical efficiency.

In Table 2, column 6 gives technical change scores. It seems that most of countries have a slightly technical progress. Annual average progress rate is 0.3% for OECD countries. Turkiye and Ireland have the highest technical progress rates which are 1%, on average. According to TFPCH, annual average rate is 0.995 for OECD countries. It shows a decrease in total factor productivity due to decrease in technical efficiency. However, Colombia, Greece, Czech Rep., Iceland and Romania have improvement in total factor productivity. The rest of other countries except for Lithuania, has a decrease in TFP, on average.

The annual average growth rate in hydraulic renewable energy production, the annual average growth rates in installed power capacities and the annual average technical efficiency scores (columns 2-4 in Table 2) of OECD countries are also given in Figure 2.

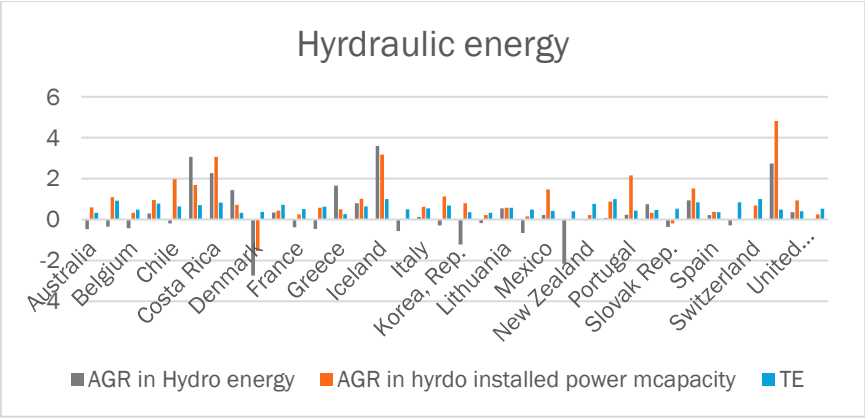


Figure 2: Annual average growth rates (AGR) in hydraulic energy production, installed power capacity and technical efficiency (TE) levels for OECD countries,2001-2021.

## **SOLAR ENERGY**

Solar energy can be utilized directly as heat energy or indirectly by converting it into electricity. Electricity generation from solar energy is achieved through photovoltaic (PV) cells or concentrated solar power (CSP) systems. In photovoltaic cells, the photovoltaic effect is used to convert light into electric current.

Table 3 shows annual average growth rate of solar energy production or electricity production, annual average growth rate of solar power installed power capacities, technical efficiency scores (TE), and components of total factor productivity change (TFPCH) indices, namely technical efficiency change (TECH) and technological change (TCH) for OECD countries over the period 2004-2021.

Table 3: Technical efficiency scores and components of total factor productivity changes in solar energy for OECD countries, 2004-2021

<i>Country</i>	<i>AGR in Solar energy Production</i>	<i>AGR in installed power capacity</i>	<i>TE</i>	<i>TECH</i>	<i>TCH</i>	<i>TFPCH</i>
<i>Australia</i>	39.53	42.06	0.507	0.970	1.040	1.009
<i>Austria</i>	32.15	29.37	0.648	0.996	1.044	1.039
<i>Belgium</i>	65.35	62.16	0.742	1.035	1.105	1.144
<i>Canada</i>	40.66	37.9	0.570	1.053	1.039	1.094
<i>Colombia</i>	27.64	33.72	1.000	1.000	1.004	1.004
<i>Costa Rica</i>	33.49	32.96	0.610	1.024	1.038	1.063
<i>Czech Rep.</i>	64.71	61.55	0.568	1.036	1.078	1.116
<i>Denmark</i>	43.36	45.48	0.535	0.977	1.038	1.014
<i>Finland</i>	30.82	29.59	0.356	0.986	1.038	1.024
<i>France</i>	51.94	49.23	0.541	1.012	1.035	1.048
<i>Germany</i>	28.29	24.77	0.890	1.021	1.159	1.183
<i>Greece</i>	63.24	59.12	0.656	1.035	1.044	1.080
<i>Italy</i>	45.59	44.23	0.790	1.007	1.081	1.088
<i>Japan</i>	27.29	26.55	0.893	1.000	1.104	1.104
<i>Korea, Rep.</i>	53.88	53.96	0.802	1.007	1.047	1.054
<i>Luxembourg</i>	17.97	14.68	0.711	0.964	1.124	1.084
<i>Mexico</i>	53.73	41.41	0.569	1.074	1.041	1.118
<i>Netherlands</i>	38.29	37.24	0.622	1.023	1.074	1.099
<i>Norway</i>	20.34	20.65	0.475	0.969	1.040	1.008
<i>Portugal</i>	44.41	45.20	0.880	0.984	1.041	1.025
<i>Spain</i>	47.86	41.00	0.931	1.036	1.060	1.098
<i>Sweden</i>	44.69	39.52	0.404	1.019	1.041	1.060
<i>Switzerland</i>	32.47	32.21	0.611	0.991	1.047	1.038
<i>Türkiye</i>	62.52	60.88	0.623	1.049	1.024	1.074
<i>United Kingdom</i>	56.12	51.39	0.536	1.034	1.037	1.072
<i>United States</i>	32.42	30.87	0.825	0.988	1.038	1.025
<i>Mean</i>	42.26	40.30	0.664	1.011	1.056	1.067

TE= technical efficiency, geometric mean; TECH=change in technical efficiency, geometric mean; TCH=technical chnge, geometric mean

TFFPCH= change in total factor productivity, geometric mean

The annual average growth rate of solar installed power capacity for OECD countries is 40.30% between 2004 and 2021. Belgium has the highest growth rate at 62.16%, while Luxembourg has the lowest at 14.68%. Other countries with notably high growth rates include the Czech Republic (61.55%), Türkiye (60.88%), Greece (59.12%), and the United Kingdom (51.39%).

Electricity production from solar installed power capacities experienced a high annual average growth rate in OECD countries between 2004 and 2021, with an overall rate of 42.26%. Belgium has the highest growth at 65.35%, while Luxembourg has the lowest at 17.97%. Additionally, the Czech Republic, Greece, Türkiye, and the United Kingdom have significant growth rates in solar energy production, with averages of 64.71%, 63.24%, 62.52%, and 56.12%, respectively.

When we examine technical efficiency scores (column 4) it is seen that Colombia is full efficient country over the entire period. The other high efficient countries are Spain (0.931), Japan (0.893), Germany (0.890), and Portugal (0.880). On the other hand, the least efficient countries are Finland (0.356), Sweden (0.404), Norway (0.475). The mean technical efficiency score is 0.664 in solar energy production.

According to technical efficiency change (TECH) index, Mexico has the highest efficiency improvement, which is 7.4%. Then, Canada (5.3%), Türkiye (4.9%), Czech Rep.(3.6%), Spain (3.6%), Belgium (3.5%), Greece (3.5%) and United Kingdom (3.4%) have a high improvement in production efficiency. Colombia and Japan are stable in efficiency, but Luxembourg has the largest decrease in efficiency on average. The mean technical efficiency improvement rate is 1.1 percent. Column 6 gives technical change indices. It seems that all countries have a technical progress. The mean progress rate is 5.6 % for OECD countries. Germany has the highest technical progress (15.9%). Then, Luxembourg (12.4 %), Japan (10.4%), and Italy (8.1%) have a high technical progress in solar energy production. Colombia has the least technical progress, which is 0.4%. According to column 7, total factor productivity grew 6.7 percent, on average, for OECD countries. When we look at on a country base, Germany has the highest growth rate (18.3%) in total factor productivity. Secondly, Belgium has a high growth rate (14.4 %). Norway and Austria have a less growth rate. They are 0.8 and 0.9 percents, respectively.

The annual average growth rate in solar renewable energy production, the annual average growth rates in installed power capacities and the annual average technical efficiency scores (columns 2-4 in Table 2) of OECD countries are also given in Figure 3.



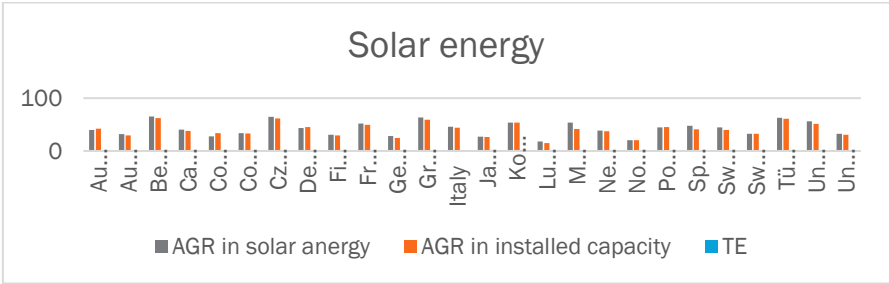


Figure 3: Annual average growth rates (AGR) in solar energy production, installed power capacity and technical efficiency (TE) levels for OECD countries,2004-2021.

### WIND ENERGY

Wind installed power capacities or energy turbines are used to produce electricity from wind energy. Wind energy turbine convert the kinetic energy of mowing air first into mechanical energy then into electrical energy. Wind turbines can be installed in offshore areas and as well as on land. To produce electrical energy form wind energy has a high installation cost and a low capacity and variable energy production. However, wind energy is environmentally friendly, clean and renewable. It has no risk of depletion, low maintenance and operation costs (T.C. Enerji ve Tabii Kaynaklar Bakanlığı, 2022).

Table 4 presents the annual average growth rates of electricity production in wind energy power plants, the installed power capacities, technical efficiency (TE) scores, and the components of total factor productivity change (TFPCH) indices, specifically technical efficiency change (TECH) and technical change (TCH), for OECD countries during the period 2004-2021.

Table 4: Technical efficiency scores and components of total factor productivity changes in wind energy for OECD countries, 2004-2021

<i>Country</i>	<i>AGR in Wind energy Production</i>	<i>AGR in installed power capacity</i>	<i>TE</i>	<i>TECH</i>	<i>TCH</i>	<i>TFPCH</i>
<i>Australia</i>	21.8	20.30	0.778	1.028	1.028	1.057
<i>Austria</i>	11.61	10.33	0.645	1.000	1.007	1.007
<i>Belgium</i>	27.98	24.49	0.663	1.027	1.002	1.028
<i>Canada</i>	22.11	21.28	0.760	1.033	1.067	1.102
<i>Chile</i>	47.48	50.50	0.657	0.976	1.025	1.000
<i>Colombia</i>	0.91	-0.46	0.752	1.005	1.026	1.031
<i>Costa Rica</i>	10.63	10.14	0.960	1.000	0.999	0.999
<i>Czech Rep.</i>	25.65	18.29	0.468	1.059	1.027	1.088
<i>Denmark</i>	5.08	4.60	0.847	0.986	1.021	1.007
<i>Finland</i>	26.69	22.70	0.655	1.047	1.011	1.059
<i>France</i>	25.76	24.59	0.662	1.025	1.008	1.034
<i>Germany</i>	8.59	7.84	0.743	0.989	1.108	1.096
<i>Greece</i>	13.23	13.58	0.746	0.989	0.998	0.987
<i>Hungary</i>	30.45	29.71	0.538	1.017	0.996	1.013
<i>Ireland</i>	16.2	15.26	0.794	0.995	1.088	1.082
<i>Israel</i>	16.73	8.77	0.543	1.043	1.027	1.071
<i>Italy</i>	14.45	13.64	0.602	0.985	0.994	0.979
<i>Japan</i>	11.59	9.98	0.635	0.979	1.016	0.995
<i>Korea, Rep.</i>	26.39	25.48	0.525	1.021	1.005	1.026
<i>Latvia</i>	6.05	6.23	0.531	1.001	1.011	1.012
<i>Lithuania</i>	49.32	43.56	0.546	1.009	1.016	1.025
<i>Luxembourg</i>	12.23	7.87	0.408	1.019	1.043	1.063
<i>Mexico</i>	57.39	39.45	0.634	1.147	0.994	1.141
<i>Netherlands</i>	13.41	11.61	0.688	1.011	1.044	1.055
<i>New Zealand</i>	11.68	9.93	0.881	1.029	1.042	1.071
<i>Norway</i>	23.81	21.48	0.729	1.030	1.037	1.068
<i>Portugal</i>	16.73	13.53	0.746	1.030	1.006	1.036
<i>Romania</i>	76.96	56.06	0.438	1.152	0.998	1.150
<i>Slovakia</i>	-1.01	1.61	0.409	0.941	1.037	0.976
<i>Spain</i>	7.93	6.96	0.787	0.993	1.090	1.082
<i>Sweden</i>	21.16	19.71	0.707	0.998	1.005	1.003
<i>Switzerland</i>	19.4	13.43	0.378	1.050	1.016	1.067
<i>Türkiye</i>	41.87	42.10	0.816	1.012	0.996	1.007
<i>United Kingdom</i>	21.52	20.24	0.812	1.026	1.021	1.047
<i>United States</i>	20.04	18.30	0.958	1.031	1.092	1.126
<i>Mean</i>	21.77	18.82	0.670	1.019	1.025	1.045

TE= technical efficiency, geometric mean ;TECH=change in technical efficiency, geometric mean;TCH=technical chnge, geometric mean

TFPCH= change in total factor productivity, geometric mean

The annual average growth rate of wind installed power capacity for OECD countries 18.82 % during the period 2004-2021. The highest growt rate (56.06 %) is belong to Romania while the lowest growth rate (-0.46 %) is belong to Colombia. Chile, Luxembourg, Türkiye, and Mexico have a high growth rates which are 50.50 %, 43.56%, 42.10%, 39.45%, respectively. On the other hand, the annual average growth rate of electricity production based on wind installed power capacity for OECD countries 21.77 % over the period 2004-2021. The highest growth rate (76.96 %) is belong to Romania while the lowest growth (decrease) rate (-1.01 %) is belong to Latvia. Mexico, Lithuania, Chile and Türkiye have a high average growth rates which are 57.30 %, 49.32%, 47.48%, and 41.87%, respectively. On the other hand, Colombia, Denmark, Latvia, and Spain have a low average growth rates which are 0.91%, 5.08%, 6.05%, and 7.93% , respectively.

Additionally, according to TE, the most efficient country is Costa-Rica (0.960), on average. Then, United States has a high efficiency (0.958). The other high efficient countries are New Zeland (0.881), Türkiye (0.816), and United Kingdom (0.812). There is no full efficient country on average but for different years different countries are full efficient and they determine the best practice frontier. Switzerland (0.378), Slovakia (0.409) , and Romania (0.438) are less efficient countiers in wind energy production. Technical efficiency change (TECH) indices indicate that Romania (15.2%) and Mexico (14.7%) have a significant improvement in tecnical efficiency, on average. The other well performing countries are Finland (4.7%), Canada (3.3%), and USA (3.1%). While Costa-Rica and Austria are stable in technical efficiency, Slovakia has the most decrease in technnical efficiency, on average.

Column 6 also gives technological change indices. The mean index is 1.025 indicating that OECD countries have 2.5 % tecnical progress during the period 2004-2021. When we look at on a country base, Germany has the highest tecnical progress (10.8%), on average. Moreover, Ireland, Canada and Luxembourg have also high technical progress rates, such as 8.8%, 6.7%, and.3 5 %, respectively. The last column in Table 6 represents TFPCH for OECD countries on averaga. The mean index is 1.045 indicating that there is 4.5 percent growth in total factor productivity of wind energy installed power capacities over the entire period. Accordingly, Romaniz has the highest TFP growth rate (15 %) and secondly Mexico has a high TFP growth rate (14.1%). Then, United States (12.6%), Germany (9.6%), Spain (8.2%), Ireland (8.2%) have high TFP growth rates. On the other hand, Costa-Rica, Greece, Italy, Slovakia, and Japan have a decrease in total factor productivity on average.

The annual average growth rate in wind renewable energy production, the annual average growth rates in installed power capacities and the annual average technical efficiency scores (columns 2-4 in Table 2) of OECD countries are also given in Figure 4.

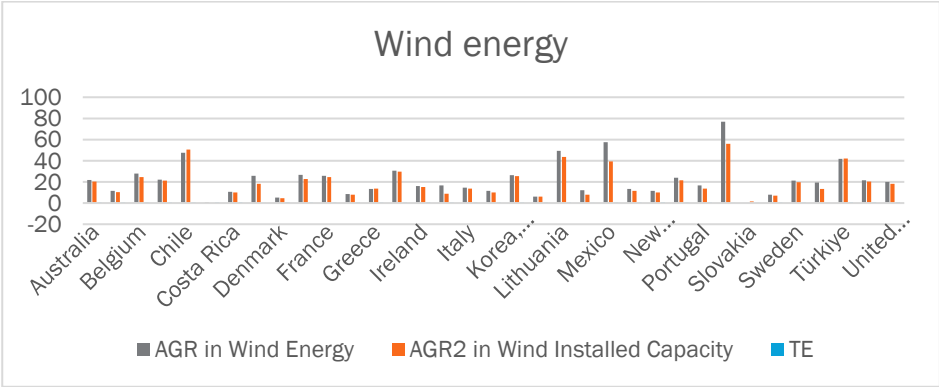


Figure 4: Annual average growth rates (AGR) in wind energy production, installed power capacity and technical efficiency (TE) levels for OECD countries,2004-2021.

### CONCLUSION AND DISCUSSION

This study examines the relative production efficiency of installed power capacities in renewable energy, as well as its sub-components—hydropower (excluding pumped storage), solar energy, and wind energy—in electricity production for OECD countries during the period 2000-2021. Biomass, geothermal, and other forms of renewable energy were excluded from the analysis due to insufficient data for certain countries.

We also analyzed Malmquist total factor productivity change indices over the same period. All performance indices were obtained using Data Envelopment Analysis (DEA) and the DEAP 2.1 software developed by T. Jim Coelli (1998). The inputs used in the analysis were the installed power capacities of renewable energy plants and the land area (in square kilometers) for each country. The output measured was electricity production based on each country's installed renewable energy capacity. Due to data limitation, the beginning period of analysis for solar and wind energy production was 2004 for some OECD countries. On the other hand, the period of analysis for total renewable energy and hydropower was 2000-2021.

The main findings of the study indicate differences in production performance among the power plants based on the type of renewable energy. In terms of technical efficiency scores, which reflect production performance, wind power plants have the highest average efficiency at 0.670. However, this score shows that wind energy installed capacities are not operating at full efficiency. The mean technical efficiency for solar power plants is 0.664, while for hydropower plants, it is 0.584. The overall technical efficiency score for renewable energy production is 0.616. All these scores are below 1.000, indicating that the installed power capacities or plants across renewable energy sources are technically inefficient. Of course full efficiency is not expected in these plants because various natural factors—such as wind speed, sunlight duration, dam volume or water flow, and drought—along with technical factors, influence renewable energy production. It is important to explore the impact of these factors in future research.

While there is an overall inefficiency among OECD countries, some nations achieve full efficiency and establish best practice frontiers for various types of renewable energy sources. In terms of total renewable energy production, Iceland, Norway, and Switzerland set the best practice frontier from 2000 to 2021. These same countries also maintained full efficiency in hydro energy throughout the entire period. For solar energy, only Colombia achieved full efficiency on average. In wind energy, although different countries demonstrate full efficiency in various years, no single country maintained full efficiency over the entire period.

Although installed power capacity is important in providing the electricity demand, the readiness of the existing installed power capacity to produce is of greater importance. Power plants that are ready to produce are considered available plants. Whether a plant is available or not to produce may depend on internal and external reasons, such as technical reasons (fault) and natural reasons (non-fault). Unavailability of plant due to malfunction is temporary and can be resolved. Non-fault or natural reasons generally arise from resource insufficiency. Non-fault reasons are primary reasons that can arise from primary source (solar or sunshine duration, wind speed and variability in natural water flow in dam and river power plants) irregularity. Especially, wind energy has a variable structure therefore, electrical energy obtained from wind will also be variable. For this kind of reasons wind power plants can not produce a constant value like natural gas or fossil plants. Therefore, inefficiency in renewable energy power plants are usually unavoidable (Elektrik Enerjisi Görünümü, 2021).

Renewable energy is becoming increasingly important due to global warming and climate change caused by the excessive use of fossil fuels. Given the finite nature of fossil fuels and their harmful environmental effects, interest in and

investment in installed power capacities have been steadily increasing worldwide in recent years. However, renewable energy plants must operate efficiently to produce maximum output. Because efficiency entails producing maximum output at the lowest possible cost. However, the findings of this study revealed that, on average, installed renewable energy capacities in OECD countries are highly inefficient. Therefore, it is crucial to identify the main factors affecting the production efficiency of these capacities and develop appropriate policies to improve their efficiency.

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# **An Evaluation About Foundations in Ottoman Urfa**

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## INTRODUCTION

The foundation, which means that a person leaves his/her own property for the benefit of society without expecting anything in return, has an important place in the Islamic world. Foundations established with the aim of helping those in need have increased social solidarity and contributed to economic prosperity. The foundation institution, which experienced its most glorious period in the Ottoman Empire, generally had religious, social and economic purposes. During the Ottoman period, social services were generally provided by foundations. There are many foundations with historical and cultural value in Urfa. Most of these foundations were established during the Ottoman period.

## FOUNDATIONS IN THE HISTORICAL PROCESS

The dictionary meaning of foundation is to stop, to stop and to detain (DiA, 2012, p. 475). In terminology, it means to allocate a property to be used for the benefit of the public by preventing it from being transferred and appropriated in perpetuity in order to gain the consent of Allah (Pakalın, 1972, p. 577). Jurists have different views on the legal nature of foundation, which constitutes an important institution in the history of Islamic civilization. While Imam Azam Abu Hanifa adopted the view that a foundation (the person who donates) can only endow the benefit of a property by keeping the same in his possession, the Imams (Abu Yusuf and Abu Muhammad) adopted the view that a foundation endows a property together with its benefit in perpetuity. In the Ottoman Empire, where the Hanafi school of thought was implemented, the opinion of the Imams was taken as basis on this issue (DiA, 2012, pp. 475-476).

Foundations, which were established with the aim of helping others without expecting any material reward, have been institutions that have had great importance in Islamic countries and have created undeniably deep effects on both social and economic life (Kazıcı, 1993, p. 85). In Turkish-Islamic countries, most of the municipal and social services were provided by foundations (Birecikli, 2012, p. 246). Foundations have performed many important services in Islamic society. The construction and maintenance of madrasahs, mosques, hospitals, dervish lodges and zawiyas were carried out by foundations (Türkmenoğlu, 2021, p.379). The foundation institution, which originates from the commandments and principles of the Islamic religion regarding cooperation and solidarity, is based on the Quran and the Sunnah (Kazıcı, 1993, p. 85) Although the concept and institution directly related to foundations are not mentioned in the Quran, the existence of verses advising spending in the way of Allah, giving alms and charity to those in need, and competing in charity and piety have formed a basis for Muslims in

this regard (DiA, 2012, p.476; Memiş, 2019, p.132). In addition, the Prophet's injunctions advising service to creation and especially the hadith about sadaqah jariyah, which is included in many foundation deeds, states: "When a human being dies, the reward for all his deeds is cut off. These three things are an exception to this: Charity, knowledge that is benefited from, and a good child who prays for him" (Muslim, Wasiyyet: 14) have been an important factor in the growth and development of foundations (Taş, 2015, 191; Memiş, 2019, p.132).)

In order to attain the good news in the hadiths of the Prophet, many Muslims with means, especially the rulers and their families, started competing with each other in establishing foundations after the first one was established in Medina. In the Islamic world, foundations were established not only for people but also for animals. Human needs such as food, health, education, worship, trade, etc. were met through foundations (Kazıcı, 1993, p. 85). Foundations established for religious purposes such as getting closer to Allah also have psychological, sociological and economic dimensions. While foundations shaped the social and economic life of the society on the one hand, they also ensured social solidarity on the other. The existence of many foundations, especially for the purpose of meeting the needs of the poor and the destitute, reveals that efforts were made to prevent social inequality in economic terms and to establish brotherhood among the society (Taş, 2015, p. 192).

A foundation, which is a social institution, is not just a bare building. The people who established the foundation were also responsible for providing the income that would keep that social institution alive for centuries (Birecikli, 2012, p. 246). The financial resources needed to keep foundation institutions alive and ensure the continuation of their services were provided from the movable or immovable properties donated by the people who established the foundation (Taş, 2015, p.192).

In Islamic law, the foundation transaction consists of an oral legal transaction. Foundations whose *mevkûf aleyhi* is not certain are accepted as a unilateral legal transaction by Islamic jurists. According to the majority of Islamic scholars, the elements of a foundation are four. These are: declaration of will (*sîga*), the person who endows (*vakıf*), the endowed property (*mevkuf*) and the beneficiaries of the foundation (*mevkûfun aleyh*). However, Hanafi jurists have accepted only the *sîga* among the founding elements of a foundation. They have adopted the view that the other elements are the conditions for the validity of the foundation (DiA, 2012, p.476). According to Ebu Yusuf, when a person utters the words "I have endowed", the foundation transaction has been legally realized. Later, the tradition of saying this word in the presence of the judge and witnesses became widespread. Thus, the established foundation was legitimized in the eyes of the society and registered by the

judge. A donated property could never be converted into private property. In fact, the conditions specified in the foundation deed could not be violated or changed (Üner, 2011, p. 153).

Essentially, there were three important elements for every foundation. The first of these was donations made by wealthy people. The second was a continuous and regular income to keep the foundation going. The third was a foundation's founding purpose. These purposes could be municipal, religious or health (Üner, 2011, p. 154).

When the foundation process was carried out, the endowed property had to be the property of the endower. Again, the endowed property had to be a revenue-generating property (house, shop, field) and the endower had to be free, of legal age, sane and of puberty. At the same time, the endower had to establish the foundation with the aim of gaining the consent of Allah by considering the interests of the society (Turgut, 2013, p.11). The endowment of a personal property was called vakf-ı sahih, while the endowment of a land whose property belonged to the state was called vakf-ı irsâdi (Birecikli, 2012, p.247).

Each foundation had a charter in which its provisions were written. A charter is a document that shows for which charitable purposes the endowed property will be used and how it will be managed. Charters of foundations have an important place in the history of Islamic civilization (DiA, 2012, 465). Charters of foundations are living witnesses of the social service and service that foundations provide for the country (Birecikli, 2012, p. 248).

The person who supervised and carried out the foundation's affairs was called a trustee or a minister. The trustee had to comply with the conditions of the foundation charter while performing his duty (DiA, 2012, p. 478). The administration of the foundations was carried out by the trustee under the supervision of the judge. The trustee, who was in the senior management cadre of the foundation, followed up on the works and transactions related to the foundation. The determination and appointment of the trustee was specified by the founder of the foundation and their names were written in the foundation charter. The trustee could consist of one person or a board (Türkmenoğlu, 2021, p. 380-381). In Ottoman practice, the minister especially controlled the trustee's dispositions regarding the foundation and advised him on matters related to the foundation when necessary. This duty could be performed by a person or bodies (DiA, 2012, p. 478).

Foundations, which differed in terms of their form and content, were divided into two according to their functions. The first of these was foundations that were usufruct with the same: Everyone benefited from these foundations, also called “hayrat” or “müessesât-ı hayriye”. These were foundations such as madrasahs, mosques, libraries, roads, bridges, fountains, etc. The other was foundations that were not usufruct with the same: These foundations were

foundations that provided the necessary capital for the regular and continuous continuation of the services provided in the charitable foundations. In Ottoman sources, this type of foundation is called “asl-i vakf” (Üner, 2011, p. 156).

## **FOUNDATION IN THE OTTOMAN EMPIRE**

The Ottoman civilization, which can be described as a foundation civilization, developed based on the main sources of Islam and the practices of the previous Islamic and Turkish-Islamic states (Kazıcı, 2019 p. 73). The foundation institution, whose legal principles were determined as an organization during the Abbasid period, had the opportunity to spread to all corners of the Islamic and Ottoman world (Kazıcı, 2019, p. 74).

Foundations, which have an important place in the history of Islamic civilization, have provided services in many areas. However, we see the most mature and final form of foundations in the Ottoman period. The most important factor that made this possible was the survival of the Islamic tradition and the service approach effectively implemented by the state (Memiş, 2019, p.132). Therefore, foundations in the Ottoman Empire became one of the most important factors contributing to the agricultural, transportation, road construction and commercial development of the country (Kazıcı, 2019, p. 85).

It is known that the first foundation in the Ottoman Empire was established in Bursa after the conquest of Bursa during the reign of Orhan Bey (Kaya- Koca, 2020, p.149). The foundation institution in the Ottoman Empire developed in parallel with the development of the political and financial power of the period (Kazıcı, 2019 pp. 74-75). The number of foundations in the Ottoman Empire, which existed for centuries, increased continuously, except for the last periods. However, during the stagnation and decline of the state, the foundations decreased in terms of quality and number (Kaya- Koca, 2020, p.148).

When the Ottomans annexed a Muslim region to their own lands, they did not touch the existing foundations there. They even complied with the previous conditions in their foundation deeds. Sometimes, they ensured the continuity of these foundations by allocating new properties to these foundations with decreasing income. As a matter of fact, there are many foundation deeds and documents regarding this subject (Kazıcı, 2019, p 83).

The foundation institution facilitated the settlement policies of the Ottomans and enabled the rapid spread of Islam in the conquered regions. Ottoman statesmen established architectural structures such as madrasahs, dervish lodges, zawiyas and soup kitchens in the conquered regions and attracted

Turkish figures such as teachers, sheikhs, imams and preachers. Thus, these conquered regions took on an Islamic identity in a short time. The region became lively and prosperous (Kazıcı, 2019 p. 83).

In the Ottoman Empire, services such as health, religion, education, and public works were provided through foundations. Foundations were generally established by the sultan, viziers, high-level administrators, and those with financial means. However, it is also known that modest foundations were established by people who were not considered wealthy in order to earn rewards (Memiş, 2019, p.132).

The Ottomans gave so much importance to foundation institutions that it is possible to see its effect in every area of life (Kazıcı, 2019, p. 84). In addition to the foundations established to meet the needs of people in the service area of the Ottoman society, foundations were also established to meet the needs of the environment and animals. In particular, the nests built in buildings for birds to shelter and the Migratory Birds Foundation established for the treatment of injured or sick birds during migration show us how much importance was given to birds (Kaya- Koca, 2020, p. 149).

In the Ottoman Empire, foundations were so developed that there were also foundations that worked on details other than the most basic needs of society such as education, health, security and social issues. The fact that foundations were so effective was made possible not only by the administrators who governed the state, but also by the participation of people at every level of society in the charity race. Regardless of their economic income, those who were responsible did not refrain from establishing foundations to the extent of their power (Taş, 2015, p. 192). In fact, the foundation institution was considered a very important and prestigious phenomenon in Ottoman society. So much so that there was no difference in this understanding between those at the lowest and the highest levels of society in terms of economics. Even an elderly woman with two or three rooms would participate in this understanding by donating one or two rooms of her house (Kazıcı, 2019, p. 87).

The foundation institution that developed with the Ottoman Empire brought many innovations. Undoubtedly, one of these innovations was cash foundations (Kaya- Koca, 2020, p. 149). Those who did not have the financial means to donate land and goods could donate their own small savings through cash foundations. Cash foundations would only lend the donated money to those in need, without touching the principal and profit. In this way, both the financial problems of the needy would be solved and the continuity of the foundation would be ensured (Türkmenoğlu, 2022, p. 298).

Foundations, which constituted one of the most important building blocks of the Ottoman Empire, met many needs of the society by assuming different

roles. In the Ottoman Empire, foundations were classified according to the nature of the needs, administration, ownership and usage methods (Kaya-Koca, 2020, p.149).

## FOUNDATION IN URFA

The geography of Urfa, located in the region between the Euphrates River and the Habur River, has fertile lands and abundant water. Urfa, which has important trade routes connecting the Eastern and Western worlds, has remained in the interaction of different cultures and has been an important center of culture and civilization throughout history (Turgut, 2013, p. 14). Throughout history, Urfa and its surroundings have been constantly subjected to attacks from different tribes at different times and have come under the rule of various states. The reason for this is that the region is located at the intersection of roads, which is an important transition area, does not have a natural shelter to prevent attacks, and its lands are fertile (Özçelik, 2018, p.92).

Urfa was conquered in 638 by Muslim armies under the command of İyaz b. Ganem during the time of Hz. Ömer (Özçelik, 2018, p. 92). After the conquest of Urfa, the Governor of Cezire, Said b. Amir, built a mosque in the name of Hz. Ömer. This mosque is considered the first foundation institution established in Urfa (Turgut, 2013, p.22). Considering historical sources and court records, it is accepted that this mosque is the Ömeriye Mosque located near today's Kazancı Bazaar. (Taş, 2015, p.194).

The contribution of religious places to the establishment and development of the foundation culture in Urfa is great. Indeed, in Urfa, in order to protect and provide services for the Halilu'r-Rahman and Ayn Zeliha regions, which are the shrines of Hz. İbrahim, and the places where Hz. Eyüp lived, lodges and zawiya were established from the very beginning. At the same time, it is estimated that some Urfa foundations, which do not have a foundation charter from the Ottoman period and are referred to as "evkaf-ı kadime" in archive records, were established to serve religious places before the Ottomans (Taş, 2015, 194-195). Again, the mosque located in the center of the Halilu'r-Rahman complex was built by the Abbasid caliph Me'mun (Turgut, 2013, p.24). In addition, it is known that other Muslim states that established control over Urfa and its surroundings also established many foundation institutions in the city.

Urfa, which has been subjected to many wars and invasions throughout its history and has been under the rule of different states, achieved stability and became prosperous during the Ottoman period. The most magnificent and largest mosques of the city were built during this period. These are Hüseyin Paşa Mosque, Yusuf Paşa Mosque, Nimetullah Mosque and Rızvaniye



Mosque. At the same time, education and scientific life gained vitality through foundations and madrasahs and libraries were established during this period (Kurtoğlu- Karakeçili, 2015, p.120).

Urfa, which was under Mamluk rule until 1516, came under Ottoman rule in 1516 when Yavuz Sultan Selim captured Urfa and its surrounding areas during his Egyptian campaign. In 1516, Urfa was administratively connected to the province of Aleppo. Later, in 1518, it became the pasha sanjak of the province of Raqqa. After the Battle of Nizip, it was taken over by Kavalali Mehmet Ali Pasha for a while. However, the Ottomans regained control of the region shortly thereafter (Özçelik, 2018, p. 93). After Urfa came under Ottoman rule, a stable period began in the field of education.

The city has made great progress in terms of architecture and culture by establishing many madrasahs, mosques, libraries, inns and baths by foundations (Kurtoğlu- Karakeçili, 2015, p.120).

As in other Islamic countries, many madrasahs, mosques, social complexes etc. were established by the ruling class and philanthropists in the Ottoman Empire. Foundations were also allocated for the continuation of the services provided by these structures (Kurtoğlu- Karakeçili, 2015, p.122). One of these foundations is the Halilu'r-Rahman Foundation located in Urfa. The Halilu'r-Rahman Foundation, which is of great importance for the history of the city, is among the Urfa foundations that were established in the early periods and have survived to the present day. The Ottoman Empire built the shrine of Hz. In the name of Abraham, he built foundations, mosques, zawiyas and mausoleums in many parts of the country (Türkmenoğlu, 2021, p.384).

Suleiman the Magnificent provided assistance to the Halilu'r-Rahman mosque and zawiya. He also established an almshouse that could be used by those who visited the tomb of Hz. Ibrahim, those who were guests in the zawiya, and those in need in the area (Türkmenoğlu, 2021, p.386). According to the foundation charter of Suleiman the Magnificent b. Sultan Selim Han, which was registered on 15 Şaban 948 (December 4, 1541), in addition to those listed above, he appointed a sheikh for the zawiya, an imam, muezzin, ferrash for the mosque, a cook for the almshouse, and other officials, and their salaries were also determined. The witnesses to the registration of the foundation charter were Suleiman the Magnificent's viziers (Turgut, 2013, p.25).

During the Ottoman rule, many cultural, religious, social and economic institutions were established in Urfa. These institutions consisted of institutions such as madrasahs, mosques, libraries, hospitals, tombs, fountains, fountains, cisterns, wells, bridges and cemeteries. In order for these institutions to continue their services, various real estates such as plots, lands, shops and buildings were allocated (Birecikli, 2012, p. 251).

In essence, the most important first-hand source to be consulted in order to research the names of the Ottoman period Urfa foundations and their establishment purposes, how they operated, foundation officials and their salaries, who benefited from the foundation, and how much the foundation's income and expenses were is the archive documents. Because there are many documents related to the foundation in the archive. A few examples are given in Appendix 1 and 2

## **CONCLUSION**

The institution of foundations, which arose from the human desire to meet the needs of others due to the idea of doing good, has been the greatest factor in eliminating economic inequality among the society and helping to ensure the integration of the society. Although it is known that some institutions existed in the pre-Islamic period due to the aim of helping others in the existing societies, the institution of foundations gained its real meaning in this regard with Islam.

In the Ottoman Empire, the foundation institution experienced its most glorious and peak period. In the Ottoman Empire, which was considered a foundation civilization; education, religion, health, public works and social aids that the society needed were carried out by foundations. In the Ottoman Empire, foundations had important duties in social life. Institutions such as madrasahs, masjids, mosques, caravanserais, inns, baths, covered bazaars, etc. were established by foundations.

Urfa, which has an important place in terms of history and culture, became an important settlement during the Ottoman rule. Foundations in Urfa left deep traces by affecting religious, social and economic life. Foundations made important contributions to the establishment and development of many institutions such as madrasahs, masjids, mosques, inns, baths and covered bazaars here. Today, it is possible to see many historical foundation works belonging to the Ottoman period in Urfa.

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## ATTACHMENTS

### 1.

Nezâret-i Evkâf-ı Hümayûn, Mektûb-i Kalemî, Aded 544

Evkâf-ı mülhakdan Şerîkçizâde vakfî müsakkafâtından Urfada Höyük karyesinde bulunan değirmenin hârab olan mahallerinin i'nde'l-keşf ve'l-münâkasa mecîdî yirmi üç gurus on para hesabıyla on dört bin dokuz yüz on gurus maktû'ân tamîrî hakkında Urfa sancağı meclis idâresinden vârid olan mazbata üzerine Haleb vilâyeti celîlesiyle ba-muhâbere alınan cevabundan meblağ-ı mezbûrun vakıf vâridâdından sarf olunacağı anlaşılmış olduğundan keşfinde muharrer evsâf ve eşkâlî veçhiyle ve kemâl-i metânet ve resânetle vücuda getirilmeğe sa'y ve gayret olunmak üzere ta'mirâr-ı merkûmenin bermûcib-i iş'âr maktu'ân icrâsı ve mesârif-i ta'mirâr-ı mezkûreden akçe farkı bâ- tenzîl bâkî kalan on iki bin yüz seksen dört buçuk gurusun vakf-ı mezkûr vâridâtından sarfî için me'zûnîyete lâzım i'tâ buyrulmuş zımınında keyfiyetin huzûr-i sâmi-i cenâb-ı sadâretpenâhilerine 'arz mesârifât idâresinin ifâde ve ol-bâbda evvelâ keşf defteriyle munâkasa pusulası lefen takdîm kılınmağın ol bâbda emr u ferman hazret-i veliyyül'l- emrindir. Fi- 12 Cemaziyûlahır sene 1313, 18 Nisan sene 1311, Nâzır-ı evkâf-ı hümûyun (BOA, ŞD: 136- 72).

### 2.

Ma'rûz-ı dâ'iy-ı kemîneleridir ki idâre-i 'umumiye -i dâhiliye müdürîyet-i ifâdesiyle şeref-vârid olan 7 kanûnievvel 1334 tarihli ve numaralı tezkire- i celîle-i cenâb-ı nezâretpenâhileri cevabıdır Urfada Behramiye evkâfına mehkûad-ı maktu 'ali Gümrük Hândaki odalardan dolayı Rızvaniye evkâf-ı mütevellisiyle Kürkçizâde Nedim Efendi refekâsî beyninde tehadüs eden mes'elenin nezâret-i ra'îyâneme cihet-i ta'allukî görülmemiş ve evrâak-ı mürsele lefen huzûr-i sâmi-i cenâb-ı nezâret penâhilerine i'ade ve takdîm kılınmış olmağla ol bâbda emr u ferman hazret-i veliyyül'l- emrindir. Fi- 13 Cemaziyülevvel sene 1336, Fi- 25 Şubat sene 1334

(BOA, DH.İ.UM.EK: 109- 46).

### 3.

UŞS. 213. 1061

[illegible]



# **The Office of Sheikh-Ul-Islam in The Ottoman Empire and The Official Ceremonies in Which The Sheikh-Ul-Islam Participated**

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## INTRODUCTION

The most important reason why the Ottoman State continued its dominance for six centuries was that it had deep-rooted institutions. Coming from an ancient tradition and benefiting from the practices of past Islamic states, the Ottomans rebuilt many administrative, legal, military and financial institutions, and preserved the office of Sheikh al-Islam, which was considered the highest religious and scientific authority, within their organization until their last period. The study includes considerations on the historical development of this institution from the foundation of the state to the beginning of the 19th century and its place in the state organization.

### REASONS FOR THE ESTABLISHMENT OF SHEIKH-UL-ISLAM:

The first Ottoman Sultans consulted the Jurist when establishing legal rules and even making important political decisions; later they established the Office of Sheikh-ul-Islam for the same purpose. However, it can be said that in the later periods of Ottoman history, especially during the reign of Fatih Sultan Mehmet, the areas of administration were considered to be specific to the Sultan in terms of law-making activity. The greatest example of this was the Fatih Code. (İnalçık, 2016, 4)

There are different views put forward on the reasons for the emergence of the Sheikh-ul-Islam in the Ottoman Empire, as there were on the date of its establishment. Most of these are views of the orientalist. According to these, the Office of Sheikh-ul-Islam was established to represent the religious authority in the Ottoman Empire, similar to the position of the Abbasid caliphs who were with the Mamluk rulers in Egypt. Other foreign authors who support this view state that the office of Sheikh al-Islam in the Ottoman Empire was an incomplete imitation of the Abbasid caliphate of Egypt, and argue that with the establishment of this office, the sultan's administrative power was based on a religious authority equal to that of the Grand Vizier. It is known that this view is based on a certain principle. Namely, just as the Abbasid caliphs of Egypt, who were completely stripped of their worldly authority, were consulted by the Mamluk rulers regarding matters related to their religious affairs, the Ottoman Sheikhs-ul-Islams, in accordance with a controversial practice, assumed the religious duties of the sultan who gained the title of "caliph" after the conquest of Egypt by Yavuz Sultan Selim. Our authors, who attribute the establishment of the Sheikh-ul-Islam to the issue of control of the scholarly class and claim that this occurred during the reign of Yavuz Sultan Selim, also state that this position was created so that the scholars who gave rulings in the field of sharia could be taken under a certain order, and write that a second reason was to protect the rights of the Ottoman subjects, called the "preservation of the general rights". From this, it can be understood that it



was among the duties of the Sheikh al-Islam to report the oppression and injustices committed by the administrators to the Sultan and to protect the rights of the people. Those who date the establishment of the Sheikh al-Islam to the reign of Murat II also believe that the institution emerged due to the personality of this Sultan and the social conditions of the period. According to them, during the reign of Murat II, the esoteric movements that undermined the Sunni creed became widespread in Anatolia, and sometimes even reached a level that threatened the state, as in the previous incident of Sheikh Bedreddin. In order to prevent all these negative developments and to strengthen the Sunni belief, and at the same time to ensure that the fatwas were issued by an authority under state control, the office of Sheikh al-Islam was established by Murat II, who had a pious personality.

The same ruler's desire to establish an institution that would represent the religious feelings of the people, in addition to the worldly power he was in charge of, also played an important role in this regard. It is certain that the need for an office that was considered to be the "representative of the public religious conscience", in the heritage of the Sufi-religious tradition that had been going on since ancient times, along with an existing political power, was effective in the establishment of the Sheikh-ul-Islamate. Similar to the Egyptian Abbasid caliphs, in the Ottoman Empire, the sultan represented political power and the Sheikh-ul-Islam represented religious authority. All of these views we have mentioned were effective in the establishment of the Sheikh-ul-Islamate. However, in our opinion, the real reason for the establishment of the Sheikh-ul-Islamate was the need for an authority that could monitor the conformity of every action taken by the Ottoman Sultans to the Islamic religion. Thus, the Sheikh-ul-Islamate, which undertook the duties of the caliphate in the religious field, emerged.

### **ESTABLISHMENT OF THE SHEIKH-UL-ISLAM:**

It is not clear when and how the office of Sheikh al-Islam was established in the Ottoman Empire, and there are different views on who first assumed this position. The first of these views is that it emerged with Osman Gazi's father-in-law, Sheikh Edebali, who assumed the duty of fatwa during the early establishment of the Ottoman Empire, due to the fact that the office of Sheikh al-Islam was perceived as a mufti's office. (Akgündüz, Murat; 2002, 37-44) However, if we consider that the office of mufti has existed in Islamic states since very early times and that the title of Sheikh Edebali was not used for him, it is understood that this view is not very consistent. In addition, at the time the Ottoman State was founded, there were scholars with the title of Sheikh al-Islam in the important cities of Anatolia who were considered the heads of the ulema class and who were also the authorities for fatwas. Another

view that dates the establishment of the Sheikh-ul-Islamate to the period of Murat I is based on a decree sent to Evrenos Bey, who was the commander of the left flank of the raids in the Rumelia region in 1386. In this decree, it is said to Evrenos Bey: "You should obey the fahrü'l-fuzela Elvan Fakih, who was appointed as the Sheikh-ul-Islam of the General Rumelia Province." (Ali Emiri, 1334, 317) This title of sheikh al-Islam most likely means the headship of the scholars in the Rumelia region, and does not carry the highest authority in the matter of fatwa. Because, during the reign of the sultans following the reign of Murat I, fatwas on important matters of the state were requested from scholars of Islamic countries other than the Ottomans. In the case of the murder of Sheikh Bedreddin during the reign of Mehmet I, a fatwa was taken from Haydar-ı Herevi, who came from Iran and settled in Ottoman lands. If the Office of Sheikh-ul-Islam had been present at that time, he would have been the one to be contacted for a fatwa, and no help would have been sought from a scholar who had come to the Ottoman Empire from outside.

Another view that is commonly put forward about the date of the establishment of the Sheikh-ul-Islam is that this institution emerged with the muftis who issued fatwas in Istanbul following the conquest. According to these, the Sheikh-ul-Islam began with the muftis who issued fatwas in Istanbul, and the first person to hold this position was Hızır Bey, who also served as a judge. However, if we remember that Fahreddîn-i Acemî was also present in Edirne, who issued fatwas, it becomes clear that this duty entrusted to Hızır Bey was an additional occupation in addition to his service as a judge. Thus, until the end of the Fatih period, the scholars who issued fatwas in the three important centers of the state, Edirne, Bursa and Istanbul, were evaluated in equal ranks, and later on, the Istanbul Mufti's Office gained importance and transformed into the office of Sheikh al-Islam.

There are also authors who bring the date of the first establishment of the Sheikh-ul-Islam in the Ottoman Empire to periods closer to our time. For example, in a work examining the historical development of the Ottoman judicial organization, it is mentioned that the Sheikh-ul-Islam, which was not considered an official authority at the beginning, was established during the reign of Yavuz Sultan Selim with the aim of supervising the sharia courts and protecting all kinds of rights of the people, and Zenbilli Ali Efendi was appointed for the first time. Kramers, the author of the article "Şeyhülislam" in the Encyclopedia of Islam, who defends the same view, also thinks that the office of Şeyhülislam should have started with Mola Fenari. The office of Şeyhülislam became the highest scholarly position during the legal period. Because, although the first official document in which the term Şeyhülislam is used, Fatih's organizational law mentions that Şeyhülislam is the head of the ulema, it is stated in the state protocol that he will be behind the Kadıaskers and even in some cases, he can be ahead of the sultan's teacher. (Kramers, 1979, 486.)

As a result, based on the views we have given about the establishment of the office of Sheikh al-Islam in the Ottoman State, it is certain that the duty of Molla Fenari, who is generally accepted as the first Sheikh al-Islam, was a fatwa service in addition to the duties of judge and professor, and that the people who came after him did not have extensive authorities. It is clear that this situation, which we consider as the highest religious authority and the head of the scholar class within the borders of the Ottoman State, took place in the legal era that coincided with the mid-14th century. If so, the individuals mentioned with the title of Sheikh al-Islam before this period were given this title because they served as chief muftis in cities such as Bursa, Edirne and Istanbul, which were the administrative centers of the state. The title of Sheikh al-Islam, which began to take shape with Zenbilli Ali Efendi, who served as the Mufti of Istanbul during the reigns of Bayezid II, Selim I and Suleiman the Magnificent, became the highest religious and scientific office during the reign of Ebussu'ud Efendi.

### **ORGANIZATION OF THE SHEIKH-UL-ISLAM:**

The states that adopted the basic rules of the Islamic religion did not want to go beyond the boundaries drawn by the Quran and the hadiths of the Prophet Muhammad (pbuh). Thus, they wanted religious provisions to be the dominant element in all institutions within the state, in society and in the entire world. If the Ottoman State's religious and state thought is taken into consideration; the ruler who made the law felt that he had to seek the opinion of the Islamic authority in order not to have any doubts when making a decision within the framework of religious rules. However, the first sultans of the Ottoman Empire took the opinion of the jurists when making important decisions. Later, they established the institution of Sheikh-ul-Islam because of the same opinion. The Ottoman Empire had a form of government and administration based on the foundations of the Islamic religion.

For this reason, since the state's operational structure is at the forefront of religion, Islamic institutions have also been in an important position within the state organization. Although the most important unit of the state after the Sultanate is the Grand Vizier institution, when the stages that the Sheikh-ul-Islam went through are taken into consideration, it has been seen that it has taken on a structure equivalent to the Grand Viziership. However, this situation described is valid for the normal operational structure of the state. Spiritually, the office of Sheikh-ul-Islam had a higher position than the Grand Viziership. Because when we look at the political past of the Ottoman Empire, during a rebellion or when the sultan could not govern the country, the head of the state could be changed with the opinion of the Sheikh-ul-Islam. The Sheikh-ul-Islam was invited to the palace for important matters, and when he

appeared before the sultan in the palace, he was greeted standing. This was a sign of respect and reverence for the Sheikh-ul-Islam. In addition, state officials who visited the Sheikh-ul-Islam, whether they were from the “ilmiye” and “seyfiye” classes or members of the “kalemiye” class, always showed their respect by kissing his hand when they appeared before him. In addition, with this behavior, one of the situations that highlighted the importance of religion within the state would occur. In cases where the Sheikh-ul-Islam was invited to the palace or was asked to attend any ceremony, he would be invited by the reisülküttap, an important official of the Kalemiye class.

Under normal circumstances, when state officials were to be invited to a ceremony, this process was carried out by the kethüdas, but when it came to the sheikhs-ul-islams, the reisülküttaps stepped in. In the official ceremonies of the Ottoman State, the sheikhs-ul-islam would be on the left of the sultan and the grand vizier on the right. However, during the time of Sheikhs-ul-islam Feyzullah Efendi, who had strong political authority, the situation was reversed. After a decree was issued by Sultan Mustafa II and the rule was changed, Sheikhs-ul-islam Feyzullah Efendi was seated on the right of the throne. Thus, it is understood that some changes were made in the ceremony during the period of powerful Sheikhs-ul-Islams. The section about Sheikh-ul-Islam in the organizational law summarizes the place of the sheikh in the state organization. "And the Shaykh al-Islam is the head of the Ulema. And the Sultan teacher is also the chief of the Ulema. It is necessary and appropriate to take the Grand Vizier above the court. But the Mufti and the Hoca are many levels above the other viziers and they even contribute to them." (Akgündüz, Ahmet; 1990, 318) This section shows that the Grand Vizier unit was above the Sheikh al-Islam in the state hierarchy. The Sheikh al-Islam unit, which did not have many duties other than the authority to issue fatwas in the early Ottoman Empire, became the sole authority authorized for the appointment and dismissal of the scholar class during the reign of Suleiman the Magnificent. (Kara, 2017, 8)

Later, during the years 1584-1585, when Özdemiroğlu Osman Paşa, who was the Grand Vizier, visited the Sheikh-ul-Islam of the period, Çivizade Mehmet Efendi, this became a tradition. Therefore, it became a rule for the grand viziers to visit the Sheikh-ul-Islams several times a year. Thus, the difference between the Sheikh-ul-Islam position and the Sultan's tutor and other viziers during the reign of Fatih Sultan Mehmet became more apparent and gave way to the superiority of the Sheikh-ul-Islam position. From these years onwards, it was seen that the Sheikh-ul-Islam position became the highest authority responsible for religious affairs, while the Grand Vizier position was responsible for state affairs.

## OFFICIAL CEREMONIES ATTENDED BY THE SHEIKH-UL-ISLAM:

In order to more clearly demonstrate the high esteem in which the Sheikh-ul-Islam was held in the Ottoman Empire, it would be appropriate to examine the ceremonies he attended one by one. We can list them as follows:

### *Enthronement Ceremony:*

Until the end of the Ottoman Empire, the Sheikh-ul-Islam would always attend this ceremony, which was held on the occasion of the new sultan's accession to the throne. For example, at the enthronement ceremony of Murad III, which took place on 8 Ramadan 982/22 December 1574, the Sheikh-ul-Islam Konyalı Hamid Efendi came to the presence after the Grand Vizier Sokollu Mehmet Pasha, the dome viziers, Kaptan Pasha, the Rumelian and Anatolian Kazaskers, the Chief Treasurer, the Chief Marksman and the Reisülküttap and gave his allegiance. In the enthronement ceremony of Mustafa III, which is narrated in a protocol book from the second half of the 18th century, dated 18 Safer 1171/3 November 1757, the Grand Vizier Ragıp Pasha, who learned of the death of the former sultan Osman III, informed his chamberlain and the Reisülküttap about what he would do regarding the matters of allegiance, including holding his funeral. Then, without losing any time, he sent a message to the Sheikh-ul-Islam Damat-zâde Feyzullah Efendi, asking him to come to the palace. In the Mantle of Saadet, the Sheikh-ul-Islam and the Grand Vizier first swore allegiance to the new sultan, and together with the other people who had been invited for the ceremony, they arrived in front of the Bab-al-Saade gate. Meanwhile, Mustafa III, who came out of the circumcision room next to the Mantle of Saadet, with Darü's-Saade Ağası on his right and Silahtar Ağa on his left, greeted the guests by saying "Good morning" and presented each of the Sheikh-ul-Islam and the Grand Vizier with a sable fur coat as a gift. Then, as in the holiday greetings, first Nakîbü'l-Eşraf prayed and gave his allegiance to the sultan who sat on his throne, then the Crimean Khans, the Rikâb and the Kapı Ağas paid their allegiance and the Şeyhülislam, who was followed by the ulema class, came to the presence. After a short prayer, the Şeyhülislam, who paid his allegiance to the sultan for the second time, took his place on the right side of the Grand Vizier. The enthronement ceremony ended with the allegiance of other state dignitaries such as the Viziers, Kadı Asker's, Janissary Ağas, and Ocak Ağas.

As can be seen, the approval of the Sheikh al-Islam was of great importance in the accession of the Ottoman Sultan to the throne, so it was necessary to receive his allegiance before the other statesmen. Thus, it was clearly stated that the sultan's reign was intended to be based on legitimate foundations. It is seen that the Sheikh al-Islam was also active during the enthronement of the

new Sultan, which was called "taqlîd-i seyf" as a continuation of the enthronement ceremony. In the enthronement ceremonies that became a tradition to be held at the tomb of Abu Ayyub al-Ansari after the conquest of Istanbul, the Sheikh al-Islam of the time usually performed this duty, but sometimes it was delegated to the Naqîbu'l-Eshraf.

### ***The Funeral Ceremony of the Sultan:***

The funeral prayer of a deceased sultan was performed among the duties of the Sheikh-ul-Islam, and when he could not come due to an excuse, this duty was performed by one of the Kadi soldiers or the imam-ı evvel-i sultani. Murat III, who broke this tradition, requested in his will that Hoca Saadeddin Efendi lead the prayer. However, Sheikh-ul-Islam Bostan-zade Mehmet Efendi, who had arrived at the Hagia Sophia Mosque where the body was brought, fulfilled his duty as imamate. In the funeral ceremony of Osman II, which is narrated in the Teşrifat Defteri; after the body of the former sultan was taken out of the Harem gate of the palace, it was observed by the Janissary Agha, the servant chamberlain and the sekbanbaşı with his face uncovered, as was the custom since the old times, and then placed on the musalla stone in front of the Babü's-Saade gate. Then, the new sultan, III. Upon Mustafa's order, the funeral prayer was performed by the Sheikh-ul-Islam Damat-zâde Feyzullah Efendi. After the burial, the Sheikh-ul-Islam came to the Grand Vizier Ragıp Pasha and was served sweets, coffee, and sherbet, as well as being given a sable fur wrapped in green broadcloth as a gift.

### ***Ceremonies Related to Princes:***

We learn from sources that during the birth of the sultan's children, he would come to the palace with other statesmen to convey the congratulations of the Sheikh al-Islam, to whom the Grand Vizier had sent a message. For example, in one of the telegrams from the reign of Selim III, the Grand Vizier addressed the sultan and stated that he wanted to meet with the Sheikh al-Islam on Wednesday because his child was born. In the imperial edict written in response, it was stated that "My Vizier will come tomorrow day with our master da'if and Kaptan Pasha, bi'l-ma'iyye reciprocity of the magnificent palace." and permission was given.

It is also mentioned in the Protocol Book that the wife of the Sheikh ul-Islam was invited to the palace with a memorandum sent by the Darü's-Saade Agha, along with the wives of the Grand Vizier, the Janissary Agha and the Kaptan Pasha. When the princes grew up and reached the age of education, the "bed'i-besmele" ceremony would be held, again attended by the Sheikh ul-Islam. In

this ceremony, the Sheikh ul-Islam would have the prince read the alphabet from the elif to the last letter, then pray and hand him over to his teacher, who would give the real lesson. The historian Çelebizade İsmail Asım Efendi, who recounts a bed'i-besmele ceremony held in 1727 in his work, states that tents were set up for the guests in front of the İncili Mansion in Topkapı Palace and that after the morning prayer performed in Hagia Sophia, Sultan Ahmed III It is stated that the alphabet was taught to the five-year-old Prince Mehmed by the Sheikh-ul-Islam Yenişehirli Abdullah Efendi in the presence of Ahmed. (Kara, 2017, 47)

### ***Feast Ceremony:***

The Sheikh-ul-Islam was among the state dignitaries present at the palace for the celebrations of Ramadan and Eid al-Adha, one of the most important ceremonies in the Ottoman Empire. In Tarih-i 'Ata, which provides detailed information about the palace organization, it is stated that the guests started to gather in front of Bab-ı Hümayun from the night of the feast, and the next day when the sultan came to the feasting area in front of the Babu's-Saâde gate, they kissed hands starting from Nakibü'l Eşraf. It is stated that when it was the turn of the Şeyhülislam, the sultan stood up and walked a few steps towards him out of respect. It is stated that when it was the Sheikh-ul-Islam's turn, the sultan stood up and walked a few steps towards him out of respect. In some sources describing the practice in the 17th century, it is mentioned that the Sheikh-ul-Islam would stand up and walk a few steps towards the sultan during Eid ceremonies, kiss his shoulder or the collar of his garment. (Tarih-i Atâ, I, 1282, 223)

It is understood from various archive documents that it became a tradition for the Sheikh-ul-Islam to appear before the Sultan together with the Grand Vizier on special occasions, such as the beginning of the three months, the beginning of the Hijri year and the congratulations of the Jumada al-Akhir. Apart from this, we learn from another archive document on the subject that after the distribution of the mevacib from the treasury to the state officials, it was the custom for the grand vizier and the Sheikh-ul-Islam to come to the imperial court to thank the sultan. In all these matters we have mentioned, the grand vizier would first present a telegram and ask for permission, and the sultan would give his answer with a line of imperial mail, saying, "Come with our Sheikh-ul-Islam." (Akgündüz, Murat; 2002, 303)

### ***Mawlid-i Sharif Ceremony:***

Until the last periods of the Ottoman Empire, we see the exceptional position of the Sheikhs-ul-Islams once again in the Mawlid-i Sharif ceremony held with the participation of the Sultan himself on the 12th day of the month of Rabi'ul-awwal, which was the last date of our Prophet. At first, the Sheikhs-ul-Islam would attend the Mawlid ceremony held in the Hagia Sophia Mosque, and after the construction of the Sultan Ahmet Mosque, the Sheikhs-ul-Islam would wear a special dress called "ferve-i beyzâ" and a traditional turban, while other state dignitaries would wear their ceremonial dresses. At the specified time, the people who came to the Sultan Ahmet Mosque, the "Sadreyn", the Anatolian and Rumelian judges, the mevalis and the lecturers, would pass through the neighborhood on the right side of the mihrab towards the imperial gallery, while the sheikh-ul-islam would take his place on the left of the grand vizier sitting in front of the mihrab. Then, the ceremony would begin with the sultan coming to the imperial gallery, and after the sultan preachers, three mevlid-hans would take the podium and recite the mevlid. If the grand vizier was outside of Istanbul because he was leading the army during the mevlid, his place would be left empty, and the sheikh-ul-islam would sit on a prayer rug a little further back in the middle of the mihrab. After the mevlid was over, the guests who left the mosque, with the sheikh-ul-islam and the grand vizier at their head, would wait for the sultan to greet them. (Akgündüz, Murat; 2002, 308)

During the reign of Abdulhamid I, the sheikh al-Islam, who was able to attend a Mawlid-i Sharif ceremony with the permission of the doctors despite being ill, was presented with a jeweled box by the sultan. The grand vizier reported that the sheikh al-Islam was very happy and prayed for this gift, and upon this, the sultan wrote in his imperial edict, asking the sheikh al-Islam to give advice to the doctors who were treating him.

### ***Navy Ceremony:***

During the reign of Bayezid II, one of the participants in the ceremony of the Ottoman fleet setting sail, which was held every spring from 1502 onwards, when the Sheikh al-Islam arrived at the Imperial Shipyard in his own boat after the morning prayer, he was welcomed by the captain pasha and invited to his room. When the sultan gave permission for the fleet to set sail, the guests would board the captain pasha's bastard and go to the Kireç Pier near Sirkeci. Meanwhile, the grand vizier and the captain pasha would board a separate boat and appear before the sultan, who was watching them at the Yalı Köşk.

In later periods, it became customary for the grand vizier and the sheikh of the Islamic community to come here before the sultan and wait, and for the captain



pasha to arrive later. It also became a tradition for the sheikh of the Islamic community to dress the "ferve-i beyza" when they welcomed the sultan at the Yalı Köşk. Indeed, when the sultan announced that he would not be able to attend a naval ceremony during the reign of Mustafa III, the grand vizier sent a telegram to the palace requesting that the necessary order be given for the procurement of the ferve-i beyza to be dressed by the sheikh of the Islamic community. Upon this, the sultan stated in his imperial edict that even if he did not come, the ferve-i beyza could be purchased and dressed, or the money for the cost could be paid according to the sheikh of the Islamic community's request.

After the naval ceremony ended, the Sheikh al-Islam was among those to whom the captain pasha gave gifts. For example, after a naval ceremony held on 14 Muharram 1170/10 October 1756, the captain pasha gave a jewel watch, a full moon, ihram, binoculars, fruit and a flower as gifts to the Sheikh al-Islam Dürri-zade Mustafa Efendi. (Akgündüz, Murat; 2002, 311-314)

## CONCLUSION

The Ottoman society can be considered in two groups, the administrator and the administered, in terms of administration. The administrators, called the kul taifesi, received salaries, while the administered, called the reaya taifesi, were obliged to pay taxes. The administrators, also called the military class, were divided into four groups: the palace people, the seyfiye, the ilmiye and the kalemiye. The ilmiye must have been the most numerous of these.

The highest representative of the scholarly class, who performed very important duties such as education, fatwa and judiciary, was the sheikh al-islam. In this short article, the establishment of the sheikh al-islam institution and the place of the sheikh al-islam in the Ottoman Empire were discussed.

Accordingly, although its status in practice varies depending on the place and the centuries, the office of Sheikh al-Islam, which emerged as a concrete indicator of the efforts of the Ottoman State, which was always a state of sharia, to adapt its own practices to the religion of Islam, has a very important place in the Ottoman State organization, and Sheikh al-Islam is always and on every occasion in a visible position in the Ottoman State.

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# **A Comprehensive Review of Energy Sector in Tanzanian Economy<sup>1</sup>**

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<sup>1</sup> This study is derived from the Master's Thesis submitted to the Kütahya Dumlupınar University Graduate School in 2024.

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## ABSTRACT

Energy is essential for economic growth, industrialization, and societal development, and Tanzania's energy sector relies on both non-renewable resources such as oil and natural gas and emerging renewable resources. Ensuring energy sustainability is crucial for meeting current demands while preserving resources for future generations. This research investigates the economic impacts of non-renewable and renewable energy resources in Tanzania, focusing specifically on oil, natural gas, and hydropower. It aims to explore how these energy resources contribute to economic development and to outline the potential for long-term sustainable growth through renewable energy. This research reviews non-renewable and renewable energy sectors in Tanzania. We specifically investigate the oil, natural gas, and hydropower resources in the country. Our study aims to explore how these energy resources contribute to economic growth and to outline the energy sectors potential for long-term sustainable growth through non-renewables and renewable energy. Findings of the study indicates that non-renewable energy sources have significant positive impact on the Tanzanian economy. Meanwhile, investments on renewable energy stimulates economic growth.

*Keywords – Renewable Energy, Economic Growth, Tanzania, Non-Renewables, Consumption.*

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## INTRODUCTION

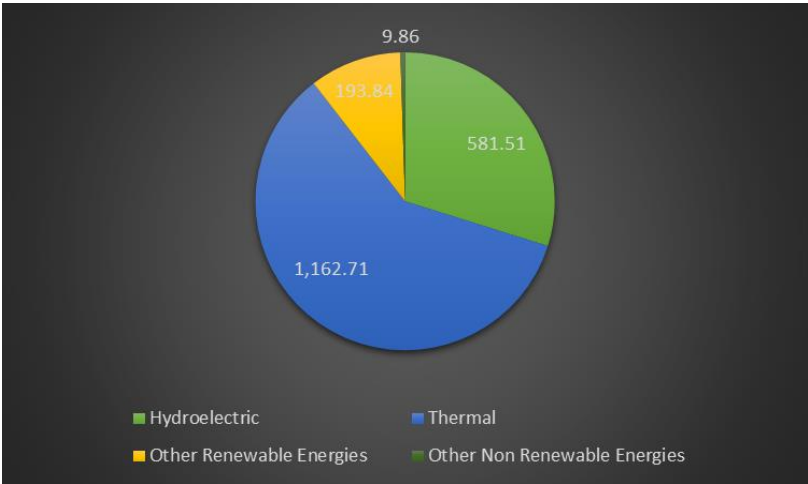
Energy plays a crucial role in driving economic growth, with a direct correlation between energy consumption and a nation's economic development. Investment and development in the energy sector are fundamental for fostering economic progress as it fuels various sectors such as transportation, industries, education, agriculture, health, and social welfare. Tanzania's strategy to avoid monopolies in the energy sector and promote competitive markets encourages private sector involvement in electricity production and distribution, fostering a dynamic energy market that benefits domestic consumers (World Bank, 2021).

Transitioning to natural gas as a primary energy source can reduce reliance on charcoal and firewood, thereby mitigating air pollution and related health risks associated with airborne diseases caused by smoke and emissions. The promotion of renewable energy further enhances Tanzania's environmental sustainability and economic resilience, aiming to achieve full decarbonization and socioeconomic development while addressing energy inequalities (International Renewable Energy Agency, 2020).

The present study explores the impact of the oil, natural gas and hydro power industries on the economic performance of Tanzania, drawing on well-established theories in energy economics and resource management. The theoretical foundation of this study is grounded in the Energy-Led Growth Hypothesis and the Resource Curse Hypothesis. The Energy-Led Growth Hypothesis posits that energy consumption is a critical driver of economic growth. This hypothesis suggests that both renewable and non-renewable energy resources can significantly influence economic performance, providing the basis for examining the role of the oil, natural gas and hydro power industries in Tanzania's economy. In contrast, the Resource Curse Hypothesis argues that countries rich in natural resources might experience slower economic growth due to over-dependence on these resources. This theory helps explore the potential pitfalls of relying heavily on oil and natural gas industries for economic development.

**AN OVERVIEW OF ENERGY SECTOR IN TANZANIA**

Tanzania is a low middle income country that uses around 70% of its energy from Tanzania has diverse energy resources such as hydro power, natural gas, coal, uranium, wind, geothermal, biomass, solar, tidal, and waves. Tanzania’s power supply is owned by TANESCO (Tanazaia Electricity Supply Company Limited) this institute controls the distribution and transmission network of the whole country. Tanzania’s installed capacity is 1,938.35 MW (Energy and Water Utilities Regulatory Authority [EWURA], 2023). Its resources for the capacity to be met are as follows.



Source: Energy and Water Utilities Regulatory Authority, 2023  
Figure 1: Tanzania’s Energy Capacity Distribution in Mw

### ***Tanzania's Energy Distribution***

We can break it down into two parts: renewable and non-renewable energy sources alike. Over the years, Tanzania's transition into clean energy has been gradual and very interesting. Being the biggest country area-wise in Eastern Africa, it is taking the sustainability concept with great effort. Understanding that it is a low-income country and only 64% of its population attains energy services, most of it is clean energy (Mwakapugi, 2021).

### ***Tanzania's Renewable Energy Resources***

Tanzania relies significantly on renewable energy resources to meet its electricity demands. Currently, hydroelectric power contributes approximately 45% of the country's electricity. However, intermittent poor rainfall in recent years has led to water shortages affecting hydroelectric generation. To mitigate this and ensure reliable power supply for economic growth, Tanzania has adopted a diversified energy strategy. This strategy includes the promotion of energy diversification in renewable energy resources such as solar, wind, biomass, waste-to-energy, micro-hydro, and natural gas (World Bank, 2020).

In response to projected quadrupling of peak electricity demand to 4,000 MW by 2025, Tanzania aims to increase its installed capacity to 10 GW within the same time frame. Additionally, the government targets a substantial increase in electrification rates to 75% by 2033. To support these ambitious goals, the government allocated \$1.1 billion for the 2022/2023 fiscal year to complete various energy projects aimed at expanding production (Ministry of Foreign Affairs and East African Cooperation, 2020).

a) Solar Energy: Solar energy development in Tanzania is currently at a nascent stage, primarily focused on small-scale domestic and some commercial installations. Presently, the country has installed approximately 6 MW of photovoltaic (PV) solar capacity. The government supports solar energy by waiving VAT and import duties on key components like solar panels, batteries, inverters, and regulators. President Samia Suluhu Hassan has set a target for Tanzania to generate 6,000 MW from renewable sources by 2025, Tanzania emphasizing its commitment to reducing carbon emissions and promoting clean energy (Takouleu, 2020).

b) Hydro power: Tanzania's existing hydro-power capacity stands at 562 MW, with potential estimates suggesting it could reach up to 4.7 GW. The country is planning significant hydro-power projects at sites such as Ruhudji (360 MW), Rumakali (22 MW), and Stieglers Gorge (2,100 MW). Small hydro projects, currently exploiting up to 8 MW, have further potential totaling around 315 MW. Notably, the completion of projects like the Julius Nyerere Hydroelectric Dam in June 2022 aims to bolster total hydro-power capacity to 2,115 MW (Kuhudzai, 2022).

c) Wind Energy: Tanzania has begun exploring wind energy due to its potential to complement existing energy sources, particularly in remote and underserved areas. The Mwenga wind farm, completed in May 2022 with support from the UK Government's Renewable Energy Performance Platform (REPP), consists of three turbines generating 2.4 MW. Integrated into the existing grid network, this project enhances energy security across Tanzania. Moreover, the wind farm, in conjunction with an existing hydroelectric plant, forms a hybrid system that stabilizes energy supply throughout different seasons.

d) Geothermal Energy: Geothermal energy development in Tanzania is in its infancy, with identified sites across various regions such as Mbeya, Arusha, Dodoma, and others. The government aims to inject 1,100 MW into the national grid from renewable sources, including geothermal, solar, and wind, by 2025. Ongoing efforts are focused on exploring and harnessing geothermal resources to support sustainable energy development in Tanzania.

e) Biomass Energy: Biomass remains a critical energy source in rural Tanzania, where approximately 80% of households rely on it. Given the country's agricultural-based economy, biomass plays a crucial role in meeting energy needs, particularly in underserved rural areas (World Bank, 2020).

## **NON-RENEWABLE ENERGY RESOURCES IN TANZANIA**

Tanzania as of recently doesn't produce oil or have any oil outlets. Tanzania is currently still importing its oil from other nations. Reports have narrowed down the use of oil in Tanzania per day to 35,000 barrels of refined oil and its products. Tanzania uses a Bulk Procurement System BPS for its oils importation since 2011. BPS follows a purchase system based on competitive bidding process from a group of suppliers. BPS has a choice grade system it follows and it is Automotive gas oil (AGO), Unleaded Motor Spirit Premium (MSP), Jet A-1 and Illuminating Kerosene (IK). In 2020, Tanzania imported \$730M in Refined Petroleum, becoming the 90th largest importer of Refined Petroleum in the world and oil was the first most imported product.

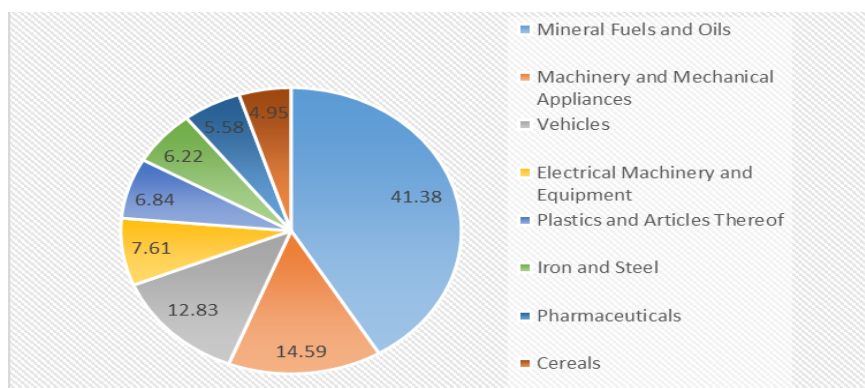


Table 1: Tanzania's Main Energy Imports

Category	% Total Imports	Value Billion \$
Mineral Fuels and Oils	41.38	5.19
Machinery and Mechanical Appliances	14.59	1.83
Vehicles	12.83	1.61
Electrical Machinery and Equipment	7.61	0.955
Plastics and Articles Thereof	6.84	0.858
Iron and Steel	6.22	0.780
Pharmaceuticals	5.58	0.700
Cereals	4.95	0.620

Source: Tanzania Bureau of Statistics, 2023

Tanzania's main imports are predominantly composed of mineral fuels and oils (41.38%, valued at \$5.19 billion), machinery and mechanical appliances (14.59%, valued at \$1.83 billion), vehicles (12.83%, valued at \$1.61 billion), electrical machinery and equipment (7.61%, valued at \$0.955 billion), plastics and articles thereof (6.84%, valued at \$0.858 billion), iron and steel (6.22%, valued at \$0.780 billion), pharmaceuticals (5.58%, valued at \$0.700 billion), and cereals (4.95%, valued at \$0.620 billion).



Source: Tanzania Bureau of Statistics, 2023

Figure 2: Tanzania's Major imports

These import patterns highlight Tanzania's reliance on external resources for energy, industrial equipment, and healthcare supplies, reflecting ongoing industrialization and modernization efforts. The significant share of mineral fuels and oils in the import basket underscores the country's dependence on imported energy to meet its growing demand, particularly as it seeks to expand its industrial base and improve

infrastructure. The total value of these imports at \$5.19 billion illustrates the crucial role of external energy sources in the economy.

Machinery and mechanical appliances, which form 14.59% of imports at a value of \$1.83 billion, are vital for various sectors including manufacturing, construction, and agriculture. This import category indicates efforts to enhance productive capacities and drive economic growth. The significant investment in vehicles (12.83%, \$1.61 billion) and electrical machinery and equipment (7.61%, \$0.955 billion) highlights the increasing need for transportation and technological advancements. These imports are essential for both urban development and rural connectivity, reflecting efforts to modernize the transportation sector and improve logistics and supply chain efficiencies.

The healthcare sector's dependency on pharmaceuticals (5.58%, \$0.700 billion) highlights gaps in domestic production capabilities, necessitating reliance on imported medicines to address public health needs. This dependency emphasizes the need for investments in local pharmaceutical production to enhance self-sufficiency and reduce vulnerability to global supply chain disruptions (World Bank, 2022).

The importation of plastics and articles thereof (6.84%, \$0.858 billion), iron and steel (6.22%, \$0.780 billion), and cereals (4.95%, \$0.620 billion) further underscores the broader economic challenges Tanzania faces. These include the need for technological advancement, improved infrastructure, and enhanced agricultural productivity. The reliance on agricultural imports, despite Tanzania's vast agricultural potential, suggests inefficiencies and challenges within the domestic agricultural sector, such as inadequate infrastructure, limited access to modern farming technologies, and financial constraints faced by local farmers.

Addressing these issues through targeted policies and investments can reduce import dependence and enhance food security. Strategic efforts to boost domestic production capabilities, particularly in energy, healthcare, and agriculture, can mitigate reliance on imports and foster economic resilience. These import trends highlight the critical areas that need attention to achieve sustainable development goals and reduce poverty in Tanzania (Tanzania Revenue Authority, 2023).

Table 4: Tanzania’s Main Oil Suppliers

COUNTRIES	VALUE IN MILLION USD
INDIA	481
UNITED ARAB EMIRATES	134
CHINA	72.2
NETHERLANDS	9.39
SOUTH AFRICA	5.68

Source: Tanzania Revenue Authority, 2023

Tanzania's main imports are predominantly composed of mineral fuels and oils (41.38%, valued at \$5.19 billion), machinery and mechanical appliances (14.59%, valued at \$1.83 billion), vehicles (12.83%, valued at \$1.61 billion), electrical machinery and equipment (7.61%, valued at \$0.955 billion), plastics and articles thereof (6.84%, valued at \$0.858 billion), iron and steel (6.22%, valued at \$0.780 billion), pharmaceuticals (5.58%, valued at \$0.700 billion), and cereals (4.95%, valued at \$0.620 billion) (Tanzania Revenue Authority, 2023).

These import patterns highlight Tanzania's reliance on external resources for energy, industrial equipment, and healthcare supplies, reflecting ongoing industrialization and modernization efforts. The significant share of mineral fuels and oils in the import basket underscores the country's dependence on imported energy to meet its growing demand, particularly as it seeks to expand its industrial base and improve infrastructure. The total value of these imports at \$5.19 billion illustrates the crucial role of external energy sources in the economy (World Bank, 2022).

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Furthermore, Tanzania's main sources of imports are India (\$481 million), the United Arab Emirates (\$134 million), China (\$72.2 million), the Netherlands (\$9.39 million), and South Africa (\$5.68 million) (Tanzania Revenue Authority, 2023). India, being the largest source of imports, supplies a wide range of goods, including pharmaceuticals, machinery, and mineral fuels. This robust trade relationship indicates India's pivotal role in meeting Tanzania's demand for industrial and healthcare supplies. The substantial import value of \$481 million signifies India's importance as a strategic trading partner (World Bank, 2022).

The United Arab Emirates, with imports valued at \$134 million, primarily exports mineral fuels and oils to Tanzania, reflecting the UAE's role in fulfilling Tanzania's energy needs. This highlights the dependency on the UAE for energy supplies critical for Tanzania's industrial and economic activities (UNCTAD, 2022).

China, contributing \$72.2 million in imports, provides a variety of products including machinery, electronics, and textiles. This trade is vital for Tanzania's technological and industrial sectors, emphasizing China's role in supplying essential goods that support Tanzania's modernization efforts (World Bank, 2022).

The Netherlands and South Africa, although contributing smaller import values of \$9.39 million and \$5.68 million respectively, still play significant roles. The Netherlands supplies high-value industrial machinery and equipment, while South Africa exports goods such as vehicles and agricultural products. These imports are essential for Tanzania's industrialization and agricultural sectors, aiding in improving productivity and infrastructure development (Tanzania Revenue Authority, 2023).

Analyzing the import data from these countries underscores Tanzania's diverse trade relationships and the critical role of international partners in supplying essential goods. It also highlights areas where Tanzania could potentially improve domestic production to reduce dependency on imports and enhance economic resilience (World Bank, 2022).

The fluctuation of fuel prices significantly impacts inflation and the local currency in Tanzania, East Africa's second-largest economy, which heavily relies on oil imports for transportation and power generation. The port of Dar es Salaam serves as the primary entry point for petroleum products, handling 99% of all imports, with the remaining 1% entering through the Kenyan border at Sirari (Tanzania Petroleum Bulk Procurement Agency, 2023). Tanzania has streamlined its petroleum importation process through the Petroleum Bulk Procurement Agency (PBPA), which

administers the Bulk Procurement System (BPS), ensuring cost-effective and high-quality petroleum products in the supply chain (PBPB, 2023).

Key players in Tanzania's petroleum importation sector include major companies like Puma Energy Tanzania, Oryx Energies, Camel Oil Group, Total Tanzania, Oil-com, and Lake Oil Group. These companies facilitate the widespread distribution of imported oil across the country, supporting Tanzania's energy needs (Tanzania Petroleum Development Corporation, 2023).

In pursuit of energy sustainability and self-sufficiency, Tanzania collaborates through institutions like the Tanzania Petroleum Development Corporation (TPDC) and the Petroleum Upstream Regulatory Authority (PURA). PURA, mandated under the Petroleum Act of 2015, regulates and monitors upstream petroleum operations in mainland Tanzania, providing advisory services to the government on petroleum affairs (PURA, 2023). TPDC, the national oil company, implements petroleum exploration and development policies, aiming to bolster the oil and gas industry by engaging in exploration, production, and distribution. These efforts also focus on establishing quality and safety standards to protect Tanzania's people, property, and environment (TPDC, 2023).

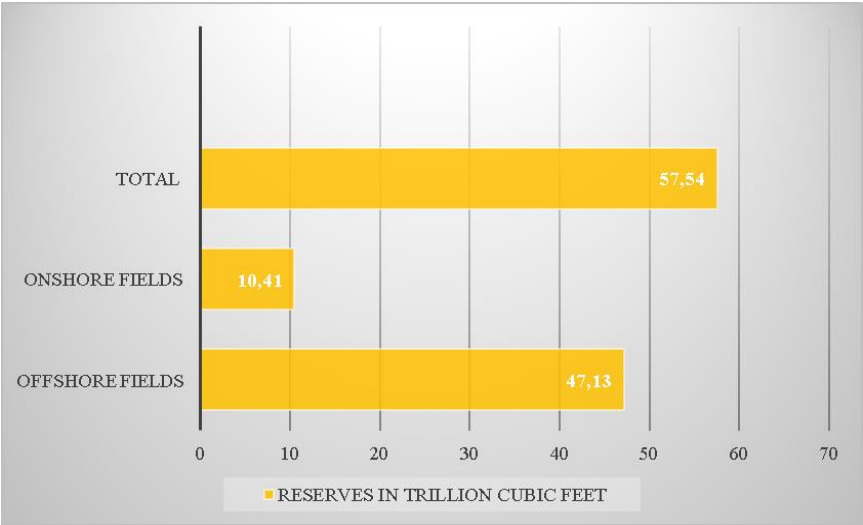
Tanzania's ambitions in the petroleum sector are underscored by significant infrastructure projects, such as the Uganda-Tanzania oil pipeline, launched in May 2020, aimed at enhancing regional energy security and economic cooperation (World Bank, 2022).

b) Natural Gas Energy: Tanzania is a notable natural gas producer in East Africa, with a rich history spanning over five decades in gas exports. Initial discoveries were made at Songo Songo Island in the Lindi Region in 1974 and at Mnazi Bay in the Mtwara Region in 1982. Despite initial delays in commercialization, these sites were eventually developed, with Songo Songo becoming operational in 2004 and Mnazi Bay following in 2006 (Ministry of Energy, 2020). As of 2020, Tanzania's natural gas reserves were estimated at 57.54 trillion cubic feet, underscoring the country's significant role in the regional energy market (Ministry of Energy, 2020).

Tanzania's natural gas infrastructure includes 842 kilometers of transmission pipelines, with 58 kilometers dedicated to serving industrial customers in Dar es Salaam. Ongoing exploration and development of natural gas resources continue to play a crucial role in enhancing the country's energy security and driving economic development (Ministry of Energy, 2017).

In this case for natural gas the whole stream system is used from upstream through downstream systems. Since discovery a total of 67 wells were drilled both exploration and developmental were drilled, 53 onshore and 14 offshore. Tanzania's annual natural gas production is 110 billion cubic feet which is for domestic use. J.Choumert-Nkolo in 2018 suggested that for the Tanzanian economy to be sustainable and inclusive, it should

balance its investment in the natural gas sector by observations on the impacts on the social capital, human and environmental aspects (Tanzania Natural Gas Reserves, 2021).Its sources are currently three as follows.



Source: Ministry of Energy, 2017  
Figure 3: Tanzania’s Natural Gas Reserves

The Energy and Water Regulatory Authority (EWURA) is responsible for regulating midstream and downstream natural gas activities in mainland Tanzania. This regulatory framework covers various aspects, including processing, transportation, storage, and distribution of natural gas. EWURA ensures that these activities are carried out efficiently and in compliance with established safety and environmental standards (Energy Information Administration, 2021).

Table 5: Tanzania's Natural Gas Fields

<p><b>1. SONGO SONGO GAS FIELD</b></p>	<ul style="list-style-type: none"> <li>❖ Proved reserves amount to <b>293 Billion standard cubic feet.</b></li> <li>❖ While productivity of the well is <b>165 million standard cubic</b> feet per day.</li> <li>❖ Operated by <b>ORCA Energy</b>, both the wells and plant.</li> </ul>
<p><b>2. KILIWANI NORTH GAS FIELD</b></p>	<ul style="list-style-type: none"> <li>❖ It's an adjacent of the Songo Songo operated by <b>Aminex.</b></li> <li>❖ Proved reserves amount to <b>31 billion standard cubic feet.</b></li> <li>❖ Production per/day is 15 million cubic feet.</li> </ul>
<p><b>3. MNAZI BAY GAS FIELD</b></p>	<ul style="list-style-type: none"> <li>❖ It is operated by stake shares between, <b>MAUREL &amp; PROM (M&amp;P) 48.06%, TPDC (20%) and WENTWORTH RESOURCES (31.94%).</b></li> <li>❖ Proved reserves at <b>290 billion standard cubic feet.</b></li> <li>❖ Per day production is at <b>92.3 million cubic feet.</b></li> </ul>
<p><b>4. SONGO SONGO GAS FIELD</b></p>	<ul style="list-style-type: none"> <li>❖ Proved reserves amount to <b>293 Billion standard cubic feet.</b></li> <li>❖ While productivity of the well is <b>165 million standard cubic</b> feet per day.</li> <li>❖ Operated by <b>ORCA Energy</b>, both the wells and plant.</li> </ul>

<p><b>5. KILIWANI NORTH GAS FIELD</b></p>	<ul style="list-style-type: none"> <li>❖ It's an adjacent of the Songo Songo operated by <b>Aminex</b>.</li> <li>❖ Proved reserves amount to <b>31 billion standard cubic feet</b>.</li> <li>❖ Production per/day is 15 million cubic feet.</li> </ul>
<p><b>6. MNAZI BAY GAS FIELD</b></p>	<ul style="list-style-type: none"> <li>❖ It is operated by stake shares between, <b>MAUREL &amp; PROM (M&amp;P) 48.06%, TPDC (20%) and WENTWORTH RESOURCES (31.94%)</b>.</li> <li>❖ Proved reserves at <b>290 billion standard cubic feet</b>.</li> <li>❖ Per day production is at <b>92.3 million cubic feet</b>.</li> </ul>

**Source:** Tanzania Natural Gas Reserves, 2021



Key players in Tanzania's natural gas sector, operating under EWURA's oversight, include the Tanzania Petroleum Development Corporation (TPDC), Songas, Pan African Energy Tanzania (PAET), and Maurel & Prom (M&P). TPDC, as the national oil company, plays a significant role in the exploration, development, and commercialization of natural gas resources. Songas focuses on the processing and distribution of natural gas from the Songo Songo field, while PAET and M&P are involved in the development and production of natural gas in the Mnazi Bay and other fields (Energy Information Administration, 2021).

These companies are pivotal in supplying natural gas to Tanzania's power plants, which are essential for electricity generation across the country. The natural gas sourced from Songo Songo Island and Mnazi Bay significantly contributes to the country's energy portfolio. In 2020, Tanzania's proven natural gas reserves were estimated at 57.54 trillion cubic feet, highlighting the importance of this resource in the national energy strategy (Ministry of Energy, 2020).

Tanzania currently operates several major gas-fired power plants, including Ubungo I and II, Somanga, Mtwara, and Kinyerezi I and II. The Ubungo power plants, located in Dar es Salaam, have a combined capacity of approximately 235 MW and play a critical role in supplying electricity to the city and surrounding areas. The Somanga power plant, with a capacity of 7.5 MW, serves the southern regions of the country. The Mtwara power plant, located in the Mtwara Region, has a capacity of 18 MW and is vital for electricity generation in the southeastern regions (Ministry of Energy, 2020).

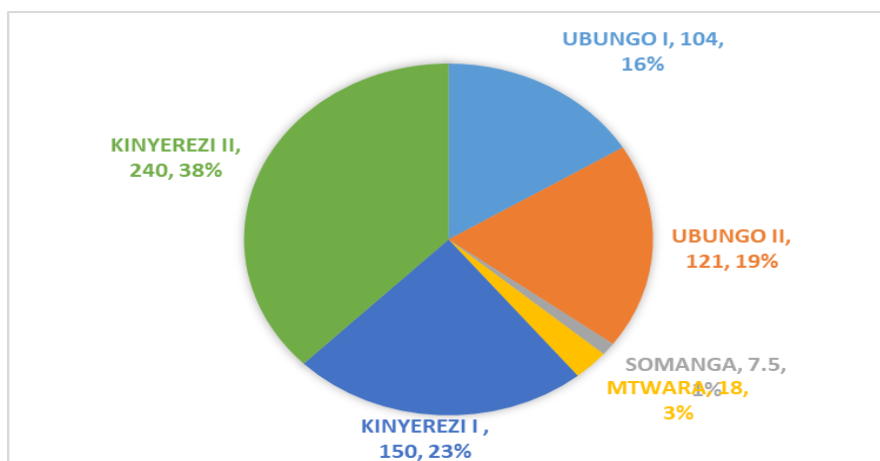
The Kinyerezi I and II power plants, located on the outskirts of Dar es Salaam, have capacities of 150 MW and 240 MW, respectively. These facilities are part of a broader plan to expand Tanzania's electricity generation capacity and reduce dependency on hydroelectric power, which can be unreliable during dry seasons. The Kinyerezi plants are also part of Tanzania's efforts to diversify its energy mix and ensure a stable and sustainable supply of electricity to support economic growth and meet the increasing energy demands of its population (Ministry of Energy, 2020). Below is a summary of the Tanzania's Natural Gas plants with the operators and owners.

Table 6: Tanzania's Natural Gas Plants

<b>UBUNGO I GAS PLANT.</b>	Located in Ubungo Dar Es Salaam. Access to Songo Songo natural gas as fuel. Have 12 generating units, each with capacity of 8.73MW total to 104MW. Owned by TANESCO and operated by Songas.
<b>UBUNGO II GAS PLANT</b>	Same location as UBUNGO I, used gas from Mtwara via TPDC gas pipelines. Has 3 turbines, 2 with 43MW and 1 with 35MW capacity. Owned and operated by TANESCO but the gas is obtained by Songas.
<b>SOMANGA GAS PLANT</b>	Located in Lindi, Somanga region. Its natural gas comes from Songo Songo island. Have 3 generating units with 2.5MW capacity totaling 7.5MW. Owned and operated by TANESCO.
<b>MTWARA GAS PLANT</b>	Located in Mtwara and uses natural gas from Mnazi Bay. Have 9 generating units @ with 2MW capacity at a total of 18MW. Owned and operated by TANESCO.
<b>KINYEREZI I and II GAS PLANTS</b>	Located in Ilala district Dar Es Salaam and used natural gas from Mnazi Bay wells in Mtwara. Kinyerezi I have 4 turbines (2 with capacity of 40MW and 2 with 35MW capacity giving a total of 150MW). Kinyerezi II has a total of 240MW capacity. Both are owned and operated by TANESCO.

**Sources:** Ministry of Energy, 2020

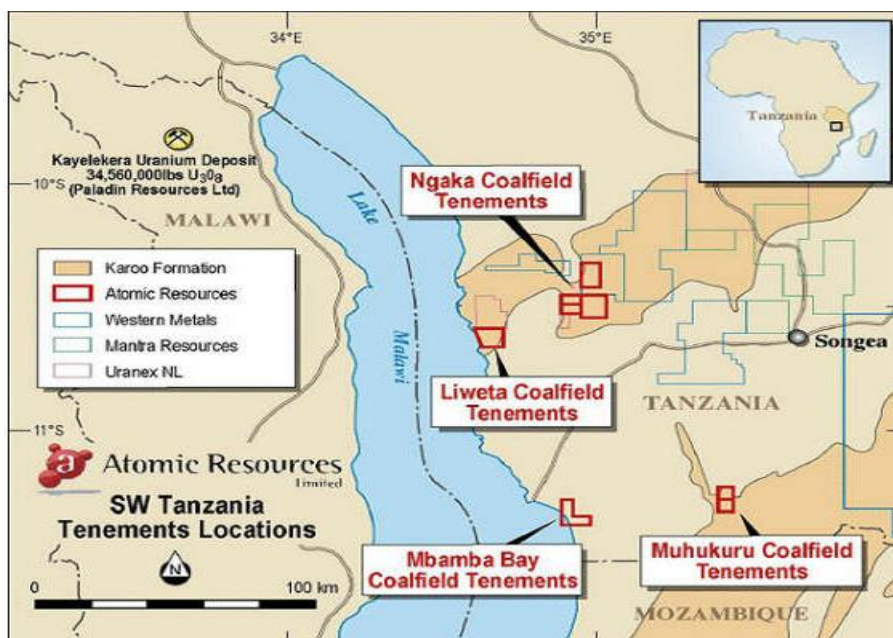
Tanzania's natural gas pipelines that run from Lindi, Mtwara to Dar Es Salaam where constructed by Chinese companies and are financed by Chinese loans and grants from the World Bank (approximately \$300 Million) and African Development Bank (approximately \$200 Million). The construction included the Madimba processing center that is operated by (GASCO) Gas Supply Company Limited in June 2015. These are the development plans to reach the goal of 10,000MW by 2025. From 1500MW in 2015 and climbing, currently at 48%. Hence aiming to reduce the load on the hydroelectric power sector due to the unforeseen droughts in Tanzania over the years (Tanzania Natural Gas Limited, 2021).



Source: Ministry of Energy, 2020  
Figure 4: Natural Gas Plants Capacity

Oil and gas in Tanzania is governed by the Petroleum Act of 1980, the National Policy of 2003, Petroleum Act of 2008, National Natural Gas Policy of 2013 and Petroleum Act of 2015. Tanzania aims at achieving a competitive natural gas industry and a stable oil industry that contributes significantly to the broad based growth and socioeconomic transformation of Tanzania. However, for this to be possible the accessibility of the refined oil and natural gas with its products have to be consistent for the community and nation at large to be able to use them. But at the rate this sector provides energy and revenue for Tanzania no doubt.

c) Coal energy, Tanzania possesses a considerable resource of low sulphur coal. Currently coal is exploited only on a small scale at Kiwira Coal Mine that operates in the Songwe-Kiwira Coalfield. There is potential for export to neighbouring African countries and others with access to the Indian Ocean. Tanzania's coal reserves are estimated at 1.9 billion tonnes, 25% of which are proven. The country's coal production reached 712,136 tonnes in 2019.



Source: Romero, 2016  
Figure 5: Tanzania's Coal Sites

Coal exploitation in Tanzania is predominantly focused on industrial applications. Tanzanian industries rely on coal for thermal processes, particularly in cement factories and agro-processing industries (Tanzania Invest, 2021). The promotion of coal briquettes for cooking aims to reduce reliance on charcoal, which is the primary cooking fuel in the country (Tanzania Invest, 2021). Despite these uses, Tanzania generates less than 1% of its total installed capacity of 1,605MW from coal-fired power plants, relying entirely on imported coal (Tanzania Ministry of Energy and Minerals, 2020).

The major coal mining projects in Tanzania are strategically located in the southwestern region:

Ngaka Coal Mine: is operated by Tan Coal Energy, a joint venture between the National Development Corporation of Tanzania (NDC) and Intra Energy Tanzania Limited (IETL), the Ngaka Coal Project is the largest operational coal mine in East Africa (Tanzania Ministry of Energy and Minerals, 2020). It is situated within the Ngaka Basin, which includes the Mbalawala sub-basin in the south and the Mbuyura-Mkapa sub-basin to the north. The Ngaka Basin holds proven coal resources totaling 367 million tonnes (Tanzania Ministry of Energy and Minerals, 2020).

Mining operations commenced in 2011, but in 2020 both sales and production decreased by 34% compared to 2019 due to the economic impact of Covid-19 and competition from smaller miners (Tanzania Ministry of

Energy and Minerals, 2020). The project's expected production is between 2-3 million tonnes of coal for export annually, with sufficient reserves for over 50 years of production at a maximum rate of 4-5 million tonnes per annum (Tanzania Ministry of Energy and Minerals, 2020).

**Rukwa Coalfields:** Managed by UK-based Edenville Energy Plc, the Rukwa coalfields project received a mining license from Tanzania's Ministry of Energy and Minerals (MEM) to develop coal deposits in the southwestern region (Edenville Energy Plc, 2019). The Rukwa coalfields, which include the Mkomolo, Namwele, and Muze deposits, contain measured and indicated coal reserves totaling 173 million tonnes (Edenville Energy Plc, 2019). These reserves are adequate to support a 120 MW coal-fired power plant for approximately 30 years. Production in FY 2019 amounted to 37,239 tonnes, a decrease from 75,442 tonnes in FY 2018, primarily due to financial constraints that hindered planned mine upgrades (Edenville Energy Plc, 2019).

Despite challenges, Edenville Energy remains committed to its coal-to-power project, although in February 2019, Tanzania Electric Supply Company (TANESCO) notified Edenville Energy of their unsuccessful qualification in the Request for Qualification process to supply power to TANESCO (Edenville Energy Plc, 2019).

**Kiwira Coal Mine:** Located in the Songwe-Kiwira coalfield within the Ivogo Ridge, southeast of Mbeya City in the Ileje District, the Kiwira Coal Mine aims to produce 1.5 million tonnes of coal annually. The then Tanzanian President John Magufuli directed the transfer of all remaining shares held by the initial investor, Tan Power Resources, back to the government to facilitate a new sale to potential investors (Tanzania Ministry of Energy and Minerals, 2020).

### ***Nuclear energy in Tanzania***

Nuclear energy in Tanzania is under way of exploration of diverse opportunities to integrate nuclear power into its energy mix to support economic growth, improve quality of life, and ensure a stable, carbon-free energy source (Tanzania Nuclear Energy, July 2023).

Tanzania possesses significant uranium reserves across various regions including Namtumbo (Mkuju), Bahi, Galapo, Minjingu, Mbulu, Simanjiro, Lake Natron, Manyoni, Songea, Tunduru, Madaba, and Nachingwea (Tanzania Nuclear Energy, July 2023). The country's nuclear energy sector is still in its early stages but holds substantial potential for growth, with plans to leverage nuclear technologies for sustainable development and economic advancement (Tanzania Nuclear Energy, July 2023).

This comprehensive approach highlights Tanzania's current and future endeavors in both coal and nuclear energy sectors, underscoring their

strategic importance in the country's energy landscape and economic development plans.

## **CONCLUDING REMARKS AND POLICY IMPLICATIONS**

International organizations play a significant role in Tanzania's energy sector, particularly in the development and implementation of both renewable and non-renewable energy sources. Their involvement spans from funding and technical assistance to policy advocacy and capacity building.

In the realm of renewable energy, international organizations such as the World Bank, the African Development Bank (AfDB), and the United Nations Development Programme (UNDP) have been pivotal in funding renewable energy projects in Tanzania. For example, the World Bank has funded various projects under its Scaling Solar initiative, aimed at increasing solar energy capacity in the country (World Bank, 2020).

The World Bank's Tanzania Energy Development and Access Project (TEDAP) focuses on improving electricity service supply and establishing a sustainable foundation for energy access expansion (World Bank, 2021). Similarly, the Rural Electrification Expansion Program, supported by the World Bank and the African Development Bank (AfDB), aims to increase electricity access in rural areas, which is crucial for economic development and poverty reduction (African Development Bank, 2020).

Moreover, the International Renewable Energy Agency (IRENA) provides technical support and capacity-building initiatives to help Tanzania harness its renewable energy potential. This includes training local engineers and policymakers on the latest technologies and best practices (IRENA, 2021).

Additionally, the United Nations Framework Convention on Climate Change (UNFCCC) supports Tanzania in developing and implementing policies and regulatory frameworks that promote renewable energy. This includes assistance in drafting national strategies and action plans aligned with international climate goals (UNFCCC, 2019).

For non-renewable energy sources, organizations like the International Monetary Fund (IMF) and the World Bank have provided financial and advisory support for the exploration and development of Tanzania's oil and gas industries. The World Bank, for instance, has financed projects aimed at improving the regulatory framework and infrastructure for oil and gas extraction (World Bank, 2018).

Another notable initiative is the Songo Songo Gas Development and Power Generation Project, which involves the extraction of natural gas from the Songo Songo gas field for power generation. The World Bank has

provided crucial funding and technical assistance to enhance infrastructure and operational capabilities associated with this project (World Bank, 2023).

Another significant endeavor is the Mtwara-Dar es Salaam Gas Pipeline Project, aimed at constructing a pipeline to transport natural gas from offshore fields to urban centers. The African Development Bank (AfDB) has been instrumental in financing and supporting the necessary infrastructure for this pipeline, which contributes to enhancing Tanzania's energy infrastructure and domestic energy supply (AfDB, 2022).

Furthermore, the United Nations Development Programme (UNDP) has supported initiatives to advance the Local Content Development within Tanzania's oil and gas industries. These efforts include funding programs for skills development, vocational training, and support for local businesses to participate in supply chains and service provision, thereby maximizing socioeconomic benefits from oil and gas activities (UNDP, 2021).

Environmental and social considerations are also paramount in Tanzania's oil and gas Industries. The African Development Bank (AfDB) provides guidelines and monitoring to ensure that projects in Tanzania's non-renewable energy sector are sustainable and socially responsible (AfDB, 2019).

Furthermore, Various projects supported by organizations like the World Bank and European Union focus on conducting comprehensive Environmental and Social Impact Assessments (ESIA). These assessments ensure that potential impacts of oil and gas exploration and production are carefully evaluated and mitigated, aligning with international best practices and standards (World Bank, 2023; EU, 2023).

Moreover, international organizations collaborate with Tanzanian authorities to enhance the Policy and Regulatory Framework governing the oil and gas industries. The World Bank and UNDP provide technical assistance and capacity building to strengthen policies, laws, and regulatory frameworks. These efforts aim to improve governance, transparency, and accountability in managing Tanzania's natural resources sustainably (World Bank, 2023; UNDP, 2021).

Furthermore, the International Energy Agency (IEA) collaborates with Tanzania to enhance its energy security through the development of reliable energy infrastructure. This includes support for the construction of pipelines, refineries, and power plants necessary for non-renewable energy utilization (IEA, 2020).

Hence forth, the international organizations significantly contribute to the development of both renewable and non-renewable energy sectors in Tanzania through funding, technical assistance, policy support, and ensuring adherence to environmental and social standards.

Government initiatives like the Stiegler's Gorge Hydroelectric Power Station underscore Tanzania's commitment to expanding energy infrastructure. Once operational, the power station is expected to

significantly increase national electricity production, reduce reliance on traditional biomass fuels, and stimulate economic activities across various sectors (Ministry of Energy, Tanzania, 2023).

Furthermore, strategic projects such as the East African Crude Oil Pipeline (EACOP) and Belt and Road Initiative (BRI) aim to enhance Tanzania's energy security, reduce import dependency, and boost export revenues, thereby leveraging the country's diverse energy resources for sustainable development.

In conclusion, Tanzania's effective utilization of its energy resources, coupled with strategic investments in renewable and conventional energy infrastructure, is pivotal for achieving its development goals and positioning itself as a middle-income economy by 2025.

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# **An Artificial Intelligence Method using Machine Learning Algorithms in Prediction Models: Adaptive Neuro Fuzzy Inference Systems**

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## ABSTRACT

Fuzzy logic, a branch of Artificial Intelligence, based on the membership degree of objects and elements to “Sets” instead of defining them as distinct members or non-members. In this way, the fuzzy logic fits the human being’s thinking systems as it considers the transition of characters of objects gradually instead of a suddenly change. For the aim of developing systems, thinking, deciding and acting as human beings i.e with Artificial Intelligence, fuzzy set theory has been used with the “If, then else” rules and fuzzy parameters. Those kinds of systems are called Fuzzy Systems. By addition of Machine Learning Algorithms to fuzzy systems led to a new area of research under Artificial Intelligence. Combining the learning ability of Artificial Neural Networks which are simulating the real neural system of human beings, generated the new quantitative method: Adaptive Neuro Fuzzy Inference Systems. In this chapter a predicting branch of Machine Learning Algorithms has been introduced with a concrete example of a real dataset. Adaptive Neuro Fuzzy Inference Systems makes possible to generate the fuzzy “if then, else” rules systems by using Machine Learning. Real life example consists of the prediction of short-term electricity prices in the regulated electricity market of Türkiye. The potential demand of the system and historical prices are chosen to be the predictors after searching the literature. MATLAB 2023b has been used to apply Machine Learning Algorithms. As a result, the fuzzy rules’ base system and the relationship between inputs and outputs are found and shown in the 3D graphs after experimenting with the 10 different models on the 2000 training and 168 testing data.

*Keywords: Artificial Intelligence, Machine Learning, Prediction Models, ANFIS.*

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## INTRODUCTION

Forecasting future trends is one of the basic aims of scientific research as one of the others is to uncover and understand reality. Human beings are trying to control reality by predicting it before occurrence and developing many tools so they can understand it. For this purpose, many statistical forecasting tools were developed until ancient times. Those forecasting tools were used successfully in social and physical sciences to set a model that predict unmeasured values by using measured ones. In the 21<sup>st</sup> century, with rapid developments in Artificial Intelligence, Machine Learning became the most important tool in all science branches to forecast the unmeasured data or future values. Using past data to settle a model and estimating the future trends are done by sub-discipline of Artificial Intelligence named Machine Learning. Machine Learning is a general title of programming algorithms that learns the solution of the problems by itself with the characteristics of decision making,

based on the data and perception ability of complicated patterns. Today Machine Learning Algorithms are used more than forecasting problems like computer vision, natural language processing, image processing, pattern recognition, speech recognition, self-driving cars' systems etc.

The idea of Machine Learning term was popularized by Arthur Samuel in 1959 (Stang and et al, 2019) with his world's first self-learning program. Today with the improved versions of Machine Learning definitions it is generally called the learning ability of machines from data without explicitly programmed (Manesh, 2018). Machine Learning Algorithms were classified as supervised, unsupervised, semi-supervised and reinforcement learning which depended on finding the relationship between inputs and outputs by machine itself with given and ungiven outputs. Some researchers divide into two as supervised and unsupervised. When inputs are paired with outputs it is called supervised learning, when the machines automatically develop classification labels, it is called unsupervised learning (Nasteski, 2017). The semi-supervised and reinforcement learning algorithms can be added to the classification of Machine Learning Algorithms in some sources (Manesh, 2018; Alzubi et al, 2018; Sarker, 2021). Reinforcement algorithms is a kind of learning algorithms, when the response is given to the system if the correct pair is found with a reward or penalty. Semi-supervised learning algorithms consist of the advantageous parts of supervised and unsupervised ones (Alzubi et al, 2018) with labeled and unlabeled data.

## **ADAPTIVE NEURO-FUZZY INFERENCE SYSTEM (ANFIS)**

ANFIS consists of the methodology of Artificial Neural Networks and Fuzzy Logic at the same time and method is developed by Jang (1993). Fuzzy Theory has an advantage in the explicability of rules and the Neural Network Theory has advantages in adaptive learning capability which is simulating the human being's brain (Zhou and et al, 2011). The mathematical modelling of the prediction systems with traditional methods that consist of uncertainty and subjective criteria are inadequate to explain the relationships of variables as well as a possible relatively lower performance with many restrictions and assumptions. However, the Fuzzy Inference Systems consisting of "if then else" rules with "and-or" conjunctions and the real reasoning system of human being performs better. ANFIS incorporates the learning ability of Neural Networks with the linguistic expressions of fuzzy inference systems (Catalão et al, 2011). If parameters are effectively trained and an adequate number of rules are generated, it means the ANFIS can be successfully applied. Since the ANFIS method is flexible, fast and robust it has been applied to many problems from engineering, medicine and social sciences such as finance and economics (Ishola et al, 2024). For the prediction examples in Medicine

discipline: prediction of chronic kidney disease (Yadollahpour et al, 2018), prediction of early heart attack (Opeyemi and Justice, 2012) can be examined. In the Engineering disciplines, prediction of grain yield of irrigated wheat (Naderloo et al, 2012), prediction of water quality parameters (Azad et al, 2018) can be examined. Also, there are many examples in finance like bank's soundness level prediction (Maharani et al, 2023), stock market prediction (Wei, 2016) etc.

ANFIS is based on the Takagi-Sugeno model (T-S model) consisting of a specific fuzzy inference system. The general structure of ANFIS of 5 layers. Figure 1 displays the architecture of ANFIS model with two inputs and an output.

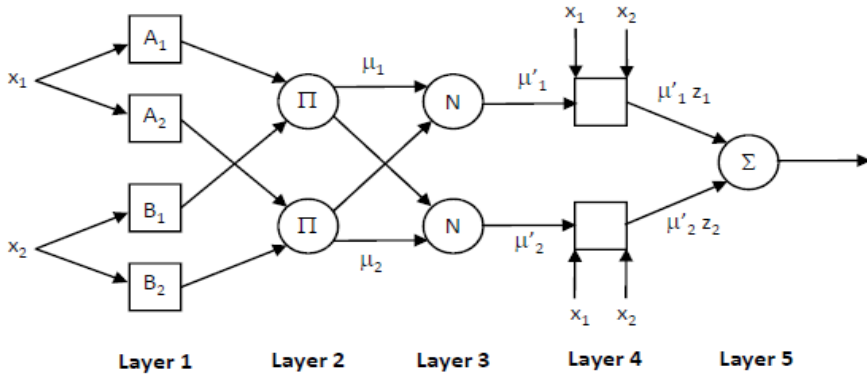


Figure1. Architecture of ANFIS model.

According to model, the system consists of two fuzzy rules:

Rule 1: If  $x$  is  $A_1$  and  $y$  is  $B_1$ , then  $f_1 = p_1x + q_1y + r_1$

Rule 2: If  $x$  is  $A_2$  and  $y$  is  $B_2$ , then  $f_2 = p_2x + q_2y + r_2$

In the  $k$ -th layer the node of  $i$ -th one is called  $Q_{k,i}$ . These two rules can be generated as follows:

Rule  $i$ : If  $x_1 = A_i^1$  and...and  $x_{N1} = A_i^{N1}$ , then  $y_1 = a_i^0 + a_i^1x + \dots + a_i^{N1}x_{N1}$

The node functions in each layer are given as in the following (Jang, 1993):

Fuzzy inputs in Layer 1, transformed into outputs by using the Eqs. (1) and (2).

$$Q_{1,j} = \mu_{Ai}(x_1) \quad i = (1,2) \quad (1)$$

$$Q_{2,j} = \mu_{Bi}(x_2) \quad i = (1,2) \quad (2)$$

Layer 2 consists of the product of the input signals and its output is given in the Eq. (3)

$$\mu_i = \mu_{Ai}(x_1) \cdot \mu_{Bi}(x_2) \quad i = (1,2) \quad (3)$$

In layer 3 the normalization process is conducted, and the output is obtained by the Eq. (4)

$$\mu'_i = \frac{\mu_i}{\mu_1 + \mu_{Ai}} \mu_{Ai}(x_1) \cdot \mu_{Bi}(x_2) \quad i = (1,2) \quad (4)$$

In Layer 4 the  $i^{\text{th}}$  rules' contribution to system is calculated with the Eq. (5)

$$\mu'_i = \mu'_i(p_i x + q_i y + r_i) \quad (5)$$

In Layer 5 the sum of all the signals is calculated with the Eq. (6)

$$z = \sum_i \mu'_i z_i = \frac{\sum_i \mu_i z_i}{\sum_i \mu_i} \quad (6)$$

Hence the obtained network is T-S fuzzy inference system. The weights of connections between two layers are adapted by the sample data given to the system. The “adaptive” in the name of ANFIS refers to the adaptation of the variables. The 1<sup>st</sup> and 4<sup>th</sup> layers are adaptable. The principles of forward and back prorogation algorithms are used in ANFIS (Zhou et al 2011). In the Back-propagation algorithm, the system uses the descending errors, and the weights are readjusted in a cycle until the error reaches the predetermined stopping conditions. The best model that the system sets use the Least Squares Errors method and Gradient Descent Algorithm (Rubio et al, 2019).

## PERFORMANCE MEASURES

In the prediction problems, after settling the model the performance of the models must be tested with some tests, techniques or functions. The basic principle of testing the performance of a model is based upon the assumption that the model will predict the unmeasured data truly (Montgomery et al, 2016). To test this assumption, many tools can be used as Sum of Square Errors (SSE), Least Square Error (LSE), Mean Squared Error (MSE), Root



Mean Squared Error (RMSE), Squared Error Percentage (SEP), Normalized Root Mean Square Error (NRMSE), Percentage of Correctly Classified Examples (PCCE), Classification Error Percentage (CEP), Mean Absolute Error (MAE), Mean Absolute Percentage Error (MAPE) (Montgomery et al., 2016; Thawornwong and Enke, 2003; Kattan et al, 2013).

In this research RMSE has been used and the formula is given in the Eq. (7), where  $x_t$  are real,  $\hat{x}_t$  are estimated values and  $n$  is the size of data.

$$RMSE = \sqrt{\frac{\sum_{t=1}^n (x_t - \hat{x}_t)^2}{n}} \quad (7)$$

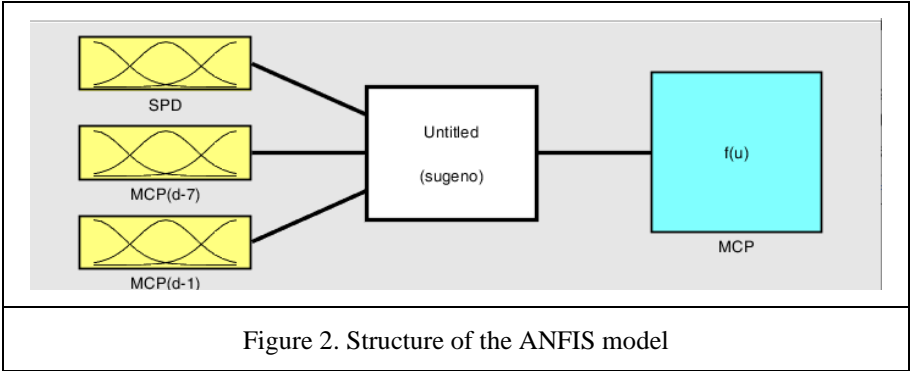
## **APPLICATION: PREDICTION OF ELECTRICITY PRICES**

After regulations in the Electricity Market, for the decision of the electricity prices different parts such as generation companies and consumers meet in the marketplace (Aggraval et al, 2009) and be effective in the decision of the Market Clearing Prices (MCP).

MCP are decided hourly when the supply and demand are balanced in the day-ahead market. So, it will be useful for suppliers of generation companies if the prices of electricity can be predicted before the encounter in the Market with the other components. On the other hand, since it is impossible to store electricity, the demand for electricity must be satisfied at any time during the day to fulfill the uninterrupted supply ability (Szkuta et al, 1999). So the forecasting the MCP must be done with the advanced technics using Artificial Intelligence, like one of the most advanced ones: ANFIS.

For a short-term forecast of MCP, the historical prices, bidding of generators-SPD (System Potential Demand) and temporal effects of time are used in much research (Zhou et al 2011; Catalao et al, 2011; Amjady, 2006; Szkuta et al, 1999; Yamin et al, 2004) in literature. Zhou et al (2011) used ANFIS to forecast MCP on the 24 hour of 17 March 1999 by using the last 120 data from March 1999. They used 7 inputs consisting of load and historical prices. Catalao, et al (2011) used ANFIS to forecast 4<sup>th</sup> weeks of February, May, August and November respectively by using the historical data of past 6 weeks – 42 days -1008 hours data. Amjady (2006) used neural fuzzy method to forecast the day ahead electricity prices of fourth weeks of February, May, August and November respectively. He used the last 48 days (4\*24=1152 hours) to predict the day ahead MCP. Alshejari and Kodogiannis (2017) used Neuro Fuzzy Systems to forecast the MCP at 22.<sup>00</sup> pm and at 04.<sup>00</sup> am. i.e the max and min level by using the 5 input variables including load and the historical prices. They used 600 data for training and 123 data for testing the period in 2006-2007 period.

According to Catalao, et al (2011) and Amjady (2006) 4<sup>th</sup> week of March is a typical spring week on electricity price forecasting by using historical data. In this research the MCP has been forecasted for the 4<sup>th</sup> week of March with the input variables of SPD, MCP(d-7), MCP at 7 days before; and MCP(d-1), MCP at 1 day before. The historical data of the past 12 weeks (84 days) of 2000 training data and 168 testing data has been used after excluding the outliers determined with the Mahalanobis Distance Method and applying the min-max normalization process. Structure of the Model is given in the Figure 2.



MATLAB 2023b is used to verify the ANFIS analysis. To determine the structure of the ANFIS model, many models are constructed by changing the parameters. ANFIS adapts the parameters according to the data set. The training has continued until the MAE decreases to the lower limit. 100 epochs have been conducted. The results of experiments on the structure of the model with different membership functions are given in Table 1.

Table 1. RMSE Statistics for Experiments of Models

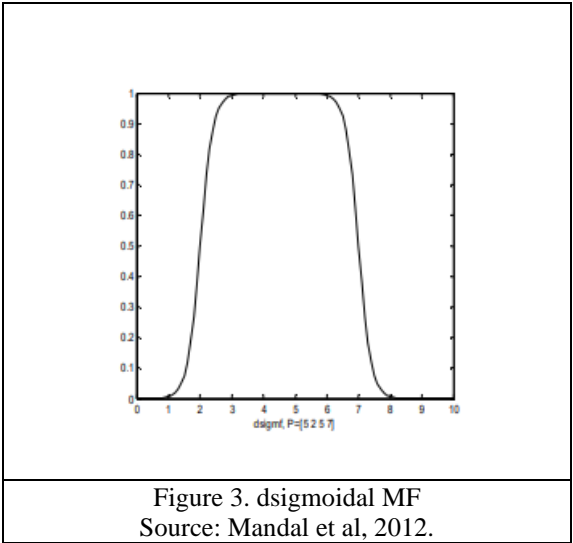
	Model1		Model2		Model3		Model4		Model5	
Members hip Functions	3-3-3		4-3-3		4-4-3		4-3-4		4-4-4	
	Trainin g	Testin g	Trainin g	Testin g	Trainin g	Testin g	Trainin g	Testin g	Trainin g	Testin g
Triangula r	0.1521 51	0.194 51	0.1519 3	0.1937 7	0.1509 0	0.1955 6	0.1503 4	0.2416 3	0.1490 7	0.2022 8
Trapezed ual	0.1539 7	0.197 29	0.1538 1	0.2000 9	0.1530 1	0.1959 7	0.1518 9	0.3539 4	0.1496 4	0.2005 8
Gbell	0.1520 7	0.199 22	0.1504 4	0.1948 2	0.1506 4	0.2006 3	0.1498 3	0.1977 5	0.1481 4	0.1981 5
Gauss	0.1519 3	0.197 23	0.1506 2	0.1946 0	0.1513 2	0.2010 6	0.1506 9	0.2344 2	0.1495 5	0.2056 5
Gauss2	0.1528 7	0.196 76	0.1527 0	0.1987 2	0.1507 4	0.1989 5	0.1509 9	0.2406 4	0.1488 5	0.3779 4
Pi	0.1595 4	0.203 59	0.1590 1	0.2240 7	0.1561 4	0.2271 3	0.1551	1.3336	0.1530 1	0.2719 6
dsig	0.1517 0	0.193 13	0.1510 5	0.1918 0	0.1504 2	0.1910 8	0.1496 9	0.2273 8	0.1489 0	0.2146
psig	0.1517 0	0.193 13	0.1510 5	0.1918 0	0.1504 2	0.1910 8	0.1496 9	0.2273 8	0.1491 2	0.2413 2

	Model6		Model7		Model8		Model9		Model10	
Members hip Functions	5-4-4		5-5-4		5-4-5		4-5-5		5-5-5	
	Trainin g	Testing	Trainin g	Testin g	Trainin g	Trainin g	Training	Testin g	Trainin g	Testin g
Triangula r	0.1490 1	0.42346	0.1470 7	0.7150 4	0.1463 2	0.20 846	0.14754	0.2092 7	0.1449 5	0.20 839
Trapezed ual	0.1466 5	0.20675	0.1473 5	0.1989 0	0.1464 6	0.19 679	0.14852	0.2095 9	0.1463 7	0.19 700
Gbell	0.1471 1	0.51696	0.1464 1	0.8791 6	0.1452 7	0.54 34	0.14651	1.0255 0	0.1426 0	0.53 068
Gauss	0.1477 8	0.25298	0.1466 4	1.1283 0	0.1462 4	0.24 123	0.14653	0.2447 4	0.1426 9	0.42 719
Gauss2	0.1480 1	1.73060	0.1466 7	1.0658 0	0.1457 4	0.90 190	0.14691	1.5479 0	0.1455 0	2.85 480
Pi	0.1500 4	0.20646	0.1488 5	0.2031 1	0.1493 6	0.20 482	0.15270	0.2085 6	0.1494 4	0.20 453
dsig	0.1473 3	0.31959	0.1458 9	0.9718 8	0.1456 8	0.58 935	0.14704	2.4074 0	0.1430 2	0.21 337
psig	0.1473 3	0.32001	0.1458 8	0.8531 6	0.1456 9	0.59 529	0.14704	2.4070 0	0.1430 2	0.21 337

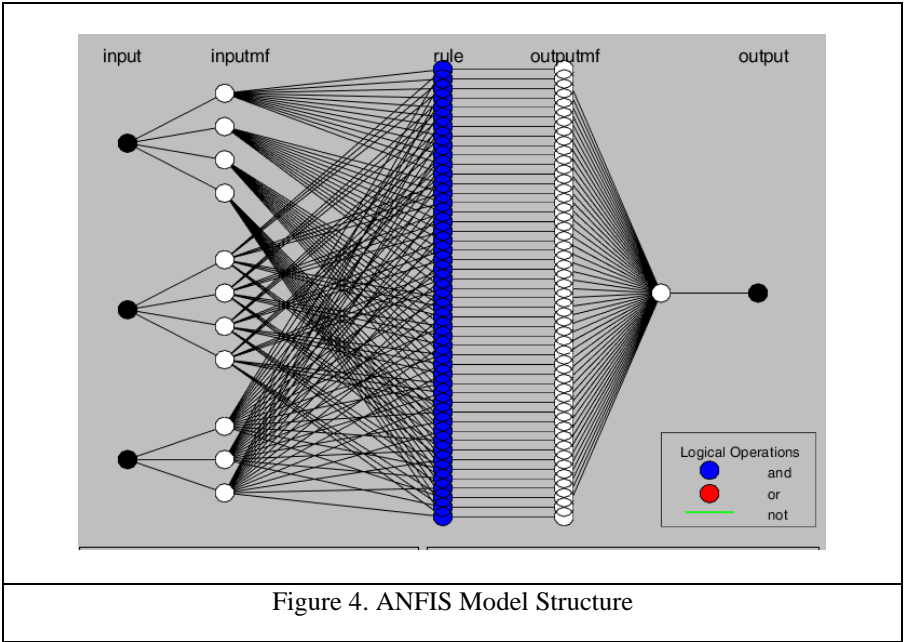
According to Table 1 the “dsig” membership function with the network structure of 4-4-3 is chosen as the best model, satisfying relatively lower RMSE both for training and testing sets. At this model “dsig” membership function refers to the difference of two sigmoidal functions. The sigmoidal functions are given in the Eq. (8).

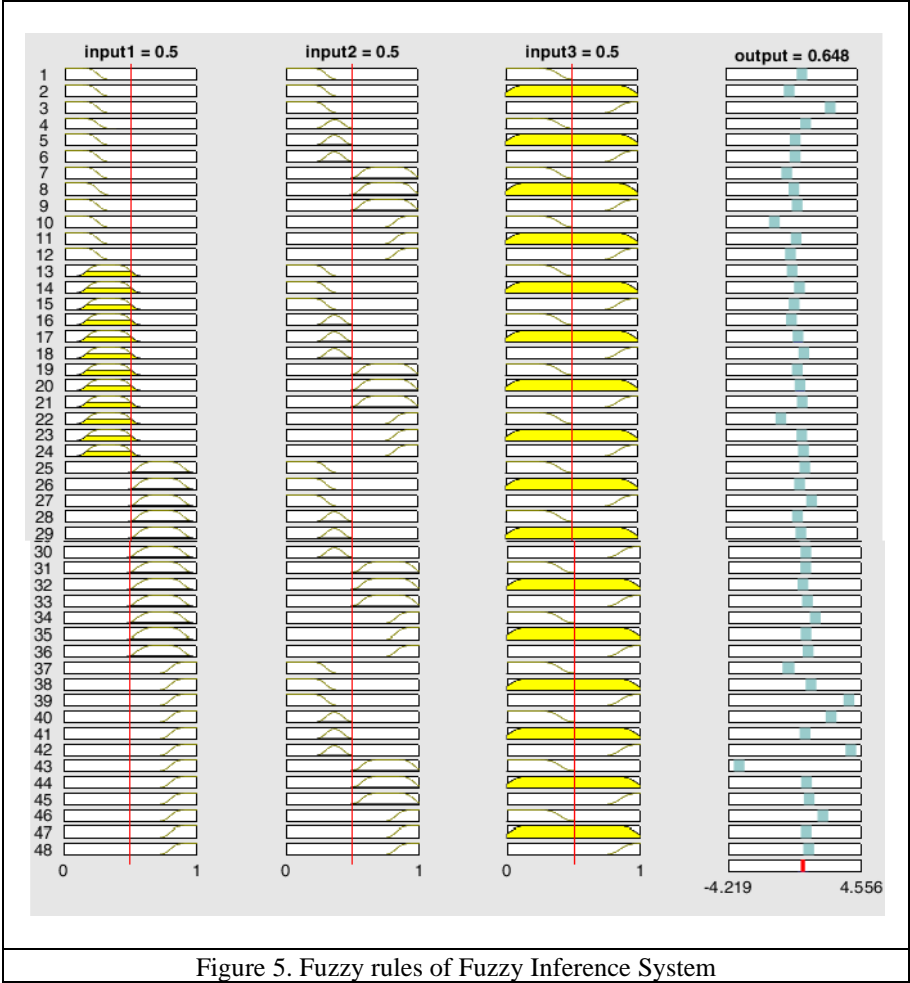
$$f(x; a_k, c_k) = \frac{1}{1+e^{-a_k(x-c_k)}} \quad (8)$$

The graph of the dsigm membership function is given as in the Figure 3.



After settling the model of 4-4-3 with the dsigm membership function, ANFIS Model structure is given in Figure 4 and 48 fuzzy rules of the system are given in Figure 5. The rules base of 4-4-3 indicates that for the inputs there is 4, 4 and 3 membership functions exist and this implies that  $4*4*3=48$  fuzzy rules exist.





The graphs in three dimensions between the inputs and output of the model are given in Figure 6.

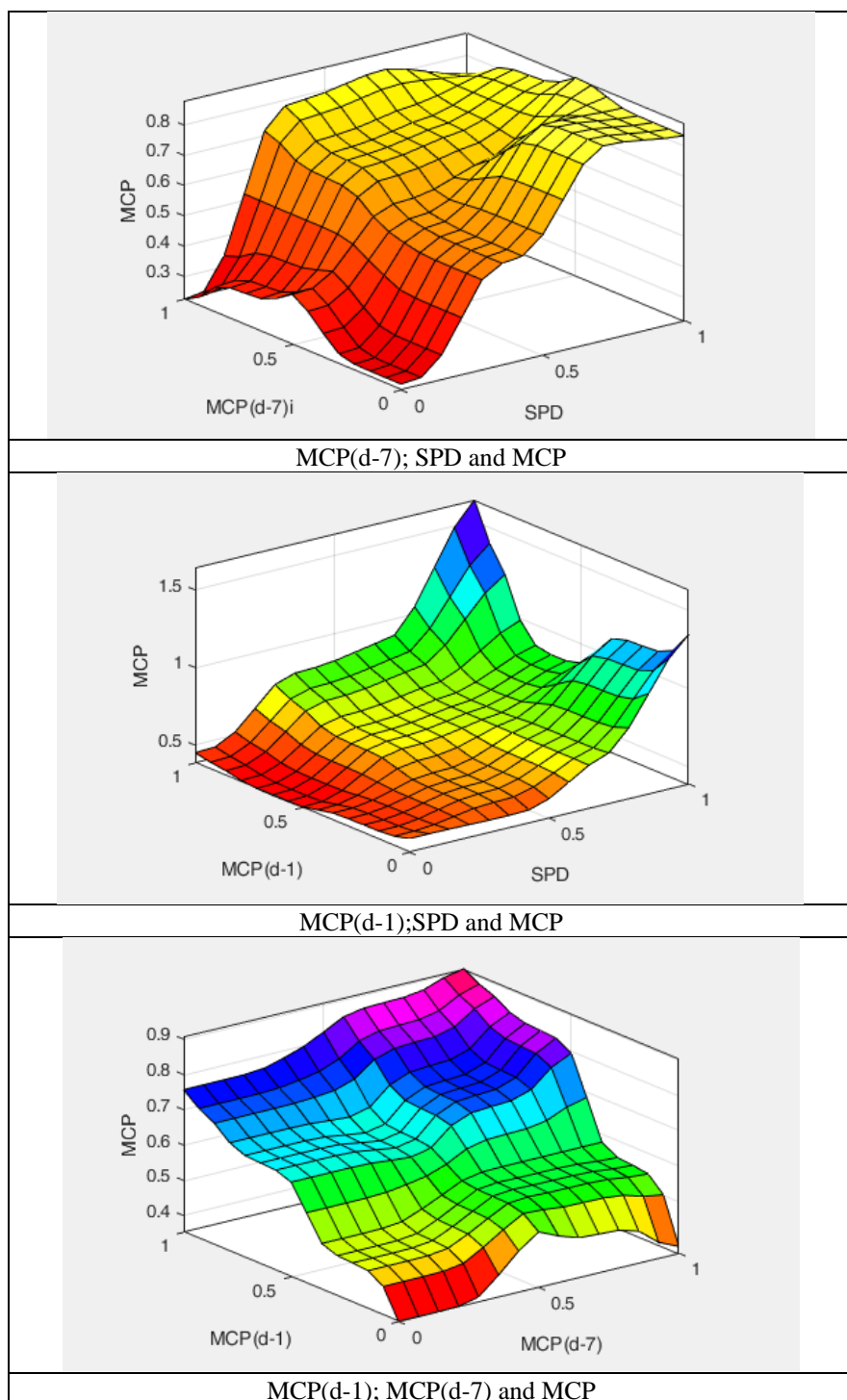


Figure 6. Graphs of relations in 3-D between inputs and MCP.

## CONCLUSION

Artificial Intelligent methods containing Machine Learning Algorithms are frequently used in prediction problems. ANFIS uses Machine Learning Algorithms to learn from data. ANFIS is used in this research for modelling the relations between variables to predict the day ahead prices of electricity stock market of Turkey. In the set of training data of 2000, Machine Learning Algorithms has been used to understand the relationship between input variables and output variables. The model is constructed by the historical data of electricity prices and the potential demand. In the 4<sup>th</sup> week of March, the MCP in the same hour as 7 days before, MCP in the same hour of 1 day before and the System Potential Demand are the good predictors of the day ahead prices. The best model is found after making many experiments given in Table 1. The best model with best performance is in the architecture of 4-4-3 with the Membership function of “dsig” which refers to the difference of two sigmoidal functions. According to the 3D graphs the relations between those inputs (SPD, MCP(d-7), MCP(d-1)) and output MCP can be modelled by predicted functions. Machine learning algorithms are successfully used to learn the relationships between datasets, while training it. Then the trained model is tested on the testing set. The performance of models is compared, and the best model is chosen.

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# **Village Tourism in Nigeria**

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## ABSTRACT

Village tourism is a major means for developing the rural areas and it is also a means of promoting accelerated growth in the rural settlements. Thus, this paper studied village tourism development in Nigeria through a narrative review on its potentials and challenges. The study deduced that most of the tourism sites and destinations in Nigeria are located in the rural areas; developing rural tourism therefore implies the development of the Nigerian tourism industry at large. Twelve frequently visited tourism sites in the rural areas of Nigeria were examined in this paper. The study found that village tourism in Nigeria is often linked to the cultural belief of the people in the host community of the tourism sites. These cultural beliefs are often associated with religious or mystical beliefs about their ancient artifacts such as monoliths, sacred waterfalls, sacred grove, hills and mountains, lakes, forests, game reserve and so on. These monuments have been a source of employment to the people and a source of revenue generation to the government. However, some of these monuments have been neglected which has resulted in the fall in the number of visiting tourists. Therefore, deliberate efforts should be geared towards the maintenance and conservation of the monuments in order to attract tourists thereby increasing the income generated through village tourism in Nigeria.

*Keywords – Village Tourism, Tourism Potential, Tourism Challenges, Revenue Generation, Nigeria.*

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## INTRODUCTION

Tourism development has become the focus of many countries of the world due to its imminent potentials and its importance towards generating revenue to the government and being a viable source of employment to the unemployed population in the society. Tourism sector is one of the fast-rising sectors of economies around the world [1]; it is also a major means of encouraging immigration into the country which consequently results to many accruing economic and social benefits [2]. [1] asserting that some countries of the world such as Egypt, Kenya, the Caribbean, South Africa, Morocco, Greece, United Arab Emirate and so on has been generating reasonable revenue through the tourism industry.

Specifically, in the developing countries, tourism development is believed to be a major means of ensuring national development because of the presence of noticeable natural monuments and artifacts domiciled in the developing countries particularly in Africa, Nigeria inclusive. In Nigeria, virtually every geographical region has at least a significant tourist site

which will be discussed later in this paper; a thorough investigation all Nigeria will show more potentials and benefits of the tourism industries. From the tropical rain forest in the South to the Sahara Desert in the North and the Atlantic Ocean and fresh water habitat in the Niger- Delta area, Nigeria social landscape is visibly dominated by variety of natural phenomena that attracts the locals and the internationals to these scenes to have a glance of nature.

Furthermore, the significant contribution of the tourism industry to the socio-economic development of countries around the world is well documented in the literature ([3]; [4]; [5]; [6]; [7]). These studies outlined the importance of the tourism industry to national development and also justify the need for total overhauling of the tourism sector in order to boost its income generation to the country at large. Nigeria is not left out in this trend; increase in the volume of tourist into the country has increased the contribution of the tourism industry to national development or specifically the socio-economic development of the country ([1]; [8]; [9]; [10]). All these justify the importance of the tourism industry to national development and employment generation.

In developing country like Nigeria, village settings are mostly referred to as the rural areas; and majority of the population lives in the rural areas meaning that any activity in the rural areas directly affects most of the population in the country as a whole. In other words, the location of a tourist attraction in the rural areas is very important to the development of such area. [6] opined that the behavior of people that visit rural area for tourism is determined by the level of satisfaction they derived from the area. Rural tourism can be described as a visit to the rural area in order to have recreation or leisure [11].

In Nigeria specifically, rural tourism is a major means for developing the rural areas and it is also a means of promoting accelerated growth in the rural settlements because most of the tourists' attraction in Nigeria are located in the rural areas [12]. Most of these tourists' attractions located in the Nigeria's rural areas comprise of natural or cultural heritage and sites [14]. These are tourists' attractions made up of rocks, ancient buildings and sites, rivers, waterfalls, forests, cold and warm springs, ranches, wildlife and so on. Most of the studies in Nigeria focused on tourism development generally; apparently, existing literature on village or rural tourism in Nigeria is very scanty ([11]; [12]; [13]; [14]; [15]). The studies focused majorly on the implication of rural tourism on the development of the counties without fully harnessing and analyzing the potentials of the rural tourism sites in Nigeria. For instance, while [12] analyzed the potentials of a tourism location in Nigeria-Sukur World Heritage site, [15] analyzed the potentials of a tourism location in Nigeria- Oguta Lake; this study seeks to harness and analyze the potentials of the village tourism in Nigeria with emphasis on rural tourism sites in geo-political zones of Nigeria. The latter part of this

paper shall review past literature on tourism in Nigeria as a whole and specifically on rural tourism. Further discussions shall include the development of tourism in Nigeria, discussion on some rural tourism sites in Nigeria, conclusion and preferring some recommendations towards the development of rural tourism.

Therefore, the main purpose of the study is; to identify the potentials and problems of rural tourism development in Nigeria, to analyze the existing literature on tourism development and make inference, to discuss the development of rural tourism in Nigeria over the years, to provide descriptive analyses on the data on tourism in Nigeria, and to identify potential rural tourism sites in Nigeria.

## **LITERATURE REVIEW**

In South Africa, [5] analyzed the impact of tourism potentials on the locality. The findings revealed that a few members of the community participate in tourism related ventures. Most of the residents are discouraged to participate in tourism related ventures because of the decadence of the infrastructure facilities in the community and the tourism potentials or products in the vicinity are not well marketed to the general public.

[4] investigated the possibility of using tourism to ameliorate the level of poverty in a community in Cameroon. The study asserted that the presence of tourism site in the rural areas tends to allow the residents of the area to market their locally produced products to the tourist thereby leading to increase in their level of income and reducing their poverty level. The study further stated that any natural tourism sites for example forest reserves should be protected by appropriate legislation so that the use of such endowment for tourism purposes will not adversely affect the rural dwellers.

Similarly, in [16] investigated the implication of lack of basic amenities and services on tourism development in a community in Cameroon. The study opined that effective security is a basic service needed for a viable tourism industry because tourists will most times visit places where there is no insecurity. In the same vein, the study opined that adequate social infrastructure is a catalyst for effective tourism industry. Infrastructures such as good road network, good internet access and stable power supply are very fundamental towards the development of the tourism industry.

In Cyprus, [3] opined that rural tourism is a major panacea for the socio-economic development of the country and the individuals in the rural areas in particular as it promotes their source of income and employment generation. The study further asserted that rural tourism is an integral means of improving the wellbeing of the residents of the rural areas. Rural tourism is also seen as a means of solving or ameliorating the societal problems in the rural areas. Since agricultural practices have been one of the main

occupations in the rural areas; this consequently leads to agricultural tourism (agro tourism) [3]. By 'agro tourism', people that live in the city centers come to the villages for them to have the experience of the rural settlements.

[3] opined that that recently, Spanish has been witnessing boost in its rural tourism and rural tourism is one of the main tourism potentials that is improving the Spanish economy. According to the study, the major motivating factor regarding rural tourism is improved number of visits and the ability to make tourist very loyal and committed to the tourism site. Further, the study revealed that rural tourism is a catalyst for improving the wellbeing of the masses in the rural areas through direct and indirect provision of employment to the people.

[7] studied the importance of the development of tourism towards improving the wellbeing of the rural areas of Iran. The study revealed that tourism development plays a major role towards the development of the rural areas of Iran and further opined that tourism development in the rural area often expand or increase the impact of the income generated through tourism in the area on sustaining the population of the people living in the areas. More specifically, the result of the estimation showed that rural tourism development had a positive and significant impact on development of the society and the economy at large.

[17] evaluated the potentials and problems of rural tourism in Russia. The study suggested that development of rural tourism tends to provide alternative source of income to the rural dwellers in Russia. The study further opined that increasing the productivity of the agricultural sector tends to boost the level of patronage to the rural areas thereby increasing the volume of agricultural tourism in such areas. [18] showed that tourism as a whole is made up of services and activities coordinated by a person or an institution in order to ensure that people are able to travel for leisure or pleasure. They opined that tourism is one of the main industries in the world as a whole and one of the sectors that generate income to the developing economies such as Nigeria. Further, they asserted that the advancement in the level of technology coupled with affordable means of transportation can help in encouraging tourism in the country.

[1] investigated the impact of tourism to the economy of Nigeria. They asserted that tourism location may be natural or man-made. They opined that natural tourism location includes; natural waterfalls, rocks, rivers and so on. Man-made tourism location includes; amusement parks, artificial waterfalls, games garden and so on. They also classified tourism into culture/art attractions, sports, festival/carnival, business and medical tourism. In their findings, they discovered that international tourism improves the economy significantly and posits a great advantage to the economy as a whole and individuals in particular.

[19] examined the implication of creative tourism on the development of business center. According to the study, the Nigerian tourism recorded the

absence efficient players in the tourism industry and limited numbers of tourist visits the rural tourism sites. The study concluded that creative tourism through skill application and the level of technological advancement had a positive implication on the business development in Nigeria.

[2] specifically explored the potential of Oguta Lake in a Nigerian community. The study found that the Lake have numerous potentials that might be tapped into when it is fully utilized and adopted as a tourism destination. According to the study, when the potentials of the rural tourism site are fully developed through massive infrastructural development; it tends to boost the level of economic growth in the region.

[8] explored the connection between cultural heritage and the development of the tourism industry in Nigeria. The study confirmed that Nigeria is not really making reasonable income from tourism, despite the array of tourism potentials and most of these potentials portrayed the cultural values of the communities where the tourism site is located. The study identified that the development of tourism in Nigeria is affected by many problems such as lack of infrastructure and high level of insecurity. The study further shows that Nigeria has not utilize the advantage of its high population of over two hundred million people to develop its tourism potentials.

[20] investigated tourism with respect to statistics on restaurants, hotels and some tourism sites in Nigeria. The study opined that trade tourism was the first notable tourism experience in Nigeria and that tourism can be a great potential towards improving the foreign exchange earnings in the country. If the Nigeria tourism industry is fully developed, the industry has the potential of making the Nigerian foreign exchange earning very favorable. The study also argued that data on tourism should be collected and effectively managed in order to facilitate the development of the tourism industry in Nigeria.

[9] examined the impact of tourism on Nigeria's economic growth from 1980 to 2015. The study found that the development of the tourism industry had a positive impact on the level of Nigeria's economic growth. In line with the views of [8], the study further revealed that many of the tourism potentials in Nigeria are rather untapped both by the corporate entities and the government at all levels.

[11] investigated the development of rural tourism in Nigeria. The study revealed that rural tourism does not have much attention compared to the tourism in the urban areas in Nigeria. This implies that the facilities and social infrastructures enjoyed by the tourism sites in the urban areas are not replicated in the rural areas where there are natural monuments and artifacts that can encourage visitors to visit such areas. The study further showed that the neglect of the rural tourism sites has discouraged the development of tourism in the rural areas on Nigeria.



[12] asserted that tourism is one of the fastest growing industries of the world which has the acumen to improve the level of economic growth and to increase the income of the people and the country at large. The study investigated the implication of the Sukur World Heritage site in Adamawa state of Nigeria with specific consideration of its effect on the development of the economy. Findings revealed that the heritage site is of great importance to the economy of the people specifically and the nation in general.

[22] explored the marketing of tourism potential in Africa with a specific reference to the Nigerian tourism industry. The study discovered that effective marketing vis-à-vis the coordinated and all-round marketing of the tourism potentials in Nigeria locally and internationally tends to boost the level of tourism patronage in the Nigeria economy thereby improving the level of income of the populace and the economy at large. In other words, deliberate effort to show case the tourism asset of the country will increase its patronage and the income accruing to the industry.

[23] argued that Nigeria as a nation is endowed with enormous socio-cultural, physical and ecological tourism potentials that are sufficient to sustain the tourism industry in Nigeria. The study further revealed that tourism tends to be the most lucrative industry of the world in the twenty-first century; the strength of competitiveness in the industry will determine the level of benefit through which each nation will derive from the industry. It asserted that effective planning and innovation of programs to develop the tourism industry will determine the viability of the industry in the nations of the world.

[14] investigated the effect of cultural tourism on the development of the rural area of in Nigeria. The study showed that cultural heritage exists in the rural areas which are supposed to be tapped in order to develop such areas. According to the study, cultural festivals and the celebration of custom should be done in a way that it will increase the income of the rural dwellers and the economy of the region.

Similar to the study of [14]; [24] examined the effect of rural tourism on the development of the rural area of in Nigeria. The study also revealed that tourism plays major and significant roles in the economy of the rural dwellers and national economy as a whole. The study further asserted that developing and maintaining the cultural resources has significant impact on the local economy of the rural dwellers since most of the cultural resources are in the rural areas of the country.

Corroborating the assertion of [11]; [13] explored the development of rural tourism in Nigeria. The study argued that despite the high potentials accruing to the Nigerian tourism industry particularly in the rural area, reasonable attention has not been shown towards uplifting the potentials in the rural tourism industry in Nigeria. This means that the facilities and social infrastructures required to improve the patronage of rural tourism in the rural

areas where there are natural monuments and artifacts have been neglected and unattended to. The study further showed that the neglect of the rural tourism sites has discouraged the development of tourism in the rural areas on Nigeria.

[8] believed that development of the tourism industry in the villages would have been a milestone in the realization of the millennium development goals. They further asserted that tourism development in the rural areas will also help in the even distribution of income and the national resources. [10] asserted that tourism development is a tool usually used to promote rural development and to ensure sustainable peace in the society. According to the study, villages now attract more tourist to see their unique potentials compared to its past trend where there were minimal visits and such visits are often halted by ineffective tourism policy and policy somersault. The study further suggested that in order for Nigeria to realize its economy diversification goal; tourism industry development can be the major substitute to the over dependency on crude oil exploration and production. [25] were of the opinion that entrepreneurship development towards the tourism sector of the economy is fundamental in order to develop the tourism industry in Nigeria. They further opined that artificial or man-made innovations can also be introduced to the natural attractions in the rural areas.

## **MATERIALS AND METHOD**

The development of the Nigerian tourism industry is a continuous or unending process that evolves from one phase to the other. Many natural and artificial tourism attractions are imbedded in Nigeria. With Nigeria's population advantage, adequate natural resources and its large expanse comprising of thirty-six states and the Capital territory in Abuja, Nigeria's tourism potentials are numerous and have comparative advantage compare to other countries of the world.

The development of tourism is ever increasing in Nigeria; while the development of the tourism industry was not fully considered in the past especially during the pre-independence era, the trend in the world over has resuscitated the desire of the Nigerian government to invest more in the tourism industry and to encourage private investment in the industry. The first tourism experience in Nigeria was done by the merchants from Portugal when they visited Lagos for trade purposes in 1472 [20]; we can therefore assert that business tourism was the first tourism experience in Nigeria. This later developed into several trade related visit Trans- Atlantic trade arrangement and tourism. The development of the tourism industry started in 1962 just two years after Nigeria's independence, this started with the

creation of the first tourism association in Nigeria called the Nigerian Tourism Association. Consequently in 1964, the creation of this association resulted to the acceptance of Nigeria into the International Union of Official Travel Organization-IUOTO [12].

After Nigeria became a member of IUOTO, the Nigerian government created the Nigeria Tourism Board in order to regulate the activities in the tourism industry and to introduce policies and measures that will motivate indigenes of the country and the foreigners to visit tourism locations in the country. However, the Nigeria Tourism Board failed to live up to the expectation of the government which led to the creation of the Nigeria Tourism Development Corporation- NTDC which replaces the Nigeria Tourism Board as the agency of government for regulating and promoting the Nigerian tourism industry. Till date, the government of Nigeria regulates and promotes the affairs of the tourism industry through the NTDC and the Ministry of Culture and Tourism coupled with some agencies saddled with the responsibility preserving the national heritage and monuments.

In conformity with [11], [12], [14] and [15] the potentials of rural tourism in Nigeria include: 1) One of the main potentials of rural tourism in Nigeria is that it is of great benefit to the economically disadvantaged in the society due to the fact that this set of people lives in the rural areas; 2) Rural tourism development aims to reduce rural-urban migration. In other words, rural tourism tends to bridge the gap between the urban and rural areas; 3) Rural tourism development in Nigeria brings the world to the remote places in the society; 4) Rural tourism also provides avenue to tap into nature itself and it provides opportunity for tourist to move within the natural environment and be exposed to cultural heritage and resources in the local environment; 5) Rural tourism also encapsulates but ecological tourism and Agro-tourism. Meaning that, the tourist to the rural areas tends to enjoy both the natural phenomena and closeness to the agricultural settings; 6) Rural tourism posits socio-economic, cultural and environmental impacts to the rural dwellers in particular and the country in general; 7) Rural tourism in Nigeria is also a significant mean of generating employment to the rural dwellers; 8) It also helps in the conservation and protection of natural resources in Nigeria; and 9) Rural tourism is also a means of improving the foreign exchange earnings in Nigeria.

#### *A. Challenges of Rural Tourism in Nigeria*

Nonetheless, good infrastructural and social amenities coupled with a viable legislation are required to ensure the full utilization of the tourism potentials in Nigeria. According to Bankole (2013), the problems associated with tourism in the rural areas include; government negligence and structural problems. By government negligence, there is no sufficient political will from the government at all levels to develop the tourism industry in the rural areas. Some of the policies of government towards improving the rural

tourism patronage have been halted by the successive government. Structural problem in this sense shows the ineptitude of the practitioners in the tourism industry towards committing their investments in the rural areas.

[13] identified that the underdevelopment of the qualities and the potentials of the tourism industry in the rural area has the major problem bedevilling the development of tourism in the less developed areas in Nigeria. On this, the resources required for the swift development of rural tourism are not allocated to the industry by the government. Meaning, there is insufficient budgetary allocation for rural tourism development in Nigeria despite the noticeable potentials feasible in the industry.

In the words of [25], the problems bedevilling the rural tourism sector in Nigeria include but not limited to: “inadequate finance of the rural tourism industry, limited level of education, advertisement or sensitization of the domestic or international communities on the tourist sites and the benefits accrue to them and insignificant level of progress towards the development of the rural settlements itself.

Similarly, [21] identified financial hiccups as one of the major the problem associated with rural tourism development in Nigeria. The other problems identified include; lack of conducive business environment in the Nigeria’s tourism industry, high level of insecurity and poor social infrastructure. In analysing the challenges of tourism in a rural area of Nigeria, [26] identified the major challenges against the flourishing of tourism in the rural areas as extreme poverty, the movement of the influx of people to the urban area, low income as a result of poor crop yield and poor state of the infrastructure in the rural areas.

According to the data of the World Development Index (2019), the percentage of the population that are in the rural areas, the number of tourists per annum and the total annual expenditure made by these tourists. For clarity of this data, descriptive statistics was used subsequently followed by Bar Charts and Line Graphs. The descriptive statistics of Nigeria in 2021 represent that about 62.2% of the total population in Nigeria resides in the villages. The implication of this is that, developing the tourism industry specifically in the rural area tends to directly affect about 62.2% of Nigeria thereby ameliorating the problems associated with the rural dwellers. Its corresponding median value was estimated at 67.8% of the total population; meaning that, large proportions of Nigerians live in the rural areas. This corroborates the assertions [1]; [4]; [9], [10], and [25] that developing the tourism sector in the rural area is a panacea for developing the economy of Nigeria at large. In 2021, about 3370227 people visited tourism sites per annum in Nigeria. Comparing this figure to the total number of Nigeria’s population of over 200 million people really shows that the patronage on tourism is too low. This might have affected the income generated from the tourism industry all this while. The corresponding median value estimated at

about 2917000 also buttresses the point that patronage of the tourism industry is still low in Nigeria.

Furthermore, the analysis also shows that an average of about \$3.80 million was realized from the tourist per annum. This is far below the potentials readily available in the tourism industry in Nigeria. The further decline of its corresponding median value to about \$2.33 million confirms that the revenue or receipts generated through tourism in Nigeria is low despite the high population and the potentials of tourism particularly in the rural areas of Nigeria.

Rural Dwellers Percentage of Total Population in Nigeria between 1995-2019, revealed a steady decline in the in the number of people living in the rural areas, from about 68% in 1995, to about 64% in 2002, to about 56% in 2011, to about 52% in 2015 and an all-time low of a little over 28% in 2019. This shows that large proportion of the population in Nigeria are relocating to the urban centers and this might be as a result of neglect of the tourism industry development in the rural area [11]. In addition, the trend of the persistent decrease in the numbers of Nigerians living in the rural areas of the country. Especially from around year 2000, the slope of the graph becomes a straight-line graph meaning that there is a steady and consistent decline in the number of residents of the rural areas in Nigeria and the margin of emigration from the rural areas is uniformly the same annually. This clearly explain the conclusion from year between 1995-2019 statistics, meaning that, the large number of the population in Nigeria moving to the urban centers can be curtailed through conscious promotion and development of rural tourism in Nigeria.

Approximately, one million tourists were recorded to have visited the various Nigeria tourism sites in 1995 and the numbers have been increasing marginally from 1996 to 2000. In 2001, the number of tourists increased fairly and maintained similar tempo of increase till 2006 to about three million tourists. However, in 2007, the number of tourists in Nigeria increased sharply above five million, the increase in the number of tourists was consistent reaching an all-time high of over six million tourists in Nigeria. This was subsequently followed by sharp decline in the number of tourists in Nigeria; recovering back in 2015 and a marginal decline in 2016. The chart shows that on aggregate the number of tourists visiting Nigeria was low, this might be as a result of the neglect of the tourism industry in Nigeria over the years.

The total revenue accruing to the Nigeria government from tourism was grossly insignificant from 1995 to 1999 and between 2003 and 2004. The insignificance of the revenue generated through tourism from 1995 to 1999 might be related to the tension and insecurity as a result of Military rule in Nigeria which was later recovered in 2000 just few months after democracy has been restored back to the Nigeria government system. This supports [21] and [8] that one of the major problems bedeviling the tourism industry in

Nigeria particularly in the rural area is insecurity. Meaning that, adequate security for the lives and properties of tourist will boost their level of patronage. Similar trend of gross insignificance of the revenue on tourism also reflects between 2003 and 2004; this might be as a result of the heightened political tension in Nigeria as a result of the 2003 presidential elections, this might have discouraged patronage on tourism and subsequently reducing the revenue generated from it. Moreover, the revenue has been increasing coupled with a little decline from 2005 to 2015. This was however followed by a sharp and significant increase in the accruing revenue in 2016 and reaching an all-time high of over \$2.4 billion in 2017 and subsequently followed by two years consecutive decline in 2018 and 2019 respectively.

## RESULTS

Some Nigeria's tourism sites shall be discoursed in the section. Identifying such tourism sites will specifically show forth the potentials of the Nigerian tourism industry in the rural areas and the country in general. The outline of the tourism sites that shall be discussed in the section include: Idanre Hills, Kainji National Park, Yankari National Park, Alok Ikom Monoliths, Ogbunike caves, Erin-Ijesha Waterfalls, Osun-Osogbo Sacred Grove, and Argungu Festival.

### *B. Idanre Hills*

Idanre hill locally known as Oke-Idanre is a natural phenomenon located in Idanre in Ondo State, Nigeria. Idanre hills is an historic mountain that is believed to have been in existence for about five hundred million years. The ancient Idanre itself is surrounded by numerous rocks; the ancient town kingdom resided on the hills and it serves as a shield for the villagers during war and inter-tribal attacks especially during the inter-tribal wars among the present-day South Western Nigeria. For ease-climbing, six hundred and eighty-two steps were erected from the level-ground to the top of the mountain for ease of climbing of the three thousand feet above the sea level hill; five huts are also provided along the steps for the tourist to relax while climbing. Idanre hill has numerous cultural heritages and it was the home of the King of the town and also served as the abode of the indigenes of the town before 1934 when they left the hills and resettled on the ground beneath the hills. The hills have been on the tentative list of the UNESCO World Heritage site since 2007. According to [27], Idanre hills posits get benefits to the people of Idanre. According to them, the potentials of the Hills is sufficient to increase the level of economic development of the locality and it is effective to boost the level of employment creation and

income generation in the locality. Also, [31] opined that the development of the hills will promote the tourism potentials of the town thereby improving the level of socio-economic features of the town which will invariably improve the economy of the state at large.

### *C. Kainji National Park*

The Kainji national park was established in 1978 and hosted by two Nigerian States including Niger State and Kwara State. The national park became popular due to the establishment of a hydro-electric power plant in Kainji. The dam serves as one of the major power generation plants in Nigeria. The Kainji national park are of about three functions; these include, the Kainji Lake and two separate game reserves, i.e, Zuguma and Borgu game reserves. The game reserves are made up of varieties of trees and shrubs and wild animals such as lions, hippopotamus, tigers, birds, reptiles of different kinds, elephant, cheetah, crocodile, monkey and so on. These are the major attractions to the parks and it has been attracting tourists both locally and internationally to the park. [29] and [30] classified the Kainji National Park under ecotourism. They observed that ecotourism as an arm of tourism is very friendly to the environment and can be of great importance and benefits to the local resident in terms of employment creation and income generation for the government. It was further discovered that Kainji national park has contributed immensely to the economic growth and development of the host states. Also, the national park has also assisted in conserving and protecting the natural resources in its domain; resources such as the wild trees and wild animals are being conserved to protect the extinction of the species and to prevent environmental degradation.

### *C. Yankari National Park*

Yankari National Park was established in 1956 and located Yankari in Bauchi state, Nigeria. Similar to the games reserve in Kainji national park, Yankari games reserve consist of fresh water habitat for varieties of the world plants and animals' species such as, Varieties of monkeys, buffalo, hippopotamus, birds, reptiles, elephant, cheetah, crocodile, lions, *etcetera*. Apart from the wildlife species visibly present at the park, the Yankari games reserve also have natural warm springs.

Because of the need to accommodate the visiting tourists, hotel-business is one of the flourishing ventures in the locality. Being the richest wildlife reserve park in Nigeria, Yankari national park is of numerous economic and social benefits to the indigenes of the locality, the host state and the country in general. According to Wikipedia, Yankari national park is the biggest games reserve in Nigeria and it has been in the 'A' list of tourist destination in Nigeria and it has been a major source of revenue generation in the tourism industry in Nigeria.

#### *D. Alok Ikam Monoliths*

Alok Ikom Monoliths is located in Ikom area of Cross River State, Nigeria and it comprises of monoliths of volcanic stone which are believed to be up to 1,500 years old totaling about 450 of such. It is believed that the stone was engraved around 16th and 17th century. About three hundred volcanic stones in total are present at the location of the tourist area. It is also believed that the writings on the stone might have been a means of communication in the ancient time. Because of the uniqueness of this natural monument, it has been included on the tentative list of UNESCO World Heritage. According to [28] the monoliths are in danger of being destroyed. Meaning that concerted efforts are needed to sustain this rare natural monument for it not to be totally destroyed. Awareness is therefore needed to protect and preserve it; deliberate efforts of the government should also be geared towards protecting these monuments from further destruction.



Fig. 1 Alok Ikom Monoliths (rebrandnigeria.org)

Despite the threat against the sustainability of these monoliths, Lekan (2017) observed that the monument still shows many potentials because of its beauty and uniqueness. It was opined that tourists from both local environment, national and international communities still visit to catch a glimpse of the natural phenomenon. Accordingly, the monuments are also believed to have mystical powers and potentials and the engraving on each if these volcanic-stone calls for proper investigation in order for the dwellers to understand their past ancestral potentials that may be tapped into in the future.

#### *E. Ogbunike Caves*

Nigeria has natural monuments that showcases her cultural heritages and endowments, one of such is the Ogbunike caves located in a community known as Ogbenike in Anambra State of Nigeria. It is located within a tropical rain forest with varieties of plants and serene environment. It is the connumeration of different caves along the same axis of the forest and it is linked together by natural tunnels. In the ancient times, the Ogbunike caves served as refuge and hide during the period of war. Ogbunike cave also serve as one of the most visited tourism sites in the rural areas on Nigeria. Local and international tourists



have been patronizing the caves and this has made the village to be known and popular within the state and internationally. It has also been a source of livelihood to indigenes of the locality; as a source of reverence to the community which attached sacred importance to the caves. [16] identified that the Ogbunike caves have mystical powers with spiritual beliefs and also have some taboos which are often briefly explained to the tourists before entering the caves.

#### *F. Erin-Ijesha Waterfalls*

Similar to other rural tourism sites in Nigeria, Erin-Ijesha Waterfalls was named after the host community, Erin-Ijesha in Osun State of Nigeria. It was locally referred to as the Olumirin waterfall and was believed to have been discovered around 1140 and had been an attraction to people both far and near. The waterfall has remained one of the popular places visited for student excursion and other recreational activities. Mystical beliefs are also attached to the waterfall; it is believed that it can be used for the cleansing of the soul. The uniqueness of Erin-Ijesha waterfall compared to other waterfalls in Nigeria is that it is made up of seven individual cascades which flows together and formed the waterfalls at its falling. The waterfall is believed to be sacred and posits spiritual benefit to the people around it; not only that, the waterfall also provides direct and indirect employments to the people of Erin-Ijesha and the state at large. The people around the location often sell food and other necessities to the tourists whenever they visit; this has practically increased their commercial activities in the community. [33] asserted that most of the residents around the waterfall appreciate the existence of the waterfall around them because of the benefits accruing to them because the waterfall is located around them. Pointing to the potentials of the waterfall, [34] identified such potentials as the ability to be used as hydro power generation, for tourism and commercial purposes, for fisheries and a viable source of income generation for the residents and the state at large.

#### *G. Osun-Osobgo Sacred Grove*

Osun-Osobgo Sacred Grove is an ancient monument located in Osogbo in Osun State of Nigeria which has also been declared as a world heritage site by UNESCO in year 2005. The forest and other monuments present in the land scape are believed to be named after a mystical river goddess named Osun. The grove to have been in existence for over four hundred years ago. The grove has remained a revered place amongst its worshippers and tourists as many tourists locally and internationally attend the annual festival dedicated towards the celebration of the grove and the believed river goddess. Many tourists from both far and near also

attend the festival referred to as the Osun-Osogbo festival with the intention of praying at the grove for fertility and prosperity. [35] argued that pilgrimage to the Osun-Osogbo grove boosts the standard of living of the residents and it is also a means of employment generation if well managed. Similarly, [36] suggested that the people around should be integrated into the maintenance and management of the for them to have a means of living.



Fig. 2 Worshippers at the Osun-Osogbo festival (wmf.org)

#### *H. Argungu Festival*

Argungu festival is the most popular and the patronized cultural fishing festival in Nigeria. The festival is an annual festival held in Argungu in Kebbi State of Nigeria since 1934; the festival is usually held for four days coupled with a dance festival. Fishermen are allowed to enter into the Argungu water once every year which falls on one of the days of the festival; they are not expected to hold any fishing tool except for nets and container but to catch a fish using their bare hands. The fisherman with the biggest catch goes home with rewards, mostly financial.



Fig. 3 Argungu Fishing Festival (guardian.ng)

According to [37], promoting cultural heritage such as the Argungu fishing festival is a means for the conservation of natural resources. Accordingly, the significant cultural belief is attached to the festival; the Argungu community typically made up of farmers believes that the fishing festival is a means of signifying the end of the planting season. Furthermore, the festival is a major means of income generation to the people of the host community and it is seen as a means of empowering the residents because cash rewards and materials such as cars are allocated to the viable fishermen per year. Auction of the large fishes is also a means of generating income through the festival. During the festival, the residents benefit directly from the tourists because the international and local tourists buy some of the traditional stuffs such as cap, clothes, mats, etcetera. The implication of this is that the commercial activities of the people sharply increase during the festival resulting to increase in their income.

## CONCLUSION

Village tourism in Nigeria is the dominant part of the Nigerian tourism industry due to the fact that higher percent of the tourism sites and destinations in Nigeria are located in the rural areas. Meaning that, measures targeted towards improving the patronage on village tourism in Nigeria also implies the development of tourism as a whole in the country. The implication of this is that improving of village tourism directly affects the larger part of the population because reasonable part of Nigeria's population are farmers who dwell in the rural areas. Village tourism has also helped the rural dwellers in Nigeria to have another means of income generation apart from the income generated through the agriculture industry. This has really helped to augment the income of the rural dwellers and provides another means of raising funds for their needs.

Furthermore, village tourism in Nigeria is often linked to the cultural belief of the people in the host community of the tourism sites. These cultural believes are often associated with religious or mystical beliefs, though some are not verifiable, but the conviction of the people around the sites towards the originality of the beliefs show that there is possibility for the realness of such beliefs. Consequently, village tourism in Nigeria consists of ancient artifacts such as monoliths, sacred waterfalls, sacred grove, hills and mountains, lakes, forests, games reserve and so on. Some of these resources have been neglected and as resulted in the fall in the number of visiting tourists. All these natural resources need to be maintained because maintaining source implies the preservation of the cultural heritage of the people and a means of providing employment to the people specifically and

a source of revenue to the government at large. The main conclusions of the study should be summarized in a short Conclusions section.

#### ACKNOWLEDGMENT

Samiat Abimbola Lawal wrote this article as a result of her master study and Ozlem Uzunsaf contributed as the supervisor for the graduation project.

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# **Psychological Well-being in the Workplace, Mobbing, and Digital Mobbing**

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## ABSTRACT

Mobbing poses a serious threat to employees' psychological health and creates a negative workplace atmosphere. This detrimental behavior not only undermines employee motivation but also significantly reduces organizational efficiency. Mobbing can lead to psychological issues such as stress, depression, and anxiety in individuals, while organizations may face high staff turnover and low job satisfaction as consequences. This chapter reviews the definitions, impacts, and prevention strategies of mobbing and digital mobbing in the existing literature, discussing approaches to protect employees' psychological well-being.

The individual and organizational effects of mobbing and digital mobbing are analyzed in detail, and solutions are proposed. Additionally, individual steps for victims to cope with the problems and organizational measures to prevent mobbing are emphasized. The importance of creating a healthy and safe working environment is highlighted, and strategies and policies to enhance employee welfare are suggested. It is argued that integrated efforts at both individual and institutional levels are necessary to combat mobbing. Furthermore, the widespread adoption of digitalization and remote working models has introduced a new dimension to workplace psychological health and mobbing. The emergence of digital mobbing (cyberbullying), as traditional mobbing transitions into virtual environments, has had significant effects on employees' mental and professional well-being. This article also examines the definition of digital mobbing, its psychological effects in the workplace, and prevention strategies.

*Keywords – Mobbing, Psychological Health, Digital Mobbing, Workplace Mobbing, Definition And Dimensions Of Mobbing.*

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## INTRODUCTION

Mobbing can be defined as systematic and persistent psychological harassment actions directed toward an employee in the workplace. Leymann (1996) describes mobbing as a set of behaviors that make an individual feel consistently humiliated, excluded, and isolated in their work environment, often as a result of group dynamics. These behaviors can include questioning professional competencies, excessive criticism, social isolation, derogatory remarks, mocking attitudes, gossip, and defamation (Einarsen et al., 2003).

Mobbing has significant adverse consequences not only at the individual level but also at the organizational level. Psychological pressures on employees threaten personal health and severely decrease workplace productivity (Vartia, 2001). Victims of mobbing may experience psychological issues such as stress, depression, anxiety, sleep disorders, and

low self-esteem (Zapf et al., 2003). These psychological effects can lead to job dissatisfaction, burnout, and resignation (Hauge et al., 2010).

The organizational repercussions of workplace mobbing are also notable. Mobbing creates a negative atmosphere of collaboration among employees and undermines key factors such as communication, trust, and job satisfaction within the organization. Additionally, increased workplace stress levels can result in overall productivity loss and a higher employee turnover rate (Rayner, 1997). Organizations must develop various strategies to prevent mobbing and support its victims.

Technological advancements have brought numerous advantages to the working world, but the problems arising from digitalization include the critical issue of digital mobbing (Yıldırım & Özdemir, 2021). Unlike traditional mobbing, digital mobbing occurs through electronic communication and is frequently observed in remote working teams. Its characteristics of anonymity, persistence, and rapid spread make digital mobbing more damaging (Einarsen et al., 2020).

This study aims to examine the effects of mobbing in the workplace and discuss ways to address this issue. It explores strategies that can be implemented at the individual level, as well as policies and approaches that institutions should develop. Furthermore, it addresses the increasingly common and widespread issue of digital mobbing, which requires preventive measures at both individual and organizational levels (Coyne & Farley, 2021).

## **DEFINITION AND DIMENSIONS OF MOBBING**

Mobbing encompasses a series of repetitive and intentional negative behaviors in the workplace (Hoel and Cooper, 2001). These behaviors typically occur within hierarchical relationships, such as managers harassing subordinates. However, they can also emerge horizontally, i.e., among colleagues (Zapf and Einarsen, 2011).

Mobbing behaviors are generally categorized into four main types:

### ***Personal Attacks***

Personalized mobbing includes malicious behaviors and verbal assaults targeting employees' personal attributes. These actions undermine employees' self-esteem, diminishing their job performance. Zapf and Einarsen (2001) define such behaviors as "personal attacks," emphasizing their focus on individual traits. Leymann (1996) notes that these actions harm employees' reputations, weaken organizational relationships, and increase feelings of loneliness. For instance, using consistently derogatory language can result in employees losing social support and suffering further psychological harm.

***Social Isolation:***

Social isolation involves deliberately distancing an employee from colleagues and causing communication breakdowns. Einarsen (1996) refers to this as "sociological isolation," emphasizing how it erodes employees' sense of belonging and leaves them feeling alone in the workplace. Examples include exclusion from meetings or social events, which detach employees from the organizational context and hinder collaboration. Leymann (1996) adds that social isolation heightens stress levels and lowers performance by making employees feel isolated at work.

***Attacks on Professional Competence:***

This type of mobbing includes misleading employees about their duties, creating obstacles to their work, or continuously questioning their performance. Leymann (1996) terms these behaviors "professional pressure," highlighting their capacity to damage employees' confidence and challenge their professional abilities. For example, persistently misinforming an employee or deeming their work inadequate can reduce their job performance and hinder career growth.

***Intimidation and Threats:***

Leymann (1996) describes this as "violent pressures," encompassing physical or moral threats that severely harm employees' psychological well-being. This type of mobbing causes employees to feel constantly threatened, eroding workplace security. Examples include physical violence, which can increase anxiety, depression, and low job performance among victims. Einarsen and Raknes (1997) note that such threats raise stress levels and negatively impact long-term workplace productivity.

## **PSYCHOLOGICAL AND PHYSICAL EFFECTS OF MOBBING**

Mobbing has severe impacts on employees' psychological health, including stress, depression, anxiety, and burnout (Matthiesen and Einarsen, 2001). These effects not only degrade individuals' quality of life but also harm the workplace atmosphere. Moreover, individuals exposed to mobbing are at a high risk of developing post-traumatic stress disorder (PTSD) (Leymann and Gustafsson, 1996).

Mobbing can also have adverse effects on physical health, causing symptoms such as headaches, gastrointestinal problems, and cardiovascular issues (Kivimäki et al., 2003). These symptoms reduce individual productivity and disrupt organizational dynamics.

***Organizational Effects of Mobbing***

Beyond its individual effects, mobbing significantly damages organizations. These consequences include:

- **Reduced Job Satisfaction:** Employees' commitment to their workplace declines, affecting long-term organizational performance.

- **Increased Absenteeism:** Psychological and physical problems resulting from mobbing lead to frequent absenteeism.

- **High Staff Turnover:** Employees leave their jobs due to mobbing, increasing turnover rates.

- **Lower Productivity:** Reduced employee motivation results in decreased organizational performance.

Additionally, increased workplace tensions and management issues caused by mobbing can harm a company's brand value and competitiveness.

## **COPING STRATEGIES FOR MOBBING**

To address mobbing effectively, strategies must be developed at both individual and organizational levels:

### ***Individual Strategies:***

- **Psychological Support:** Victims should seek professional help to cope with the effects of mobbing. Therapy and counseling services are essential for recovery.

- **Documentation:** Recording incidents is crucial for pursuing legal action and serves as evidence during complaint processes.

### ***Organizational Strategies:***

- **Training Programs:** Educating employees about mobbing helps them recognize and prevent such behaviors. These programs assist both managers and employees in identifying and addressing mobbing.

- **Open Communication Channels:** Establishing systems for reporting complaints easily and anonymously encourages employees to report mobbing incidents.

- **Corporate Policies and Regulations:** Clear policies should be developed to prevent mobbing, emphasizing the unacceptability of such behaviors and outlining consequences for violations.

- **Conflict Management and Mediation:** Effective management of conflicts among employees plays a critical role in preventing mobbing. Mediation processes can help resolve disputes between parties.

## DEFINITION OF DIGITAL MOBBING

Digital mobbing is defined as malicious behaviors targeting employees' psychological and professional well-being through electronic communication tools (Kowalski et al., 2018). These behaviors often aim to damage individuals' reputations, isolate them, or disrupt their social relationships in the workplace. Key elements of digital mobbing include:

### ***Digital Harassment***

Sending threatening, derogatory, or malicious messages via email, messaging apps, or video conferencing platforms (Smith et al., 2020). These actions undermine victims' psychological safety, increasing stress and anxiety levels (Einarsen et al., 2020).

### ***Exclusion***

Excluding individuals from virtual meetings, group chats, or digital platforms (Baruch, 2015). This weakens victims' sense of workplace belonging and negatively impacts productivity (Zapf et al., 2016).

### ***Humiliation***

Making sarcastic or derogatory remarks under the guise of "jokes" on social media or group messaging platforms. Such behaviors harm victims' self-esteem and disrupt group dynamics. Research indicates that humiliation significantly reduces work efficiency and emotional resilience (Kowalski et al., 2020; Einarsen, 2021).

Although digital mobbing is an extension of traditional mobbing, its characteristics of anonymity, speed, and persistence make it more complex and destructive. These factors adversely affect individuals' overall quality of life (Namie & Namie, 2014).

### ***Effects of Digital Mobbing***

Digital mobbing creates severe psychological effects, often with long-term consequences. Unlike traditional mobbing, which typically involves direct and visible actions, digital mobbing exploits technological platforms for indirect and continuous harassment. Its effects manifest both individually and organizationally:

#### ***Individual Effects***

##### ***Psychological Support***

Victims should seek professional help to cope with the effects of mobbing. Therapy and counseling services are essential for recovery.

- ***Burnout Syndrome:*** Victims of digital mobbing may experience job dissatisfaction and energy loss due to constant criticism, surveillance, or feelings of being threatened. Maslach and Leiter (1997) state that the core components of burnout syndrome are emotional exhaustion, depersonalization, and reduced personal accomplishment. Digital mobbing exacerbates these three components, negatively impacting the mental health of victims. The continuous use of digital tools and the feeling of being

monitored in the workplace can lead to declines in both job performance and overall quality of life.

- **Anxiety and Depression:** Digital mobbing can lead to mental health disorders such as anxiety and depression in victims. The constant feeling of being monitored and criticized can result in high stress levels, loneliness, and low self-esteem among employees. Einarsen and Raknes (1997) highlighted that victims of mobbing often experience psychological issues like anxiety and depression. Similarly, Björkqvist (1994) stated that digital mobbing can cause anxiety disorders, sleep disturbances, and a reduced sense of self-efficacy in individuals.

- **Performance Decline:** Victims of digital mobbing may face consequences such as inattention, difficulties concentrating, and decreased productivity. Combined with feelings of being undervalued or humiliated, this negatively affects their performance. Zapf (1999) noted that workplace mobbing victims often suffer from distraction, lack of concentration, and impaired decision-making abilities. These challenges adversely impact their productivity and career development.

#### ***Organizational Effects:***

In addition to its effects on individuals, digital mobbing can negatively affect organizations. By reducing employee motivation, commitment levels, and performance, digital mobbing can undermine overall organizational efficiency.

- **Team Performance:** Digital mobbing damages team communication and adversely affects collaboration and coordination. This diminishes the ability of team members to work together effectively, leading to reduced productivity. Salin (2003) emphasized that digital mobbing in the workplace creates a lack of trust and communication breakdowns among team members, ultimately weakening overall team performance.

- **Commitment and Loyalty:** Victims of digital mobbing may experience significant decreases in their commitment and loyalty to the organization. Mobbing increases the likelihood of employees wanting to leave their jobs, resulting in a decline in organizational commitment. Tuckey and Dewe (2006) found that mobbing victims are more inclined to consider leaving their jobs and show reduced loyalty to their organizations. Similarly, Mobley (1977) noted that thoughts of resignation negatively affect individuals' motivation and commitment to the organization.

- **Reputation Damage:** Companies that fail to address digital mobbing effectively risk reputational harm. The widespread use of social media and digital platforms today necessitates greater transparency and sensitivity toward employee rights. Baruch & Spiegel (2016) highlighted that organizational indifference to digital mobbing can lead to employee dissatisfaction and decreased customer trust. Furthermore, Robbins and Judge (2011) stated that a negative corporate image can lower employee morale and diminish a company's value.

## COPING STRATEGIES

Addressing digital mobbing requires a combination of individual and organizational strategies.

### *Individual Strategies*

- ***Raising Awareness:*** Individuals should develop awareness of the signs of digital mobbing and document incidents (Coyne & Farley, 2021).
- ***Setting Boundaries:*** Establishing clear boundaries for social media and digital communication is essential.
- ***Seeking Support:*** Victims should seek help from colleagues, supervisors, or professional counselors (Yildirim & Özdemir, 2021).

### *Organizational Strategies*

- ***Developing Clear Policies:*** Organizations should create explicit policies stating that digital mobbing is unacceptable. These policies provide transparent guidance on expectations and potential consequences for employees (Einarsen et al., 2020).
- ***Training Programs:*** Training sessions should be organized for employees and managers to raise awareness about digital mobbing and teach effective countermeasures. These programs should focus on identifying mobbing behaviors and equipping participants with skills to address them (Salin & Notelaers, 2017).
- ***Anonymous Reporting Channels:*** Secure systems should be established to allow victims to report incidents of digital mobbing anonymously. These channels enable victims to express themselves comfortably and help organizations assess the situation promptly (Coyne & Farley, 2021).
- ***Regular Evaluation and Feedback:*** Organizations should regularly evaluate the impact of digital mobbing and the effectiveness of preventive policies. Surveys, employee meetings, and feedback mechanisms can support this process (Einarsen et al., 2020).

## DIFFERENCES BETWEEN DIGITAL MOBBING AND TRADITIONAL MOBBING

Mobbing encompasses a series of repetitive and intentional negative behaviors in the workplace (Hoel & Cooper, 2001). These behaviors typically occur within hierarchical relationships but can also manifest at a horizontal level, i.e., among colleagues (Zapf & Einarsen, 2011). In hierarchical relationships, mobbing involves a superior systematically exerting pressure on a subordinate. On the other hand, horizontal mobbing often arises from competition, jealousy, or interpersonal conflicts. Digital mobbing can encompass both types and finds a broader scope for dissemination through factors such as anonymity and easy accessibility in virtual environments (Einarsen et al., 2020).

Table 1: Differences Between Digital Mobbing and Traditional Mobbing

Feature	Traditional Mobbing	Digital Mobbing
Environment	Physical setting	Virtual setting
Anonymity	Low	High
Continuity	Within specific timeframes	7/24
Visibility	Often hidden	Can leave records and traces
Speed of Impact	Gradual	Immediate
Provability	Often relies on witness accounts	Can be supported by digital traces and documents
Target Audience	Mostly one-on-one	Can spread to a wider audience

## RESULTS AND DISCUSSION

Digital mobbing is a complex issue that needs to be addressed on both individual and organizational levels. Literature reviews reveal its detrimental effects on individuals' psychological health and its damaging impact on organizational structures. Compared to traditional mobbing, digital mobbing's characteristics, such as anonymity and continuity, make it more challenging to combat (Coyne & Farley, 2021; Salin & Notelaers, 2017).

The contributions of Einarsen et al. (2020) to the mobbing literature emphasize the need to further explore the effects of digital environments while focusing on employees' psychological well-being. Digital mobbing emerges as a factor that adversely affects not only individuals but also team morale, productivity levels, and the public image of companies.



Salin and Notelaers' (2017) study suggests that effective anti-mobbing policies should be extended to encompass behaviors occurring in digital environments, in addition to physical violence and threats. This highlights the importance of increasing organizational awareness about digital mobbing and developing long-term strategies to address it.

Lastly, Yıldırım and Özdemir's (2021) research details the pressure digital mobbing places on the work experiences of newer generations and underscores the importance of training programs aimed at enhancing individual resilience. These findings support the notion that both individuals and organizations must play an active role in combating digital mobbing.

Future research can provide more specific solutions for preventing digital mobbing and mitigating its effects. In this context, adopting approaches that simultaneously enhance individual awareness and deepen organizational policies and practices becomes a critical necessity.

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# **What is Popular in Popular Culture Tourism Research?: A Bibliometric Research**

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## ABSTRACT

This study aims to provide an overview of popular culture in tourism and to examine the studies conducted in this field. In this direction, by providing information about the current status of popular culture studies in tourism literature, it is tried to provide an understanding of the number of studies on popular culture in tourism and the characteristics of the studies. Web of Science database was searched and 519 articles on popular culture in tourism were analyzed by bibliometric analysis. The study examines popular culture and tourism published in tourism and other journals from 1995 to 2022. In this context, it has been determined that there are different perspectives on popular culture in tourism studies.

*Keywords – Popular Culture, Tourism, Bibliometric Analysis, WOS.*

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## INTRODUCTION

Popular culture shapes social perceptions with a wide range of cultural elements from movies to music, TV series to celebrities, it emerges as an important source of motivation in tourist behavior and destination preferences. Popular culture tourism is defined as travel to tourism destinations promoted through media, including movies, music, TV series and celebrities (Miller & Washington, 2007). It is based on the view that various popular culture products such as movies, articles, and news influence general knowledge of a destination (Lee & Bai, 2016).

Popular culture tourism is also characterized as demand-driven (Lim et. al., 2023). In popular culture tourism, demand in certain destinations will increase due to interest in popular culture elements, because this directly affects tourist behavior. It is also stated that tourists in this type of tourism are easily influenced by certain events and characters described in media and literary works (Larson, Lundberg, & Lexhagen, 2013; Shim, 2006).

In addition, popular culture helps to form and strengthen the image of a destination and influences tourists' decision-making process (Beeton, 2001; Kim & Richardson, 2003; Reijnders, 2011). In the context of tourism, some studies consider different elements such as movies, pop stars, and cultural attractions as an attractions. This study aims to provide a detailed overview of the field of popular culture and to examine the studies on popular culture in tourism.

Popular culture is defined as an ephemeral consumer culture encompassing various elements such as music, sports and fashion and is present in everyday life. Popular culture means the culture formed by and belonging to a large part of the society (Shumway, 1999). It is stated that popular culture includes meanings, forms, and practices embedded in social

structures and processes, and that its constitutive elements are variable (Rowe, 1996). In addition, it is also stated that this culture should be in constant change and innovation (Karaduman, 2017).

Popular culture includes cultural products such as movies, music, TV series as well as celebrities. Each of the elements of popular culture plays a major role in the formation of a destination image and in the visitation of that destination (Beeton, 2001; Glover, 2009). In terms of tourism, popular culture contributes to the formation of a positive image of the destination, economic revitalization and increasing the number of tourists (Busby & Klug, 2001; Connell, 2005; Lee, Busser, & Yang, 2015). Popular culture also increases the brand value of destinations, which creates positive effects on the market value of all companies in the tourism sector (Kim & Nicolau, 2025).

Popular culture tourism refers to travel to a destination with various characteristics of popular culture and the activation of tourism through popular culture. This type of tourism is defined as travel to a destination that is promoted and featured in different sources or media, such as movies, music, TV series, television programs, and literary works (Lee & Bai, 2016). It also includes visiting destinations that feature a celebrity or popular culture theme (Miller & Washington, 2007). In some sources, it is also referred to as pop culture tourism. Another perspective defines as a type of tourism based on popular culture such as movies, music and literature (Larson, Lundberg, & Lexhagen, 2013). In addition, celebrities play an important role in influencing tourist motivations and the development of this tourism (Shim, 2006; Larson et al., 2013).

There has been an increasing interest in popular culture tourism in the literature. Studies on popular culture tourism address different subjects such as destination image, tourist motivation, movies, pop star fandoms (Kim & Richardson, 2003; Lee & Bai, 2016; Macionis & Sparks, 2009; Kim, 2012; Kim and Wang, 2012; Lim et. al., 2023). Recent studies examine fans and tourists who are influenced by popular culture. In this type of tourism, tourists pay more attention to experiences involving a celebrity, subculture or any theme. Moreover, tourists visit destinations presented in media content. (Lee & Bai, 2016; Lee, Song, Lee, & Petrick, 2017; Yen & Croy, 2016). In addition, some studies suggest that tourists consider factors such as movies or celebrities when deciding to visit a destination (Croy & Heitmann, 2011; Yen & Croy, 2016).

Reichenberger (2021), while discussing how popular culture shapes tourism, emphasizes the main functions of popular culture such as meaning and identity formation for individuals and social change. In his study, he emphasizes the great importance of popular culture tourism in bringing communities of fans together and creating a sense of belonging, and states that this form of tourism will evolve into more interactive and personalized experiences with the effect of digitalization (Reichenberger, 2021). Other

research on the connection between popular culture and tourism by focusing on celebrities, elements of popular culture, and the media through their ability to construct destination images, motivation for visitation, and tourism experiences (Joseph & Wearing, 2014; Lee & Yoo, 2015; Lee & Bai, 2016; Yen & Croy, 2016). The research provides evidence of the broad influence of popular culture icons, such as pop stars, TV programs, or movies, on identity development to destination loyalty for the individual (Lee et al., 2019). This common perception of celebrities as role models in marketing makes tourism products powerful by use (Yen & Croy, 2016). In addition, there is evidence to suggest that fandom communities create social bonds and may give the meaning of tourist areas to fans (Reichenberger & Smith, 2020).

Furthermore, the study by Conell et al. (2021) illustrates how the use of Chinese social media shapes tourist behavior and what role architectural heritage and popular culture play in hosting tourists. The study finds social media an important medium in information sharing on new tourism destinations and effects the choices of tourists (Connell et al., 2021). Lee et al. (2023) analyzed the impact of Korean Wave (Hallyu) popular culture products on social media and demonstrated its statistical increase in the number of tourists.

Based on all these, it can be seen that the dominant area of popular culture tourism is a type of tourism that occurs when tourists are influenced by events or characters presented in the media or literature. This type of tourism is shaped by visitors' desire to experience places they have seen in a movie, TV series, book or other popular culture product. For example, the shooting location of a popular TV series, a town depicted in a literary work, or the location where a memorable scene of a movie takes place are among the main elements that attract tourists in this context. Such experiences have the potential to strengthen the image of destinations and provide economic benefits while creating a meaningful connection for tourists.

## **METHODOLOGY**

This study aims to identify the current trends by examining the academic literature on tourism and popular culture through bibliometric analysis. Web of Science (WoS) database was preferred as the data source. This choice is justified because WoS offers consistency across disciplines; it is a trusted source for high-impact journals; using it reduces the chances of duplication problems compared with using several databases; and it is presently the most employed database in performing bibliometric analysis globally.

The data was obtained through a search of the WoS database on March 10, 2023 using the keyword "Popular Culture and Tourism". A total

of 1080 documents were found in this search, but in order to focus the analysis and obtain clearer results, only the studies that were in the “article” type and included this phrase in the “topic” field were selected, so a total of 519 articles were included in the study.

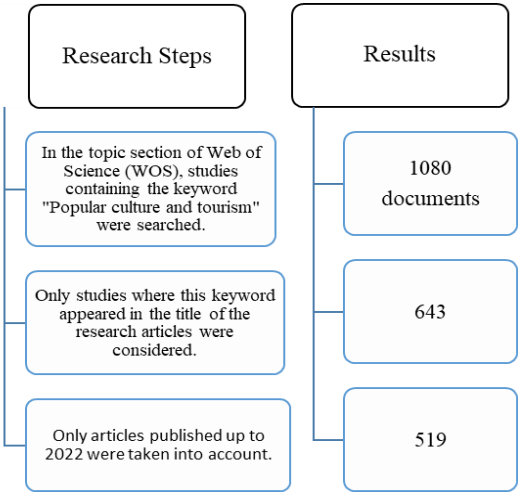


Figure 1. Flow chart for the selection process of publications

The collected data were analyzed using VOSviewer and R Bibliometrix software. Parameters such as number of publications, keywords, sources, most prolific authors, and network structures across institutions and countries were analyzed. In addition, in-depth assessments were made on the most cited articles and keywords to understand the trends in popular culture and tourism, and gaps in the field were identified and recommendations for future research were presented.

FINDINGS

In this section, the distribution of journals, research methodology and findings of tourism-related studies on popular culture found in the Web of Science database are presented.

*Distribution of Publications*

The publications on “popular culture and tourism” over the years are shown in Figure 2. This analysis was conducted to reveal the total number of articles published on popular culture and tourism since 1995. 643 publications since 1995 were identified without any filter. While there was a limited number of publications from 1995 to 2005, there is a significant increase in the number of publications from 2007 to 2022.



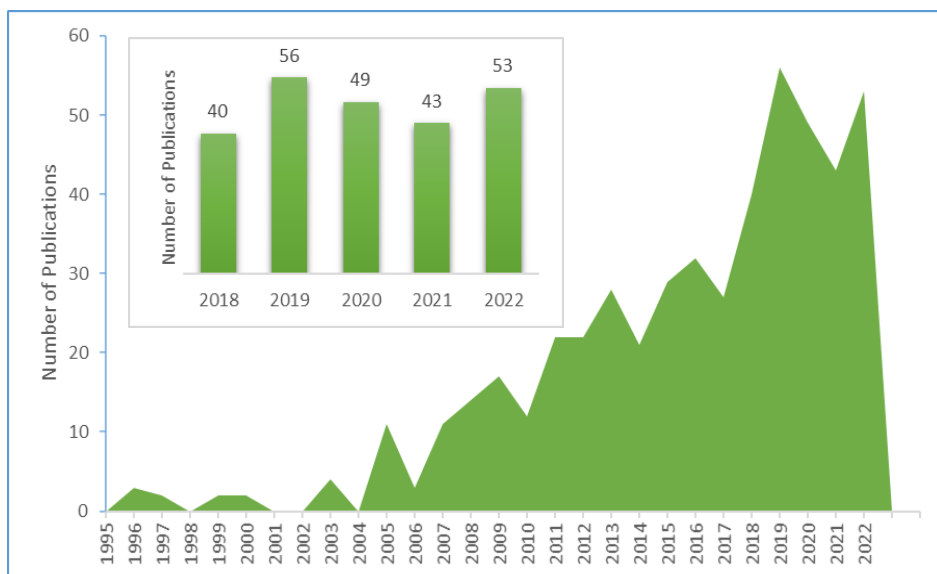


Fig. 2. Distribution of articles on popular culture and tourism by years

### ***Analysis of main keywords***

The combined use of keywords in a research field is important for understanding the study trends and the boundaries of this field (Ye et al., 2020). Within the scope of the study, the keywords of 519 publications analyzed by bibliometric analysis were examined and 169 different keywords were identified. The most frequently used keywords are listed as follows: popular culture (18), tourism (9), cultural tourism (4), crime (2), heritage tourism (2), content tourism (2), destination management (2), tourism policy (2), regional culture (2). These results show that the studies on popular culture are mainly focused on cultural tourism and policy development. Figure 3(a) shows the bibliometric matching of the 100 most frequent keywords and the formation of clusters associated with this matching.

Figure 3(b) presents the thematic map that categorized authors' keywords regarding the importance and complexity of their research areas. This kind of map shows intuitively the set of research themes divided into four quadrants: i) motor themes, ii) core themes, iii) emerging or in decline themes, and iv) niche themes. Figure 3(b). In this bibliometric study, the keywords “popular culture”, “state”, “china” “pilgrimage”, “chinese”, “content tourism”, “consequences”, “conservation” and “perspectives” are considered as motor themes, i.e. developed, important themes. The terms “city”, “cities”, “gentrification”, “dark tourism”, “community” and “geography” occupy a hybrid position between the upper and lower right quadrant. In other words, these terms are both important developed themes

but also indicate that there is still a need for research and analysis. “travel”, “behavior”, “behaviour”, “experience”, “tourism”, “culture”, “identity” are considered to be core themes and are important but undeveloped themes for the research field. It also reveals that “evolution”, “fascism”, “knowledge”, “East”, “Japan”, “migration”, “national culture and “dimension” are niche themes. The themes “history”, “health”, “hospitality”, “word of mouth” and “technology” seem to be emerging and declining themes according to their position on the thematic map and could be further explored in the context of popular culture. When research in the context of these keywords increases, they may develop into motor themes. Figure 3 shows all the items and their main keywords that make up the clusters obtained in VOSviewer and Bibliometrix.

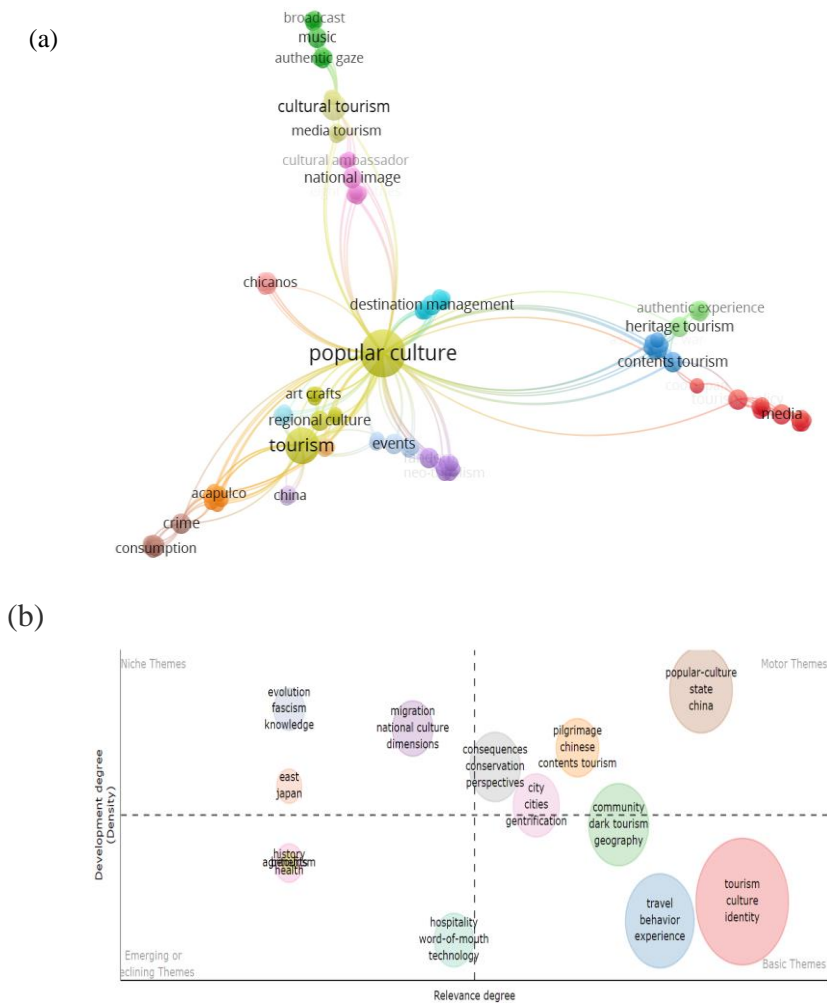


Fig. 3. (a) Keyword analysis and clustering; and (b) Thematic map.

### ***Most cited publications***

One of the most important indicators of trends in research and the effectiveness of publications is the number of citations. Table 1 shows the 5 most cited articles on popular culture and tourism to date. The most cited article is the one assessing the extent to which watching a popular motion picture changes cognitive and affective images of the place it depicts, as well as familiarity and interest in visiting it (Kim & Richardson, 2003). The second ranked article (159 citations) explores the extent to which people's relationship with a celebrity influences their perceptions of tourism destinations (familiarity, image and visit intentions). The results showed that celebrities positively influence familiarity and visit intentions to a destination (Lee, Scott & Kim, 2008). 3rd place (144 citations) examines the

motivations of tourists in Taiwan when they shop in Touristic Night Markets and the leisure activities they prefer in these markets. According to the research results, novelty seeking, experiencing and living local culture and traditions are the main factors that motivate tourists to shop. In leisure activities, eating out, shopping and novelty seeking are the most important leisure activities (Hsieh & Chang, 2006). 4th ranked article Tamworth has shaped its identity as Australia's “country music capital' since the 1970s and the social, cultural, and economic impacts of this identity”, which received 143 citations (Gibson & Davidson, 2004). Paper 5 (140 citations) reveals the effects of destination-related information in the media on destination image through the perceptions of tourists in Tibet (Mercille, 2005).

Table 1: Top 5 most cited articles in the Popular Culture in Tourism research					
	Title	Topic	Journal	Citation	Yıl
1st	Motion picture impacts on destination images	Effects of popular films on destination image	Annals Of Tourism Research	510	2003
2rd	Celebrity Fan Involvement And Destination Perceptions	The impact of celebrity association on perceptions of tourism destinations	Annals of Tourism Research	159	2008
3th	Shopping and tourist night markets in Taiwan	To understand tourists' motivations and preferred leisure activities when they shop.	Tourism Management	144	2006
4th	Tamworth, Australia's 'country music capital': place marketing, rurality, and resident reactions	This excerpt offers a multifaceted analysis of Tamworth's evolution into Australia's "country music capital.	Journal of Rural Studies	143	2004
5th	Media effects on image - The case of Tibet	Examine the impact of media such as movies, books and magazines on destination image	Annals of Tourism Research	140	2005

**Authors’ Network and Most Productive Authors**

Figure 4 (a) shows the network of authors using the number of citations per author. The lines between researchers indicate the co-authorship links between a particular researcher and others, and the distance between two elements indicates the strength of their relationship. In this visualization with 17 authors, it is possible to see that four clusters are formed: i) red, 7; ii) green, 4; iii) blue, 4; iv) yellow, 2 authors. The most cited authors in each cluster are Kim, H. (124) Richardson, S. (122), Bai, B. (58), Lee, S. (58), Brandellero, A. and Janssen, S. (55).

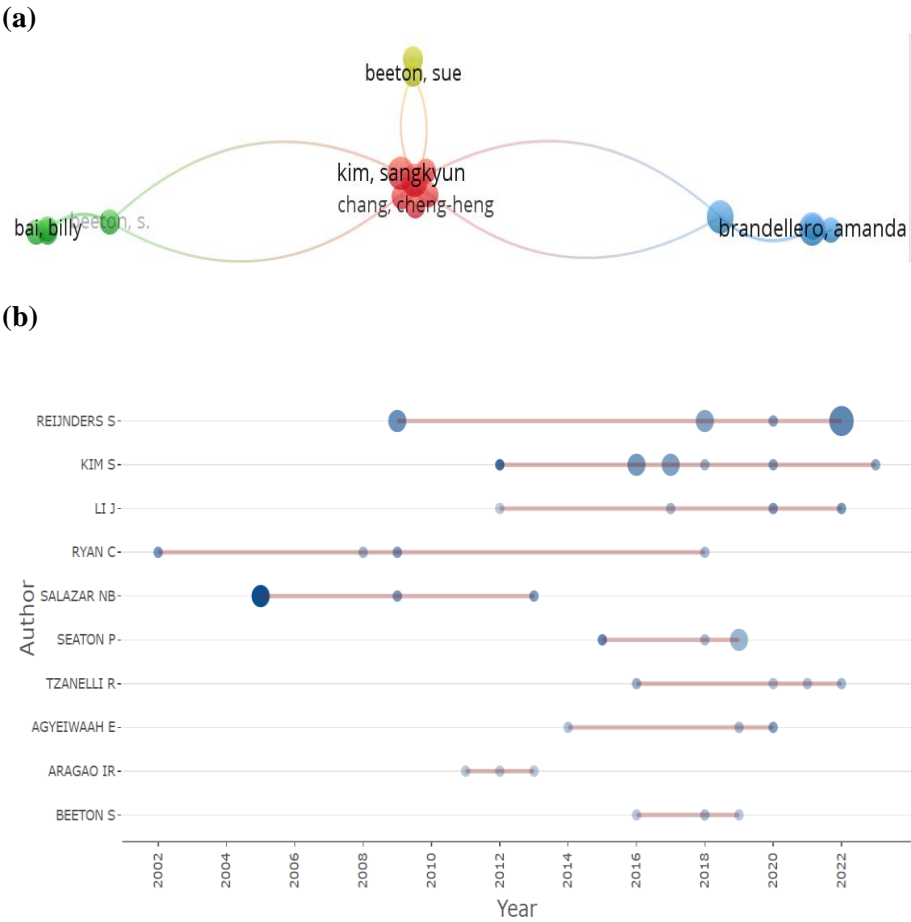


Fig. 4. (a) The most influential author network; and (b) The top 10 most productive authors.

Figure 4 (b) shows the work of the top 10 authors for all years, showing the number of articles (size of the circle) and total citations per year (color of the circle). Reijnders, S. (Erasmus University Rotterdam) appears to be the most prolific author from 2009 to 2022 and has the highest number of papers with 9 papers from these years. Looking at recent years, Reijnders,

S together with Kim, S. (Edith Cowan University), Li, J. (Gettysburg College) and Tzanelli, R. (University of Leeds) are the most prolific authors from 2019 to 2022. Reijnders, S. publishing 4 papers in 2022 can be considered as the most remarkable performance in recent years.

***Bibliometric analysis of journals, institutions, and countries***

Figure 5(a) shows the journals that have most frequently published on tourism and popular culture. The network is a bibliographic coupling, with salience of items based on shared references. According to the number of articles on tourism and popular culture published in each source, the top 3 journals are Sustainability, Journal of Tourism And Cultural Change and Annals of Tourism Research. However, when the number of citations is considered, the Tourism Management journal ranks first, second and Annals of tourism research journal ranks third.

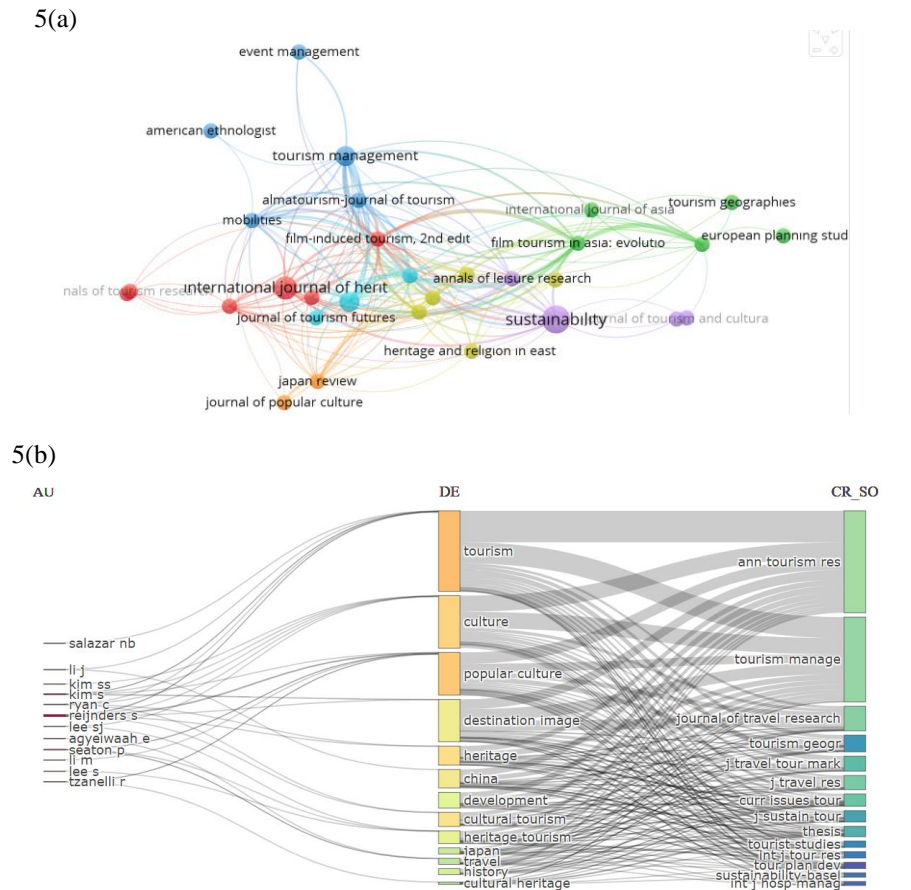


Figure 5. (a) Top 30 journals on popular culture and tourism (b) Three-field graph linking top 10 authors, authors’ keywords and sources

Figure 5(b) illustrates that *Annals of Tourism Research* and *Tourism Management* are the most productive journals, and the strongest relationships are formed with the keywords *tourism*, *culture*, *popular culture*, and *destination image*. Through the visualization presented in Figure 5(b), it is possible to understand multidisciplinary studies on popular culture and tourism, indicating the need for research in various fields to support the development of popular culture in tourism.

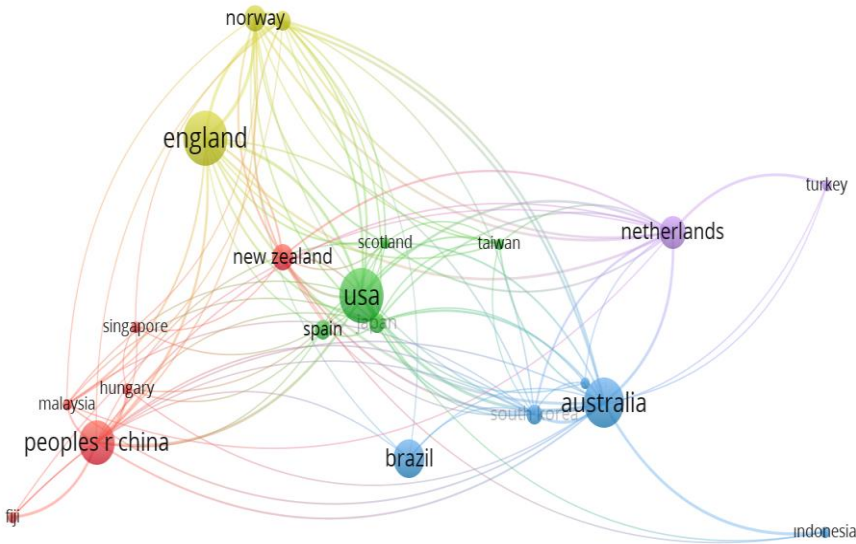


Fig. 6. The strength of the collaboration network between countries based on co-authorship.

Figure 6 presents the 35 most prolific countries and their networks in popular culture and tourism research. Examining the most productive countries may also provide important input to understand the research area and find the reasons which have made this particular field of study grow. The most productive countries by number of publications are ranked first by the USA (106), followed by Australia (55), England (54), China (52), Netherlands (24), Spain (20), Canada (18) and South Korea (18).

Figure 6 shows that the analysis resulted in 5 clusters: i) the red cluster (6 countries and 83 publications) is formed by China, Singapore, New Zealand, Hungary, Malaysia, Fiji; ii) the green cluster (5 countries and 157 publications) is grouped as Japan, Scotland, Spain, Taiwan, USA; iii) the blue cluster (5 countries and 104 publications) is formed by Australia, Austria, Brazil, Indonesia, South Korea; iv) the yellow cluster (3 countries and 73 publications) is grouped as England, Norway, Sweden; and finally, v) the purple cluster (2 countries and 36 publications) is formed by Turkey and the Netherlands. The network was developed based on the number of co-authored documents to identify the partnership structures between countries.

Thus, the cluster identifies the most frequent collaborations between countries in studying popular culture in tourism.

## **CONCLUSION**

This study examines the literature trends of popular culture in tourism studies by examining the relationship between popular culture and tourism through bibliometric analysis. The findings show that the effect of popular culture on tourism is multidimensional and that various elements such as film, music and literature can be used as an important tool in the promotion of destinations and in increasing tourism revenues, in the formation of destination image and in the effect on tourist motivations.

The results of the bibliometric analysis revealed that the increasing academic interest in popular culture and tourism is particularly concentrated in the context of film tourism, destination management and tourist motivations. The increasing number of publications over the years shows that the interest in studies in this field continues and that the tendency towards alternative forms of tourism is increasing. In addition, keyword analyses and the most cited publications indicate that themes such as, celebrity influence, media and destination image are prominent in popular culture tourism studies.

These findings provide important clues for the development of theoretical frameworks and applied studies on the integration of popular culture and tourism. It is suggested that future research should focus on the potential impacts of popular culture in the context of creative tourism and sustainable development. In particular, a detailed examination of the topics identified as declining or niche themes can contribute to a better understanding of this area and the development of tourism policies. This study provides a guiding framework for both academic and sectoral actors and demonstrates how popular culture tourism can be a leverage in increasing the competitiveness of destinations.

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# **Comparative Analysis of Multi-Criteria Decision-Making Techniques for Project Selection Using AHP, PROMETHEE, Conjoint Analysis, and MOORA**

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## ABSTRACT

Project selection is a critical decision-making process involving the evaluation of multiple criteria to identify the most suitable alternative. This study employs four Multi-Criteria Decision-Making (MCDM) methods—AHP, PROMETHEE, Conjoint Analysis, and MOORA—to solve a project selection problem. Each method was applied to a predefined dataset, and the results were compared to determine their effectiveness and suitability. AHP and Conjoint Analysis rely on qualitative assessments and are better suited for problems with smaller data sets or qualitative inputs, but they were found less suitable for the predominantly quantitative nature of this problem. PROMETHEE, leveraging quantitative measurements and pairwise comparisons, proved effective for small-scale problems, especially when using Visual PROMETHEE software, which simplifies analysis and enhances interpretability. MOORA, with its robust and computationally efficient approach, was better suited for large-scale problems due to its ability to handle extensive data and provide clear, objective rankings. The analysis demonstrated consistent rankings across the methods, with P1 and P3 emerging as the most favorable projects. While PROMETHEE offers simplicity and visual advantages for smaller problems, MOORA's scalability and computational efficiency make it the ideal choice for larger, more complex problems. This study highlights the importance of selecting the appropriate MCDM method based on the problem's scale and data characteristics to achieve accurate and effective decision-making results.

*Keywords – Multi-Criteria Decision-Making (MCDM), Project Selection, Analytic Hierarchy Process (AHP), PROMETHEE Method, MOORA And Conjoint Analysis.*

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## INTRODUCTION

Decision-making is a fundamental aspect of human activity and organizational management. It involves evaluating multiple alternatives to select the most appropriate course of action based on a set of criteria. In complex decision-making scenarios, particularly in strategic processes like project selection, the need to balance conflicting criteria adds to the challenge. Selecting the right project is crucial for ensuring profitability, growth, and sustainability, making it one of the most important tasks in modern organizations. However, the intricacies involved in weighing multiple, sometimes conflicting, criteria necessitate the use of structured and systematic approaches to guide decision-makers toward rational choices.

Multi-Criteria Decision-Making (MCDM) methods have emerged as valuable tools for addressing such challenges. They provide frameworks to handle multiple conflicting objectives in decision-making, enabling

organizations to make well-informed choices. MCDM techniques are particularly relevant in project selection, where criteria like financial viability, operational efficiency, risk, and sustainability need to be evaluated. Among the many MCDM methods available, four widely applied techniques stand out for their versatility and effectiveness: the Analytic Hierarchy Process (AHP), PROMETHEE, MOORA, and Conjoint Analysis.

The Analytic Hierarchy Process (AHP), developed by Saaty, is one of the most prominent MCDM methods. It allows decision-makers to decompose complex problems into a hierarchy of criteria and sub-criteria, facilitating a structured and logical evaluation process. By employing pairwise comparisons, AHP assigns weights to criteria and alternatives, enabling the prioritization of competing options. The method also includes consistency checks to ensure that the judgments provided are logically sound, making it particularly suitable for hierarchical decision-making problems. However, researchers such as Podvezko (2009) have identified challenges with incompatible matrices in large-scale problems, prompting the development of algorithms to address these issues (Saaty, 2008) (Podvezko, 2009).

PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluation), introduced by Brans and Vincke (1985), is another widely used MCDM technique. It employs a preference-based ranking system, using pairwise comparisons to evaluate alternatives across multiple criteria. PROMETHEE is known for its intuitive approach, which allows decision-makers to rank options based on specific preference functions. Its effectiveness in handling multi-dimensional criteria has been demonstrated in applications ranging from environmental analysis to logistics. For example, Tomić et al. (2011) applied PROMETHEE to evaluate logistic competitiveness among Balkan countries, illustrating its utility in identifying and ranking complex alternatives (Brans & Vincke, 1985 ) (Tomić et al., 2011 ).

The MOORA (Multi-Objective Optimization on the Basis of Ratio Analysis) method is a more recent addition to the MCDM family, offering a simple yet robust approach to multi-criteria evaluations. It uses normalization and ratio analysis to balance benefit and cost objectives, making it particularly effective in scenarios requiring quick and efficient decision-making. Brauers and Zavadskas (2006) validated MOORA's application in privatization efforts in transition economies, while Chakraborty (2011) demonstrated its utility in optimizing manufacturing decisions (Brauers & Zavadskas, 2006) (Chakraborty, 2011).

Conjoint Analysis, originally developed for marketing research, has evolved into a versatile tool in MCDM applications. By evaluating trade-offs between attributes, it provides insights into stakeholder preferences and priorities. Louviere (1994) highlighted its use in evaluating product

attributes such as price and quality, while Jaeger et al. (2001) addressed methodological challenges in preference evaluations, emphasizing the importance of improved experimental designs and data interpretation (Louviere, 1994) (Jaeger et al., 2001).

These MCDM methods are highly effective in integrating qualitative and quantitative decision criteria, each offering unique advantages. AHP is particularly suitable for hierarchical problems requiring detailed comparisons, while PROMETHEE excels in providing user-friendly and interactive decision-making tools. MOORA's computational simplicity makes it ideal for straightforward multi-objective problems, and Conjoint Analysis is invaluable in scenarios requiring detailed trade-off evaluations. This paper applies these four MCDM methods to a real-world project selection problem: the expansion of optical fiber infrastructure in Iran's telecommunications sector. The study evaluates projects based on key criteria such as Net Present Value (NPV), Rate of Return (ROR), Payback Period, and Project Risk. Each method is implemented using specialized software to demonstrate its practical application and comparative effectiveness. AHP is performed using Super Decision software, PROMETHEE through Visual PROMETHEE, Conjoint Analysis via 1000Minds, and MOORA using MATLAB.

The structure of the paper is organized as follows: Section 2 defines the problem context and the complexities of project selection. Section 3 provides detailed solutions using the four MCDM methods, with dedicated subsections for each technique. AHP is discussed in Subsection 3.1, PROMETHEE in Subsection 3.2, Conjoint Analysis in Subsection 3.3, and MOORA in Subsection 3.4. Section 4 synthesizes the findings, offering a comparative analysis of the methods, while Section 5 includes the appendix with supplementary materials, such as the MATLAB code for MOORA. By presenting a structured application of these methods, this study aims to provide actionable insights for practitioners and contribute to the growing body of knowledge on MCDM in project selection.

## **DECISION MAKING**

Decision-making is an integral aspect of human and organizational activities, driven by values, beliefs, and perceptions that define the gap between the present state and a desirable future state. In the context of engineering and construction, decision-making is further complicated by diverse structures and processes, incomparable variables, and conflicting development objectives and constraints. These challenges are magnified by the involvement of multiple stakeholders with differing interests and values, making the decision-making process inherently complex (Tomić et al., 2011) (Brans & Vincke, 1985) .

To navigate this complexity, decision-making typically begins with articulating a goal, which serves as the foundation for formal decision processes. Each decision alternative represents a potential choice evaluated based on specific objectives. In Multi-Objective Decision-Making (MODM), the selection process involves assessing each alternative against a set of defined objectives. These objectives must be measurable, even if only nominally (e.g., yes/no or present/absent), to enable meaningful comparison of outcomes and facilitate the ranking or selection of satisfactory alternatives (Saaty, 2008) (Louviere, 1994). MODM is synonymous with several related frameworks, including:

- Multi-Criteria Decision Analysis (MCDA),
- Multi-Dimensional Decision-Making (MDDM),
- Multi-Attribute Decision-Making (MADM).

MODM methods are designed to rank or select one or more alternatives from a set of available options based on multiple, often conflicting, objectives. They range from simple techniques requiring minimal information to sophisticated mathematical programming approaches that demand extensive data on objectives and decision-maker preferences. Regardless of the approach, MODM methods aim to structure complex decision-making scenarios and provide systematic support for evaluating choices (Brauers & Zavadskas, 2006) (Chakraborty, 2011). The methodologies within MODM frameworks are grouped as follows:

**Methods Based on Quantitative Measurements:** This group includes techniques from multiple criteria utility theory and others such as MOORA, TOPSIS, VIKOR, and COPRAS. These methods use numerical data to rank alternatives effectively (Brauers & Zavadskas, 2006; Chakraborty, 2011).

**Methods Involving Initial Qualitative Assessment with Quantitative Transformation:** Methods such as Analytic Hierarchy Process (AHP), game theory-based approaches, and fuzzy set methods fall into this category. They start with qualitative inputs that are later transformed into quantitative data for detailed evaluation (Saaty, 2008; Podvezko, 2009).

**Methods Using Quantitative Measurements with Preference Comparison:** Techniques like ELECTRE and PROMETHEE compare alternatives based on a few criteria and employ preference functions to prioritize choices (Brans & Vincke, 1985) (Tomić et al., 2011).

**Methods Based on Qualitative Data Without Quantitative Transformation:** Verbal Decision Analysis (VDA) represents this group, focusing purely on qualitative assessments without converting them into numerical values (Louviere, 1994).

The theoretical foundation of MODM has evolved significantly over centuries, shaped by contributions from key pioneers and theorists. Early



concepts, such as the Condorcet Paradox (1785), Gossen's Law of Diminishing Marginal Utility (1853), and Pareto's Optimum (1906), laid the groundwork for modern decision-making methods. The mid-20th century saw significant advancements with ordinal scales by Kendall (1948), the Multiplicative Form by Miller and Starr (1964), and the introduction of decision models like ELECTRE (1966), TOPSIS (1981), PROMETHEE (1984), AHP (1988), VIKOR (2004), and MOORA (2004). Recent developments include MULTIMOORA (2010), an advanced form of MOORA (Saaty, 2008; Brauers & Zavadskas, 2006; Tomić et al., 2011).

Given the broad applicability of these methods, MODM frameworks have found successful implementation in solving engineering problems, including civil engineering, manufacturing, and infrastructure development. The diversity of approaches enables their application to scenarios with varying levels of complexity and data availability (Brauers & Zavadskas, 2006; Louviere, 1994).

In this study, we employ four MODM methods—AHP, PROMETHEE, Conjoint Analysis, and MOORA—to address the project selection problem defined in the next section. Each method represents a distinct approach within the MODM framework, offering unique advantages for ranking and selecting alternatives based on defined criteria. The selected methods are as follows:

1. AHP (Analytic Hierarchy Process): Ideal for hierarchical structuring of problems and pairwise comparisons (Saaty, 2008; Podvezko, 2009) .
2. PROMETHEE (Preference Ranking Organization Method for Enrichment Evaluations): Effective for ranking alternatives using preference functions (Brans & Vincke, 1985; Tomić et al., 2011) .
3. Conjoint Analysis: Focused on trade-offs between attributes to understand preferences (Louviere, 1994; Jaeger et al., 2001) .
4. MOORA (Multi-Objective Optimization on the Basis of Ratio Analysis): Simplifies multi-objective evaluations through ratio analysis (Brauers & Zavadskas, 2006; Chakraborty, 2011) .

These methods, applied with specialized software tools, provide a robust and comprehensive solution to the decision-making challenges associated with project selection. The details of the problem definition are presented in the subsequent section.

## PROBLEM DEFINITION

The project selection problem is a critical decision-making task that involves evaluating multiple alternatives based on defined criteria to select the most optimal project. In this study, the proposed methodology for solving the project selection problem consists of three fundamental stages:

1. Identification of Properties: Define the criteria and attributes that will guide the evaluation of project alternatives.
2. Weight Assigning: Assign relative importance or weights to each criterion using expert judgment or established methods.
3. Evaluation of Alternatives and Final Ranking: Assess project alternatives based on the weighted criteria and determine the final ranking of projects.

This framework enables a systematic and structured approach to project selection, ensuring that all relevant factors are considered.

### *Selected Criteria for Project Evaluation*

The following criteria have been identified as crucial for evaluating and selecting a project for optical fiber expansion in Iran's telecommunications sector. These criteria reflect key financial, operational, and risk-related aspects of project feasibility:

1. Net Present Value is defined as the sum of the present values (PVs) of the individual cash flows over the life of the project. It is a measure of how much value a project adds to an organization. NPV is treated as a benefit criterion, where a positive NPV indicates that the project is expected to generate more value than its cost. Among mutually exclusive alternatives, the project with the highest NPV should be selected, as it aligns with financial theory and maximizes value for the organization (Bakshi et al., 2011).

2. The Rate of Return (ROR) is the ratio of money gained or lost on a project relative to the amount of money invested. Expressed as a percentage, ROR serves as another benefit criterion for project selection. A higher ROR indicates a more attractive investment, making it a critical measure for assessing the financial viability of projects (Bakshi et al., 2011).

3. The Payback Period refers to the time required for the project to recoup its initial investment. While it does not provide a direct measure of profitability, it is an important criterion for assessing the liquidity and risk of an investment. Projects with shorter payback periods are preferred, as they return the initial investment faster and reduce exposure to financial uncertainty. This criterion has no explicit decision rule but is often used as a supplementary evaluation metric (Bakshi et al., 2011).

4. Project Risk considers external circumstances or events that could impact the project's success. These external factors, termed project risks, must be minimized to improve the likelihood of successful project implementation. The aim in project selection is to identify and mitigate risks, making risk minimization a crucial cost criterion in decision-making (Bakshi et al., 2011).

After identifying the criteria, their relative importance (weights) is determined using the AHP method. Expert input plays a pivotal role in this step, with a panel of five homogeneous experts consulted to assign weights based on pairwise comparisons. This structured approach ensures that the weighting reflects the priorities and preferences of stakeholders, making the evaluation process both robust and consistent.

The data used in this study is sourced from a prior survey conducted for evaluating optical fiber expansion in the telecommunications sector in a region of Iran. This dataset, originally used in the study *Exploratory Analysis of Project Selection through MCDM* by Bakshi, Sinharay, and Sarkar (2011), provides a practical and realistic foundation for applying the proposed methodology. Table 1 outlines the attributes, utility types, and weights for the MCDM evaluation, while Table 2 presents the decision-making matrix with performance values for project alternatives (P1 to P5) against these attributes.

Table 1. Problem Description for MCDM Methods

Set of Attributes for Evaluation	Variable	Utility Type	Unit of Measurement	Weight
Net Present Value (NPV)	X1	MAX	Rs. (Rupees)	0.29
Rate of Return (ROR)	X2	MAX	Rs. (Rupees)	0.34
Payback Period (PB)	X3	MIN	Days (Month)	0.22
Project Risk (PR)	X4	MIN	-	0.15

Table 2. Establishment of the Decision Making Matrix with Type of Utility Function

Attributes	Utility Type	Weight	P1	P2	P3	P4	P5
NPV	MAX	0.29	13	11	12	9	10
ROR	MAX	0.34	5	3	5	1	3
PB	MIN	0.23	7	8	10	8	6
PR	MIN	0.14	9	7	5	1	7

This structured approach ensures that the decision-making process is comprehensive, transparent, and tailored to the specific requirements of the telecommunications sector project selection problem. The detailed solutions are presented in the subsequent sections.

To address the project selection problem, we apply four Multi-Criteria Decision-Making (MCDM) methods: AHP, PROMETHEE, Conjoint Analysis, and MOORA. Each method provides a unique perspective and computational approach to evaluating and ranking alternatives based on defined criteria. The following subsections detail the application of these methods.

AHP SOLUTION BY USING SUPER DECISION

The Analytic Hierarchy Process (AHP), developed by Thomas L. Saaty (1980), is one of the most widely used MCDM methods. Often referred to as the Saaty method, AHP is celebrated for its systematic approach to decision-making, which involves decomposing complex problems into a hierarchy of criteria, sub-criteria, and alternatives. This hierarchy allows for structured comparisons and logical prioritization based on expert judgments.

AHP’s flexibility makes it applicable to a variety of domains, from personal decisions, such as choosing a school, to large-scale infrastructural projects like planning transportation systems. Its ability to integrate qualitative and quantitative criteria is one of its most significant advantages.

Table 3. Intensity of Importance

Intensity of Importance	Definition	Explanation
1	Equal importance	Two factors contribute equally to the objective
3	Somewhat more important	Experience and judgment slightly favor one over the other
5	Much more important	Experience and judgment strongly favor one over the other
7	Very much more important	Experience and judgment very strongly favor one over the other. Its importance is demonstrated in practice
9	Absolutely more important	The evidence favoring one over the other is of the highest possible validity
2, 4, 6, 8	Intermediate values	When compromise is needed

In the Analytic Hierarchy Process (AHP), if attribute A is deemed absolutely more important than attribute B, it is assigned a value of 9, while attribute B is reciprocally valued at 1/9. Pairwise comparisons are performed for all relevant factors, typically limited to seven for clarity, and the results are organized into a matrix that facilitates subsequent calculations. These

comparisons lead to the calculation of weights (or eigenvector), representing the relative importance of each factor. For example, if cost is significantly more important than operability, the weights will prioritize cost accordingly. However, interpreting weights requires nuance, as decision-making often involves trade-offs beyond simple prioritization.

A crucial step in AHP is calculating the Consistency Ratio (CR) to ensure that judgments are not random. If the CR exceeds 0.1, the judgments are considered inconsistent and need refinement. While it is possible to enforce perfect consistency by minimizing the number of required judgments, this approach may lead to unrealistic outcomes.

The true power of AHP lies in its hierarchical structure. Beyond computing weights, AHP uses additional matrices to evaluate how alternatives (e.g., machines or projects) satisfy the criteria, each generating its own eigenvector and CR. These matrices are synthesized using standard calculations to produce an overall ranking of alternatives, providing clear and reliable decision-making results. Proper application of AHP, including CR validation, ensures its effectiveness as a decision-support tool.

### ***AHP Solution By Using Super Decision***

The Analytic Hierarchy Process (AHP) is implemented using the **Super Decision** software, a specialized tool designed for AHP and Analytic Network Process (ANP). Super Decision simplifies complex decision-making by enabling users to create hierarchies, perform pairwise comparisons, calculate consistency ratios (CR), and synthesize results to rank alternatives. This section demonstrates how Super Decision is applied to solve the project selection problem by structuring criteria, conducting comparisons, and aggregating results. The software's robust features make it a valuable tool for multi-criteria decision-making. Additional details can be found on its official website <https://www.superdecisions.com/>.

The network model shown above was created using Super Decision software and represents the project selection problem's hierarchical structure and given in Figure 1 with some interfaces of the software.

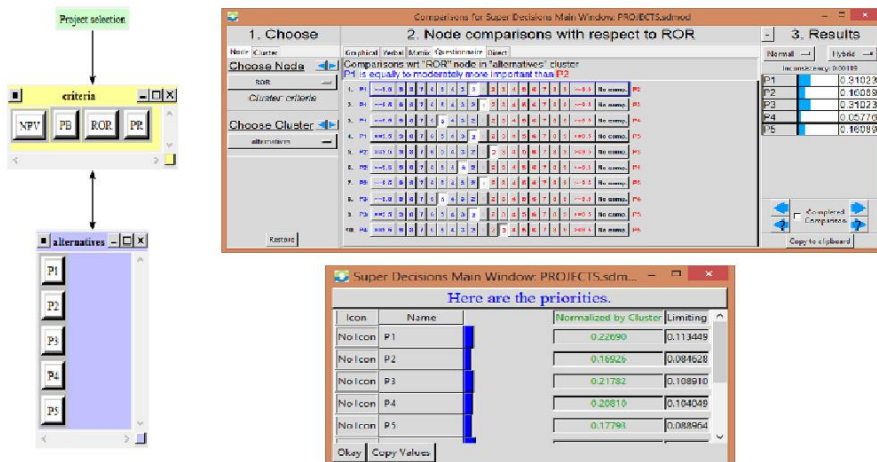


Figure 1. Hierarchical Network Model for Project Selection in Super Decision Software

The Super Decision software facilitates the step-by-step calculation of priorities and ensures consistency in pairwise comparisons. Based on the obtained priorities, the recommendation is to select P1, which exhibits the highest overall score. The preference order is: P1 > P3 > P4 > P5 > P2. This ranking reflects the performance of alternatives across all criteria and emphasizes the influence of ROR, the most heavily weighted criterion in this evaluation.

## PROMETHEE SOLUTION BY USING VISUAL PROMETHEE SOFTWARE

The PROMETHEE (Preference Ranking Organization METHod for Enrichment Evaluations) method is designed to provide decision-makers with a simple yet effective framework for evaluating multiple alternatives based on multiple criteria. This approach is particularly valued for its ease of understanding and the economic significance of its parameters, which are straightforward to define (at most two parameters per criterion). PROMETHEE is grounded in the construction of a valued outranking graph that uses a preference index to compare alternatives. Depending on the needs of the decision-maker, PROMETHEE offers two methods for ranking:

- PROMETHEE I: Provides a partial ranking, useful in scenarios where some alternatives cannot be directly compared.
- PROMETHEE II: Produces a complete ranking, providing a total preorder of the alternatives.

The flexibility of PROMETHEE, coupled with its ability to balance simplicity and precision, makes it a preferred choice for decision-making

problems. Its application is further facilitated by tools such as Visual PROMETHEE, which provide intuitive graphical interfaces and computational support.

### ***Principle of PROMETHEE Method***

The classical notion of criterion implies on  $K$  a " $\{I, P\}$  preference structure". Indeed, if  $f$  is a criterion, we then have:

1.  $a P b$  iff  $f(a) > f(b)$ , (2.1)
2.  $a I b$  iff  $f(a) = f(b)$ ,

where  $P$  and  $I$  respectively denote preference and indifference. Such a modelisation of the preferences of the decision-maker implies that no distinction in strict preference is made for small or large deviations between  $f(a)$  and  $f(b)$ . Moreover the notion of indifference is necessarily transitive. We know that these implications are in general not realistic.

To address these limitations, concepts like quasi-criteria and pseudo-criteria were introduced, as seen in methods like ELECTRE. Quasi-criteria expand the range of indifference, while pseudo-criteria add a zone of hesitation between preference and indifference. However, these approaches require parameters such as concordance, discordance, and discrimination thresholds, which are often complex and difficult for practitioners to understand.

PROMETHEE improves upon these models by introducing a more flexible framework for defining preferences. It allows for extensions that accommodate varying levels of preference intensity and enables smooth transitions from indifference to strict preference. PROMETHEE's extensions are designed to be clear and easily understood by decision-makers, offering a balance between precision and simplicity in modeling preferences. This user-friendly approach ensures better alignment with real-world decision-making processes.

Some authors have already suggested valued outranking relations for treating a decision problem in a multicriteria framework. In the PROMETHEE methods, we also consider such a relation; moreover, the proposed relation is less sensitive to small modifications and its interpretation is easy.

We will consider a particular exploitation of the valued outranking relation, especially for the case in which the actions have to be ranked from best to weakest. The PROMETHEE I method provides a partial ranking of the actions. If needed, a complete ranking can be obtained by PROMETHEE II.

### ***Solution by Using Visual PROMETHEE***

In our project selection problem, a preference function was not utilized because the criteria values have a narrow range, meaning all values are relatively close to each other. This simplifies the decision-making

process, as no significant deviations require the differentiation provided by preference functions.

Visual PROMETHEE was used to solve the project selection problem (<https://visual-promethee.software.informer.com>). This software provides an intuitive interface for implementing the PROMETHEE method, enabling criteria evaluation, preference definition, and alternative ranking with clear visualizations. It facilitated the application of the PROMETHEE I and II methods, allowing for the generation of partial and complete rankings of the alternatives. The first part of the Figure 3 shows the criteria preferences, weights, and evaluations for each alternative (P1 to P5), including statistical summaries. The second part presents the PROMETHEE Flow Table with positive, negative, and net flow *phi* values, ranking P1 as the most favorable alternative.

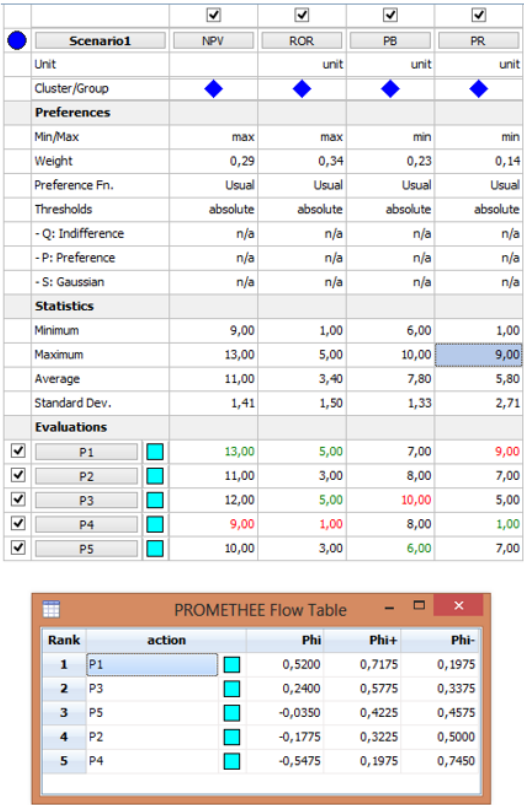


Figure 3. Criteria Evaluations and PROMETHEE Flow Table Results



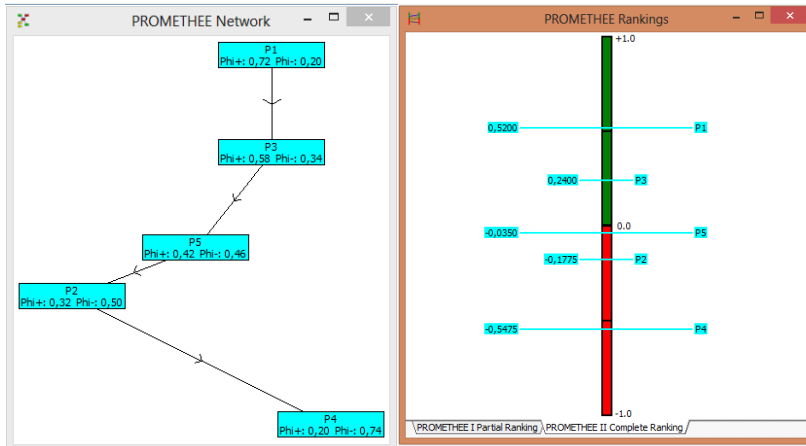


Figure 4. PROMETHEE Network and Rankings Output

The outputs given in Figure 4 provide a detailed visualization and ranking of the alternatives based on the PROMETHEE method. **P1** is the clear top choice, demonstrating strong positive flows and minimal negative flows, while **P4** is the weakest alternative. This combination of network and ranking visuals facilitates an in-depth understanding of the decision-making process.

## CONJOINT ANALYSIS USING 1000MINDS SOFTWARE

The 1000Minds software (<https://www.1000minds.com>) facilitates the application of conjoint analysis through an online platform. Although the software could not be downloaded locally, it was fully accessible via the internet. After entering the alternatives, criteria, and corresponding values into the system, users are presented with a series of preference-based questions, where they must compare two options and choose their preferred alternative.

The results of these paired comparisons are used to determine the priorities of the projects, allowing for an in-depth understanding of how different attributes influence decision-making. This approach provides a clear ranking of projects based on the decision-maker's preferences, enabling effective and data-driven project selection.

Figure 5 illustrates the data input interface of the 1000Minds software, where the criteria and their corresponding levels are entered for conjoint analysis. Each criterion, such as Net Present Value (NPV), Rate of Return (ROR), Payback Period (PB), and Project Risk (PR), is defined with ranked levels that reflect their importance or priority.

+ new criterion

NPV

lowest ranked: 9

↓ 10

↓ 11

↓ 12

highest ranked: 13

+ new level

ROR

lowest ranked: 1

↓ 3

highest ranked: 5

+ new level

Figure 5. An Example of Data Input Interface for 1000Minds Software



Figure 6. Preference Value Results in 1000Minds Software

Based on the results obtained from the analysis in 1000Minds software, the final ranking of the project alternatives is  $P1 > P3 > P2 > P5 > P4$ . This ranking indicates that P1 is the most favorable project, followed by P3, P2, and P5, with P4 being the least preferred. Prioritization reflects the

combined influence of all criteria, including Net Present Value (NPV), Rate of Return (ROR), Payback Period (PB), and Project Risk (PR), as evaluated during the conjoint analysis.

## **MOORA METHOD SOLUTION BY USING MATLAB**

The MOORA (Multi-Objective Optimization on the Basis of Ratio Analysis) method is a computationally simple yet effective approach to multi-criteria decision-making. It is known for its robustness and ease of use, making it suitable for scenarios that involve a mix of quantitative and qualitative attributes. However, the method is less efficient when dealing with decision matrices containing a large number of qualitative attributes. MOORA operates using dimensionless measures to eliminate the influence of units, ensuring comparability across criteria. The method is divided into two key components:

1. **Ratio System:** In this step, each alternative is evaluated by normalizing its performance values for each criterion. This normalization ensures that all criteria are treated equitably, regardless of their scale or unit.
2. **Reference Point Approach:** The normalized values are further analyzed by selecting a reference point, usually the ideal or maximum value for each criterion. Alternatives are ranked based on their proximity to the reference point, offering a clear and logical decision-making framework.

### ***Application Using MATLAB***

The MOORA method was implemented using MATLAB for the project selection problem. MATLAB's computational capabilities provided a streamlined process for normalizing the decision matrix and calculating the ratio and reference point-based rankings. The following steps were executed:

1. **Input Decision Matrix:** The decision matrix, containing the performance values for the alternatives across all criteria, was entered into MATLAB.
2. **Normalization:** The ratio system was applied to normalize the decision matrix, converting all criteria into dimensionless measures.
3. **Ranking:** Using the reference point approach, the alternatives were ranked based on their relative closeness to the ideal solution.

The MOORA method, with its straightforward computational approach, provided clear and logical rankings of the project alternatives, ensuring an objective and transparent decision-making process. This combination of simplicity and robustness makes it a valuable tool in multi-criteria decision-making scenarios. Let me know if you need the MATLAB code or a detailed breakdown of the results.

Table 4. Decision-Making Matrix with Type of Utility Function

Attributes	Utility Type	Weight	P1	P2	P3	P4	P5
NPV	MAX	0.29	13	11	12	9	10
ROR	MAX	0.34	5	3	5	1	3
PB	MIN	0.23	7	8	10	8	6
PR	MIN	0.14	9	7	5	1	7

Table 5 Normalized Decision Matrix

Attributes	Utility Type	Weight	P1	P2	P3	P4	P5
NPV	MAX	0.29	0.524	0.443	0.484	0.363	0.403
ROR	MAX	0.34	0.630	0.378	0.630	0.126	0.378
PB	MIN	0.23	0.395	0.452	0.565	0.452	0.339
PR	MIN	0.14	0.628	0.489	0.349	0.069	0.489

Table 6. Weighted Normalized Matrix and the Solution Results

Attributes	Utility Type	P1	P2	P3	P4	P5	Rank
NPV	MAX	0.15	0.13	0.14	0.11	0.12	1
ROR	MAX	0.21	0.13	0.21	0.04	0.13	4
PB	MIN	0.09	0.10	0.13	0.10	0.08	2
PR	MIN	0.18	0.07	0.05	0.009	0.07	5

Table 7. Reference Point Approach And Results

Attributes	NPV	ROR	PB	PR		Rank
Reference point	0,152021	0,204656	0,078002	0,009778		
P1	0	0	0,013	0,078224	0,078224	2
P2	0,023388	0,081862	0,026001	0,058668	0,081862	3
P3	0,011694	0	0,052001	0,039112	0,052001	1
P4	0,046776	0,163725	0,026001	0	0,163725	5
P5	0,035082	0,081862	0	0,058668	0,081862	3

The MOORA method results provide a comprehensive evaluation of the project alternatives using both the Ratio System and Reference Point Approach. The normalized decision matrix ensures comparability across criteria, highlighting P1's strong performance in ROR and PR and P4's weaker overall performance. When weights are applied in the weighted normalized matrix, P1 ranks first, followed by P3 and P5, with P4 last. In the Reference Point Approach, the alternatives are evaluated against the ideal reference point for each criterion, where P3 emerges as the closest to the ideal, making it the top alternative, followed by P1, while P5 and P2 tie for third place. The final combined ranking is  $P3 > P1 > P5 = P2 > P4$ , demonstrating P3 as the most favourable alternative due to its overall

proximity to the ideal values, reflecting the method’s robustness and logical decision-making capability.

### CONCLUSION

This study analyzed the project selection problem using four different multi-criteria decision-making (MCDM) methods: AHP, PROMETHEE, Conjoint Analysis, and MOORA. Each method offers distinct strengths and limitations, making them suitable for varying types of decision-making scenarios. The rankings derived from these methods are summarized in Table 8.

Each method offers unique strengths and limitations, making them suitable for different types of decision-making scenarios. AHP is based on initial qualitative assessments that are later converted into quantitative rankings, making it suitable for problems with a strong qualitative component but less ideal for predominantly quantitative problems like project selection. Conjoint Analysis, which focuses on studying consumer preferences, excels when dealing with multiple criteria and a small number of alternatives, but its applicability diminishes for problems like this one, where quantitative measurement dominates.

On the other hand, PROMETHEE and MOORA are well-suited to the project selection problem, as they are grounded in quantitative evaluations. PROMETHEE's comparison preference method excels in handling problems with fewer criteria and provides ease of use, especially with software like Visual PROMETHEE, which simplifies the analysis and enhances visualization. However, as the size and complexity of the problem increase, PROMETHEE may face computational challenges. In such cases, MOORA becomes a more appropriate choice due to its ability to handle larger decision matrices efficiently. MOORA's simplicity, objectivity, and scalability make it a robust method for solving large-scale problems that may not be feasible with PROMETHEE.

Table 8. Comparative Rankings of Project Alternatives Across MCDM Methods

AHP	PROMETHEE	Conjoint Analysis	MOORA
P1	P1	P1	P1
P3	P3	P3	P3
P4	P5	P2	P5
P5	P2	P5	P2
P2	P4	P4	P4

In conclusion, while all methods demonstrated their utility, the suitability of each method depends on the nature and size of the problem.

For small-sized problems, PROMETHEE offers significant advantages due to its simplicity and user-friendly interface. For larger or more complex problems, MOORA emerges as the preferred method, offering computational efficiency and robust decision-making capabilities. This study highlights the importance of selecting an appropriate MCDM method based on the specific characteristics of the decision-making problem, ensuring accurate and effective results.

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## APPENDIX-1 MATLAB CODE and FRACTIONS

### (a) Ratio

```
clear
n_a=5;
n_c=4;
w=[0.29 0.34 0.23 0.14];

d_m=[13 5 7 9;
     11 3 8 7;
     12 5 10 5;
     9 1 8 1;
     10 3 6 7];

n_s=zeros(n_c);
sum=zeros(n_c);

for j=1:n_c
    for i=1:n_a
        sum(j)=sum(j)+d_m(i,j)^2;
    end

    n_s(j)=sqrt(sum (j));
end

normal=zeros(n_a,n_c);
w_n=zeros(n_a,n_c);

for i=1:n_a
    for j=1:n_c
        normal(i,j)=d_m(i,j)/n_s(j);
        w_n(i,j)=w(j)*normal(i,j);
    end
end

disp(w_n);
ranking=zeros(n_a,1);

for i=1:n_a
    ranking(i)=w_n(i,1)+w_n(i,2)-w_n(i,3)-w_n(i,4);
end

disp(ranking);
```



### **(b) Reference Point**

```
ref1=max(w_n);  
ref2=min(w_n);  
ref=[ref1(1,1) ref1(1,2) ref2(1,3) ref2(1,4)];
```

```
disp(ref);
```

```
dev=zeros(5,4);
```

```
for i=1:5
```

```
    for j=1:4
```

```
        if j<=2
```

```
            dev(i,j)=ref(j)-w_n(i,j);
```

```
        else
```

```
            dev(i,j)=w_n(i,j)-ref(j);
```

```
        end
```

```
    end
```

```
end
```

```
%disp(dev);
```

```
max_d=zeros(5,1);
```

```
for i=1:5
```

```
    for j=1:4
```

```
        if dev(i,j)>=max_d(i)
```

```
            max_d(i)=dev(i,j);
```

```
        end
```

```
    end
```

```
end
```

```
disp(max_d);
```



# **Are Values Important in Football Refereeing?\***

**Musa ŞANVERDİ<sup>1</sup>  
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\* This research was produced from the Master's Thesis presented at Necmettin Erbakan University, Institute of Educational Sciences in 2022.

## INTRODUCTION

Football is at the center of many individuals' lives around the world. While many sports fans focus on the athletes, they actually overlook the football referees who have a huge impact on the financial and moral gains or losses of the players. Because football referees are at least as important as players in determining the outcome of the matches. For this reason, it is seen that studies on the role of football referees are increasing in the literature (Aragão e Pina et al., 2019).

Football referees, who are the sole decision-making body in the management of football organizations that have become a serious money industry today, make right or wrong decisions in front of tens of thousands of spectators in the stadium during the match, causing great benefits or losses, the decisions made by football referees during the match literally drive the spectators crazy, and the phenomenon of football has an important effect on the pleasure of watching, and on the occurrence of material or spiritual gains and losses. In addition, after the matches played in the leagues, regardless of the lower or upper levels, an agenda is created in which the referee team is discussed rather than the match itself. The reason for this can be thought to be that with the developing technology, football stakeholders have full knowledge of football rules. In this respect, it can be said that the profession of football refereeing is not an easy profession and that this profession includes difficult processes that must be overcome, both in material and spiritual contexts, and the referee decisions made in favor or against the teams during a football match (Deveci, 2018).

Values are the set of moral criteria that an individual uses when evaluating his/her various qualities, attitudes, goals, desires, intentions and behaviors (Kızılçelik and Erjem, 1994). Values are closely related to people's emotions, thoughts and behaviors. Many studies in the field of social sciences state that values are the most important factor in expressing human behavior (Kuşdil and Kağıtçıbaşı, 2000). In this context, values education has a major share in individuals having values accepted by society (Yıldız and Güven, 2019).

The values that guide the attitudes and behaviors of football referees, who have an important place in the phenomenon of football, have an important place. Because a referee who does not possess a universal value such as the consciousness of justice cannot be expected to establish justice in the competitions in which he is on duty. Therefore, it can be said that knowing the values that football referees have will eliminate the negative discussions that arise in the football phenomenon, even if only a little. In football competitions, which are one of the most important areas of sports organizations, it is very important to know the importance of values in football refereeing and for football referees to gain values accepted by the society.

### **Concept of Football**

Football is a sport that has a direct or indirect audience in the world (Capranica et al., 1992). Football has been called the "game of the century" among sports (Ferah, 2000). Although there are many branches that people like, football is the first branch that comes to mind among the branches played with a ball (Öğretici and Karcılılar, 2005). It can be said that football has created a large market in domestic and international platforms due to its wide-scale display and applicability. This market brings together the demands of the general public and football fans, amateur and professional athletes, finance, tourism and travel agencies, businessmen, telecommunication organizations and various business, media and service sectors (Topkaya and Tekin, 2004). It can be said that football exhibits itself as an irresistible phenomenon today (Çakmak, 2019).

Football has become a popular game because it is a game that can be played by people of all ages, genders and skill levels. Football is a simple sport that does not require expensive equipment and can be played on almost any field. Thanks to these features, football attracts new players and spectators every day (Gifford, 2006). It can be said that there is no greater global phenomenon than football today. This empire is so big that not even the smallest region has been able to resist it, but this empire has taken its place as an invited master, not as an invader. In this context, football, which was previously a British sport, has now managed to become a world sport (Boniface, 2007).

In professional football, millions of money are spent every day. In fact, the fees and bonuses given to transfer football players increase every year. It is also true that the fan factor has an important effect in eliminating the costs incurred in the game of football and ensuring that the players are excited. Those who follow the game of football convey emotional messages such as love, support, and passion to their teams. This ensures that the teams they support are successful (Singh and Lamba, 2019).

As a result, the game of football is an organization that has a great impact on the economies of countries with its international relations, eliminates the feelings of hostility and grudge, strengthens friendships, ensures unity with all segments of society, does not allow any discrimination between people, has all kinds of colors, music and rhythm are experienced in the stands, and millions can relieve their stress and discharge (Türkmen, 1998).

### **Football Referee**

The referee is the person who manages and directs the game. The referee is the person who ensures that the game is played by taking on a judicial duty within the framework of the rules according to the authority given to him. The referee is important in a game because he is the only person responsible for the fair and correct implementation of the rules of the game (Schild, 2004). Refereeing is the job of controlling and managing

human behavior within the rules of football. Refereeing is not a security force, but a scientific job, a judge, and a leadership task (Vautrot, 2002). It can be said that the management of sports organizations by referees requires a high level of effort and expertise, and in this sense, the institution of refereeing requires great competence, since all sports organizations have different characteristics, time, facilities, opponents and weather conditions each time (Balci, 1999).

Referees have a very important position in sports activities. After the technical team and the athletes, referees are the third most important factor in sports competitions. Referees have undertaken one of the most important responsibilities in sports competitions. Good refereeing allows the preparation of a match environment that will add value to the players in terms of talent, skill and tactics, while bad refereeing leads to the elimination of the pleasure of the game for the players, coaches and spectators and the damage to the pleasure of watching the match. The match performance of the referees is open to criticism and evaluation by the spectators and is a constant subject of discussion. Because the referees' mistakes are always the first thing that the audience pays attention to. On the other hand, when the match goes well and with minimal problems, the referees are questioned and criticized negatively by very few people (Weinberg and Richardson, 2008). In this context, it is a fact that football referees are as important as coaches and athletes in terms of their positive or negative effects on the results of the match (Cuskelly and Hoye, 2013).

The referee is the one who makes the necessary effort to demonstrate all the technical competence, skill, experience and positive psychological behaviors brought by modern sports in order to increase the viewing pleasure during the match. A referee is a person who makes the least amount of wrong decisions in his daily life as well as the wrong decisions he makes during the match, has a certain profession, does not deviate directly even if he knows that it will lead to unpleasant results against him, can express his thoughts openly, has respect in the environment he is in, manages the game according to the rules during the match, does not make impulsive decisions, manages the match in a way that will earn the respect and trust of the athletes, managers and spectators, is careful to ensure justice in the decisions he makes for both teams, and believes that ethnic origin is not important in sports (Babacan, 1990). The referee is one of the most decisive elements of football matches, the symbol of rules, standards, order and honesty in every match (Kılıçgil, 2001). The football referee, who leads the teams, directly affects the outcome of the match with his decisions (Harley, 2001). As a result of the important role of referees in sports organizations, it is important for sports organizers to identify the functions of referees so that they can develop different methods to train and retain referees in a more effective and experienced way (Ridinger et al. 2017).

While football holds the title of 'Game of the Age', referees are the ones who lead the way for the game of this age to be played in accordance with its rules and ensure that it is managed and played fairly. In football, the final decision and the last word are always at the discretion of the referee (Harley, 2001). If a football referee wants to manage the match fairly; he must know football and its rules well. Perceiving football is first mastering its rules. The referee's duty is to manage and manage sports matches in accordance with the rules. Referees are responsible for obeying the rules and doing their best. Therefore, referees are responsible for doing their best in terms of the rules. Referees who manage matches must know the rules of the football game very well. The duty of referees who manage matches is to manage the game within the framework of the rules of the game. Therefore, referees must have a very good command of the rules of the game (Collina, 2004).

Football refereeing has been described as a physical act with cognitive and psychological aspects. For this reason, it has been stated that it is one of the most difficult jobs to do. The difficulty of the job is that the task is performed in front of spectators who do not fully know the rules of the football game, and when the football players, coaches and managers who constantly object to the referees' decisions as seen on television are added to this situation, and the difficulties encountered arise spontaneously, it is thought that the emotional state experienced by the referees is worth investigating. It has been stated that in competitions where referees have no other thought than applying the rules of the game, teams that act only with the thought of winning and the fans of these teams evaluate the decisions made by the referees in their own way due to their ignorance arising from not knowing the rules of the game, and therefore, differences of opinion arise; and the spectators think that the referees are always unfair in many of the decisions made against the team they support, and the reason for this is that the fans' only thought is for their own team to win (Ceï, 1994).

### **Characteristics of a Good Football Referee**

Although the institution of refereeing is seen as being associated with knowledge of the rules, being a successful referee is actually similar to practicing art. The general part of this skill displayed on the field of play reflects the personal characteristics of the referee. When many trainers and experts are asked to list the definitions and characteristics of refereeing, it can be seen that all experts and educators express different definitions and characteristics. In this sense, although there are different views and definitions on refereeing, when the results of recent research on football refereeing are examined, there are certain characteristics that are agreed upon to have certain criteria in order to become a top-level referee. These characteristics can be gathered under the titles of harmony, honesty, consistency, determination, decision-making, self-confidence and motivation (Ekmekeçi et al., 2011).

### **1. Harmony**

Harmony is the ability of people to act in coordination with each other. It is extremely important for referees to work in harmony in order to manage a good match. In order to ensure good harmony, referees must see themselves as part of a whole before, during and after the match and have good communication skills (Ekmekçi et al., 2011).

### **2. Honesty**

Honesty is referees not being under pressure, adopting the right management style and managing the matches without prejudice. In the context of refereeing, privileges given to a group are unacceptable. Because this is a fundamental element that reveals how honest refereeing is. In this context, it can be said that avoiding behaviors that would undermine the value of honesty during the arbitration process is of great importance for the arbitration institution to reach the position it deserves (Ekmekçi et al., 2011). It is a fact that the concept of honesty as a value has a very important place in sports as it exists in every aspect of life. The word honesty is among the exemplary values used by individuals to protect and strengthen the peace and health of other individuals they mostly meet and to be a model of goodness (Öztep, 2016). Honesty is related to the concept of truth in terms of values. Honesty is a concept expressed in the way that people believe that their thoughts represent the best. In this context, the beliefs and attitudes that individuals have for events that happen to themselves or others include honesty in their own motivations or inner realities (Babu, 2007).

### **3. Consistency**

Referees are expected to be consistent by coaches, athletes and spectators. In this context, it can be stated that referees are expected by sports stakeholders to be determined, consistent and fair in the decisions they make during the competition, regardless of the conditions. In order for referees to achieve consistency at the highest level and achieve success, two skills are required. The first skill is that referees have good technique, that is, they have a good command of the rules of the game. The second skill is the referees' ability to interpret positions.

The referees' lack of complete knowledge of the rules specific to the sport and their inability to specialize in the specific refereeing strategies related to the branch can cause inconsistencies in their decisions. In order for referees to be successful in their consistency skills, it is essential to eliminate the deficiencies in these areas. For effective refereeing, a standard must be achieved in interpreting and applying the rules of the match. This consistency should not be for a single match but should continue in the same way in other matches. In line with this information, it can be stated that referees having consistency skills will standardize their interpretation of the rules and eliminate debates on the subject (Ekmekçi et al., 2011).



#### **4. Determination**

Within the sports organization, referees are subjected to pressure under different conditions and have to make decisions. The decisions made by the referees about the position are made in seconds. Therefore, this situation creates pressure on the referees. However, the review and evaluation of the decision made in refereeing is a rapid phenomenon. In this context, referees should pause before making a final decision on certain events that they think will affect the outcome of the match and avoid making hasty decisions in order to make the right decision. Because during this waiting period, referees can better evaluate unusual situations and achieve certainty in their decisions (Baltaş, 2008). In addition, the characteristic called determination can be said to be the referees' decision making that they believe is correct in the competition, regardless of the costs, and standing by their decisions without listening to pressure.

According to Rasmussen (1993), there are cognitive decision-making processes in sports. These processes consist of three items. These are:

- a. Ability-based decision making
- b. Rule-based decision making
- c. It is a knowledge-based decision making process.

Ability-based decision making process includes sensory-motor cognitive performance. For example, ability-based decision making is when an athlete makes a sudden decision in a changing position and acts according to the newly formed position. In rule-based decision making, the athlete is not given a choice, the movements he will make and how he will act are within the framework of rules. Finally, in the knowledge-based decision making process, action is taken according to abstract and detailed situations.

#### **5. Decision Making**

People make decisions in situations they encounter from birth to death. The decision-making behaviors of individuals in the face of events vary according to the characteristics of the options perceived by the individual (Taşgıt, 2012). In decision-making processes, the individual first defines the problem and finds and evaluates solutions to this problem. In other words, at this stage, the individual determines the most suitable option for him/herself among the options (Poussard, 2006). This decision-making process can be simple as well as complex. When a need arises, individuals make a choice by turning to the decision that causes the least trouble among the options (Kuzgun, 1992).

The most important decision-making mechanism in sports is the referee. Referees are sports judges who think and decide quickly, establish the scales of justice in the best way, distinguish mistakes made in seconds, interpret what they see very quickly and conclude within the framework of the rules, and most importantly, make critical and irreversible decisions (Atakan, 2017). In this context, it can be said that referees need to know the

rules well and repeat them all the time in order to improve their decision-making skills (just like an athlete who constantly trains to improve his performance) (Sülün, 2013).

### **6. Self-Confidence**

Self-confidence is the belief that individuals can overcome difficult situations, their determination to learn, their potential power, their skills and their beliefs that they can improve all these situations (Koç and Gün, 2006). Individuals with self-confidence are more peaceful, creative, profitable and productive in their own worlds. Individuals become more confident when they take action against events and become more knowledgeable about what they can and cannot handle, as they know themselves better thanks to self-confidence. Furthermore, individuals set goals that can be achieved thanks to self-confidence and do not run away from problems when faced with them, thus not allowing the problem to grow. In this context, individuals with self-confidence are aware of their duties and responsibilities, and instead of blaming others for negative events, they take responsibility themselves and, when necessary, work to eliminate the problem by finding the cause (Göknar, 2007).

In the context of referees, high self-confidence causes them to have knowledge of the rules and make the right decisions during the match. In addition, it is seen that referees with the desired level of self-confidence are consistent in their decisions and are not immediately affected by the pressures that may arise. It can be said that this feature provides the trust in referees by sports stakeholders (Simmons, 2011). It can be said that referees are informed about their performance according to the positive and negative criticisms made to them at the end of the match. This situation provides information to the referees about what they did and did not do, as well as providing them with information about themselves. However, if referees receive contradictory and unstable reactions from the environment and act according to the criticisms made as a result of these situations, they will expect approval from the environment for every match managed, and this will cause a loss of self-confidence in the referees. In line with this information, it can be said that the referees' success in the match will increase their self-confidence (Eygü, 2010).

### **7. Motivation**

Motivation is the desire to take action. Motivation continues in people as long as their ability to satisfy their needs continues. Motivation can also be expressed as the process of taking action under the influence of motivations and carrying out this action until it is concluded (Fidan, 1997).

To be a good referee, one must work hard and develop practices must be repeated constantly. In order for these situations to occur, referees must enjoy the work they do. The word pleasure is integral to motivation and is highly affected by motivation. Therefore, referees whose enjoyment decreases will experience a lack of motivation in their job performance and

practices. In this context, it can be said that the biggest problem of those who cannot fully fulfill their referee duties is actually due to their lack of enjoyment in the job they do (Güven, 2016).

### **The Concept of Value**

There is more than one definition in the literature on the concept of value. The concept of value has the Latin origin of "valere (value - valuable and strong)" (Aydın, 2011). Value is the common results of humanity that exist in the mind and conscience of the people, are accepted by the people and transmitted from generation to generation (Ballı, 2007). The concept of value is the beliefs that lead to the selection and evaluation of behaviors and cases to overcome desired or individual situations and also ensure that they are organized according to the importance of relativity (Schwartz, 1992). Values allow the creation of accepted or unacceptable, positive or negative inferences about objects, thoughts, cases and actions, and also enable the individual to represent himself/herself in the judgments made (Halstead and Taylor, 2000).

The values that are popular and adopted by the society can be expressed as truth-honesty, respect, responsibility, love, being useful, justice, equality, trust, tolerance, self-confidence, standing upright, modesty, contentment, hard work, being active, understanding and being patient. These adopted and mentioned values are the values that people living in the society need, improve the standard of living of the society, cause people to be good, happy, peaceful and comfortable, and enable people to live a good life (Akpınar, 2017). For Nietzsche, values are defined as everything that people adopt, value, and possess. It is a fact that concepts such as people's thoughts, science, art, ideology, religion, past, etc. determine values. In short, everything that a person sees as reasonable in his/her life can be a value (Kuçuradi, 1999). In this context, the concept of value orientations is defined as guiding principles in people's lives. Value orientations that guide people's lives are accepted as goals between needed situations, and individuals' desires are shaped according to the events that occur (Schwartz et al., 2001).

The concept of value is explained as a regular and relative opinion that is obtained during the socialization process, acts as a guide in choosing the person's choices, approaches and actions, is organized according to the degree of importance, and expresses which actions, purposes and goals are personally or socially acceptable (Demirutku and Sümer, 2010).

Value cannot be accepted as a concept used in a single subject and meaning. Studies conducted on different subjects have led to a variety of definitions of the concept of value, and a common definition has not emerged (Flew, 2010). Value is an abstract concept and is difficult to explain and define. However, more than one definition has been made regarding value. In the definitions made, many aspects of value are emphasized, and these are personal, social and economic aspects. There are different

definitions of value, which has an effect on the person's contemplation, decision-making and idea-forming processes. In this context, all the principles, rules and criteria that individuals and society adopt, find reasonable and valuable are called values (Cooper, 2014).

Fichter (2012) listed the functions of values as follows. Values;

- They are a judgment tool.
- They direct the individual's attention to the desired place.
- They show the ways of thinking and behaving.
- They have a guiding role in the internalization and realization of individuals' social duties.
- They undertake the task of pressure and control in society.

Values education, which is important for societies, can be defined as “a process in which values that are at the core of society and that will ensure the continuity of culture to the next generations, which have existed from the past to the present and are present in almost all societies under different names (manners, character education, moral education, etc.), are transferred. Values education is a form of education that targets social, cultural, and emotional characteristics in the family. Nowadays, it has taken on a more systematic structure, especially with the assignment of this responsibility to educational institutions (Bolat, 2016; Doğanay, 2006). Values education is the work carried out to ensure that general and universal values are also gained by imparting some values (Karagöz and Şeref, 2019). The aim of values education is to raise responsible citizens who display good human characteristics, have ethical values, and emphasize the universal values that all humanity possesses. It aims to provide people with all values such as respect, tolerance, love, sense of responsibility, virtue, courage, faith, determination, fairness and discipline. Values education aims to help with issues that are becoming increasingly more problematic in societies with forward-looking goals, and to make the world more reliable and livable. In order for values education to achieve its goals, families, schools, the entire environment and social media must act together (Temel, 2017; Tulunay Ateş, 2017).

### **Values in Football Refereeing**

Today, the values that societies have are important for their survival. Because the values that societies have are formed by shaping their behaviors in the face of facts and the elements that direct their behaviors. The phenomenon of sports is one of the situations that shape values and direct these values. It is possible to gain many values positively or negatively through sports. For example, sports necessitates cooperation in many aspects and fair play with the opponent during the competition. This situation allows individuals in particular and societies in general to be effective and productive in the future. However, it may not always be possible to gain positive values through sports. According to Lumpkin et al. (1999), for many athletes, rules are there to be broken. Cheating is seen as cheating if you are

caught, so care is taken not to get caught. Not lying, not cheating, not stealing are difficult in the real world of sports, and in the real world of sports, "winning" is essential. In line with this information, it can be thought that negative values are also acquired in the nature of sports and that these values are passed on to future generations.

Sports play an important role in the moral and social development of the individual. Sports events and competitions include concepts such as morality, character, self-confidence, teammates, game rules, ethics and sporting virtues (Păunescu et al., 2013). Karakullukcu and Yildiz (2020) also stated that sports environments provide individuals with values such as protection from bad habits, sportsmanship, tolerance, empathy and responsibility. When we look at the basic functions of sports, there are values such as unity and solidarity, cooperation, collaboration, uniting for a common goal, striving for success, apologizing for wrongdoings, showing patience, tolerance, respect, thanking, courage, friendship and cleanliness, etc. (Öztürk Kuter and Kuter, 2012). It can be said that these values should be among the characteristics that a good football referee should have.

In the management of football organizations, which have become a serious money-making industry, the right and wrong decisions of the referees, who are the sole decision-making body, in front of tens of thousands of spectators in the stands, cause great benefits or losses. These decisions drive the spectators crazy, and this shows why the decisions made by the referees are important in creating the pleasure of watching football and in realizing material and spiritual gains or losses (Deveci, 2018). In this context, it can be said that as the importance of football matches increases, formal and informal morality has lost its importance and conscious rule errors have started to enter football (Balçıkanlı, 2010). In the football referee profession, which is one of the most important professional professions in football, referees are obliged to maintain the same distance with all stakeholders (Gümüş, 2009). Therefore, the refereeing profession requires being fair in the decisions made during the match and being on the same page with all stakeholders of the teams. At this point, the values that football referees have are among the factors that guide the behavior of referees on and off the field. For example, a football referee may experience negative situations (physical harm, verbal insults, etc.) due to the current conditions when he/she attends the previous matches of both teams. However, the same referee must forget the negative situations experienced when these teams compete in their next match and be consistent and fair in his decisions. Because an unfair decision during the match will cause the teams and their stakeholders to suffer serious material and moral losses, and this will also cause the institution of refereeing to be discredited in the sports community.

The values supported through sports are honesty, justice, responsibility and helpfulness (Lumpkin et al., 1999), non-discrimination (Demirhan, 2014), friendship and tolerance (Lee et al., 2000). Values affect

determination and especially performance in athletes (Whitehead et al., 2016). It is thought that the presence of these and similar values in the personality structure of football referees will positively affect their performance in the competition.

As a result, football is an important phenomenon that drags all sports stakeholders in the world and in Turkey with both its economic and cultural dimensions (Yıldız and Karakullukçu, 2019). Football referees, who undertake a very important task in the management of football matches, also have a very important career and a great ethical responsibility in protecting the rules and morality of the game (Carlsson, 2006). In recent years, especially in Turkey, almost every team that loses points to football referees as the first culprit, and public pressure on referees who manage matches is increasing. Despite these negative conditions, it can be said that the values of football referees who have to manage matches (Yıldız and Yıldız, 2020a) have a great impact on the development of today's football. In this context, considering the moral corruption in sports in recent years, it is predicted that it is important for football referees to have positive values, and that this will reduce the corruption in the context of values in football (Yıldız and Yıldız, 2020b). In addition, values that play an important role in shaping societies also have this vision in football refereeing and will contribute to the formation of referees within the framework of values. In this context, it is thought that shaping the training to be given to referees within the framework of values will support the positive personality and character development of referees and their decision-making within the framework of universal values within the competition.

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# **Social Security from the Perspective of Fiscal Policy**

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## ABSTRACT

Social security emerged as a reflection of the process that began with the Industrial Revolution and has changed and transformed its role and scope throughout the course of history. Along with the understanding of social security that goes beyond a series of rights only for employees, the expenditures made by governments for this purpose have diversified on the one hand and entered a continuous upward trend on the other. The aim of this study is to evaluate the reasons for the transfer of resources from the government budget to the social security system in Turkey and to contribute to policymakers and academics interested in the subject. In this context, firstly, the birth of social security as a right and the change in its role within public finance were examined. In the second section, the relationship between the social security system and public finance in Turkey was evaluated, especially in the context of the deficits of the social security system. In the conclusion section, a series of suggestions were put forward, which we believe will guide policymakers.

*Keywords – social security, fiscal policy, Turkey, Governmental expenditure, public finance*

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## INTRODUCTION

Behind the advanced and complex nature of the social security system today lies the desire to combat the risks humanity faces, and beyond that, the necessity to combat these risks. As long as there is injustice in the distribution of risks and the elimination of their effects, regardless of the nature of social structure and production relations, the need for structures like the social security system will continue to exist. The large labor masses created by industrial society, deprived of the ownership of production tools and unable to conduct a struggle for rights due to their low level of organization, have become a community more exposed to risks and much more open to the adverse outcomes that arise. With their long-lasting struggles and the understanding that labor is not an unlimited resource, initially very narrow social security mechanisms aimed only at employees were established. In subsequent years, with the emergence of various problems, the meaning attributed to social security expanded. Particularly in the post-World War II period, social security was used to ensure social peace and create effective demand in the Keynesian sense. However, this period did not last long, and the acceleration demonstrated by the global spread of the world economy and major economic crises (such as the oil shocks)

necessitated the reform of social security. Undoubtedly, the sole reason for these reforms is not the burden of social security on the state budget. However, when the reasons are listed, it can still be said that the heavy costs imposed on society, especially on producers, by the measures taken to finance government expenditures are at the top of the list.

As social security transitioned from being merely a risk-preventive mechanism for employees, the role assumed by the state also became complicated. The more governments took on roles in the financing of social security and the distribution of social security resources, the more the relationship between social security and public finance became highly debated. In these debates, the negative effects of social security financing on the budget, the labor loss caused by such expenditures, and "fake unemployment" began to be frequently mentioned. Regardless of whether the government's activities within the social security system are deemed justified or not, the unchanging truth is that these activities have a financial dimension. At this point, healthy analyses on whether countries can have a sustainable social security system will be the best response to the rhetoric on the elimination of social security. In this context, the position of social security as a necessity and its place within public finance will be examined below. Then, the significance of social security as a fiscal policy argument will be discussed. Following this, an evaluation will be made on how the social security system can be made more sustainable in terms of public finance, using the example of our country. 1

**1. Chapter: The Development Process of Social Security as a Necessity and Its Role in Public Finance** People need to meet a number of needs to sustain their lives. These needs include both personal needs and societal needs that concern the general public. Personal needs are met through goods and services described as private goods and services in the economy. These goods and services are subject to individual consumption and provide only individual benefits. People meet these needs through the market, and they pay for these goods and services themselves. Therefore, there is always competition among individuals in the consumption of these goods and services, and individuals who cannot afford them are unable to benefit from them. The exclusion of individuals from the consumption of goods and services they cannot afford is a situation that will occur.

In addition to personal needs, there are also societal needs. The most notable example of societal needs is the need for security. The need for justice can also be given as an example. It is not possible for individuals to meet these kinds of needs through their own means. On the other hand, even if a single individual has the means to meet this need on their own, if other individuals do not have the same need met, it is not possible to ensure and maintain a stable peace environment for the individual whose need is met, resulting in additional costs. The desire and wish of individuals to feel secure led them to seek an upper authority and voluntarily transfer some of their rights and powers to this authority. The necessity to meet such societal needs led to the formation of states. Throughout the historical process of humanity, it is seen that people always have the desire to live together. However, in a situation of living together, chaos or disorder is likely to occur. This potential chaos and disorder can arise from the limited resources in nature and the economy, and the necessity to distribute these resources fairly among people. To meet societal needs, it is necessary for limited resources to be distributed fairly and for every segment of society to benefit from these resources. People want to live in a safe environment where they can benefit fairly from resources, respect each other's rights, and continue their lives. This situation will be possible with an effective set of rules. Therefore, an authority to set and implement these rules was needed. The need for this authority and the necessity to meet societal needs led to the formation of states. Needs that concern the whole society are met by states. Because in meeting these needs, it is not possible for individuals to be deprived of consumption or for there to be competition among individuals. For example, in meeting the need for security, it is not possible for one individual to be deprived of this service while another individual's need is met. In conclusion, these needs are met by the state. At this point, the fact that social security, which appears to be an individual need, is actually a public need becomes evident. The risks covered by social security, such as unemployment, illness, maternity, disability, and old age, seem to concern only one individual at first glance. However, if these risks and their adverse effects are not mitigated for individuals, the resulting consequences will deeply affect the entire society. Both social and economic collapse would be very difficult to reverse. Therefore, social security has become a system that tries to include the entire society in some way and is supported by social assistance and social services where it falls short. Although elements such as individual retirement mechanisms are increasingly being included in the social security system, social security still exists as a system provided by the state. At this point, the first question that

comes to mind regarding social security is whether it is a pure public good. Even if social security is not a pure public good, it is still a public good. At this point, we need to clarify what a public good means.

In economics, services provided by the public sector are referred to as pure public goods and services. Pure public goods and services are defined as goods and services that address societal needs, whose benefits cannot be divided among individuals in the society, cannot exclude any individual from their benefits, and cannot be priced (Akdoğan, 2013: 41). As seen, there is no need for individuals to pay for these types of goods and services. Individuals can benefit from these services whether they pay for them or not. A similar situation exists for the social security system. In some way, certain risks are covered without a specified cost. However, while this situation is advantageous for individuals, it also creates a problem in the economy. This problem is known as the "free-rider problem."

The free-rider problem arises when individuals know they can benefit from public goods and services provided by the public sector for free and therefore do not want to contribute to the financing of public goods (Eker, 2007: 57). However, this problem does not fundamentally affect the scope, quality, or quantity of the services that need to be provided, and these services are provided by states under all conditions. Throughout the historical process, even if the roles assigned to the state and its role in economic and social life change, there has been consensus on the provision of goods and services that are pure public goods, and these activities have been carried out by the state. The free-rider problem has been discussed within the social security system and the welfare state, especially since the 1980s, and it has been argued that welfare services should be carried out through active rather than passive labor policies. The primary argument put forward at this point is that unconditional welfare expenditures and payments negatively affect individuals' work behavior. Indeed, some policies developed with this approach sometimes force workers, not directly but coercively, to work, sometimes at low wages (İçke et al., 2012: 17).

Individuals need to work to support themselves and their families and to sustain their lives. If individuals are deprived of the opportunity to work or if a significant illness affects their working capacity, they will also be deprived of the income they would earn, which will lead to a very disadvantageous situation for both themselves and their dependents. Ultimately, this situation will have negative consequences not only for the individual and their family

but also for society as a whole. The likelihood of individuals encountering social risks that may lead to income losses throughout their lives is quite high. Moreover, losing one's working capacity is only one of the social risks. Additionally, old age, death, accidents, disabilities, or old age are also among the risks individuals face. Although risks appear to arise from adverse situations, they may also arise as a result of positive situations. For example, they may occur in the case of marriage or when a person has a child (Bulut, 2011: 59).

As social risks negatively affect individuals while also permeating society, they cause this adverse effect to spread and harm the entire society and economy. Therefore, the necessity to eliminate risks has led to the provision of certain services. These services are referred to as "merit goods." This concept was first introduced by Musgrave. Examples of these goods and services include services for the elderly and the needy, as well as free healthcare services. According to Musgrave, these goods and services should be provided by the state or their control should be ensured by the state. Thus, the state will prevent various social risks in society and minimize problems (Eker, 2007: 62). The fact that this kind of definition made by Musgrave coincides with a period of intense state intervention in market failures and that this concept was later eroded by neo-liberal tendencies and approaches should be evaluated within the framework of the chronological analysis we conducted in the introduction (Göker, 2008: 109).

Individuals have always sought assurance to prevent the social dangers they and their families may face. People have made efforts to take personal and collective measures to protect themselves from dangers (Erol, 2014: 40). As a result, the search for protection from social risks and dangers has led to the need for a social security system (Bulut, 2011: 59). Social security needs have a significant feature that distinguishes them from other needs. The need for social security arises from risks and dangers that individuals are exposed to outside of their control. In contrast, individuals' intentions are involved in private goods and services. In other words, private goods and services are demand-dependent. Individuals benefit from private goods and services as much as they demand them, provided they pay for them. Pure public goods and services, on the other hand, have emerged as a necessity for communal living. However, the need for social security has arisen due to risks and dangers that occur or are likely to occur outside of individuals' control



As can be seen, social security aims to protect individuals from the dangers they face due to professional, physiological, and socio-economic risks (Bulut, 2011:59). Therefore, social security can be defined as the protection and security of individuals against the economic consequences of certain social risks (Dilik, 1980:77). Although not with the same meaning and institutionalization as today, the concept of social security has existed in every period of history. Social security emerged with the feeling of solidarity among people and developed with traditional methods of mutual assistance. Initially, it began with intra-family assistance, aid to neighbors and relatives, and support for the poor and sick (Güvercin, 2004:90). These traditional assistance activities continued over time with the establishment of religious charitable institutions and during the Middle Ages through guilds (Akyıldız, 1999: 197). With the Industrial Revolution, traditional methods lost their importance, and the social security system began to institutionalize. It was shaped around the concepts of the welfare state or social state after World War II.

The social state, a concept that emerged within the capitalist system, refers to the situation where public authority has the ability to intervene in economic and social life through direct or indirect means (Ayman-Güler, 2006:2-3). Thus, it aims to compensate for the vulnerabilities that a pure market mechanism brings to the entire economy and the general societal structure. With the widespread acceptance of the concepts of the social state or welfare state, the role assigned to the state within economic and social life has also transformed. As a result, in terms of public finance, there has been a change towards increasing expenditures and generating financing.

Social security service is a service that concerns the entire society and provides social benefits. Conducting this service entirely through markets would contradict its fundamental purpose. Ultimately, those in need, such as the sick, elderly, and unemployed, are primarily within the scope of this service. Therefore, services with a social nature need to be provided by the state. This means that states must play an active role in this area and protect individuals against social risks they may encounter with an effective social security system. This situation will lead to an increase in the role and responsibilities of states, as well as an increase in their weight in the economy. Because the service to be provided is among those requiring state intervention. However, the increasing role and weight of states in social and economic life throughout the historical process have not always been desirable. Throughout history, there have been significant changes in

thoughts related to the socio-economic role of the state, and accordingly, there have been serious changes in economic approaches on the subject.

Especially before the 1929 Economic Depression, the classical view that opposed state intervention in the economy dominated economics. Adam Smith, the representative of the classical view, assigned only a set of duties and responsibilities such as defense, justice, and public works to the state and opposed state intervention in economic and social life. Therefore, during that period, there were no duties that required the state's intervention in economic and social life. Because, according to classical economics, everything in the economy was in balance, and therefore, they argued that intervention was unnecessary (Güngör, 2006: 6). Classical economists such as Adam Smith, David Riccardo, and Thomas Robert Malthus opposed regulations within the scope of social security that protected the poor. They argued that social security would have a negative impact on the economy. Because when these services were provided by states, they would increase the population and unemployment, subsequently lowering wages. Thus, they claimed it would lead to an increase in poverty. Moreover, they argued that such services were unsustainable (Doğan and Kabayel, 2017: 219).

However, despite their opposition to such regulations, social assistance and insurance aids were provided to certain and limited target groups due to the poverty that emerged during this period, and some programs were included in the field of social security to counter a potential uprising from the poor and workers. Although there were limited activities related to social security, the content of the social security concept as used today was realized with the Keynesian policies developed after the 1929 Depression (Süleymanoğlu, 2016: 276). Because Keynes blamed the liberal capitalist social order for the poverty that emerged in the 20th century and saw state intervention in the economy as necessary. The classical view fell short and lost its importance in addressing the stagnation and unemployment problems that emerged with the 1929 Crisis. Economies were tried to be revived with state intervention in response to the stagnation and unemployment experienced.

The modern emergence of both the social state and social security took place with Keynesian policies. Keynesian policies supported active state intervention in the economy. According to Keynes, the state should intervene in the economy with fiscal policy tools and especially actively use these tools during periods of economic instability. Public expenditures, taxes, borrowing, and the budget are among these tools. Keynes argued that

the state's duties were not limited to defense, justice, and public works services. Ensuring fair income distribution, efficiency in resource use, price stability, reducing unemployment, economic stability, and economic growth were also among the state's duties. During this period, the idea that social security is a human right and the belief that social security is the responsibility of the state rather than the individual also started to gain importance and became dominant (Akyıldız, 1999:198-199).

Although the history of the social state understanding dates back quite far, during this period, the social aspect of the state re-emerged. The social state is a state understanding that envisages the state actively and effectively intervening in the economy to ensure social welfare. Its most distinctive and fundamental feature is its side that supports active state intervention in economic and social life. At the same time, the social state has a redistributive feature, guaranteeing a minimum income level for individuals. Additionally, it has aspects that fight poverty, ensure social justice, and provide social security services. One of the purposes of social states offering social security as a service is to make public regulations aimed at providing a standard of living worthy of human dignity for every individual constituting the society. Because as a result of these regulations, individuals will be protected against social risks (illness, accident, old age, etc.) (Yay, 2014: 148-149). Another aim is to prevent unemployment and increase employment. While increasing employment, it is also among its goals to make regulations about the working hours, health conditions, job security of the employed, and to protect employees. Moreover, providing insurance services against income losses, unemployment, illnesses, and retirement through welfare expenditures is a result of being a social state (Aksoy, .. :56).

Indeed, due to the socio-economic distortions created by the liberal social order, the need for socio-economic equality and social security in society started to increase significantly, and the importance of the social state understanding gained momentum and spread rapidly. With the acceleration of the social state understanding, the importance of social security systems also started to increase. Social security transformed into a human right and took its place in many international documents and country constitutions after World War II. In Article 22 of the Universal Declaration of Human Rights, adopted by the United Nations on December 10, 1948, it is stated that “Everyone, as a member of society, has the right to social security.” From this statement, it is understood that individuals' social security rights

should be provided by the state and that this has become one of the fundamental duties of the state. All these developments have led to more social security and beyond that, social expenditures within both government budgets and policy mixes.

**2. Chapter Social Security as a Fiscal Policy Argument** Initially emerging as an argument related to tax processes of state authority, fiscal policy evolved with Keynes to include expenditures as well (Tanzi, 2006: 2). In his famous work "The General Theory," Keynes stated that public expenditures, when applied to achieve income distribution justice, would be a significant tool in the economy and would positively influence economic activities by increasing the propensity to consume at the societal level more than interest rate changes would (Keynes, 1936: 51). The fundamental perspective behind Keynes's view was that the classical economists' ideas of associating consumption with investment and interest rates were incorrect.

Among the classical economists, particularly the group led by Adam Smith, investment and consumption were functions of interest rates. As interest rates increased, decision units deferred their current consumption, instead opting for savings. On the other hand, entrepreneurs aspiring to invest reduced their investments as interest rates rose. Interest rates were determined at the point where the supply of savings equaled the demand for investment, consistently balancing investment with savings. This mechanism, along with Say's Law, kept the goods market in a constant state of equilibrium in the economy. Consequently, state intervention became redundant.

Keynes's view can be considered what Musgrave called the "stabilization role" (Tanzi, 2006: 3). This stabilization relates to the balancing role on aggregate demand. It refers to maintaining economic stability by reducing fluctuations between production and consumption. For Keynes, as long as aggregate demand was insufficient, the economy would create unemployment and deflation, as seen in the Great Depression. However, demand generated with the contribution of government expenditures would stimulate production again, increasing employment and raising the general price level. Ultimately, stagnation would disappear. Musgrave attributed other roles to fiscal policy alongside this stabilization role. According to him, public finance could not simply be based on balancing revenues and expenditures. Distribution and allocation roles were also among the primary

areas of interest in public finance (Musgrave, 1959: 3). The fundamental question regarding allocation is how and by whom production resources will be used and for what purposes. The fundamental question regarding distribution is how the distribution of produced goods and consequently the obtained income can be improved (Musgrave, 1959: 5).

In this context, social security is related to all three roles. Primarily, it serves as a mechanism to balance decreases in aggregate demand, as it mitigates the negative effects on disposable income for individuals in shrinking economies faced with unemployment and other adversities. Additionally, it fulfills the distribution role by transferring deductions from employers, that is, capital owners, and those able to pay higher taxes to individuals in lower-income groups. It also carries out the allocation function by determining the extent of resources taken from employers by the state and the extent to which government resources are allocated to which goods and services.

Although we initially stated that social security contributes to all three roles, different views exist in the literature. With the progress in statistics and econometrics, significant studies have been conducted on the distribution role of social security expenditures, and some have shown that social security struggles to fulfill its distribution function. For example, Gustman and Steinmeir, in their study, stated that the social security system in the USA was not very successful in transferring income from high-income families to low-income families (Gustman and Steinmeir, 2001: 26). Cremer and colleagues also stated in their study that due to decision units' myopic behavior regarding the economy, the redistribution role of the social security system was replaced by the role of a compulsory savings mechanism (Cremer et al., 2009: 98). In an older study, Paukert suggested that social security might be more successful in redistributing income in developing countries compared to developed countries (Paukert, 1968: 448).

Discussions on the roles of fiscal policy as stated above have gradually shifted to the function of aiding sustainable growth and development. While fiscal policy was seen more as a tool for dealing with short-term fluctuations since Keynes, it has been associated with sustainable economic growth in the long term since the 1990s (Zagler and Dürnecker, 2003: 397). In this context, it refers particularly to the public sector focusing on education, health, and infrastructure expenditures to invest in a qualified workforce (Zagler and Dürnecker, 2003: 398). In his comparative study for European Union countries, Benos found that expenditures from the government budget

on education, security, and social protection positively impacted sustainable growth (Benos, 2009: 19).

***In this context, it is possible to say that social security expenditures will positively impact sustainable growth. Social security will create additional resources for individuals to make education expenditures for themselves and their households while ensuring more stable income and thus stable demand for goods and services. Additionally, the social security system will contribute to the continuity of long-term investments, whether made by the public or private sector, by acting as a compulsory savings mechanism.***

## **RESULTS AND DISCUSSION**

As a result of the evaluation for Turkey, it has been seen that a significant amount of resources is transferred from the government budget to finance the deficits of the social security system. While part of this resource is transferred under the name of state contribution, another part is transferred directly in the form of treasury assistance. The use of treasury resources in this way to finance social security deficits has several negative consequences. Firstly, it reduces the resources allocated from the budget for financing other investments, making sustainable economic growth and development difficult. To the extent that it does not allocate resources to investments needed to address the negative impacts of market failures on society, it also disrupts the optimal distribution of public resources. Our findings regarding the causes of these deficits have focused on the low active-passive ratio and pointed to the low labor force participation rate, high unemployment rate, and informal economy as the underlying reasons. Therefore, it has shown that the issue is serious enough that it cannot be resolved with simple measures alone. On the other hand, the inability to ensure tax justice increases the social security premiums for current registered workers, which also encourages informal employment. Establishing a stable social security system primarily requires a macroeconomic transformation. Without this transformation, it is not possible to establish an effectively functioning and self-sustaining social security system. The first condition for this transformation is to create and produce high value-added products with an advantage in international competition. This requires giving importance to education and making serious investments. Education will both increase the labor force participation rate and reduce unemployment if labor demand is aligned with supply. The second point to be emphasized is to take measures that will ensure the spread of the social security culture in society. Thus, negativities such as informal employment or the abuse of social security will decrease. Another point, although not analyzed in depth above, is the necessity of establishing an administrative mechanism that will ensure the more effective

functioning of the social security system. In light of our findings, we believe that our contributions are to shed light on the studies needed to make the financing of social security more effective and to guide policymakers. However, we also want to express that a stronger social security system can be provided with in-depth studies and analyses of different disciplines.

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# **Unbalanced Development Strategies and a Proposal For Türkiye**

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## ABSTRACT

The fact that the concept of economic growth is only concerned with gross domestic product and that the increase in gross domestic product alone does not guarantee a welfare spread throughout society triggered an alternative search among researchers interested in the discipline of economics. With this search, the concept of development economics emerged. The basic question that was sought to be answered was how welfare would be increased and in what form it would be spread throughout society. In other words, how would enrichment be achieved and how would its blessings be distributed. However, the distinction between balanced and unbalanced development in development economics is the basic starting point of the study. The aim is to present an alternative development strategy for the Turkish Economy based on unbalanced development theories. The concept of development will be discussed in the first section. Then, the distinction between balanced and unbalanced development will be analyzed. Then, unbalanced development strategies will be discussed. Then, the model proposed for the Turkish economy will be explained.

*Keywords – Development economics, unbalanced development, balances development Turkish economy, agricultural dissolution ,*

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## INTRODUCTION

The fact that the concept of economic growth is only concerned with gross domestic product and that the increase in gross domestic product alone does not guarantee a welfare spread throughout society triggered an alternative search among researchers interested in the discipline of economics. With this search, the concept of development economics emerged. The basic question that was sought to be answered was how welfare would be increased and in what form it would be spread throughout society. In other words, how would enrichment be achieved and how would its blessings be distributed.

When development economics emerged as an independent concept, that is, around the 1940s, it was thought that underdeveloped countries of that time could devise their own strategies in light of the past experiences of the developed economies of that time. Just as the USA, England, France did, Asian and African countries or South American economies could do the same. However, over time, some question marks arose regarding this idea. As these question marks increased, development economics began to have a more complex set of concepts. Then, with a series of developments, primarily the dissolution of the Eastern Bloc, this set of concepts of development economics was replaced by a series of arguments based on quantitative data and talking about a spontaneous development. A detailed

historical analysis of this change and the “rise and fall” of the concept is beyond the scope of this study. However, the distinction between balanced and unbalanced development in development economics is the basic starting point of the study. The aim is to present an alternative development strategy for the Turkish Economy based on unbalanced development theories. The concept of development will be discussed in the first section. Then, the distinction between balanced and unbalanced development will be analyzed. Then, unbalanced development strategies will be discussed. Then, the model proposed for the Turkish economy will be explained.

## **1. CHAPTER A CONCEPTUAL DISCUSSION ON DEVELOPMENT ECONOMICS**

Development economics emerged in the post-World War II period, especially in the 1950s and 1960s, when many Asian, African and Latin American countries gained their independence and needed economic development strategies. During this period, development economics developed new models and strategies that took into account the economic, social and political conditions of these countries, differentiating itself from classical and neoclassical economic theories. However, it does not seem possible to come up with a single definition of development.

Development economics is a branch of economics that examines economic growth and development processes, focusing particularly on the economic and social problems faced by underdeveloped and developing countries. Development economics takes into account not only economic growth rates but also factors such as income distribution, poverty, education, health, infrastructure, housing and the environment. Economic Growth refers to the increase in economic output, usually measured by the increase in a country's gross domestic product (GDP). While economic growth focuses on the increase in a country's total production capacity, Economic Development refers to the increase in the general welfare of a society beyond economic growth. This includes elements such as increasing living standards, increasing access to education and health services, reducing poverty and improving income distribution. Economic growth examines the transition from one equilibrium state to another better equilibrium state or the path followed by this transition process. In this sense, it refers to a dynamic change tested with comparative static or quantitative data. Schumpeter similarly addresses the concept of development as a concept related to development, starting from the concepts of “static” and “dynamic”. After making the distinction between social development and economic development, he defines the concept of development in the sense of development, starting from the concepts of “static” and “dynamic”:

“ Development in our sense is a distinct phenomenon, entirely foreign to what may be observed in the circular flow or in the tendency towards equilibrium. It is spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing. “Our theory of development is nothing but a treatment of this phenomenon and the processes incident to it” (Schumpeter, 2021, 55).

In this approach, development is defined as an economic phenomenon in the sense of innovation and progress, and is formulated as having an impact on the well-being of individuals. The concept of innovation is at the center of Schumpeter's theory of economic development. Schumpeter defines innovation as the main element that triggers economic development. Innovations lead to revolutionary changes in production processes, products, market structures and supply chains. These changes allow for more efficient use of resources in the economy and the development of new production technologies. The process that Schumpeter calls "creative destruction" is that innovations eliminate old economic structures and business models and replace them with more efficient and innovative structures. In this process, economic structures constantly change and transform, which contributes to sustainable development in the long term.

According to Schumpeter, entrepreneurs play a critical role in implementing innovations and driving economic development. An entrepreneur is someone who implements innovations under uncertainty and risk and creates new opportunities in the market. Entrepreneurs support economic growth and development by developing new products and services, renewing production methods, and expanding beyond existing markets. Schumpeter sees entrepreneurs as dynamic elements of the economy; their activities are the primary drivers of economic cycles and structural transformations. Schumpeter argues that economic development is not a linear process but is characterized by business cycles and fluctuations. According to him, innovations and entrepreneurial activities trigger periods of economic expansion and contraction. These cycles show that the economy is in a constant process of change and adaptation.

According to Schumpeter, these cyclical dynamics increase the economy's capacity for self-renewal and strengthen its long-term development potential. One of the most distinctive aspects of Schumpeter's understanding of economic development is the concept of "creative destruction." Creative destruction is the process of eliminating old and inefficient structures in the economy through innovative activities and entrepreneurship. This process ensures the continuous renewal and modernization of the economic structure. According to Schumpeter, creative destruction is an indispensable element of economic development, because without this process, economic structures stagnate and inefficiency increases. Creative destruction occurs as

a natural consequence of the market economy and ensures the sustainability of economic development.

There are other thinkers who have similar views to Schumpeter. One of them is Hayek, who advocates the idea of “spontaneous order.” Hayek emphasizes the central role of the market process in distributing knowledge and encouraging innovation. In market economies, individuals and firms constantly innovate in response to changing market conditions, which in turn drives economic development. In this respect, Hayek argues that the dynamic nature of market processes is important for economic growth and development. According to Hayek, economic development occurs as a result of innovative decisions made by individuals using their own local knowledge, without central planning. This is consistent with Schumpeter’s concept of the innovative entrepreneur. Hayek speaks of a change that is irregular and reminiscent of a leap, similar to Schumpeter:

“There is, however, a point to be emphasized here. The modern habit of going beyond the actual crisis and seeking to explain the entire cycle, suffers inherently from the danger of paying less and less attention to the crucial problem. In particular, the attempt to give the object of the theory as neutral a name as possible (such as “industrial fluctuations” or “cyclical movements of industry”) threatens to drive the real theoretical problem more into the background than was the case in the old theory of crisis. The simple fact that economic development does not go on quite uniformly, but that periods of relatively rapid change alternate with periods of relative stagnation, does not in itself constitute a problem. It is sufficiently explained by the adjustment of the economic system to irregular changes in the data—changes whose occurrence we always have to assume and which cannot be further explained by economic science. The real problem presented to economic theory is: Why doesn't this adjustment come about smoothly and continuously, just as a new equilibrium is formed after every change in the data? "Why is there this temporary possibility of developments leading away from equilibrium and finally, without any changes in data, necessitating a change in the economic trend" (Hayek, 2008, 25-26).

Hayek answers the question he asks about development through individual knowledge and innovation. According to Hayek, economic development occurs as a result of innovative decisions made by individuals using their own local knowledge, without central planning. This is consistent with Schumpeter's concept of the innovative entrepreneur. "Hayek challenged both socialist planning and the positivism of Neo-Classical Economics by emphasizing the superiority of the market mechanism in the distribution of knowledge" (Whyte, 2017, 166).

Another thinker who tries to explain development by starting from the dynamism of market processes is Kirzner. Kirzner argues that market

processes are dynamic and that competition encourages innovative activities. This is similar to Schumpeter's theory of creative destruction, since both views accept that market dynamics constantly transform the economy. Kirzner argues that entrepreneurship is a process of discovering opportunities. Unlike Schumpeter's innovative entrepreneur, Kirzner's entrepreneur is more of an actor who notices existing market imbalances and turns these imbalances into profit. However, both views emphasize the central role that the entrepreneur plays in economic development. Kirzner himself expresses this situation as follows:

“The entrepreneur who played the equilibrative role for me in 1973, fulfilled his essential function not by introducing new products, or technologically more efficient methods of production (in fact he was not a producer at all)—but simply by noticing earlier errors (manifested). , most importantly, by the availability of pure profit opportunities existing in the multiple-price-for-the-same-good situation generated by those earlier errors). The emphasis was thus on the entrepreneur as the person who alertly (but “passively”) simply noticed the opportunities generated by the earlier errors, which errors were seen as arising from unanticipated independently-caused, changes in underlying market circumstances” (Krizner, 1999). , 6-7).

North has made a similar leap analysis on institutions. North argues that economic development is not only related to innovation and entrepreneurship, but also to the quality of institutions. According to him, effective and adaptable institutions provide the environment of trust required for economic development and a structured market process that encourages innovation. North's views on the evolution of institutions are similar to Schumpeter's theory of creative destruction. Both argue that economic development occurs through the transformation of existing structures and the creation of new structures. With North's studies, the understanding of economic development that emerged due to new technologies has given way to the development approach in the form of a dynamic process of institutional change (Menard and Shirley, 2014, 12). For North, institutions are important because of their effect of reducing uncertainty. In a world without institutions, uncertainties arise and economic life loses its sustainable quality (North, 2003, 1).

Like North, another thinker who emphasizes uncertainty is Knight. Knight argues that economic development is linked to the ability of entrepreneurs to cope with uncertainty. Like Schumpeter's innovative entrepreneur, Knight emphasizes the entrepreneur's ability to manage uncertainty and create new market opportunities. Knight distinguishes between risk and uncertainty and examines how entrepreneurs' decisions under uncertainty affect economic development. This perspective is closely related to Schumpeter's processes of innovation and creative destruction.

In Knight's analysis, it is stated that in the time of the British Classical Economists, the level of development of the economy was relatively low, economic institutions were not in a complex network of relationships, and the capitalist was at the center of management:

“At the time when the English Classical school of economists were writing.... corporations were relatively unimportant, being practically restricted to few banks and trading companies. There was of course, some lending at interest, but in the dominant form of industry men used their own capital, hiring labor and renting land from others. The managerial function centered in the capitalists” (Knight, 1921, 23).

Knight later referred to Clark's work and focused on the idea that snow could be a result of dynamic changes (Knight, 1921, 34). In the following sections of the work, he put forward his views on uncertainty. One of the most striking of these is the paragraph given below:

“profit arises out of the inherent, absolute unpredictability of things, out of the sheer brute fact that the results of human activity can not be anticipated and then only in so far as even a probability calculation in regard to them is impossible and meaningless” ( Knight, 1921, 311).

Knight's views imply that development is directly related to the correct management of the uncertainty process. When uncertainty is managed correctly, it will lead to a leap-type growth and development. In fact, economic growth and development are the aggregated results of a micro-level governance process. This idea also coincides with Drucker's thoughts. Drucker argues that innovation is not only a technological but also a managerial process. He emphasizes the role that entrepreneurship and innovation play in economic development, but unlike Schumpeter, he argues that innovation can also be developed in a broader context, through business management practices and strategies. Drucker sees entrepreneurship as a management activity that recognizes new opportunities and transforms them into successful business models. This offers a complementary perspective to Schumpeter's concept of the innovative entrepreneur.

For Drucker, marketing is a process that enables the growth and development of a company or sector in particular and an economy in general, and has a social as well as an economic dimension:

“My thesis is very briefly as foll Marketing occupies a critical role inspect to the development of such "growth" areas. Indeed marketing is the most important "multiplier" of such development. It is in itself in every one of these areas the least developed, the most backward part of the economic system. Its development, above all others, make possible economic integration and the fullest utilization of whatever assets and productive capacity an economy already possesses. It mobilizes latent economic energy.



It contributes to the greatest needs: that for the rapid development of entrepreneurs and managers, and at the same time it may be the easiest area of managerial work to get going” (Drucker, 1958, 253).

The studies mentioned above have addressed development as leap models. They have associated it with concepts such as innovation, technology and governance. However, some thinkers have addressed development as process models. According to these models, it is not possible to reach a certain level of development without passing through certain stages. The most well-known of these models is Rostow's model. Rostow made an important contribution to the development economics literature with his work "The Stages of Economic Growth: A Non-Communist Manifesto" published in 1959. Rostow's model defines economic development as a series of stages and argues that countries have certain characteristics in each of these stages. Rostow's economic growth stages model addresses development as a linear process and suggests that each country must go through these stages in a certain order. Rostow talks about five stages and argues that countries follow and will follow these stages:

1. Traditional Society: This is a stage where technological and economic development is quite limited. These societies have an economy based mainly on agriculture and operate at a low level of productivity. Economic activities are carried out with traditional methods and usually in the form of family businesses. At this stage, production is largely oriented towards domestic consumption and the market economy is not developed. Technological innovations are limited and a conservative approach is adopted towards innovations. The social structure is hierarchical and feudal in character.

2. Preconditions for Development (Take-Off): This stage is the period in which the foundations of modern economic growth are laid. It is the beginning of the exit from traditional society and the modernization of economic structures. In this stage, the economic basis changes with factors such as infrastructure investments, modernization of agriculture and expansion of trade. Foreign trade increases and capital accumulation accelerates. Investments in education and technological knowledge begin. Political and social changes create a suitable environment for economic growth.

3. Transition to Development (Take-Off): It is one of the most critical stages of the development process. This stage is the period when economic growth accelerates and becomes a self-sustaining growth process. In this stage, the industrial sector grows rapidly and becomes the dominant sector of the economy. Investments increase and new sectors develop. Technological innovations and productivity increases support economic growth. Economic

growth occurs continuously at rates of 5 percent or higher. While the share of agriculture decreases, the share of industry and service sectors increases.

4. Maturity (Drive to Maturity): The maturity phase is a period in which the economy diversifies into industry and services and technological developments continue. During this phase, the economy continues to grow in advanced technologies and high value-added sectors. Income distribution becomes more balanced and general welfare increases. Exports diversify and the economy becomes more resilient to external shocks. Significant investments are made in infrastructure and education, and the quality of the workforce increases. Economic and social institutions undergo reforms to ensure the sustainability of growth.

5. Age of High Mass Consumption: This last stage is the period of societies that have reached a high level of welfare as a result of economic development. It is a period in which the demand for consumer goods increases and living standards rise. In this stage, consumption goes beyond basic needs and turns to luxury consumer goods. The service sector becomes the largest sector of the economy. Individuals' income levels rise and their level of welfare increases. Policies for social security and the welfare state gain importance. Economic growth focuses on increasing social welfare and reducing income inequalities (Rostow, 1959).

Rostow's article is actually the product of a search for an answer to Marx's arguments. Marx's theory of social stages offers an economic-based analysis of history and argues that the economic structures of societies are decisive in the development process. According to Marx, societies have evolved throughout history based on the ownership and control of the means of production, and each stage creates the conditions for the transition to the next stage. The internal contradictions and class struggle of capitalism will inevitably lead to the emergence of a communist society. Within this framework, Marx's theory of social stages is based on the concepts of historical materialism and dialectical materialism and argues that social change is possible through the transformation of the economic infrastructure (Marx and Engels, 2004,):

1. Primitive Communal Society : Primitive communal society is the first stage of human history, where the means of production are under common ownership. During this period, society lives in hunter-gatherer groups and has a structure where everyone is equal. The economy is based on survival; there is limited production with hunting and gathering. There is no private ownership of the means of production, and class differences have not developed among people. Social relations are based on common ownership and mutual aid. Hierarchical structures and class differences have not yet emerged at this stage.

2. **Slave Society:** Slave society is the stage in which the means of production and part of the labor (slaves) are under private ownership. During this period, society is divided into two basic classes: slave owners and slaves. The economy is based on agriculture and animal husbandry. The means of production (land and labor) are under the control of slave owners. Slaves constitute the main labor force of economic activities. In slave society, class differences become apparent. Slave owners own the means of production and have social power; slaves are propertyless and deprived of their rights.

3. **Feudal Society:** Feudal society is a social structure based on land ownership and a relationship between lords (feudal lords) and serfs (peasants). At this stage, slavery was abolished, but a different relationship of dependency was established on the serfs. In feudal society, the economy is based on agriculture. Lords own the land and means of production, while serfs work under the lords and must give them a portion of the product. The feudal structure is a hierarchical and closed system. Lords have political and economic power, while serfs are deprived of their freedom and are tied to the land. The class structure is quite rigid and class transitivity is very limited.

4. **Capitalist Society:** Capitalist society is a social structure in which the means of production are privately owned and labor power is sold as a commodity. At this stage, there are two basic classes: the bourgeoisie (capitalist class) and the proletariat (working class). The economy is based on industrial production and trade. Capitalists own the means of production and buy the labor power of workers in order to create surplus value. Labor has become a commodity and workers have to work for a wage to make a living. Class struggle is at the center of social dynamics in capitalist society. While the bourgeoisie gains political and social superiority through capital accumulation and economic power, the proletariat is the exploited and poor segment. The internal contradictions of capitalism and exploitative relations are the most prominent features of this society.

5. **Communist Society:** According to Marx, communist society is a classless, stateless and propertyless society. This stage occurs when the contradictions of capitalism reach their peak and the proletariat overthrows the capitalist system with a revolutionary movement. The economy is based on the principles of common ownership and planned production. The means of production are under social ownership and production is carried out according to everyone's needs. There is no longer any surplus-value exploitation or class struggle. Social justice and equality prevail in communist society. Each individual contributes according to their abilities

and receives a share according to their needs. The state disappears as a means of oppression and society becomes a self-governing structure.

It is possible to say that this approach of Marx is not a model that makes predictions for individual countries. However, it is not easy to make such a clear prediction about the uniqueness of the approach. For example, Holton (1981, 835) states that Marx explains social transformation in at least four different ways in his different works . The change related to the development of the division of labor and exchange relations that he put forward in the German Ideology; the change related to technological determinism that he explained in The Poverty of Philosophy; the change analyzed in terms of productive forces, knowledge and technology as can be understood from the generality of the same work; the change based on class conflict explained in The Communist Manifesto and Capital (Holton, 1981, 835). In fact, this is compatible with the dualist character of Marx's analysis of capitalism. Elliott expresses this dual character as follows:

“Marx's dual perspective concerning capitalism. On the one hand, capitalism according to Marx is characterized by economic contradiction, social conflict, and human degradation. Alienation, exploitation, and recurrent cyclical crisis and accompanying depression and mass unemployment are among its most salient features. On the other hand, capitalism exhibits revolutionizing, industrializing, and universalizing qualities of development, growth, and progressivity that both create a new civilization and propel the world system so created on toward a post-capitalist future. Although Marx gave the nineteenth century's most penetrating and provocative critique of the contradictory and dehumanizing aspects of capitalism, he also provided the deepest and most comprehensive account of its revolutionary and progressive properties.” (Elliott, 1984, 384).

As can be seen from this paragraph, Elliott has a perspective that evaluates Marx's views on capitalism from both a critical and developmental perspective. According to Elliott, Marx emphasizes the contradictions and social conflicts inherent in capitalism; he reveals the negative aspects of this system such as alienation, exploitation, economic crises and mass unemployment. In this respect, capitalism is depicted as an inhuman system. However, Elliott states that Marx's views on capitalism are not only critical, but also emphasize the revolutionary and progressive features of this system. Capitalism is seen as a force that transforms the means of production and society, triggering industrialization and globalization. Thanks to these features, capitalism both contributes to the emergence of a new civilization and prepares this civilization for a post-capitalist future. Elliott evaluates this dual perspective of Marx as one of the most comprehensive analyses that addresses both the constructive and destructive aspects of capitalism.

Another thinker who tries to explain development through a process, albeit in a sectoral sense, in a different way than Rostow, is Lewis. Lewis's "Dual Economy" model, while considering development as a process, argues that economies develop through a two-sector structure, agriculture and industry. This model foresees the transfer of labor from the agricultural sector to the industrial sector in the initial stages of development. In developing economies, the agricultural sector is generally a sector with low productivity and hidden unemployment. The labor surplus in this sector can be transferred to the industrial sector. The industrial sector is a sector with high productivity and profitability potential. Growth in this sector during the development process is supported by the labor transferred from the agricultural sector. Lewis's model explains development through labor transfer and capital accumulation, and argues that development is based on the transformation of the economic structure. However, this model does not take into account the social and political dimensions of development.

Lewis argues that economic growth and development will be achieved as a result of the unlimited surplus labor in agriculture being transferred to industry. However, for him, this is not necessarily a situation that must be seen in all countries. "An unlimited supply of labor may be said to exist in those countries where the population is so large relatively to capital and natural resources, that there are large sectors of the economy where the marginal productivity of labor is negligible, zero, or even negative." (Lewis, 1954, 2). However, if at any stage in history labor is too much relative to capital in a country, this process must have occurred there as well.

According to Lewis, as the workforce moves to the industrial sector, wages rise, income distribution becomes more equitable throughout the country, and progress is made in terms of development. However, the model has some limitations and points of criticism. These are related to unlimited labor supply, deindustrialization, and social factors. Today, the surplus labor in the agricultural sector has been exhausted in many developing countries. This shows that labor transfer cannot continue without putting pressure on wages in the industrial sector. In modern economies, labor demand decreases with the increase in technology and automation. This can limit the growth of the industrial sector and reduce the effectiveness of the labor transfer model. The Lewis model assumes that economic growth can only be achieved through labor and capital accumulation, but neglects the effects of social and political factors on growth. These factors are especially critical in terms of income distribution and the sustainability of social welfare.

Another approach that can be given as an example of process models is Kuznets' approach. Kuznets emphasized the importance of structural transformation in the economic development process. Kuznets' studies revealed that economic growth is related not only to capital accumulation and technology, but also to the change of economic structure. In particular,

by analyzing the transition process from agriculture to industry and services, he showed that industrial modernization is one of the main driving forces of economic growth. This approach, which conducts a type of modernization analysis, states that economies will go through certain stages starting from agriculture. Its perspective on development-related issues, especially income distribution justice, is also based on this framework. As income increases, income distribution will be provided automatically after a certain point and the process will result in economic development. From another perspective, he says that industrial modernization will also provide development:

“An invariable accompaniment of growth in developed countries is the shift away from agriculture, a process usually referred to as industrialization and urbanization. The income distribution of the total population, in the simplest model, may therefore be viewed as a combination of the income distributions of the rural and of the urban populations” (Kuznets, 1958, 7).

Kuznets evaluated development as a result of a transition from agriculture to industry by using the data he had for some developed countries and making some theoretical inferences (Acemoğlu and Robinson, 2002, 183). According to him, this transition includes technological progress and is a kind of industrial modernization process (Kuznets, 1955, 10).

Another thinker who tried to explain economic development in terms of industrial transformation is Chenery. Chenery emphasized the importance of structural changes in the economic development process and analyzed the effects of these changes on development models in different countries. Chenery's "structural change theory" argues that economic development is directly related to sectoral transformation and industrial modernization processes. This theory emphasizes the importance of countries prioritizing industrial modernization processes when determining their development strategies. Chenery drew attention to investment and technology transfer as another important component of industrial modernization. Foreign aid, foreign investments and technology transfer in the development process can accelerate industrialization and modernization processes. Chenery stated that it is critical for developing countries to use these elements effectively in their modernization processes for long-term economic growth and development.

Chenery says that the development problem can be analyzed with a certain set of tools because the growth patterns of countries are uniform. When examining development processes, he takes the Rodan-Nurske-Lewis Balanced Development models as the starting point. According to him, the best way to analyze individual countries is to act on universal principles until a set of equations is obtained (Chenery, 1970, 2-4).

Both Kuznets and Chenery have addressed the role and importance of industrial modernization in the process of economic development from different perspectives. Kuznets analyzed the effects on economic growth and income distribution, while Chenery focused more on structural transformation and technology transfer. The studies of both economists have shown that industrial modernization is one of the driving forces of economic growth and development and that this process should be managed in a planned and strategic way.

In conclusion, the contributions of Kuznets and Chenery have helped us understand that industrial modernization is not limited to processes of economic growth and structural change, but also has broader effects on social and economic transformations. This has contributed to the development of more inclusive and sustainable development strategies of modernization processes.

## **CHAPTER 2: UNBALANCED DEVELOPMENT MODELS**

Unbalanced development models suggest that economic growth is focused on specific regions or sectors and that this focus will lead to broader economic growth in the long run. The basic principles of these models are as follows:

**Regional Inequality and Clustering:** Unbalanced development models advocate the concentration of economic activity in certain regions and the growth of these regions through “clustering.” Clustering occurs when similar or complementary industries come together geographically, and can enhance regional development and competitiveness.

Regional inequality causes economic activities and development opportunities to be concentrated in certain regions and develop at a different pace and in a different way than in other regions. This is a frequently observed phenomenon in the economic growth process and is at the core of unbalanced development models. Economic clustering is both a cause and a result of these inequalities. Clustering occurs when similar or complementary industries are gathered in a certain region, and while this increases the economic dynamism of that region, it can also weaken economic activities in other regions.

Clusters often occur when natural resources, labor, capital, and knowledge are concentrated in a specific geography. This concentration creates economies of scale and network effects, increasing the competitive advantage of that region. For example, regions such as Silicon Valley, where technology companies are concentrated, can contribute to global economic growth by creating innovation ecosystems. However, this concentration can reduce the competitiveness of other regions and increase regional inequalities.

A significant advantage of clustering is the network effects that emerge through interaction and knowledge sharing between firms. Firms operating in the same region can benefit from technological developments and innovations more quickly and efficiently. While this increases global competitive advantage, it can restrict access to these developments for firms in regions outside the cluster. This can lead to deepening development gaps between regions. Cluster regions also have an advantage in attracting talented labor. Educated and experienced individuals prefer regions with more career opportunities, higher quality of life and stronger social networks. This brain drain can further accelerate the development of cluster regions while limiting the economic development potential of other regions. This situation can lead to inequality in income distribution between regions in the long term.

Such clustering, which risks deepening regional inequalities, also brings with it some problems. Regional inequalities pose not only economic but also social and political challenges. The unequal distribution of economic opportunities and public services can lead to social unrest and migration. Therefore, regional development policies are critical to reducing inequalities and contributing to the sustainable development of all regions. Policymakers should adopt inclusive development strategies to reduce regional inequalities. These strategies may include measures such as improving the infrastructure of underdeveloped regions, increasing access to education and health services, and developing the local workforce. For example, supporting and diversifying local economies through regional development agencies can promote long-term economic growth.

The economic dynamism created by cluster regions can be used as a lever for broader development. Policy interventions can be made to spread the knowledge and technology accumulation in these regions to other regions. For example, cooperation can be encouraged between universities and research centers in cluster regions and educational institutions in other regions. Technological developments have created new opportunities in regional development strategies. In particular, strengthening digital infrastructure can facilitate the integration of regions outside the cluster into the global economy. In addition, improving transportation and communication infrastructure can spread the advantages of cluster regions to other regions and reduce regional inequalities.

If we make a general assessment on this subject, regional inequality and clustering are one of the basic dynamics of unbalanced development models. Clustering can enable certain regions to stand out economically and increase their competitiveness. However, this process can also cause economic stagnation and inequality of opportunity in other regions. Therefore, the effects of regional inequalities should be carefully evaluated in the implementation of unbalanced development strategies. For sustainable and



inclusive development, policy makers should develop strategies that will reveal the potential of all regions and distribute economic opportunities more fairly.

**Forward and Backward Linkages:** The concentration of development in a particular sector creates an indirect effect on other sectors. Forward linkages are the use of outputs from one sector as inputs in other sectors. Backward linkages are the provision of inputs necessary for the development of a sector from other sectors. According to the theory of unbalanced development, these linkages can spread to the entire economy over time and contribute to balanced development.

Forward and backward linkages are concepts frequently discussed in the economic development literature. These concepts are used to understand the economic relations of a sector with other sectors and the effects of these relations on industrial development. Forward linkages refer to the use of goods and services produced in one sector as inputs in other sectors, while backward linkages are based on the inputs that a sector receives from other sectors in its own production processes. These two-way relations play a key role in economic development processes and have an important place in determining industrialization strategies.

Forward linkages occur when goods and services produced in one sector are used by other sectors. For example, steel production provides input to various sectors such as automotive, construction, shipbuilding. This means that steel production increases not only its own sector, but also the production capacity and growth potential of other sectors.

Forward linkages can promote economic diversification. If a country can develop strong forward linkages in a particular sector, different industries can develop around that sector, making the economy more resilient and diversified overall. For example, the technology sector can feed into many sub-sectors such as software development, hardware manufacturing, data analytics. Such diversification can increase resilience to economic shocks and create new job opportunities.

Backward linkages occur when production processes within a sector rely on inputs from other sectors. For example, the automotive industry receives inputs from many different sectors, such as steel, plastics, electronic components, and chemicals. When backward linkages are strong, this contributes to the development of domestic supply chains and leads to a strengthening of the national industrial structure.

Backward linkages can reduce import dependency by increasing domestic production capacity. If a country can source key production inputs locally, this can both preserve foreign exchange reserves and increase economic independence. Furthermore, an economy with strong backward linkages

can be more resilient to external economic shocks because domestic supply chains are less likely to be disrupted than foreign trade routes.

Forward and backward linkages can directly affect the development potential of an economy. These linkages can guide the determination of industrial policies and development strategies. For example, supporting a sector with strong backward linkages can contribute to the development of domestic supply chains and overall economic growth. Similarly, promoting sectors with strong forward linkages can stimulate growth in different areas of the economy.

These linkages are also important in terms of creating employment and promoting technology transfer. Backward linkages enable domestic firms to provide more jobs and gain experience in various sectors for the workforce, while forward linkages can encourage the diffusion of new technologies and production methods. This can increase overall productivity and support sustainable development in the long term. Given the impact of forward and backward linkages on economic development, it is important for policymakers to develop strategies to support and strengthen these linkages. Policies that encourage sectoral development and support the growth of interdependent sectors can contribute to more balanced and sustainable economic development. For example, policies that encourage industrial clusters can enhance regional development and economic diversification by strengthening both forward and backward linkages.

Regional development strategies can also be redesigned within the framework of these connections. Especially for the development of underdeveloped regions, the development of sectors with strong backward and forward linkages in these regions can increase the dynamism of local economies. Thus, economic development can achieve a more equitable and sustainable structure.

**Leading Sectors and Growth Dynamics:** Unbalanced development models argue that economic growth depends on developments in certain “leading” sectors. For example, growth in high value-added sectors such as industry or technology can stimulate other sectors and support overall economic growth. Leading sectors are defined as innovative and competitive sectors in an economy with high growth potential. These sectors generally have a faster growth rate than the rest of the economy and act as multipliers for other sectors, thus stimulating overall economic growth. The development of leading sectors plays a critical role in the economic development process because these sectors have a significant impact on both employment generation and the transfer of technology and knowledge.

Leading sectors generally produce high value-added products and services. Thanks to their innovation capacity, these sectors continuously develop new products, and the economic value of these products is higher than products

produced in other sectors. For example, the information and communication technologies (ICT) sector supports the digital transformation of other sectors by providing high value-added services and continuously innovating. At the same time, they play a leading role in the development and implementation of new technologies. Innovative activities in these sectors spread to other sectors and increase the efficiency of the overall economy. For example, the biotechnology sector paves the way for important innovations and developments in other sectors such as agriculture and health. Such innovations increase the overall quality of life and contribute significantly to economic growth. Leading sectors are sectors with high employment potential. These sectors generally require a highly qualified workforce, which creates pressure to increase the education level and skills of the workforce. For example, the renewable energy sector offers various job opportunities for both engineers with technical knowledge and field workers. This increases the competencies of the workforce and adds dynamism to the overall economy.

Leading sectors are at the center of economic growth dynamics. These sectors can stimulate the rest of the economy through their direct and indirect effects. For example, the automotive industry, which is a leading sector, creates demand for many sub-industries such as iron and steel, plastics, and electronics. This increase in demand causes other sectors to increase their production capacity and thus contribute to overall economic growth. Leading sectors sustain their own growth through their direct effects, while supporting the development of other sectors through their indirect effects. For example, when a country's technology sector grows rapidly, the services required by this sector (e.g. cloud computing, data analytics) can spread to many other sectors, which can increase overall economic activity. Leading sectors can support local and regional development by creating an economic multiplier effect. Regions where these sectors are concentrated usually have higher economic growth rates and better living standards. For example, a high-tech cluster in a region can increase the economic vitality of the region by creating high-wage jobs, which can stimulate the local service sector and infrastructure investments.

Leading sectors play a critical role in increasing a country's international competitiveness. These sectors often have high export potential and can help gain competitive advantage in global markets. For example, a country's IT sector can reduce the current account deficit and increase foreign exchange reserves by exporting software and technology products to global markets. In order to support the development of leading sectors, policymakers need to develop strategies that address the needs of these sectors. These strategies are important not only to promote the growth of leading sectors, but also to ensure the overall balance and sustainability of the economy.

In order to sustain the growth of leading sectors, investments in research and development (R&D) activities need to be increased. Government support, tax reductions and collaborations between the private sector and universities can accelerate innovation and technological developments in this sector. Education and skill development programs should be encouraged to provide the skilled workforce required by leading sectors. Scholarships and internship opportunities can be offered especially to students studying in STEM (science, technology, engineering and mathematics) fields. This will ensure that the labor market meets the needs of leading sectors in the long term. It is important to support regional development by encouraging the concentration of leading sectors in certain regions. For this purpose, industrial clusters can be established and infrastructure investments can be made in these regions. For example, innovation centers and technology parks can be built for technology clusters. Sustainability-oriented transformations of leading sectors should be encouraged. Investments in areas such as renewable energy, environmentally friendly technology and sustainable agriculture can both increase environmental sustainability and create new leading sectors in the economy.

Leading sectors are critical elements that reveal the growth potential of an economy and accelerate the development process. These sectors become the locomotives of the economy with their innovation, high value-added production and employment generation capacities. However, the development of these sectors does not only depend on their own internal dynamics; it is also necessary to develop and implement appropriate strategic policies. For sustainable development in the future, it is of great importance for policy makers to develop comprehensive and integrated strategies for leading sectors.

The beginning of unbalanced development models is generally accepted as Hirschman's work "Strategy of Economic Development" (Gualerzi, 2015, 1). Hirschman states that balanced development theories, led by Rosenstein-Rodan, Nurkse, Lewis and Scitovsky, basically suggest balanced development due to a demand deficiency spread throughout the economy and even accept it as the only possibility. It is possible to see this perspective in the following paragraph:

"It is argued that a new venture---say, a shoe factory -which gets underway by itself in an underdeveloped country is likely to turn into a failure: the workers, employees, and owners of the shoe factory will obviously not buy all of its output, while the other citizens of the country are caught in an .. underdevelopment equilibrium" where they are just able jointly to afford their own meager output. Therefore, it is argued, to make development possible it is necessary to start, at one and the same time, a large number of new industries which will be each others' clients through the purchases of

their workers, employers, and owners. For this reason, the theory has now also been annexed to the .. theory of the big push." (Hirschman, 1958, 51).

During the years Hirschman worked in Colombia, the question marks in his mind about the balanced development model increased (Alacevich, 2017, 6). According to him, balanced development models do not even have the quality of being real development models. Because their basic starting point is a traditional balance situation in the Neo-classical sense. However, for Hirschman, development means transforming from one economic structure to another:

"Development presumably means the process of change of one type of economy into some other more advanced type. But such a process is given up as hopeless by the balanced growth theory which finds it difficult to visualize how the "underdevelopment equilibrium" can be broken into at any one point. The argument is reminiscent of the paradox about the string that is equally strong everywhere and that therefore when pulled cannot break anywhere first: it either will not break at all or must give way everywhere at once" (Hirschman, 1958, 52).

Hirschman, who was once tasked with overseeing the operation of the Marshall Plan in Europe, also focused on small-scale projects that attempted to reveal the effects of the connections that local economies would create, rather than plans for the economy as a whole, during his years in Colombia (Bianchi, 2011, 3). However, Rosenstein-Rodan, who was also a consultant at the time, advocated a balanced development model that related the economy as a whole to each other within the framework of a grand plan. He expressed this situation by giving a numerical example as follows:

" Let us assume that 20,000 unemployed workers in Eastern and South-Eastern Europe are taken from the land and put into a large shoe factory. They receive wages substantially higher than their previous average income in natura. It would be impossible to put them into industry at their previous income standard, because they need more foodstuffs than they had in their agrarian semi-unemployed existence, because these food-stuffs have to be transported to towns, and because the workers have to pay for housing accommodation. If these workers spent all their wages on shoes, a market for the products of their enterprise would arise representing an expansion which does not disturb the pre-existing market, and 90% of the problem (assuming 10% profit) would be solved. The trouble is that the workers will not spend all their wages on shoes. If, instead, one million unemployed workers were taken from the land and put, not into one industry, but into a whole series of industries which produce the bulk of the goods on which the workers would spend their wages, what was not true in the case of one shoe factory would become true in the case of a whole system of industries: it would create its own additional market, thus realizing an expansion of world

output with the minimum disturbance of the world markets. The industries producing the bulk of the wage goods can therefore be said to be complementary. The planned creation of such a complementary system reduces the risk of not being able to sell, and, since risk can be considered as cost, it reduces costs. It is in this sense a special case of "external economies" (Rosenstein-Rodan, 1943, 206-207).

Rosenstein-Rodan implicitly assumes that Say's Law is in operation (Rosenstein-Rodan, 1957, 9). Say's Law states that every production process creates income for the factors involved in that process, and this income creates demand for other goods. What is neglected in this approach is the existence of leakages (taxes, savings, imports). Keynes defines Say's Law based on the views of Mill and Marshall, and states that this law is the fundamental basis of Classical Economics:

"From the time of Say and Ricardo the classical economists have taught that supply creates its own demand; meaning by this in some significant, but not clearly defined, sense that the whole of the costs of production must necessarily be spent in the aggregate, directly or indirectly, on purchasing the product." (Keynes, 2003, 27).

In the sense expressed by Keynes, the approach of supply creating demand, that is, income creating purchasing power for other goods, is included in the above statements of Rosenstein-Rodan. However, as Keynes criticized, this situation accepted as a law is not always valid. By making such an assumption, Rosenstein-Rodan actually exhibits a stance close to the Classical School and mentions the automatic corrective mechanism referred to as the "Invisible Hand" in the literature reflecting the basic philosophy of the Classical School. In order for the mechanism that Rosenstein-Rodan envisages to work, it is necessary for the demand for consumer goods not to be rigid and for savings to be continuously transformed into investment. It can be said that by not being clear enough on these two issues, they have actually proven Keynes right (Currie, 12). Currie, who worked as a consultant in Colombia with Hirschman and has Keynesian views, argues that development will begin when the population concentrated in rural areas is drawn to cities and the lands they vacate are cultivated by capitalists engaged in agricultural production. He thinks that this will ensure accelerated development (Brittain, 2011, 344).

### **CHAPTER 3: AN EVALUATION ON TURKEY'S DEVELOPMENT DYNAMICS**

The Republic of Turkey was established in place of the Ottoman Empire. Its founding staff were mostly military and administrative bureaucrats of the Ottoman Empire. Therefore, it is not possible to understand the Turkish Economy without understanding the Ottoman Economy. The Ottoman Economy is a complex structure. There is no consensus among economic

historians about its nature. After an analysis of this structure below, the process that the Turkish Economy has experienced until today will be analyzed.

The Ottoman Empire was one of the largest and most enduring empires, spanning parts of Europe, Asia and Africa, from the late 13th century to the early 20th century. The structure and framework of the Ottoman economy were shaped by the empire's vast territory and its interactions with various cultures and economies. The Ottoman economy was predominantly agricultural, with agriculture being the dominant sector. The majority of the population lived in rural areas and earned their living from agriculture. It should not be overlooked at this point that agriculture in the Ottoman economy was no more than a subsistence activity for ordinary citizens. Similarly, it was not conducive to significant capital accumulation for those who worked the land. One of the most important elements in the Ottoman economy was the timar system. Timars were agricultural lands granted by the Ottoman State to soldiers and civil servants in return for service. This system was designed to meet the logistical and financial needs of the Ottoman army. Timar owners (sipahis) collected taxes on the lands allocated to them and used these taxes as a salary allocated to them in return for military service. The Sipahis had the right to make the necessary arrangements to increase the production of the peasants living on their lands, but the lands were owned by the state.

In the Ottoman Empire, land was divided into two categories: public and property. Aytekin summarizes this situation clearly in the following paragraph:

“The pre-modern Ottoman system of land tenure was based on a fundamental distinction between public (miri) and privately owned (m‘lk) land. Private land could become full property and consisted of homesteads, small gardens, private groves, and arable land granted by the state to individuals as a special privilege. Public land, which included the great majority of agricultural and especially grain-producing land, could only be held in possession. According to the legal fiction on which the entire pre-modern land law was built, all arable land belonged to the state as it had the right of absolute ownership (rakabe) over all land and the cultivators were tenants of the state. Thus, when public land changed hands, it was called 'transfer', (ferag, tefviz) not 'sale' (is,tira', bey', sell, buy)” (Aytekin, 2009, 937).

The period when the Ottoman Empire, whose agriculture did not allow for such capital accumulation, reached its natural limits of its booty-based economy coincides with a period when a series of developments occurred simultaneously. The loss of importance of trade routes, being surrounded by the Russian, Austrian and Safavid Empires, the powerful armies of European

countries and effective mercantilist policies limited the Ottoman area of action from the end of the 16th century onwards (Kasaba, 1987, 805). This limitation, combined with the uncontrolled fiscal regime, created an underdeveloped economy characterized by unpaid debts, foreign-controlled commercial and industrial production, and widespread poverty at the end of the 19th and beginning of the 20th centuries.

The First World War and the War of Independence that followed left the newly established Republic of Turkey facing a difficult start economically. For this reason, even before the Republic was officially declared, a congress was held with the participation of groups of workers, farmers, industrialists and merchants. Although a series of demands from each segment were brought to the agenda at this congress, the main point emphasized was the creation of a national economy. The idea of a national economy was brought to the agenda by the members of the Union and Progress in the last period of the Ottoman Empire. With the influence of the same cadres, the national bourgeoisie was accepted as the main actor of development and modernization in the early years of the Republic (Varlı and Koraltürk, 2010, 128).

After the declaration of the Republic, efforts for industrialization through public intervention and/or public support gained momentum in the post-1960 period together with the import substitution industrialization strategy. Turkey determined industrialization as one of its fundamental goals from the early years of the Republic and achieved significant industrialization largely under the leadership of the state until the 1950s. These efforts continued with the contribution of private capital accumulation in the post-war period and gained momentum with central planning in the 1960s. However, economic instability and lack of external resources brought the industrialization process to a halt in the late 1970s. Starting in the 1980s, Turkey adopted free market-oriented, open-to-the-outside policies with the support of the World Bank and the IMF (Şenses and Taymaz, 2003 as cited in Arısoy, 2005, 46). However, capital accumulation and class distinctions could not become apparent in Turkey. The wave of migration from rural to urban areas, especially in the 1960s, created areas of rent and distorted the distribution of resources to the detriment of industry.

Although liberalization has not followed a stable trend for the Turkish Economy, it has always remained as an ultimate agenda. Özel (2011, 76) summarized the liberalization process of the Turkish economy in the following paragraph, where he quotes several authors:

“ In its founding years, the Turkish economy displayed an open economic outlook. The main reason for the openness of the economy was having an extremely externally dependent economic structure (Şahin 2009: 43-44). Another reason for the implementation of an open economic policy stemmed



from the economic provisions of the Lausanne Peace Treaty. According to the provisions of the Lausanne Peace Treaty, the Ottoman Customs Tariffs signed in 1916 remained valid for five years. For this reason, no increase in customs tariffs could be made until 1929 (Uludağ and Arıcan 2003: 5). When the Turkish economy is examined between 1923 and 1929, the ratio of imports to Gross National Product (GNP) was 14.6% and the ratio of exports to GNP was 10.6%. The fact that this ratio could not be reached in the following 50 years is shown as an indicator of the trade openness practice in this period (Boratav 2006: 49-50).”

#### **CHAPTER 4: A PROPOSAL FOR AN UNBALANCED DEVELOPMENT MODEL FOR Türkiye**

According to the data obtained at the end of 2022, the share of agriculture in Turkey's GDP was 6.5%, the share of services was 51.7%, and the share of industry was 26.4% (Republic of Turkey Ministry of Treasury and Finance, 2023,13). When the sectoral distribution of employment is examined, employment in agriculture was 15.8%, employment in services was 56.5%, employment in industry was 21.7%, and employment in the construction sector was 6% (Republic of Turkey Ministry of Treasury and Finance, 2023, 70).

Turkey did not turn to services after industrialization, as some of today's developed Western economies did. The rapid increase in services accompanied the disintegration in agriculture, especially in the 2000s. The main reasons for the disintegration in agriculture can be listed as follows:

**Technological Change and Modernization:** Slow adoption of technological innovations in agriculture and the continuation of traditional production methods lead to productivity losses in the sector. Not using modern agricultural methods reduces the competitiveness of agricultural products and reduces farmers' incomes.

- **Institutional Structures and Supports:** Institutional structural deficiencies such as inadequate support provided by the state in agriculture, uncertainty of market conditions and financial access problems of farmers are among the main factors of dissolution in agriculture.
- **Migration and Population Distribution:** Migration movements from rural areas to urban centers lead to a decrease in the interest of the young population in agricultural activities and a labor shortage in these regions. The urbanization process is an important factor that accelerates the dissolution of agriculture.
- **Environmental Changes:** Environmental factors such as climate change, water resource constraints and reduced soil fertility threaten

sustainability in the agricultural sector. This accelerates agricultural disintegration and limits farmers' production capacities.

Disintegration in agriculture leads to an increase in the prices of agricultural products, a disruption in the supply-demand balance, and a weakening of the integration of the agricultural sector with other sectors of the economy. In addition, the increase in unemployment rates in rural areas and migration cause problems in the labor market in cities. In addition, disintegration in agriculture disrupts the social fabric of rural life, causing the loss of traditional lifestyles and cultures. The decline in the rural population weakens the economic and social ties of local communities, which leads to social disharmony.

Thus, agricultural disintegration, the unplanned urbanization that accompanies it and the labor force accumulated in the services sector have made it difficult to accelerate development. The definitions and targets made especially on the growth axis have also led to the development being pushed to the background from a social perspective. An unbalanced development model has been envisaged in which the agricultural sector, squeezed between input imports and low value-added final product exports, is once again the driving force. In this model, agriculture has been determined as the first leg. The emphasis to be given to agriculture will, on the one hand, provide a lowering effect on the price of the consumer goods basket, thus controlling inflation, and on the other hand, it will facilitate the industry's access to the capital it needs by accelerating the inflow of foreign exchange to the country by providing a current account surplus.

What is meant by focusing on agriculture can be expressed under certain headings as follows:

- Opening public lands to agriculture and cultivating them as common lands of the village within the administrative borders of that village.
- Not leaving any stubble areas and supporting producers for the cultivation of stubble areas
- The public purchases the products produced and keeps the prices high.
- Transfer of products purchased by the public to the industrial sector at low prices
- Providing seed and fertilizer support in kind to all producers engaged in agricultural production
- Providing fuel and labor support to producers in cash advances

- Supporting the return to village project to encourage the return to agricultural areas. In this context, creating production areas in villages and establishing cooperatives for these areas.
- Providing feed and medicine support for livestock
- Providing animals to people who will do animal husbandry
- The purchase of livestock products by the public at high prices
- The sale of purchased livestock products by the public to the food industry at low prices
- Selling purchased livestock products to the final consumer through public sales platforms
- Encouraging food industry producers to invest in rural areas
- Providing logistics support for agriculture and livestock
- A series of measures should be taken to support alternative agricultural production methods such as greenhouse farming, including the establishment of public areas and their transfer to producers.

With these activities, a production surplus will be created in the agricultural sector and the added value created will increase. Then, it will be easier for industries using agricultural inputs to create higher value-added products and gain competitive advantage in the international market. This development will increase foreign exchange income and facilitate access to capital in other industrial branches and the construction sector. On the other hand, some of the agricultural investments to be made will directly increase the demand for production in the construction sector and other non-food industries, thus increasing their added value. This process will trigger the emergence of a high multiplier effect.

## **CONCLUSION**

As a result of its geographical features, Turkey has the ability to produce a wide range of agricultural and animal products. However, due to the uncontrolled disintegration of the agricultural population, agricultural production and the ability to produce value-added products have been damaged. The increasingly fragile structure of agricultural production creates inflationary pressure, which is especially felt during crisis periods. This also brings to light the disruptive effects of resource allocation optimization. The fundamental way to prevent this is to transform agriculture into a stable area that creates added value. In order to do this, input costs must be minimized. In addition, in order to benefit from the scale throughout the country, arable lands, including marginal agricultural areas, must be

used. In order to reduce the costs caused by the rural-urban migration caused by the disintegration of agriculture and thus to make the labor market in cities more regulated, it would be appropriate to encourage the private sector to make agricultural-based industrial investments in rural areas, especially in the food industry. In addition to conventional agriculture, encouraging and facilitating more efficient production such as greenhouse farming, which can be done every day of the year, will also have a positive effect. Similarly, with the encouragement of animal husbandry, domestic prices will be suppressed as national supply increases and there will be a capital inflow due to foreign exchange as foreign trade increases. This will also accelerate the industry. It is thought that this whole process will provide faster growth and development with an unbalanced development strategy. If econometric analyses are conducted in future studies and application model suggestions are developed, a broader perspective will be gained. This will encourage both academics and policy makers.

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# **Covid-19 Research in Business and Finance**

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## ABSTRACT

The COVID-19 pandemic has significantly disrupted global economies, public health systems, and social structures, sparking an urgent academic response. This study systematically reviews early-stage literature on the pandemic's effects on business and finance, analyzing 123 articles published in high-ranked journals up to May 23, 2020. The research aimed to identify trends, methodologies, and thematic focuses by categorizing articles into conceptual, empirical, and editorial types. Conceptual studies dominated early academic output, particularly in management and marketing, focusing on theoretical frameworks and exploratory perspectives. Empirical research, meanwhile, was more prevalent in fields like finance and supply chain management, driven by data-driven analyses of markets, logistics disruptions, and organizational resilience. Tourism and public administration journals were especially active, with over 90% of their publications addressing COVID-19-related topics, reflecting the severe impact on these sectors. The exponential increase in research output during the early months of the pandemic underscores the academic community's mobilization to understand and address the crisis. Key insights reveal a divergence in research emphasis across disciplines, with conceptual studies providing exploratory foundations and empirical research offering concrete data-driven evaluations. The study concludes that integrating these approaches, along with fostering interdisciplinary collaboration, is essential for addressing complex crises effectively. These findings not only enhance our understanding of the pandemic's multifaceted impacts but also offer valuable guidance for future research and practical strategies to strengthen resilience in business and finance during global crises.

*Keywords – Covid-19, review, business, finance, conceptual and empirical research*

## INTRODUCTION

The novel coronavirus disease (COVID-19), which first emerged in December 2019 in Wuhan, China, rapidly disseminated across the globe, resulting in a profound health, social, and economic crisis on an international scale. Initially observed within China, the outbreak gained prominent attention in January 2020, as it posed a significant threat, particularly to European



nations. Countries such as Italy, Spain, the United Kingdom, and Germany experienced severe impacts, leading to considerable strain on their healthcare systems. On March 11, 2020, the World Health Organization (WHO) officially classified COVID-19 as a global pandemic. By July 30, 2020, there were 17,039,160 confirmed cases and 667,218 fatalities reported worldwide due to COVID-19, according to data from John Hopkins University.

The coronavirus pandemic has had profound effects not only on public health but also on social life and the global economy. The quarantine measures and social isolation protocols implemented to control the virus's spread significantly disrupted business operations and various sectors. Initially, there was an expectation that these measures would be temporary; however, it soon became evident that the situation would last much longer than anticipated. This extended period led to substantial economic contractions worldwide and disruptions in supply chains, making it increasingly difficult for many businesses to maintain operations. Issues such as surplus inventory and widening output gaps caused considerable economic damage, particularly in critical sectors like oil (Coibon et al., 2020; Hanspal et al., 2020; Pagano, et al., 2020). Additionally, the uncertainty surrounding the duration of the pandemic hindered accurate economic forecasting in its early stages.

As the pandemic progressed, concerns about a potential second wave grew following the early relaxation of restrictions. These concerns were widely addressed in medical and health academic literature (Xu & Li, 2020). By autumn 2020, concrete data had emerged regarding the scale of the second wave and its potential as a significant health threat. The impacts of the pandemic extended beyond healthcare, deeply affecting businesses, especially in the financial sector. The effects varied across different industries, leading to a substantial body of literature on these issues. In a short time, academics in business and finance began examining the pandemic's effects on companies and financial markets (Albuquerque et al., 2020; Döttling and Kim, 2024; Heyden and Heyden, 2021; Ramelli and Wagner, 2020;).

The aim of this study is to explore how the COVID-19 crisis has been addressed in the business and finance literature. Although the pandemic's effects on businesses and the financial sector have been analyzed in various contexts within the academic literature, this study systematically examines early-stage research on the pandemic's impact in the realms of business and

finance. This analysis provides critical insights into prevailing scholarly trends and thematic priorities.

## **METHODOLOGY**

To comprehensively assess the scholarly literature on the impact of COVID-19 on business, a systematic search was conducted across multiple high-impact academic journals. The primary data source for this search consisted of the top 500 business journals, as ranked by the Scimago Journal Rank (SJR) in the category "Business, Management and Accounting." This category encompasses a broad range of subfields, including Accounting, Business and International Management, Industrial Relations, Management Information Systems, Marketing, Organizational Behavior, Human Resource Management, Strategy and Management, and Tourism and Hospitality Management. Although Finance is classified under the "Economics, Econometrics, and Finance" category in the SJR rankings, it was also included in the search due to its significant intersection with business, particularly in the context of the COVID-19 pandemic. Given the notable links between financial markets and business operations during this time, the top 100 finance journals, as ranked by SJR, were also incorporated into the search.

The search process was carried out by utilizing the keyword "COVID" across the full text of articles, including titles, keywords, and the main body of the articles. This ensured that any paper that referred to COVID-19, either directly or through its associated terminology, was included in the review. The search was limited to articles published up to May 23, 2020, marking a significant point in the early stages of the pandemic when there was heightened global attention and increased academic interest. As a result, 123 articles relevant to the COVID-19 pandemic and its impact on business and management were identified. Among these, 17 articles were classified as editorial pieces, while the others were categorized as either conceptual or empirical studies.

To better organize the selected articles, a classification system was implemented that divided the papers into three distinct categories: conceptual, empirical, and editorial.

### ***Article Types***

**Conceptual Articles:** These papers focus primarily on theoretical frameworks, literature reviews, viewpoints, commentaries, and discussions related to the impact of COVID-19 on business and management. These articles often explore new theoretical constructs, offer insights into how the pandemic might affect various business practices, or propose frameworks for understanding the pandemic's implications. In total, 81 conceptual articles were included in this category. These papers typically do not involve new data collection but instead synthesize existing research or provide expert opinions on the subject matter.

**Empirical Articles:** In contrast, empirical papers present original research that involve the collection and analysis of data to investigate the impact of COVID-19 on business practices. These studies are further divided into qualitative and quantitative research methods. Qualitative studies primarily use interviews, case studies, and content analysis, while quantitative studies apply statistical techniques such as regression analysis, correlation analysis, volatility analysis, or simulation models. Some studies also employ secondary data sources, including financial returns, market volatility, and other financial indicators. Notably, certain studies use complex methods such as wavelet-based approaches, textual analysis, or experimental design to assess the effects of COVID-19 on various aspects of business and financial performance. Although some scholars classify simulations as conceptual research (Carnevalli & Miguel, 2008), in this study, they were classified as empirical due to their methodological nature. A total of 25 empirical articles were included in the final analysis.

**Editorial Articles:** Editorial articles are those written primarily for commentary or reflection on the implications of the COVID-19 pandemic in the field of business and finance. These articles often provide an opinion or analysis on urgent issues or offer guidance to practitioners and policymakers. Editorials typically do not present original research but are valuable in shaping the discourse around COVID-19's impact on the business world. Seventeen articles were identified as editorials and included in the final dataset.

### ***Data Collection and Article Selection Criteria***

The inclusion criteria for the articles were based on two primary factors: (1) the explicit mention of COVID-19 in the title, keywords, or body of the

article, and (2) the date of publication, with only articles published up until May 23, 2020, being considered. Articles were excluded if they did not directly address the pandemic or were published after this date, ensuring that the analysis focused specifically on the early stages of the COVID-19 crisis when academic interest in the business implications of the pandemic was peaking.

A thorough screening process was employed to ensure the relevance and quality of the selected articles. Each article was reviewed for its scope, methodology, and focus on business-related issues, such as the economic impact, changes in management practices, financial markets, and organizational behavior during the pandemic. Articles that met the inclusion criteria were retained for further analysis, while those that were deemed tangential or irrelevant to the study's focus were excluded.

### ***Final Dataset***

After completing the search and selection process, a total of 123 articles were identified and classified into three categories. Specifically, the final dataset consisted of 81 conceptual papers, 25 empirical studies, and 17 editorial pieces. This classification enabled a detailed exploration of the types of research being conducted on the intersection of COVID-19 and business disciplines during the early phase of the pandemic. The analysis of this literature offers valuable insights into the research trends, methodologies, and thematic focuses of scholars as they examined the business-level and financial impacts of COVID-19 across various sectors and regions.

By structuring the articles into these three categories, this study provides a comprehensive overview of the scholarly response to the COVID-19 pandemic in the business and finance fields, highlighting key areas of interest during the first quarter of the Covid-19 pandemic.

## **FINDINGS**

### ***Trend***

Figure 1 demonstrates the rapid evolution of COVID-19 research from February to May 2020, revealing several distinct patterns in the academic response to the pandemic. First, a noticeable increase in scholarly interest is evident, reflecting the growing recognition of COVID-19's global significance. Second, conceptual research predominated in the early months,

with theoretical papers, reviews, and viewpoints leading the discourse in the selected journals. Third, there was a striking exponential growth in the number of published papers, signaling an urgent and widespread academic mobilization to address the emerging crisis. Finally, editorial papers began to surface around March, underscoring the growing attention from journal editors and the academic community’s call for focused research on the pandemic. This surge in research, coupled with the profound and lasting impact of COVID-19, suggests that the pandemic will remain a central topic in business and management studies for the foreseeable future.

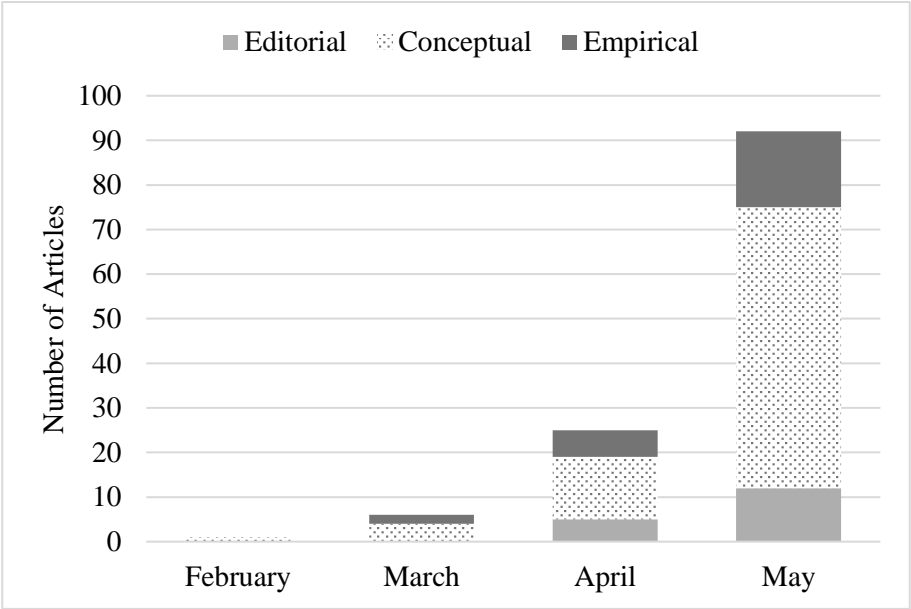


Figure 1: Trends in COVID-19 Research in Business over Time

***Journals Publishing Covid-19 Research***

Table 1 presents the 43 business journals that published COVID-19-related studies up to May 23, 2020, along with the classification of these journals based on their research fields. This classification takes into account the journals' scope and aims, as well as their rankings across various indices. Several journals, including Human Relations, International Journal of Production Research, Knowledge-Based Systems, Utilities Policy, and International Journal of Intercultural Relations, did not fit neatly into existing categories and were therefore classified under the "other" category. Notably, three journals published more than ten COVID-19-related studies during the

specified period, and all these journals are from fields outside traditional business disciplines.

Table 2 displays Covid-19 research from February to May by distinguishing conceptual and empirical research to provide insight into the focus of the research across different business domains. Editorial articles were not included in this classification.

A key finding is that tourism and public administration journals were particularly active, with more than 90% of their total publications during this period focusing on COVID-19. Management journals, on the other hand, exclusively published conceptual articles related to the pandemic, with no empirical studies appearing between February and May. Similarly, the majority of business and marketing-related COVID-19 articles were conceptual, with approximately 89% and 40% of total publications in these areas falling into this category, respectively. In contrast, the finance field demonstrated a strong emphasis on empirical research, with 90% of COVID-19-related articles in finance journals classified as empirical studies. Additionally, logistics and supply chain journals showed a similar trend, with more than half of the articles published during this period addressing COVID-19, reflecting the significant impact of the pandemic on these areas. In addition to the divergence in focus between conceptual and empirical studies, the growth rate in conceptual papers was greater than in empirical ones for four months. The number of conceptual papers increased from one in February and four in March to sixty-four in May, while the number of empirical works showed a steady rise between April and May.

Table 1: The Business Journals That Published COVID-19 Research

<b>Journal</b>	<b>Field of Journal</b>	<b>February</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>Total</b>
Tourism Geographies	Tourism			2	24	26
Public Administration Review	Public Administration			2	18	20
Journal of Vocational Behavior	Management				10	10
Journal of Business Research	Business				6	6
Finance Research Letters	Finance			1	5	6
Leadership	Management	1		1	4	6
Journal of Behavioral and Experimental Finance	Finance			1	2	3
Transportation Research Part E	Logistics and Supply Chain		1	1	1	3
Industrial Marketing Management	Marketing			1	2	3
Annals of Tourism Research	Tourism			1	2	3
Current Issues in Tourism	Tourism			1	2	3
World Economy	Economy		1		1	2
International Review of Financial Analysis	Finance				2	2
MIT Sloan Management Review	Management		1	1		2
Journal of Marketing Education	Marketing				2	2
Tourism Recreation Research	Tourism		1		1	2
Decision Sciences	Business				1	1
Journal of Business Venturing Insights	Business			1		1
Business and Politics	Business				1	1
Journal of Accounting and Public Policy	Finance			1		1
Research in International Business and Finance	Finance				1	1

North American Journal of Economics and Finance	Finance	1	1
Journal of Business Logistics	Logistics and Supply Chain	1	1
Journal of Purchasing and Supply Management	Logistics and Supply Chain	1	1
Journal of Air Transport Management	Logistics and Supply Chain	1	1
Strategic Management Journal	Management	1	1
Academy of Management Perspective	Management	1	1
Work, Aging and Retirement	Management	1	1
Work and Occupations	Management	1	1
Organizational Dynamics	Management	1	1
Journal of Macromarketing	Marketing	1	1
Journal of Retailing	Marketing	1	1
Human Relations	Other	1	1
International Journal of Production Research	Other	1	1
Knowledge-Based Systems	Other	1	1
Utilities Policy	Other	1	1
International Journal of Intercultural Relations	Other	1	1
Public Management Review	Public Administration	1	1
International Journal of Hospitality Management	Tourism	1	1
International Journal of Contemporary Hospitality Management	Tourism	1	1
Technological Forecasting & Social Change	Tourism	1	1
Journal of Sustainable Tourism	Tourism	1	1
Tourism Review	Tourism	1	1



The findings indicate a noticeable difference in the types of research conducted across various business disciplines. Conceptual studies were most prevalent in management, business, and marketing, while empirical studies were more common in finance, logistics, and supply chain management. These trends highlight the varying approaches to addressing the impact of COVID-19 within different areas of business research.

Table 2: Conceptual and Empirical Research and Field of Journals										
Field of Journals	February		March		April		May		Total	
	C	E	C	E	C	E	C	E		
Tourism			1		4	2	29	2	38	
Public Administration							18	1	19	
Finance						3	1	10	14	
Management	1		2		4		6		13	
Business					1		7	1	9	
Logistics and Supply Chain				1	2	1		1	5	
Marketing					2		2	1	5	
Other				1	1		1		3	
Economy			1					1	2	
Total		1	0	4	2	14	6	64	17	108
Note: C represents Conceptual while E denotes Theoretical.										

**Key Insights Based on Articles Keywords**

Figure 2 shows word clouds generated from sample articles. Panel A illustrates the most prominent keywords from the articles, while Panel B and Panel C display keywords specific to conceptual and empirical papers, respectively.



research into its implications. This study analyzed early literature on the pandemic's impact in business and finance, revealing important trends and themes.

The findings show that conceptual research was dominant, particularly in management and marketing, focusing on theoretical frameworks. In contrast, empirical studies were more common in finance and supply chain management, emphasizing data analysis of the pandemic's tangible effects. Journals in tourism and public administration published the most articles related to COVID-19, highlighting the varied research focus across disciplines.

The rapid growth of published research in the pandemic's early months reflects the academic community's swift response to the crisis. Moving forward, it will be crucial to blend conceptual and empirical research and encourage cross-disciplinary collaboration to develop effective insights and solutions for managing current and future crises.

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# **Sustainability Advertising and Consumer Feedback: Insights from Arçelik’s *‘Designed with Love’* Campaign**

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## ABSTRACT

Sustainability has become a critical focus for brands aiming to position themselves as environmentally responsible brands and build a sustainable brand image. This study examines consumer perceptions of Arçelik, a Turkish brand recognized among the World's 100 Most Sustainable Companies, through its 2021 advertising campaign “*İyiliği Aşkla Tasarlar*” (“*Designed with Love*”). The research explores how Arçelik's sustainability advertising efforts are interpreted by consumers, using thematic analysis of YouTube comments and semi-structured interviews with eight participants. Data were analyzed using MAXQDA 2020 software to identify key themes. Findings reveal significant gaps in understanding the concept of sustainability, with a notable discrepancy between YouTube commenters' positive views and interviewees' lack of trust in the brand's sustainability claims. While the advertisement received high praise for its aesthetic appeal, it failed to influence participants' attitudes or behaviors towards sustainability. This study highlights the challenges in effectively communicating sustainability through advertising and the complexities of consumer belief systems in fostering a sustainable brand image.

*Keywords – Sustainability Advertising, Consumer Responses, Arçelik, YouTube Comments, Semi-Structured Interview*

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## INTRODUCTION

The rapid pace of industrialization and technological advancements has significantly altered the fabric of modern society. Coupled with an increasing global population, the resulting surge in consumption has brought about profound changes to our planet. These changes include the depletion of natural resources, water scarcity and pollution, ecological imbalance, loss of biodiversity, and the emergence of global warming. Such developments have raised existential concerns for humanity, prompting the conceptualization of sustainability, which is defined as the conscious utilization of current natural resources to ensure their preservation for future generations.

This study focuses on the concept of sustainability advertising, exploring its characteristics, strategies, and the role it plays in shaping consumer behavior and awareness. Sustainability advertising extends beyond merely promoting products and services; it seeks to raise awareness about pressing environmental issues and encourage proactive measures to address these challenges. By leveraging sustainability-focused campaigns, brands strive to position themselves as eco-conscious entities in the minds of consumers.

As a member of the United Nations, Türkiye has committed to achieving the Sustainable Development Goals (SDGs) by 2030 (Yakupoğlu et al., 2022). These goals include protecting the planet, enhancing prosperity, eradicating poverty, fostering economic growth, and promoting initiatives addressing climate change and environmental protection (Altan, 2021). Achieving these objectives requires substantial contributions from businesses operating within Türkiye. Many organizations have recognized their pivotal role in this effort and incorporated sustainability into their branding and advertising strategies. These strategies not only highlight their commitment to solving environmental problems but also aim to build a green image in the minds of their target audiences.

Arçelik, the only Turkish brand recognized among the World's 100 Most Sustainable Companies (Yıldırım et al., 2022), exemplifies this commitment. The company's 2021 corporate advertisement, titled “*İyiliği Aşkla Tasarlar*” (“*Designed with Love*”), serves as a focal point for this research. By examining the advertisement, this study seeks to evaluate how Arçelik's sustainability efforts resonate with consumers and influence their perceptions and behaviors.

Key research questions underpinning this investigation include: *Do sustainability advertisements effectively inspire consumers to act towards sustainability? What actions do inspired consumers undertake?* Conversely, *why are some consumers not influenced by these advertisements?* By answering these questions, this research aims to provide valuable insights for organizations and target audiences, highlighting how sustainability advertising is perceived and what strategies are most effective.

Furthermore, the study focuses on Generation Z, exploring their perceptions of sustainability and their responses to sustainability advertising. By analyzing consumer behavior in response to advertisements encountered on platforms such as television and YouTube, the study seeks to uncover how sustainability advertisements influence their actions and contribute to a broader understanding of sustainable branding in the Turkish context.

### ***Conceptual Framework***

When examining the literature on sustainability and sustainability advertising, previous studies (e.g., Aktaş & Çiçek, 2019; Kükrer, 2010) have primarily focused on the effects of sustainability advertisements on consumer attitudes and behaviors. These works have contributed significantly to understanding how sustainability themes are communicated in advertising and how they potentially shape consumer perceptions. However, other studies that analyze advertisements with a sustainability focus, such as those recent studies by Dinçkol Akyol (2023) and Aydınlioğlu & Susur (2021), approach the topic from the perspective of the brand, leaving a critical gap in exploring consumer perspectives.

This research seeks to address this gap by investigating the role of sustainability advertisements in influencing consumer behavior. The primary aim of the study is not just to evaluate the dissemination of information about products, services, or brands, but to delve deeper into consumers' thoughts and attitudes toward sustainability and sustainability advertisements. Specifically, it aims to uncover what sustainability and sustainability advertising mean to individuals, and how these advertisements influence their real-world actions, if at all.

#### *Sustainability as a concept*

As the human population continues to grow, environmental issues are becoming increasingly severe. Beyond pollution, problems such as ozone layer depletion, global warming, glacial melting, disruptions in precipitation patterns, desertification, and rising sea levels have emerged. It is frequently emphasized that these environmental challenges have reached a more critical and dangerous stage in the present era (Kükrer, 2010).

The concept of sustainability was first defined in the 1987 Brundtland Report (Our Common Future), published by the World Commission on Environment and Development (Kazmi, 2020). Sustainability is described as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Aydınlioğlu & Susur, 2021, p. 1729). In simpler terms, it refers to using resources judiciously without excessive consumption, ensuring continuity without compromising quality of life.

One of the primary focuses of this study is the concept of generational dynamics, as generation is a key demographic factor in determining sustainable consumption behavior. Today's society comprises five generational cohorts: the Silent Generation (Traditionalists, 1900–1945), Baby Boomers (1946–1964), Generation X (1965–1979), Generation Y (Millennials, 1980–1999), and Generation Z (2000–present) (Aktaş & Çiçek, 2019).

Each generation reflects the characteristics of the society in which they are embedded. Social attitudes and behaviors shape individuals, who, in turn, influence their surroundings. These reciprocal interactions between individuals and their environments result in societal transformations and highlight the unique traits of each generation. While generations are shaped by the societies they inhabit, their attitudes and behaviors also influence and reshape those societies to varying degrees. These changes have not only underscored differences between generations but have also enabled certain effects to persist through subsequent generations (Altuntuğ, 2012; Aktaş & Çiçek, 2019). Each new generation builds upon the experiences of previous ones, continuing to influence and transform society and the environment. Consequently, every generation possesses distinct characteristics, values, attitudes, strengths, and weaknesses (Lower, 2008; Aktaş & Çiçek, 2019).



Among these cohorts, Generation Z (born after 2000) is particularly significant for this research. As the newest and most dynamic target audience, Generation Z is defined by several distinct traits: a strong affinity for technology, greater potential for economic prosperity, diminished geographic limitations, evolving social gender roles, and an increased likelihood of valuing individuality and independent living. This generation is expected to take pleasure in creativity and innovation while simultaneously prioritizing security (İzmirlioğlu, 2008). Compared to earlier generations, Generation Z is more educated and economically equipped, often seeking immediate consumption experiences and pursuing new consumption opportunities after satisfying their initial desires (Altuntuğ, 2012).

Though considered fortunate due to their access to resources, Generation Z also bears the marks of events such as 9/11, natural disasters like earthquakes and tsunamis, global terrorism, and economic crises. These experiences have led some to label them the “fear generation” (Uçkan, 2007). According to Burnham (2009), the fear and uncertainty associated with these events drive youth to escape into false realities, exacerbating their sense of identity loss and further fueling consumption behaviors.

Beyond their rapid consumption habits, Generation Z faces pressing environmental challenges, including global warming and climate change, which directly impact their lives and threaten their future (Dabija et al., 2019). This study aims to explore their awareness of sustainability and their responses to these pressing environmental concerns.

#### *Sustainability advertising*

The depletion of natural resources essential for human survival, the rise in environmental pollution, the loss of biodiversity, and the increased carbon dioxide emissions—one of the primary causes of global warming—have heightened global attention on environmental issues (Nukusheva et al., 2021). The excessive use of natural resources, particularly water, and the unsustainable nature of this consumption have underscored the importance of efforts to alter and promote sustainable consumption behaviors (Huesemann, 2006).

Institutions that embrace sustainability and recognize their environmental responsibilities have begun to focus on sustainability-themed advertisements to enhance brand value and reputation. According to Öcal and Koca (2019), who analyzed green advertising campaigns, brands often design their advertisements to appeal to emotions and build a positive image. These advertisements aim not only to raise awareness in society, but also to renew the brand's image (Özdemir, 2023).

Environmentally conscious advertisements are generally categorized into three levels (Fowler III & Close, 2012). At the macro level, advertisements convey comprehensive messages, such as “save the planet,” aimed at addressing broad environmental concerns. At the meso level, advertisements address both macro and micro concerns, but primarily focus

on promoting a specific product or service in relation to these concerns. At the micro level, advertisements target consumers directly, focusing on addressing their immediate and overwhelming environmental challenges (Fowler III & Close, 2012; Özdemir, 2023).

*Macro-Level Sustainability Advertisement Agenda: “Save the Planet”*

Macro-level advertisements are designed to appeal to broad audiences. These ads focus on large-scale environmental issues such as combating global warming, conserving water, or protecting nature, often delivering general messages like “Save the Planet” or “Let’s come together for a greener world.” The primary goal of these advertisements is to foster environmental awareness and showcase the sustainability strategies of organizations. However, it remains unclear how many consumers are genuinely motivated by these macro-level goals, as they may not align with the more tangible and micro-scale expectations of individual consumers (Fowler III & Close, 2012).

For example, one advertisement by WWF (see Figure 1) visually emphasizes the importance of soil as a critical resource for life. Soil plays a vital role in sustaining ecosystems, producing oxygen, and serving as a food source for humans and other living beings through fruits and vegetables. Factors like unsustainable agricultural practices and urbanization have severely impacted soil, making it a pressing environmental concern. This WWF advertisement serves as a prime example of a macro-level ad.



Figure 1: WWF’s Macro-Level Sustainability Advertisement

*Meso-Level Sustainability Advertisement Agenda: Brand Promotion*

Advertisements that combine macro and micro concerns address broader environmental issues while also focusing on the environmental impact of specific products or services. These ads highlight how consumers can reduce waste in their personal and professional lives. The meso level is

primarily concerned with promoting a brand and its products or the institutions associated with that brand (Fowler III & Close, 2012).

For instance, a home appliance brand might emphasize both the environmental efficiency of its products and features like the use of recyclable materials. An example of a meso-level advertisement is that of Arçelik which is prepared for *BioFridge Refrigerator* among its eco-friendly home appliances. This ad highlights the use of sustainable materials in components like the egg tray, fan cover, and door gasket, drawing attention to the brand's commitment to sustainability.



**Figure 2:** Arçelik's Meso-Level Sustainability Advertisement

*Micro-Level Sustainability Advertisement Agenda: Waste Avoidance*

Micro-level advertisements target individual consumers, emphasizing how small behavioral changes can lead to positive environmental impacts. These ads often encourage actions that can be easily incorporated into daily life, such as using sustainable packaging or energy-efficient light bulbs.

While people often express concerns about environmental issues, many also feel powerless to make a meaningful difference. Fowler III and Close (2012) describe this tension through examples from their research. For instance, Wesley, a 63-year-old retired business owner, stated: "I definitely want to save the planet, but I can't save the planet. It's too big. All I can really do is pay attention to what I bring into my home and try not to waste anything I have. I need to use it all." Similarly, Helena, a 25-year-old graduate student, echoed Wesley's sentiment, saying: "Even I can't do it. I have to save enough money just to get through the month. How can anyone

expect me to save whales or do something like that?” (Fowler III & Close, 2012)

In their research (Fowler III & Close, 2012), they stated that some participants went even further, expressing skepticism about the motives behind these macro-level environmental messages. A participant named Wesley remarked, “I don’t trust them at all. They’re just trying to make money off the environment. Most of what they say is wrong anyway.” A 41-year-old retailer shared similar concerns, stating, “It’s all misdirection. They make you believe one thing while doing something completely different behind your back.” These statements highlight a pervasive distrust in the intentions of corporations, suggesting that many see such campaigns as being driven by corporate interests rather than genuine environmental concern (Fowler III & Close, 2012).



Figure 3: Knorr’s Micro-Level Sustainability Advertisement

These three levels of sustainability advertising allow organizations to present their responsibilities from varying perspectives and engage with consumers on multiple levels. Such advertising strategies adopt a holistic approach aimed at raising environmental awareness, encouraging consumers to become more informed and sensitive, and promoting sustainability.

In the 21st century, often referred to as the “*Age of Accountability*,” advancements in technology, increasing public awareness, and rising societal demands have made it imperative for organizations to implement sustainability policies (Engin & Akgöz, 2013; Aydınlioğlu & Susur, 2021). Organizations that recognize the importance of environmental responsibility are striving to effectively integrate sustainability principles into their operations.

Ultimately, achieving widespread sustainable consumption requires a cultural shift. In response, many companies have begun altering their corporate values, internal cultures, and public images to align more closely

with sustainability goals (Michaelis, 2003; Özdemir, 2023). These efforts are often directed toward objectives such as economic growth, environmental protection, and the responsible use of natural resources. However, sustainability strategies can vary significantly among organizations, reflecting their unique priorities and approaches.

## METHODOLOGY

This study adopts a qualitative research approach to explore how consumers, particularly Generation Z, interpret and evaluate sustainability-focused advertisements. Rather than solely analyzing the content of advertisements, this research investigates how target audiences perceive sustainability and the role of such advertisements in shaping their attitudes and behaviors (Silverman, 2008).

To determine the research objects, purposeful sampling, a non-probabilistic method, was used to select both social media data and participants with direct relevance to the research topic (Patton, 2014). This method prioritizes the richness of information over representativeness and is well-suited for qualitative research where in-depth exploration is essential (Yıldırım & Şimşek, 2011). The study focuses on Arçelik, a Turkish brand recognized among the World's 100 Most Sustainable Companies (Yıldırım et al., 2022), and its 2021 corporate advertisement, “*İyiliği Aşkla Tasarlar*” (“*Designed with Love*”). Given YouTube's status as the most-watched video platform in Türkiye (Kemp, 2023), user comments on the advertisement were chosen as a primary data source. These comments were supplemented with semi-structured interviews to gain deeper insights into consumer perceptions of sustainability and sustainability advertisements. The sample for the interview process included eight Generation Z participants (four males and four females), chosen based on specific inclusion criteria to ensure their perspectives aligned with the research objectives. Additionally, two participants were designated as pilot interviewees to test the effectiveness of the interview protocol and ensure clarity and reliability. Adjustments to the interview process were made based on their feedback.

The study emphasizes the behaviors and perceptions of Generation Z, as previous research has shown notable differences between Generation Y and Z in terms of sustainable consumption. While Generation Y demonstrates higher levels of sustainable behavior and resource-saving practices, Generation Z's attitudes and actions are less established in this context (Aktaş & Çiçek, 2019). By centering on Generation Z, this research provides a unique contribution to understanding the role of sustainability advertising in influencing the behaviors of this demographic.

### ***Data Collection Methods***

Two main data collection methods were employed in this study:

*YouTube Comments Scraping:* User comments on Arçelik's "*İyiliği Aşkla Tasarlar*" advertisement, retrieved from the brand's official YouTube channel, were analyzed. A total of 119 comments, extracted on January 21, 2024, using the MAXQDA 2020 software, were examined to identify patterns and themes regarding user perceptions of sustainability and the advertisement.

*Semi-Structured Interviews:* Semi-structured interviews were conducted to explore participants' thoughts on sustainability and sustainability advertising. These interviews incorporated a total of ten open-ended questions, allowing for flexibility and the collection of detailed and comparable data (Yıldırım & Şimşek, 2011).

The semi-structured interview process consisted of two stages:

**Stage 1:** Participants were asked general questions about their understanding of sustainability and their views on sustainability advertising.

**Stage 2:** Participants watched Arçelik's "*İyiliği Aşkla Tasarlar*" advertisement, after which they were asked targeted questions about the advertisement and their perceptions of the *Arçelik* brand.

Interviews were conducted face-to-face between March 19–20, 2024, with participants' prior consent. The duration of each interview ranged from 30 to 40 minutes, ensuring a balance between depth and participant comfort.

### ***Data Analysis Methods***

The data collected from YouTube comments and interviews were analyzed using thematic analysis with the help of MAXQDA 2020 software. This method allowed the researchers to identify recurring themes and patterns within the data. To minimize bias, two researchers independently coded the data, aiming for an inter-coder agreement level of at least 80%, as recommended in the literature. The YouTube comments were thematically analyzed by adapting the taxonomy of consumer responses to advertisements developed by Aydoğan (2023).

In terms of the ethical considerations in research design and implementation, participants were asked to provide their informed consent before their participation in the interviews. Their privacy and confidentiality were maintained throughout the study. Additionally, the pilot interviews ensured that the research questions were clear and that the interview protocol was effective, thereby enhancing the validity and reliability of the findings.

## **FINDINGS**

The findings of the study were presented under two titles: 'Findings based on social media data' and 'findings based on semi-structured interviews.'

### ***Findings based on social media data***

This study analyzed 119 comments on Arçelik's "İyiliği Aşkla Tasarlar" advertisement from the brand's official YouTube channel. The findings are categorized into key themes adapted in line with the consumer comments taxonomy introduced by Aydoğan (2023) based on the nature of the comments and responses. Out of the 119 comments analyzed, 27 were direct responses from Arçelik, demonstrating the brand's commitment to engaging with viewers and valuing communication. These interactions reflect the brand's effort to create a positive consumer experience by addressing comments and fostering dialogue. Furthermore, there were some comments regarding sustainability in general. Some users expressed pessimism about achieving sustainability, with comments such as "Allah yardımcımız olsun (May God help us)" and "Amin (Amen)", highlighting a fatalistic view toward the challenges of sustainability. One comment highlighted economic barriers to sustainability. Economic hardships, unemployment, and the high cost of sustainable products were identified as barriers. In this comment, this user noted, "Economic challenges force people to choose cheap, short-lived products rather than sustainable ones."

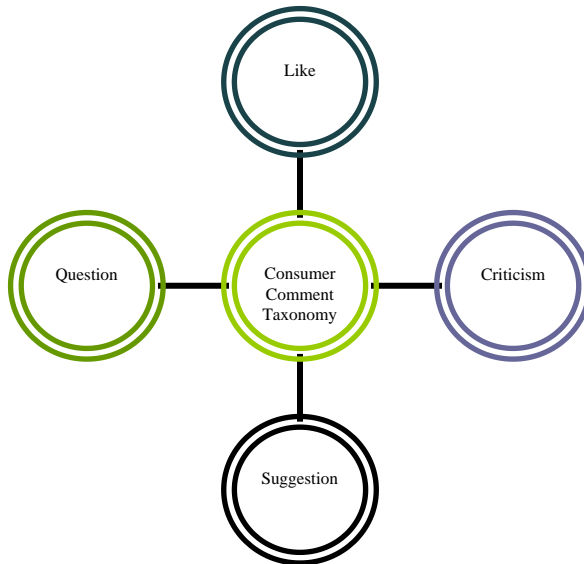


Diagram 1: Consumer Comment Taxonomy (adapted from Aydoğan (2023))

The commenters expressed their positive attitudes to both the advertising campaign and the brand, which were categorized under the theme titled "like". They praised the advertisement for its quality and inspirational message. Examples include: "This is the best advertisement I've ever seen." The commenters provided their positive reactions to the brand in terms of three main sub-themes: "general praise for the brand," "sustainability-specific appreciation," and "gratitude for brand interaction". They appreciated Arçelik's efforts in terms of "general praise for the

*brand*”, particularly the perceived quality and innovation of its products, as well as the brand’s national identity. Examples include: “*Arçelik is the pride of our country. The Koç family is number one in Türkiye*” or “*Your focus on both the environment and innovative solutions makes you more than just a brand.*” Many commenters recognized Arçelik as a sustainable brand due to its environmental initiatives and products designed with sustainability in mind, which is considered within the sub-theme of “*sustainability-specific appreciation*”. In this regard, commenters stated: “*Every product designed with the environment in mind is commendable*”, “*Arçelik says they are also in the Green Deal, how nice to see companies facing the West*” or “*It's great that you care about climate change, environmental pollution, and saving!*” Lastly, commenters expressed their appreciations for Arçelik’s responses: “*Thank you, Arçelik!*”

Despite some positive reactions to the brand and its sustainability advertisement, the corpus also included some negative feedback which can be considered criticisms towards the brand, its sustainability advertisement and the sustainability practices in general. The criticisms towards the brand stemmed from the brand’s general actions, services, product quality, and price policy. Some accused Arçelik of poor post-sales support, inadequate service, and deceptive practices: “*Arçelik offers great service until the sale, but after that, their customer service is nonexistent.*” Comments pointed to issues with repair services, such as incorrect diagnoses and high repair costs: “*The service technicians are unprofessional and cause more harm than good.*” Users criticized the use of low-quality materials and questioned the value provided by Arçelik products: “*Stop skimping on materials and deliver quality.*” Some found the products overpriced relative to their perceived quality: “*You use free materials like plastic and eggshells but sell the products for thousands.*” Regarding the brand’s sustainability advertising, criticisms included skepticism about its authenticity and perceived contradictions in the message: “*What will you do, make machines out of cardboard next?*” or “*What are you going to do, for example, are you going to change the sheet metal and make it 3 ml? Capitalism steals from this material, those who steal from the material also play with human life, shame on you*”. Finally, distrust in the authenticity of the sustainability efforts of the brands in general was highlighted, pointing to the negative evaluations of sustainability practices in general: “*No brand truly cares about the environment; all they care about is money.*”

In terms of suggestions, two types of suggestions were critical: consumer-oriented and brand-oriented. Some comments shared personal recommendations for reliable products, such as: “*Look for the 8103 YP model. It's quiet and durable, and the extended warranty is a plus.*” Moreover, users recommended brands shift the focus of sustainability efforts from sales-driven projects to impactful, long-term initiatives, such as environmental education in schools. For example: “*Instead of sales-focused*



*projects, sponsoring nature awareness programs in primary schools would be more effective.”*

Commenters were identified to pose some questions, which were considered to derive from their concerns about materials and their effect on health issues. In other words, with these questions, they questioned the potential health risks of using plastic components and the recyclability of electronic parts: *“Isn’t a plastic drum harmful to human health?”* and *“How can we recycle electronic boards? Are they valuable?”*

### ***Findings based on semi-structured interviews***

The findings obtained from the semi-structured interviews are grouped and presented under seven main themes.

#### ***Understanding of Sustainability***

Participants interpreted sustainability through various dimensions, often associating it with concepts such as preserving natural resources, reducing waste, adopting environmentally conscious lifestyles, and vegan consumption. These perspectives highlight the multifaceted nature of sustainability and the diverse ways participants engage with it.

**Focus on Recycling:** Many participants emphasized the importance of recyclable products and minimizing waste:

*“Using products that don’t harm nature and are recyclable.”* (R1)

*“Recycling things we no longer use or repurposing waste.”* (B3)

**Renewable Energy and Carbon Footprint:** Some participants discussed renewable energy systems and carbon footprint reduction:

*“Using renewable energy systems or methods that reduce carbon footprints without harming nature.”* (E5)

**Maximizing Resource Efficiency:** Sustainability was also defined as achieving maximum efficiency with minimal waste:

*“Getting the maximum benefit from a material while producing minimal waste.”* (S2)

**Vegan Consumption:** A few participants linked sustainability to veganism but expressed skepticism about its marketing:

*“Vegan products being sold through emotional appeals feels more like a marketing strategy than genuine sustainability.”* (M4)

#### ***Perceptions of Sustainability advertising***

**Interest and Support:** Some participants found sustainability advertisements interesting and believed they should be used more frequently:

*“I think sustainability advertisements should be featured more often.”* (R1)

**Skepticism:** Others questioned the authenticity of such advertisements: *“Sustainability advertisements sometimes seem like just another way to appeal to consumers without true action.”* (R1)

**Practical Impact:** Participants highlighted the need for advertisements to convey realistic, actionable messages and foster trust in brands:

*“Companies that comply with sustainability rules and issue reports stand out. They should include sustainability in their advertisements.”* (E5)

#### *Contribution to Sustainability*

Participants described their personal contributions to sustainability through everyday habits and conscious consumption choices.

*Environmentally Conscious Practices:* Participants mentioned practices like avoiding single-use plastics, shopping from small businesses, and minimizing waste:

*“I try not to buy bottled water; I carry my own reusable bottle.”* (S2)

*“I prefer handmade products and shop from small businesses.”* (R1)

*Limitations and Efforts:* Some participants expressed partial adherence to sustainability principles due to constraints:

*“I try to be mindful, but I can’t always follow through on using only environmentally friendly products.”* (M4)

#### *Impact of Advertisements*

Participants had varied responses to the “*İyiliği Aşkla Tasarlar*” advertisement by Arçelik.

*No Change in Sustainability Perspectives:* Most participants reported that the advertisement did not influence their views on sustainability:

*“No, my thoughts remain the same.”* (B3)

*Memorability and Appeal:* While some participants found the advertisement impactful and memorable, others did not:

*“The ad conveys sustainability in a short and impactful way.”* (B3)

*“I found the eggshell example intriguing.”* (S2)

#### *Skepticism Toward Brands*

Participants expressed doubts about the sincerity of large companies' sustainability efforts, perceiving them as profit-driven.

*Distrust of Motives:* Some of the participants underlined their thoughts regarding the distrust of the sustainability practices of the brands.

*“Big companies don’t care about sustainability unless there are penalties or regulations.”* (E5)

*“It feels like companies use sustainability as a way to appeal to emotions and drive sales.”* (M4)

#### *Perceived Impact of Sustainability Advertisements*

Participants were divided on the societal benefits of sustainability advertisements.

*Positive Impact:* Many participants believed that advertisements could raise awareness and promote societal consciousness:

*“Even if just one person becomes aware, it’s a win.”* (R1)

*Insufficient Impact:* Others felt that these advertisements had limited or no significant influence:

*“They have an impact, but it’s not enough.”* (S2)

#### *Sustainability and Turkish Brands*

When asked about sustainable brands in Turkey, participants struggled to identify examples, and *Arçelik* was not mentioned despite being the focus of the research.

## DISCUSSION AND CONCLUSION

The findings of this study offer valuable insights into consumer perceptions of sustainability, sustainability advertising, and the role of brands in promoting sustainable practices. By examining consumer perspectives through Arçelik's "*İyiliği Aşkla Tasarlar*" campaign and semi-structured interviews, this research contributes to the broader discourse on sustainability and marketing. Below, the findings are discussed in relation to existing literature, followed by implications for practice and theory.

### *Perceptions of Sustainability and Sustainability advertising*

The study reveals that participants associate sustainability with various concepts, including recycling, renewable energy, reducing carbon footprints, and efficient resource usage. These findings align with existing research emphasizing sustainability as a multidimensional construct encompassing environmental, social, and economic dimensions (Elkington, 1997). The focus on recycling and waste minimization mirrors similar findings by Jambeck et al. (2015), who highlighted the growing consumer awareness of waste management.

However, some participants expressed skepticism about sustainability, often linking it to external economic constraints and perceived inaction by corporations. This supports the findings of Fowler III and Close (2012), who noted that consumers are often disillusioned by the disconnect between corporate sustainability messages and their lived realities. Such skepticism underscores the importance of authenticity in sustainability communications, as suggested by Kotler and Lee (2005).

Participants demonstrated a general interest in sustainability advertising, appreciating its potential to raise awareness. However, some were critical of its authenticity, viewing it as a commercial strategy rather than a genuine effort to promote sustainability. This aligns with the "greenwashing" critique discussed in Lyon and Montgomery (2015), which warns that insincere or exaggerated claims can erode consumer trust.

### *Brand Trust and Consumer Skepticism*

A key finding was the participants' distrust of large corporations, including doubts about the sincerity of their sustainability efforts. Many perceived such efforts as profit-driven rather than value-driven, echoing findings by Du et al. (2010), who noted that corporate social responsibility (CSR) efforts must align with genuine organizational values to be credible. For instance, participants questioned the effectiveness of Arçelik's efforts, which suggests that brands must better communicate the tangible impact of their sustainability initiatives.

Despite these reservations, some participants acknowledged that sustainability-focused brands have the potential to positively influence consumer behavior, provided their efforts are seen as authentic. This reinforces the importance of transparency and third-party validation, as highlighted by Jahdi and Acikdilli (2009).

#### *Role of Sustainability advertisements*

The findings also indicate that sustainability advertisements can effectively raise awareness but are limited in their ability to transform consumer behavior. This aligns with Peattie and Peattie's (2009) and Peattie et al.'s (2009) argument that sustainable marketing must go beyond messaging to foster meaningful behavioral change. Participants reported that while advertisements may inform, their ultimate influence depends on the consumer's pre-existing awareness and attitudes.

Participants who viewed the *Arçelik* advertisement found its messaging impactful and memorable but did not experience a shift in their attitudes or behaviors toward sustainability. This supports the notion that advertising alone cannot drive behavior change without complementary initiatives, such as education or policy interventions (McKenzie-Mohr, 2000).

#### ***Theoretical Implications***

This study extends the existing literature on sustainable marketing and advertising by highlighting the critical role of consumer skepticism in shaping perceptions of sustainability efforts. It contributes to the understanding of generational perspectives on sustainability, particularly among Generation Z, a cohort that has been relatively understudied in this context. While previous studies (e.g., Aktaş & Çiçek, 2019) have emphasized the sustainability-oriented behaviors of Millennials, this study demonstrates that Generation Z exhibits a nuanced and sometimes skeptical view of sustainability messaging.

Furthermore, the findings underscore the importance of aligning advertising with broader CSR practices, supporting the theoretical framework of integrated sustainability communications (Du et al., 2010).

#### ***Managerial and Practical Implications***

Brands must ensure that their sustainability efforts are authentic, transparent, and verifiable. Incorporating certifications and independent audits can enhance credibility and reduce skepticism. For example, highlighting measurable outcomes of initiatives, such as the reduction of carbon emissions, can resonate more with consumers.

Sustainability advertisements should focus on actionable and relatable messages that align with consumer values and capabilities. Emphasizing practical steps, such as how consumers can contribute to sustainability, can make advertisements more engaging and impactful.

To address consumer skepticism, brands should integrate sustainability into their core business practices rather than treating it as an add-on. For instance, involving consumers in sustainability efforts, such as recycling programs or educational campaigns, can foster a sense of shared responsibility.

Finally, given Generation Z's skepticism and awareness, brands should adopt innovative and participatory approaches to engage this demographic. Interactive campaigns and social media-driven initiatives can create stronger connections and foster trust.

### ***Conclusion***

This study demonstrates that while sustainability advertisements can raise awareness, their impact on consumer behavior is contingent upon their perceived authenticity and alignment with broader sustainability efforts. Brands must navigate the fine line between promoting their initiatives and avoiding perceptions of greenwashing. By integrating transparency, consumer engagement, and holistic sustainability strategies, brands can build trust and drive meaningful change.

This study provides valuable insights into consumer perceptions of sustainability and sustainability advertising; however, it has certain limitations that must be acknowledged. The study relied on a small sample size of eight participants for the semi-structured interviews, which may limit the generalizability of the findings. While the purposeful sampling approach ensured relevance to the research objectives, a larger and more diverse sample might have yielded broader insights, particularly across different demographic and cultural backgrounds. Moreover, the analysis centered on Arçelik's "*İyiliği Aşkla Tasarlar*" advertisement. While this provided an in-depth understanding of perceptions related to a specific campaign, the findings may not fully capture how consumers respond to sustainability advertising across different brands, industries, or contexts. Furthermore, although the study focused on Generation Z, the perspectives of other generational cohorts, such as Millennials or Generation X, were not explored. Including these groups might have provided comparative insights into how sustainability messaging resonates differently across age groups. Besides, the findings are based on self-reported data from interviews and YouTube comments. Participants may have presented socially desirable responses or may not have accurately reflected their actual behaviors and attitudes toward sustainability. This limitation is common in qualitative research and highlights the need for triangulation with other data sources, such as behavioral observations or surveys. In addition, the use of YouTube comments as a primary data source introduces potential bias, as the platform's user base and engagement patterns may not represent broader consumer groups. Additionally, the analysis was limited to comments available on a single platform, potentially excluding insights from

consumers who engage through other channels. Last but not least, despite efforts to minimize bias through independent coding and inter-coder agreement, the qualitative nature of the analysis may still involve subjective interpretations of participant responses and YouTube comments.

Addressing these limitations in future research could enhance the depth and applicability of the findings. Expanding the sample size, exploring additional advertisements and platforms, and employing mixed-method approaches could provide a more nuanced understanding of the role of sustainability advertising in shaping consumer perceptions and behaviors. Furthermore, longitudinal studies could investigate the lasting impact of sustainability-focused campaigns on consumer attitudes and practices.

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# **Documenting the Stories “in the Blink of an Eye”: The Case of Arçelik’s Advermentary Strategy as a Blend of Advertising and Documentary**

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## ABSTRACT

This study aims to explore the role of storytelling as one of the creative advertising strategies on the advertising effectiveness, focusing on Arçelik's advermovie titled "*Göz Açıp Kapayıncaya Kadar (In the Blink of an Eye)*". Case study approach was employed to investigate this adver-movie produced as a blend of advertising and documentary, and data collected through web scraping of comments from YouTube and semi-structured interview were analyzed using thematic analysis on MAXQDA 2020 qualitative data analysis software. The findings reveal that this adver-movie integrates various advertising elements that work cohesively, with a significant emphasis on celebrity endorsements and product placement strategies. These elements elicit both positive and negative effects on consumers, enhancing appreciation and influencing perceptions. The study also concludes that the narrative's reception by the audience has a favorable impact on purchase behavior. Insights derived from the findings contribute to understanding the interplay between storytelling and advertising in shaping consumer attitudes and behaviors.

*Keywords – Advertising, Storytelling, Documentary, YouTube Comment, Interview*

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## INTRODUCTION

Storytelling is an intrinsic part of human existence, shaping how we perceive ourselves and the world around us. As Jonathan Gottschall (2012) eloquently notes in his book "*The Storytelling Animal: How Stories Make Us Human*", "[w]e are, as a species, addicted to story. Even when the body goes to sleep, the mind stays up all night, telling itself stories" (2012, p. 3). This observation underscores a profound reality: stories have existed as long as humanity itself. They are interwoven into our daily lives, evident in the structure of our conversations, which often follow a narrative arc with a beginning, middle, and end. Every individual, with their unique tone and style, creates distinct stories, reflecting their identity and experiences (Storr, 2020).

The universality and timelessness of storytelling are supported by its ability to traverse time, space, and culture. Stories, as Alterio and McDrury and Alterio (2003) argue, serve as vehicles for transmitting knowledge across individuals and generations. Similarly, Sütçü (2013) describes storytelling as a carrier of culture, while Ogur (2024) emphasizes language as a central element of storytelling, enabling humanity to envision eternity. These perspectives complement one another, demonstrating that storytelling not only connects us to the infinite but also anchors us in our historical and cultural roots, as seen in mythological narratives.

Myths, in particular, illustrate the dual function of storytelling: bridging the past and present while guiding contemporary understandings of history (Sivri & Köylü, 2013). The theoretical origins of storytelling can be traced back to ancient philosophy, with Plato and Aristotle distinguishing between mimesis (imitation) and diegesis (narration) in their discussions of narrative structure. These terms, first juxtaposed in Plato's *Republic* (Halliwell, 2022), highlight the enduring importance of storytelling frameworks in shaping human thought.

Within advertising, storytelling has evolved into a powerful strategic tool for engaging consumers, offering brands a means to forge emotional connections and enhance the memorability of their messages (Fayad, 2022; Storr, 2020). Research highlights that narratives have the unique ability to activate multiple regions of the brain, fostering deeper consumer engagement by creating empathy and trust (Kayabalı, 2018; Iacoboni, 2009).

Advertising rooted in storytelling leverages these narrative mechanisms to influence consumer perceptions and behaviors. Emotional connections, established through elements like relatable characters or evocative themes, have been shown to drive purchase intent and brand loyalty (Kayabalı, 2018; Sayın, 2008). Moreover, consumers increasingly value authentic and meaningful interactions with brands, positioning storytelling as a key driver of advertising effectiveness in the digital age (Lipman, 2022; Sutherland, 2020). This interplay between storytelling, advertising, and consumer behavior underscores the pivotal role of narratives in crafting impactful and enduring advertising strategies.

This study delves into storytelling's profound impact on advertising effectiveness, examining a novel type of advertising, which can be named "advermentary" as a blend of advertising and documentary and considered as a sub-type of adver-movies. By analyzing the advermentary "*In the Blink of an Eye*" produced by Arçelik in Türkiye and exploring the consumers' opinions and feedback, we aim to reveal the consumer understanding and perceptions of an advertising film in an extraordinary format and contribute to the literature by introducing the concept of advermentary and "timeless advertising".

### ***Why Does Brain Love Stories?***

Storytelling, as a method of communication, is one of the most significant human experiences (Park, 2003, p. 18). The various communication methods emerging alongside the advancement of technology have also played a role in the development of storytelling. Communication, which plays the leading role in advertising, has significantly expanded the domains where storytelling is utilized. To explain the use of storytelling in advertising, it is necessary first to understand how the brain perceives stories.

Stories create emotional connections that facilitate the retention of information and the preservation of memories (Fayad, 2022). According to Hasson et al. (2008), storytelling is the only way to activate all regions of the brain. Thus, listeners internalize the story by merging it with their own experiences and thoughts (Kayabali, 2018). The brain releases various hormones in response to different situations and stimuli. For instance, endorphins, primarily responsible for blocking pain, also contribute to feelings of pleasure, making them one of the four main hormones associated with happiness or pleasure (Ali et al., 2021). Oxytocin, a complex hormone with obstetric, mental health, and behavioral effects, plays a crucial role in interpersonal relationships by fostering bonding and trust (Erickson, 2018; De Cagna et al., 2019). In a story, the emotional bond formed with a character reinforces our sense of trust in the narrative, supporting the process of internalization. Dopamine, which facilitates memorability, is associated with seeking behavior, motivation, and affective arousal (Tufan & Yaluğ, 2010). It helps us feel positive while performing tasks or actions. Dopamine's connection to regions like the nucleus accumbens and other parts of the limbic system demonstrates its relationship with motivation, acting as a bridge between emotions and actions. This hypothesis has been expanded through advances in learning theory (Sayın, 2008). Furthermore, dopamine strengthens focus and concentration, supporting the memorability of the story and fulfilling its primary purpose (Özarin Öztürk, 2018).

Our brain models every well-structured story we encounter, allowing us to experience it as if it were real (Altuğ Yılmaz, 2021). From a scientific perspective, according to Iacoboni (2009), one of the pioneers of mirror neuron research, mirror neurons in our brain recreate the distress we see on screen while watching a film (Karakaya, 2021; Demirtaş, 2022). Different sensory perceptions of the same action (e.g., seeing or hearing) activate mirror neurons (Gallese & Guerra, 2019). Consequently, emotional or motor narratives emphasized in a story elicit responses through mirror neurons, drawing us into the story. This act of involvement is followed by the emergence of empathy. Neural activity triggered by signals from mirror neurons in the limbic system enables us to feel emotions associated with observed facial expressions (e.g., happiness linked to smiling or sadness linked to frowning). After experiencing these emotions internally, we can recognize them (Iacoboni, 2009). Experiencing the story as if it were real enhances our level of satisfaction, with internalization paralleling the feeling of satisfaction.

Returning to the definition of storytelling, Lipman (2022) identifies three strategies that make storytelling effective: (1) Capturing the listener's attention; (2) Ensuring the listener's engagement; and (3) Simulating the experience of the conveyed phenomenon. When we consider the scientific explanations of why the brain loves stories, we see that these strategies align

with Lipman's three points: (1) Activation of mirror neurons; (2) Reaching a point of empathy; and (3) Transforming the story into an experience.

In understanding the "story" of storytelling's extension into advertising, closely examining the scientific approach to why we love stories supports the persuasive tone of advertising. According to Sutherland (2020), the goal of an advertisement is not merely to be noticed or read. Instead, it is to present specific information and attitudes about a product (or service, organization, or country) in a way that inspires the consumer or target audience to feel inclined toward it (Sutherland, 2020). In other words, it must address them in a way that captures their attention (Topal & İspir, 2019). When the hormones released and the neurons activated by storytelling are presented through advertising, the goal becomes an action aimed at purchasing behavior. The ability to persuade, whether through a need or a compulsion to consume, can be scientifically explained.

### ***Advermovie: Advertising in the Form of a Movie***

Advertising employs various strategies to capture consumers' attention. When shaping advertising strategies, which involve determining the content of the advertisement message, it is essential to consider the consumer's perspective. The preparation of the message must focus on delivering a sales message, making a promise to the consumer, and emphasizing the consumer's benefits. Crafting the message in this way makes the success of the advertisement inevitable (Güz, 2001). Despite the traditionally short duration of advertisements and their rapid flow, a new advertising strategy has emerged in the literature: the "Advermovie." This concept, which combines elements of cinema and advertising, is described as a feature-length advertisement film. The narrative of the film revolves around a brand or product, with storytelling positioned at its core. While it primarily presents itself as a film narrative, it seamlessly integrates the advertised brand or product into the story (Aydoğan, 2024; Taşkıran & Bolat, 2013).

Due to the limited number of studies on advermovies, Bolat (2022, p. 656) defines this concept as follows: "An advermovie is not merely the placement of a product within a cinema film as a visual, auditory, or audiovisual element but the use of the product or brand as a central element within the film's narrative." Cinema, as an alternative medium, serves as a socializing tool and conveys the message of the film to its audience through knowledge transfer. This transfer provides a critical perspective, as the problems depicted in films can shape viewers' outlooks (Birkök, 2008). In this context, advermovies integrate the persuasive aspect of advertising and the supportive knowledge transfer of cinema to shape perspectives in favor of a brand or product.

The presentation of the message and the values it aims to convey go beyond merely promoting the product; they also reflect new trends that influence the construction of individual and societal identities (Taşkıran &

Bolat, 2013). Given the traditionally short duration of advertisements, it is evident that the time allocated for delivering messages is limited. Cinema, however, provides a more extended timeframe for conveying information. At the intersection of these two mediums, advermovies use the prolonged narrative duration of films to cater to viewers' attention spans and deliver messages over an extended period (Aydoğan, 2024).

The objectives of advertising—raising awareness of a brand or product, enhancing memorability, and influencing purchasing behavior (Sutherland, 2020)—remain relevant in the advermovie format. However, advermovies aim to achieve deeper and more lasting communication. Their feature-length format allows for the clear articulation of advertising messages (Aydoğan, 2024), enhancing the potential for long-term impact. Furthermore, advermovies differentiate themselves by incorporating advertising elements without making the audience feel like they are watching an advertisement (Bolat, 2022; Aydoğan, 2024). While fulfilling the objectives of advertising, the cinematic quality of advermovies provides a cohesive and engaging experience (Aydoğan, 2024).

In the literature, the authors encountered only two publications on advermovie. The earliest one is Bolat's article (2022), which analyzes various advertising films in terms of their micro and macro narrative designs. This study reveals that advermovies primarily attempt to achieve a successful brand positioning, perception and image management, and increase in sales by giving the priority to product placement. The recent study by Aydoğan (2024) aims to uncover the narrative elements and creative advertising strategies employed in mini-series advertisements, which are a type of narrative advertisements categorized within the advermovies. The study findings indicate that mini-series advertisements, with an average duration of 1 minute and 58 seconds, predominantly take place in outdoor settings and in the present tense. Celebrity actors often play dominant leading roles, and the drama narrative format is widely favored. While there are no notable differences in narrative focus or brand prominence type and level, the use of diverse plot strategies is common. Additionally, the heart strategy, emphasizing emotional appeal, is extensively employed. The positioning strategy is the most frequently used, focusing on elements such as brand image, entertainment, user image, and usage opportunities (Aydoğan, 2024).

## METHODOLOGY

This study aims to explore the impact of the advermovie format—combining advertising and cinematic elements—on consumers. The documentary film “*Göz Açıp Kapayınca Kadar (In the Blink of an Eye)*” by Arçelik was used as the case study. Given the limited use of the advermovie format in Türkiye, a project by a well-known brand – Arçelik – was

deliberately selected to ensure relevance and recognition. In qualitative analyses, key themes identified in the text are discovered, and descriptions are created through multiple interpretations of social reality (Metin & Ünal, 2022). Therefore, a qualitative thematic analysis of consumer comments on Arçelik's "*In the Blink of an Eye*" advermentary, published on the brand's YouTube page, was conducted to gain deeper insights.

### **Research Design**

This study adopts a qualitative case study design, which is particularly suitable for exploring complex phenomena within their real-life context (Yin, 2018; Deren van het Hof, 2024). A case study approach allows for an in-depth examination of a specific instance—here, the advermentary format—and provides rich insights into its dynamics and effects on consumer behavior. The design is appropriate for investigating contemporary issues where the boundaries between the phenomenon and its context are not clearly evident (Stake, 1995).

### **Data Collection and Analysis**

This study collected data in two stages: (1) Web scraping of comments from YouTube; (2) Semi-structured interviews with participants.

In the first stage of the data collection process, using purposeful sampling, consumer comments on the "*In the Blink of an Eye*" advermentary film available on the brand's YouTube channel were scraped with the help of the YouTube comment extractor function of MAXQDA 2020 qualitative data analysis program. Purposeful sampling is widely employed in qualitative research to select participants or content with rich information related to the research question (Patton, 2015).

In the second stage, based on the findings from the first stage, semi-structured interviews were conducted to deepen the analysis. This method allowed for a flexible yet focused exploration of consumer perceptions (Bryman, 2016). The sample focused on members of Generation Z, chosen for their attention span and relevance to advertising consumption patterns. This generational cohort was deemed appropriate for examining the impact of long-format advertisements, such as advermentaries. Participants were selected voluntarily, interviewed face-to-face with their informed consent obtained through a form to ensure ethical compliance, and the interviewing process lasted between 120 and 145 minutes in total.

In both stages, the study utilized the purposeful sampling method to select participants and content aligned with the research objectives. Purposeful sampling involves identifying and selecting individuals or groups that are knowledgeable about or experienced with the topic of interest (Yağar & Dökme, 2018). Data from both stages—YouTube comments and interview transcriptions—were categorized and analyzed using MAXQDA 2020, a qualitative data analysis software. The software facilitated systematic coding, categorization, and thematic analysis of the qualitative data. As a flexible yet rigorous approach, thematic analysis is a widely



accepted qualitative analysis method for identifying, analyzing, and reporting patterns within data (Braun & Clarke, 2006). This approach allows researchers to draw meaningful inferences about the data's underlying patterns. Using MAXQDA further ensured that the analysis was systematic and traceable. In this process, inductive analysis was employed to systematically develop concepts or ideas from the raw data (Bouma & Atkinson, 1995). Modern qualitative research often relies on inductive approaches to uncover relationships between phenomena and establish conceptual frameworks (Yağar & Dökme, 2018).

## FINDINGS

The study findings are presented under two sub-titles: (1) Findings from YouTube Comments; (2) Findings from Interviews.

### ***Findings from YouTube Comments***

On March 12, 2021, Arçelik shared two pieces of content on its YouTube channel: a 1-minute trailer titled “Göz Açıp Kapayınca Kadar – Bir Kahve Belgeseli Fragman” (Arçelik, 2021a) and a 1-hour 14-minute 4-second documentary titled “Göz Açıp Kapayınca Kadar – Bir Kahve Belgeseli” (Arçelik, 2021b). The trailer received 138 comments, while the documentary garnered 1,686 comments (on March 1, 2024), resulting in a total of 1,824 comments analyzed in this study.

When examining the elements that triggered appreciation, a majority of 383 users expressed general approval without specific reasons. Of those who explained their approval, 285 users cited the influence of *Okan Bayülgen* as the primary factor. However, the use of a celebrity also had negative repercussions, as 18 users explicitly stated their dislike for the documentary due to *Okan Bayülgen*'s involvement. This suggests that celebrity endorsement can have drawbacks, potentially causing minor customer losses for the brand.

Another factor contributing to viewer appreciation was the informational content. The inclusion of historical and cultural knowledge was well-received, though 37 users provided negative feedback regarding the information used. In terms of elements that captured attention, viewers highlighted the memorable dialogues, particularly the phrase “Being happy without realizing you are happy,” which was frequently mentioned and appreciated. From a scene perspective, the “Stay in the moment” message at the 1:03:00 mark, followed by the disappearance of the clock in the background, drew significant attention and was interpreted with various artistic meanings by viewers.

Many viewers praised the documentary as a unique project and expressed an expectation for similar future endeavors. This indicates that the narrative and plot choices in the documentary positively contributed to its

reception. It was observed that the long-format storytelling was effective, depending on how the content was structured and presented.

Regarding purchase behavior, 106 users expressed an increased tendency to drink coffee after watching the documentary. Some viewers explicitly mentioned the need to clarify the content as advertising in their comments. Additionally, a segment of the audience argued that, aside from the brand, *Kurukahveci Mehmet Efendi* (a leading and time-honored Turkish coffee brand in Türkiye since 1871) comes to mind when Turkish coffee is mentioned, and they felt this brand should have been included in the content.

### ***Findings from Interviews***

The interview carried out face-to-face with participants yielded diverse opinions regarding the advertising in the documentary format, advermentary characteristics, and purchasing behavior.

#### *Changes in Viewing Habits Among Generation Z: "Multitasking"*

Considering that the participants are members of Generation Z, their daily video-watching habits were examined to determine their attention spans. Findings revealed that while participants consume long-format videos, they do not dedicate their full attention to watching and have instead developed multitasking habits.

*"I watch something while getting ready casually, and I prefer longer content while working."* (G1)

*"I usually watch while eating, using my free time for videos. I also watch them for outfit combinations."* (G2)

*"If I were to watch something with full attention, I don't know if it would hold my interest. Multitasking makes it feel like a podcast."* (G3)

*"I rarely consume content by itself; I usually watch political series or historical documentaries. Other than that, I watch videos on a second screen while doing something else. I watch historical documentaries attentively since events are interconnected."* (G4)

*"Due to my work life, I keep up with videos while carrying out daily routines, without leaving content or video tracking behind."* (G6)

#### *Positive Attitudes Toward In-Video Advertising Integration*

Participants were asked about their perspectives on advertisements they encounter in videos, particularly regarding the use of product placement strategies in Arçelik's long-format advertisement film. It was observed that they were not bothered by ads integrated into storytelling.

*"I watch the integrated ones. I usually skip online language ads because they are not integrated."* (G1)

*"If it's a brand I like, I watch it, especially when it comes to technology reviews. Most of those are ads, and I choose to watch them. Product placement doesn't bother me, as long as it is integrated."* (G4)

*“No, I don’t skip ads if they are genuinely integrated into the video. For example, Murat Soner does it very well. But if the video is interrupted for the ad, I skip it.” (G5)*

*“I don’t mind it unless it feels out of place or disconnected from the overall content.” (G6)*

#### Perspectives on Long-Format Advertising Films in Terms of Duration

When evaluating participants' views on long-format content, opinions were divided. Positive views were influenced by the reasonableness of the duration, the documentary-like nature of the advertisement, and the lack of discomfort usually associated with traditional ads.

*“At first, I thought it was long, but when I realized it was a documentary, I found the duration reasonable.” (G1)*

*“I wasn’t bothered, but I found some parts of Okan Bayülgen’s scenes silly. Otherwise, the duration was fine.” (G4)*

*“No, an hour is nothing.” (G6)*

However, negative opinions about the duration were associated with initial skepticism and concerns about the content being boring.

*“Well, I was worried it might not engage me initially.” (G2)*

*“I immediately thought, ‘What, 1 hour and 15 minutes?’ It felt too long. My attention span is about 30 minutes, so it seemed excessive.” (G3)*

*“I had some prejudice; by the end, I was sleepy, but it was engaging.” (G5)*

#### Advertising Perception of the Content

In interviews, care was taken not to mention the term “advertisement” in questions about the content. Nevertheless, participants referred to it as an advertisement in their responses.

*“I think my dislike for coffee affected my reaction. But it was a good advertisement. It was interesting and transitioned smoothly from one topic to another.” (G1)*

*“Their marketing department is clearly skilled. Either management is open-minded, or they trust their team.” (G6)*

#### Reasons for Appreciation: Knowledge Transfer

All participants expressed a positive opinion about the content. Among the factors contributing to this appreciation, knowledge transfer stood out as significant for four participants:

*“... it was informative; I learned things about coffee I didn’t know.” (G1)*

*“It caught my attention. I already like coffee. It’s part of my daily routine, so I wanted to learn its story.” (G2)*

*“It was entirely about historical information.” (G3)*

*“The informative and chronological explanation of history was engaging. I enjoyed the focus on cultural heritage.” (G4)*

Two participants indicated that the narrative structure alone triggered their appreciation:

*"The camera angles were excellent; the story was compelling."* (G5)

*"The rhythm and format were amazing. They balanced different styles beautifully."* (G6)

Two others highlighted the harmony between storytelling and knowledge transfer:

*"... the dynamic structure made the information more enjoyable."* (G1)

*"Well, the direct communication with the audience, looking into the camera, caught my attention. It connected the narrative."* (G3)

#### Coffee Consumption Behavior

Three participants indicated that the content influenced their coffee consumption during or after viewing.

*"... it made me crave coffee while watching."* (G1)

*"... I enjoyed it and made coffee while watching."* (G2)

*"If I had the setting, I would have made coffee. It made me crave it."* (G6)

#### Positive Perception of Celebrity Use

All participants regarded the use of Okan Bayülgen in the content as a fitting choice, appreciating the strategy of celebrity endorsement.

*"I don't usually like Okan Bayülgen, but I liked him in this video. He felt relatable and caught my attention."* (G1)

*"The celebrity impacted me. I don't particularly like Okan Bayülgen, but I've seen his programs. He isn't someone I follow closely, but I find his statements logical. I thought he wouldn't produce poor work, and it turned out well. He was a great fit for this project."* (G2)

#### Memorability of the Information

Beyond being appreciated for its knowledge transfer, participants also found the information presented to be memorable:

*"Real coffee is actually beneficial. I remember learning about dry and wet methods, with the wet method enhancing aroma."* (G1)

*"At one point, I learned that during the Siege of Vienna, we left coffee at the gates. We brewed coffee with water and chocolate—it stuck with me."* (G2)

*"The Ottoman Empire's role in coffee culture stood out. I recall learning that Greek coffee is essentially Turkish coffee."* (G4)

*"I remember learning that Turkish coffee is not a separate type but named for its grinding method. I also appreciated the cultural and ritualistic aspects of coffee drinking."* (G6)

#### Positive Brand Perception

Three participants mentioned that the content positively influenced their perception of the Arçelik brand:

*"Well, the brand comes to mind. I know their coffee machines, and I've thought of purchasing one."* (G2)

*"I could recommend it to others."* (G3)

*"It creates a positive image. They represented the country well and expanded their reach internationally. This documentary reinforced my positive opinion."* (G4)

#### Potential to Watch Similar Content

Participants were asked about their willingness to watch similar content in the future, and all responded positively:

*"I'd watch it again; it made me crave coffee."* (G1)

*"I'd watch it as long as it interests me."* (G2)

*"I'd support it. I'm not fanatical, but I'd check it out."* (G3)

*"As long as it's information-focused, I'd watch it, even if it's two hours long."* (G4)

*"I like how they incorporated subtle elements; it left an impression on me."* (G5)

*"I already prefer such content."* (G6)

#### Product Awareness

The Arçelik brand's coffee machine *Telve* was not widely recognized by participants. Only one participant noted that they used the machine, and another mentioned realizing that the content was about coffee rather than the product itself:

*"I like coffee, and I'm familiar with Arçelik's coffee machines because I've used them. That's why I paid attention."* (G2)

*"Their marketing department is clearly skilled. However, this felt more like a coffee ad than an Arçelik ad."* (G6)

## CONCLUSION AND DISCUSSION

Arçelik's advermentary film *"In the Blink of An Eye"*, released on YouTube in 2021, serves as an example of the advermovie format. Its classification as an advermovie stems from its inclusion of various advertising elements. Advermovies are built on a foundation of storytelling, combining fictional elements with a documentary structure that maintains adherence to chronological facts, shares humor, and conveys the emotions of its characters to the audience. This combination of fiction and documentary creates what is known as a docudrama. Civelek (2016) supports this definition, emphasizing the importance of chronological elements, humor, and emotional representation in classifying such works as docudramas. In this context, *"In the Blink of An Eye"* is categorized as an advermovie due to its narrative length and format. However, since its documentary aspects are more prominent and distinguish it from typical advermovies, a new term is proposed: advermentary—an advertisement presented in the form of a documentary.

The use of celebrity appeal in the narrative is evident through *Okan Bayülgen's* lead role and the inclusion of other notable guests. Celebrities,

by representing their personality and image, transfer this association to the brand or product, creating a linked image between them (Armagan & Gursay, 2017). Toker and Sulak (2020), in their study on advertising appeal types and their impact on consumers, found that humor, celebrity usage, and emotional appeal were the most effective in stimulating purchase intentions.

In this advermentary example, the celebrity's humorous aspect, combined with similarly popular guest appearances, provides culturally informative elements, while emotional appeal contributes to the overall narrative unity. Humor is reinforced through the breaking the fourth wall technique, where the character interacts with the audience, creating an alienation effect that separates the diegetic space from the viewer (Kirel & Başer Yetimoğlu, 2022). This technique supports the fictional elements within the documentary content.

Arçelik integrates its *Telve* coffee machine into the documentary using a product placement strategy. Product placement is defined as the deliberate and planned inclusion of brands in film content to benefit the company (Arslan, 2011, p. 8). In this case, the *Telve* coffee machine is presented as a supporting element to deliver the intended message, without deviating from the documentary's focus on the coffee industry. However, findings from interviews revealed that many participants did not notice the product, suggesting that the integration may have been too subtle.

An analysis of YouTube comments showed that many users were influenced by *Okan Bayülgen's* presence, with celebrity usage sparking discussion. This finding supports the conclusions of Toker and Sulak's (2020) study. Another element that triggered appreciation was the transfer of knowledge. The storytelling-dominated presentation effectively highlighted the informational aspect of the content, which resonated with viewers.

Semi-structured interviews were also conducted as part of this study. Initial pilot interviews with four participants revealed that the use of the word "advertisement" in questions created a bias, leading participants to provide ad-focused responses, which compromised transparency. Consequently, the final interviews with six participants from Generation Z omitted direct references to advertisements.

The interviews revealed that Generation Z participants often consume content while multitasking, integrating it into other activities. This multitasking behavior, observed to have developed during the post-pandemic era, reflects a shift in attention spans and a growing focus on storytelling in advertising. Participants appreciated the knowledge transfer and fluid storytelling, which facilitated understanding and engagement.

Although some participants had personal reservations about *Okan Bayülgen*, they recognized the strategic importance of celebrity usage in long-format content. However, only one participant noticed the *Telve* coffee machine, and this recognition stemmed from their familiarity with the product. The focus of the advertisement appeared to shift from Arçelik's

product to Turkish coffee as a general concept. This shift, combined with competitors like Karaca's *Hatır* coffee machine gaining market dominance, highlights the need for Arçelik to support its coffee machines with complementary Turkish coffee products to strengthen its market position.

The storytelling elements were effective in conveying information, as participants were able to recall shared details. The interaction between how the brain processes stories and human responses supports the lasting impression created by the content. The advermentary aimed to create an emotional connection with the consumer by presenting the brand as a point of resonance in their lives. Emotional bonds, facilitated by the release of dopamine, contribute to memory retention and support brand recall. This emotional connection fosters empathy, aided by the activation of mirror neurons, which enable consumers to internalize the narrative. As Demirtaş (2022) explains, the significance of mirror neurons in cinema lies in bridging the gap between reality and fiction, facilitating the internalization of stories.

Participants reported being encouraged to consume coffee while watching the content, which can be interpreted as a need triggered by empathy. According to George P. Lakoff, an American cognitive linguist and philosopher, listening to the sensory language in stories activates areas of the brain that transform the story into a personal experience (Özarın Öztürk, 2018). The deep and lasting effects of emotional appeal are thus scientifically supported.

The analyzed advermentary “*In the Blink of an Eye*” demonstrates the potential of storytelling to create lasting impressions. By leveraging emotional appeal and memory retention, the content aligns with the concept of “timeless advertising.” However, Arçelik's focus on Turkish coffee rather than its *Telve* coffee machine risks redirecting consumer attention to other brands. To strengthen its market position, Arçelik is recommended to introduce a Turkish coffee product that complements its coffee machine, preventing competitor brands from gaining dominance. By positioning its product more prominently and creating a cohesive narrative that links the product to cultural identity, Arçelik could achieve greater brand recognition and consumer engagement.

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# **Aligning National Development with Global Goals: An Analysis of Türkiye’s Twelfth Development Plan and the 2030 Sustainable Development Agenda**

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## ABSTRACT

This study examines the alignment between Türkiye's Twelfth Development Plan and the United Nations' 2030 Sustainable Development Goals (SDGs). The aim is to assess how Türkiye's national development strategies contribute to the achievement of the SDGs, particularly in the areas of economic growth, environmental sustainability, social inclusion, and governance. Through an analysis of key policy documents and targets from the Twelfth Development Plan, the study identifies areas of strong alignment with SDGs, as well as gaps where further integration and policy development are needed. The findings indicate that the Twelfth Development Plan incorporates substantial measures in line with several SDGs, particularly those related to environmental sustainability, social justice, and economic development. However, the study also highlights areas where more concrete actions and clearer implementation strategies are required, such as in combating climate change (SDG 13) and protecting marine life (SDG 14). The study underscores the need for more inclusive and holistic strategies that encompass all SDGs, rather than focusing primarily on economic growth or environmental sustainability. Additionally, the research emphasizes the importance of increased financial resource mobilization, stronger international collaborations, and more effective data collection and monitoring mechanisms for successful SDG implementation. The study concludes that while Türkiye's development plan is a significant step towards achieving the 2030 Agenda, more focused efforts and policy adjustments are necessary to ensure that all SDGs are fully integrated into national development policies and practices. Future research should explore the practical implementation challenges and the role of external factors in shaping the success of SDG initiatives in Türkiye.

*Keywords –Türkiye, Twelfth Development Plan, Sustainable Development Goals, Development Policies, Sustainable Development, Development Strategies*

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## INTRODUCTION

National development plans are essential strategic documents that play a key role in shaping a country's development vision through their goals, principles, objectives, and policies (Batuhan & Kodaz, 2020). These plans aim primarily to promote economic and social development by planning the optimal and efficient use of resources, with each plan reflecting the economic, social, cultural, and political conditions of the time in which it was developed (Batuhan & Kodaz, 2020). A key objective of development plans is to establish a foundation for "consistent decision-making," and the preparation process should incorporate the perspectives of local planning authorities, national policies and priorities, unique local characteristics, land

use, and various stakeholder groups involved in the development process (Peel & Lloyd, 2005). However, a distinct challenge faced by development plans is that the expectations of involved stakeholders often differ and/or become polarized in terms of time, place, conditions, and objectives (Peel & Lloyd, 2005).

The introduction of the SDGs has significantly influenced national planning (Chimhowu et al., 2019). Comprising 17 goals and 169 targets, the SDGs represent a broader framework than the Millennium Development Goals (MDGs), introducing greater complexity in prioritization. Unlike the MDGs, which excluded economic development, the SDGs include a wide range of interconnected goals. Each country is responsible for selecting its national goals and sub-targets through consultations, a shift from the MDGs' more ambiguous, top-down approach. This encourages inclusive national planning and reduces the perception of external imposition. Particularly relevant for national planning are SDGs 16 (Peace, Justice, and Strong Institutions) and 17 (Partnerships for the Goals). Goal 16 emphasizes enhancing governmental capacity and citizen participation, fostering more collaborative planning. Goal 17 promotes partnerships at multiple levels but may struggle with clear indicators and actionable plans. The number of countries with national development plans has more than doubled from 62 in 2006 to 134 in 2018 (Chimhowu et al., 2019), with over 80% of the global population now living in such countries. This resurgence of national planning, once discredited in the 1980s and 1990s, has been accelerated by the SDGs. Chimhowu et al. (2019) analyze 107 national development plans, highlighting the shift from linear to collaborative planning approaches and the evolving characteristics of these plans, which are crucial for achieving the SDGs.

In 2015, the United Nations (UN) introduced the 2030 Sustainable Development Agenda, consisting of 17 main goals and 169 targets to guide global development (UNGA, 2015). These goals focus on economic, environmental, and social sustainability, reducing inequalities, and protecting the planet's future. The agenda calls for active participation from all countries, including Türkiye. To align with this global initiative, Türkiye's 12th Development Plan (2024-2028) prioritizes sustainability and equality in its development approach (Republic of Türkiye, Strategy and Budget Directorate, 2023). The plan sets targets across key areas such as economic growth, environmental protection, social justice, health, and education, with the aim of guiding the country's development. However, the success of these targets hinges on their alignment with the global SDGs.

This study aims to explore the relationship between Türkiye's 12th Development Plan and the UN's 2030 Sustainable Development Goals, assessing how Türkiye's development objectives align with the SDGs, identifying compatible policies, and highlighting areas requiring improvement. The study's central objective is to evaluate Türkiye's progress

toward sustainable development, examining challenges in achieving these global goals. By analyzing each goal in Türkiye’s 12th Development Plan in relation to the SDGs, the study will assess the effectiveness of these alignments and offer insights into areas needing further effort. Chimhowu et al. (2019) note a renewed global focus on comprehensive national planning, yet the impact of SDGs on their national implementation remains underexplored. This study seeks to address this gap by analyzing how Türkiye's 12th Development Plan contributes to achieving the SDGs, offering valuable academic and practical insights into the relationship between national development plans and global sustainability targets.

## **METHODOLOGY**

This study examines the alignment between the 17 SDGs established by the United Nations in 2015 and the policies and objectives outlined in Türkiye’s 12th Development Plan for 2024-2028. The primary goal is to assess how well the policies, strategies, and targets specified in Türkiye’s 12th Development Plan correspond with the SDGs, focusing on evaluating how this alignment can contribute to the country's sustainable development trajectory. The study begins by analyzing the key policies and objectives in Türkiye's 12th Development Plan, considering Türkiye’s economic, social, and environmental goals for the upcoming period. Each policy and target is then assessed for its relevance and compatibility with the corresponding SDGs. Using qualitative methods, including document analysis, the research systematically evaluates the alignment of Türkiye's 12th Development Plan with the SDGs. A detailed mapping exercise is conducted, pairing each SDG with relevant policies and targets from the 12th Development Plan. This mapping will provide insights into how effectively Türkiye is aligning its national development priorities with global sustainability goals.

Ultimately, the study aims to evaluate the degree of alignment between Türkiye’s national policies and the SDGs while identifying strengths and potential gaps in this alignment. The findings are expected to offer recommendations for improving Türkiye’s sustainable development strategies and contribute to the broader academic and policy discussions on integrating global sustainability frameworks into national development plans, with an emphasis on enhancing SDG implementation at the national level.

## **THE RELATIONSHIP BETWEEN THE TWELFTH DEVELOPMENT PLAN AND THE SDGS**

This section examines the relationship between the Twelfth Development Plan and the SDGs. The strategies and objectives outlined in the Development Plan are analyzed to determine how closely they align with

each SDG. For each SDG, the related policy statements from the Twelfth Development Plan are listed, and their degree of alignment is assessed.

### ***The Twelfth Development Plan and SDG 1: No Poverty***

The Twelfth Development Plan of Türkiye has developed various policies and strategies, which focuses on the eradication of poverty and the reduction of social inequalities. These strategies emphasize addressing the multidimensional nature of poverty and aim to increase social resilience while improving access to social services.

In accordance with SDG 1.1, the plan targets providing social assistance in a manner that ensures equal opportunities for all and increasing access to basic services for disadvantaged groups (Article 773, Page 185). Additionally, one of the key strategies identified is strengthening education-focused social assistance programs, aiming to achieve a permanent reduction in poverty (Article 773.1, Page 185).

Under SDG 1.2, the plan seeks to reduce the risk of poverty by improving education, healthcare, housing, and other essential services (Article 770, Page 184). Strengthening social protection systems is also considered a crucial strategy for this goal. This includes bolstering social welfare and service infrastructure to enhance societal resilience in the face of disasters and emergencies (Article 774, Page 185). Furthermore, providing employment support to beneficiaries of social assistance emerges as another significant strategy aimed at permanently reducing poverty (Article 772.1, Page 185).

In alignment with SDG 1.3, the plan aims to secure the access rights of vulnerable groups by expanding the scope of social services to enhance the resilience of the poor and vulnerable populations (Article 774.1, Page 185). Additionally, under SDG 1.4, the plan targets improving resilience to economic, social, and environmental shocks. Specifically, it addresses the mitigation of poverty impacts caused by climate change and droughts in rural areas, alongside promoting the more efficient use of agricultural land (Article 774.2, Page 185).

Following SDG 1.a, the Twelfth Development Plan emphasizes the development of social assistance and employment-linked programs through national and international cooperation (Article 771.4, Page 185). Finally, SDG 1.b aims to implement policies that increase the participation of socially excluded groups in economic and social life and reduce income inequality (Article 775, Page 186).

These strategies present a sustainable and inclusive approach to the permanent eradication of poverty and aim to achieve social equality and sustainable development goals.



### ***The Twelfth Development Plan and SDG 2: Zero Hunger***

The Twelfth Development Plan of Türkiye includes a series of strategies and measures which aims to end hunger and ensure food security. These objectives cover a broad spectrum of actions, ranging from increasing agricultural production capacity to implementing sustainable farming practices.

In line with SDG 2.1, the plan aims to enhance food security by activating food control measures and combating plant and animal diseases (Article 494, Page 101). Additionally, efforts will be made to raise awareness and reduce food loss and waste (Article 495.3, Page 101). These steps play a crucial role in strengthening food security and achieving the goal of ending hunger.

Under SDG 2.2, the Plan emphasizes promoting healthy lifestyles by encouraging widespread adoption of healthy eating habits (Article 706.1, Page 165). This strategy aims to raise awareness about the importance of healthy nutrition in society and to improve dietary practices, contributing to the overall well-being of the population.

For SDG 2.3, the Plan focuses on the widespread adoption of smart farming practices and the enhancement of the human and technical infrastructure of agricultural enterprises (Article 489.1, Page 99). Furthermore, support will be provided for strengthening producer organizations through infrastructure and management assistance (Article 496, Page 101). These measures aim to increase agricultural productivity and ensure the sustainability of the agricultural sector.

Regarding SDG 2.4, the Plan includes the promotion of sustainable farming practices and support for organic and good agricultural practices (Article 497.4, Page 101). One of the key measures will be the promotion of modern irrigation systems to ensure the efficient use of water in agriculture (Article 504.2, Page 104). These initiatives are designed to make agriculture more sustainable and resource-efficient in the long term.

Under SDG 2.5, the Plan aims to strengthen the research and development (R&D) infrastructure for the production of veterinary vaccines and diagnostic kits (Article 494.3, Page 101). This step will contribute to both the sustainability of agricultural production and the protection of biodiversity, ensuring a stable food supply while preserving natural resources.

In line with SDG 2.a, the Plan focuses on the sustainable use and effective management of agricultural land (Article 490, Page 99). Additionally, improvements will be made to agricultural information systems and agricultural statistics will be aligned with international standards (Articles 488.1-488.4, Page 99). These measures aim to enhance the efficiency and capacity of agricultural production, thus increasing the overall productivity of the sector.

For SDG 2.c, the Plan includes measures for the effective management of food raw material markets through the development of infrastructure for stock management and market controls (Article 488.4, Page 99). This will help prevent fluctuations in food prices and enhance food security by stabilizing the food supply.

These policies aim to lay the foundation for a sustainable approach to ending hunger and ensuring food security, ultimately strengthening the nutritional security of societies and promoting sustainable agricultural practices. By enhancing agricultural productivity, improving food distribution systems, and ensuring better resource management, these strategies seek to create a resilient and food-secure future for Türkiye.

### ***The Twelfth Development Plan and SDG 3: Good Health and Well-being***

The Twelfth Development Plan of Türkiye includes a wide array of strategies and measures which target a broad spectrum of health concerns, from maternal and child health to the fight against infectious and non-communicable diseases, as well as addiction treatment. The overarching goal is to improve public health and ensure healthier communities.

Under SDG 3.1, the Plan focuses on strengthening maternal and reproductive health services to reduce maternal and infant deaths (Article 706.5, Page 165). An essential step in achieving this goal is the expansion of newborn screening programs, which will enable early identification and intervention for health issues, ultimately contributing to better maternal and child health outcomes.

For SDG 3.2, the Plan aims to increase the scope of newborn screening and child health services (Article 706.5, Page 165). This will focus on preventing health problems at an early age and reducing child mortality rates, contributing to a healthier future generation.

In line with SDG 3.3, the Plan emphasizes the expansion of immunization programs and the strengthening of vaccination efforts for all risk groups (Article 708.3, Page 166). Furthermore, national vaccine production capacity will be enhanced by establishing dedicated centers for vaccine production (Article 708.2, Page 166). These strategies play a crucial role in the effective fight against infectious diseases, helping to protect public health on a national scale.

For SDG 3.4, the Plan focuses on promoting healthy lifestyles, with a particular emphasis on physical activity and the adoption of healthy eating habits (Article 706.1, Page 165). The development of early diagnosis and monitoring systems for chronic diseases will be another critical measure in preventing the spread of non-communicable diseases and improving long-term health outcomes (Article 709.2, Page 166).

Under SDG 3.5, the Plan includes the expansion of addiction treatment and counseling centers, along with efforts to raise public awareness about addiction and its dangers (Article 710.1, Page 167). These

measures aim to combat addiction and provide support to individuals undergoing treatment, thus addressing a major public health issue.

For SDG 3.7, the Plan aims to improve accessibility to reproductive health services and support family planning (Article 706.5, Page 165). This strategy seeks to empower individuals by ensuring their access to healthy reproductive rights, which are fundamental to overall well-being.

Under SDG 3.8, the Plan focuses on increasing the service capacity of primary healthcare facilities and strengthening the family medicine system (Article 709, Page 166). By improving access to healthcare, these measures aim to ensure that all segments of society can benefit from essential health services, particularly those in underserved areas.

For SDG 3.9, the Plan includes efforts to assess and mitigate the health impacts of climate change (Article 706.2, Page 165). This strategy addresses the negative effects of environmental factors on health and aims to create a healthier, more sustainable environment for the population.

These comprehensive strategies provide a framework for improving public health by increasing access to healthcare services, promoting healthier lifestyles, and reducing environmental health risks. The ultimate goal is to enhance the overall well-being of society, ensuring that every individual has access to the care and resources needed for a healthier life.

### ***The Twelfth Development Plan and SDG 4: Quality Education***

The Twelfth Development Plan of Türkiye outlines a set of strategic objectives and measures on enhancing the quality of education, increasing access, and encouraging the participation of various groups in the educational process.

Under SDG 4.1, the plan aims to ensure that all children have equal access to quality, universal, and free pre-primary education (Article 661, Page 153). In addition, to improve access, equality, and quality in education, external environmental factors will be addressed, and educational support programs will be implemented (Article 664.1, Page 154). These strategies are intended to provide equal opportunities for children in education.

For SDG 4.2, the plan includes measures to increase access to pre-primary education by enhancing physical and human infrastructure, with a special focus on priority regions (Article 661.1-661.2, Page 153). This will help broaden access to early education and ensure equal opportunities for all children.

In line with SDG 4.3, the plan focuses on updating the curricula for vocational and technical education, as well as higher education, to facilitate post-graduation employment (Article 680, Page 158). Additionally, collaboration with the private sector will enhance the regional and sectoral alignment of vocational and technical training (Article 680.2, Page 158). These measures aim to develop a skilled workforce that meets the demands of the labor market.

For SDG 4.4, the plan emphasizes the use of technology in vocational training, including the development of digital skills, analytical thinking, and social skills (Article 679.4, Page 158). This approach will equip students with the skills needed for the modern labor market and enhance their employability.

Under SDG 4.5, the plan includes projects aimed at increasing the participation of girls in education, as well as improving completion and retention rates (Article 664.2, Page 154). Additionally, efforts will be made to improve Turkish language skills for individuals under temporary protection and increase their access to formal education (Article 676, Page 157). These initiatives are designed to provide disadvantaged groups with equal opportunities in education and integrate them into society.

In line with SDG 4.6, the plan aims to update adult education programs to improve basic skills and literacy rates within the context of lifelong learning (Article 809.1, Page 196). This measure is intended to contribute to lifelong learning processes and increase literacy rates across society.

For SDG 4.7, the plan will integrate climate change and sustainable development awareness into the curriculum, ensuring that all students are taught these critical topics (Article 672.1, Page 156).

Under SDG 4.a, the plan emphasizes designing educational spaces that are environmentally friendly, safe, accessible, and resilient to disasters (Article 671, Page 156). This measure ensures that students have access to healthy and secure learning environments.

For SDG 4.c, the plan aims to enhance the professional development of teachers through in-service training and mobility programs (Article 668.1, Page 155). Furthermore, teacher training programs will be introduced for vocational and technical education (Article 668.3, Page 155). These efforts will improve teacher quality and strengthen the education system.

These strategies aim to improve equality, access, and quality in education, support all individuals involved in the educational process, and contribute to social development. By focusing on educational opportunities for all, the plan seeks to build a more inclusive and equitable society.

### ***The Twelfth Development Plan and SDG 5: Gender Equality***

The Twelfth Development Plan of Türkiye outlines a comprehensive set of strategies and actions to increase women's participation in social, economic, and political spheres, thus promoting gender equality across various sectors.

Under SDG 5.1, gender equality between men and women will be prioritized in all planning, policy development, and program processes (Article 726, Page 172). Additionally, efforts will be made to increase women's representation in decision-making mechanisms across both the

public and private sectors (Article 727.1, Page 172). These measures aim to ensure the implementation of gender equality in all areas of society.

In alignment with SDG 5.2, the Plan will adopt a zero-tolerance policy towards violence against women, ensuring effective enforcement of legal regulations (Article 729.1, Page 173). Furthermore, protective services and awareness-raising activities will be strengthened to prevent violence against women (Article 729.3, Page 173). These steps are crucial in helping women live freely and securely without the threat of violence.

For SDG 5.4, the Plan includes measures to increase women's employment by offering economic, accessible, and quality caregiving services (Article 728.1, Page 173). Moreover, rural women's social and economic participation will be enhanced through the development of caregiving services and social spaces (Article 728.6, Page 173). This aims to facilitate women's participation in the workforce and improve their overall quality of life.

Under SDG 5.5, the Plan focuses on increasing women's participation in decision-making processes in education, employment, and politics, with support such as quotas (Article 727, Page 172). It will also promote women's participation in STEM (Science, Technology, Engineering, and Mathematics) fields through targeted policies (Article 728.4, Page 173). This strategy aims to ensure greater representation of women in traditionally male-dominated sectors.

For SDG 5.6, reproductive health services will be strengthened, and programs for newborn and pre-marital screenings will be expanded (Article 706.5, Page 165). These steps are designed to improve women's access to health services and ensure they lead healthy lives.

Under SDG 5.a, the Plan will expand programs promoting women's entrepreneurship, financial literacy, and digital literacy (Article 728.2, Page 173). Additionally, efforts will be made to support female entrepreneurs in earthquake-affected regions, helping them reintegrate into the economy (Article 728.5, Page 173). This will play a crucial role in empowering women to achieve economic independence.

For SDG 5.b, the Plan will provide training and support to integrate women into the digital transformation process (Article 728.3, Page 173). This will enable women to actively participate in the digital world and gain access to economic opportunities.

Under SDG 5.c, the Plan will promote gender-sensitive budgeting across various sectors (Article 726.2, Page 172). This measure ensures that policies promoting gender equality are effectively implemented.

These strategies offer a comprehensive approach to achieving gender equality, aiming to strengthen the position of women in social, economic, and political life. By addressing various dimensions of gender equality, the Plan seeks to create a more inclusive and equitable society for women and girls.

### ***The Twelfth Development Plan and SDG 6: Clean Water and Sanitation***

The Twelfth Development Plan of Türkiye outlines a set of strategies and policies which emphasize the sustainable management of water resources, access to clean drinking water, water efficiency, wastewater management, and the preservation of water ecosystems.

Under SDG 6.1, the goal is to provide 100% of the municipal population with access to safe drinking water (Table 51, Page 216). Additionally, there are plans to renew and expand drinking water facilities in rural areas (Article 896.1, Page 221). These measures aim to guarantee that every individual has access to clean drinking water.

For SDG 6.2, the coverage of wastewater treatment plants will be expanded, and efforts will be made to reduce the impact of wastewater on human health and the environment (Article 878.6, Page 214). Furthermore, solid waste management and recycling projects will be implemented to improve sanitary conditions (Article 882, Page 215). These strategies aim to improve hygiene and reduce the environmental impact of waste.

Under SDG 6.3, clean production techniques will be adopted to prevent industrial water pollution (Article 878.3, Page 214). Moreover, the reuse of treated wastewater will be increased (Table 51, Page 216). These measures focus on reducing water pollution and promoting the recycling and reuse of water resources.

For SDG 6.4, municipalities will be supported in reducing water losses and using water efficiently (Article 880.3, Page 215). Additionally, modern water-saving irrigation techniques will be promoted in agriculture (Article 504.2, Page 104). These measures aim to ensure efficient water use and the conservation of water resources.

Under SDG 6.5, river basin management plans will be implemented, and mechanisms for transboundary cooperation will be developed (Article 875.4, Page 213). This aims to strengthen the management of transboundary water resources and foster international collaboration.

For SDG 6.6, regulations will be made to protect mountains, wetlands, rivers, and other water ecosystems (Article 878, Page 214). These regulations aim to ensure the sustainability of water ecosystems and contribute to the conservation of water resources.

Under SDG 6.a, the efficient use of international funds for water resources and infrastructure projects will be increased (Article 879.1, Page 214). This strategy seeks to strengthen international cooperation in financing water infrastructure projects.

For SDG 6.b, local governments will be supported in preparing water budgets and monitoring water losses (Article 880.6, Page 215). This step is crucial in improving local water management and ensuring the effective use of water resources at the local level.

These policies offer a comprehensive approach to achieving SDG 6, focusing on the efficient use of water resources, improving hygiene and

sanitation conditions, combating water pollution, and preserving water ecosystems.

### ***The Twelfth Development Plan and SDG 7: Affordable and Clean Energy***

The Twelfth Development Plan of Türkiye includes a series of strategies and policies focusing on energy access, the expansion of renewable energy sources, energy efficiency, clean energy technologies, and the development of modern energy infrastructures.

Under SDG 7.1, plans include adopting cost-based pricing for electricity and natural gas markets to support low-income consumer groups (Article 507.1, Page 105). Additionally, efforts will be made to increase the accessibility of natural gas by bringing the reserves in the Sakarya Gas Field in the Black Sea into the economy (Article 513.1, Page 107). These measures represent a critical step toward ensuring universal access to energy.

For SDG 7.2, the goal is to increase electricity generation from renewable sources and integrate these energies into the national grid, in alignment with the 2053 net zero emissions target (Article 511, Page 106). Moreover, new Renewable Energy Resource Area (YEKA) tender processes will continue for solar and wind energy projects (Article 511.1, Page 106). These policies aim to increase the share of renewable energy sources and encourage sustainable energy production.

Under SDG 7.3, the plan includes making public buildings energy-efficient and accelerating energy transformation through the widespread use of renewable energy-supported buildings (Article 508.2, Page 105). Additionally, energy efficiency investments will be prioritized for energy-intensive sectors (Article 508.5, Page 105). These strategies aim to improve energy efficiency and reduce overall energy consumption.

For SDG 7.a, the use of hydrogen in energy transformation will be expanded, and green hydrogen technologies will be supported (Article 516, Page 108). Moreover, recycling facilities for energy technologies such as solar panels and batteries will be established (Article 517.1, Page 108). These policies aim to increase access to clean energy technologies and support innovations in this field.

Under SDG 7.b, the energy sector will develop a competitive investment environment, and Türkiye's strategic position in international energy trade will be strengthened (Article 506, Page 105). Additionally, the widespread adoption of smart grid infrastructures and energy storage systems is planned (Article 512.3, Page 107). These strategies aim to enhance modern energy service infrastructure and improve energy trading efficiency.

These measures represent a comprehensive approach to achieving SDG 7, focusing on energy access, renewable energy production, energy efficiency, and clean energy technologies. Through these efforts, the plan

will contribute to the creation of sustainable energy systems and ensure affordable and sustainable energy access for all.

### ***The Twelfth Development Plan and SDG 8: Decent Work and Economic Growth***

The Twelfth Development Plan of Türkiye includes a series of strategies and policies which emphasize economic growth, employment, entrepreneurship, industrialization, and sustainable development, with the goal of improving the quality of life for citizens.

Under SDG 8.1, the plan aims to increase per capita income by fostering a balanced economic structure, emphasizing net exports of goods and services, and improving the quality of growth. Specific policies include supporting the growth of high value-added sectors and promoting stable contributions to GDP growth (Article 191, Page 33; Article 210, Page 36).

For SDG 8.2, the plan focuses on improving productivity through innovation, especially by encouraging the use of innovative technologies in production processes. It also aims to strengthen industrial productivity policies and support the transition to more efficient production methods. Key policies include modernizing the industrial sector and promoting a culture of innovation (Article 552, Page 120; Article 316, Page 36).

In line with SDG 8.3, the plan outlines strategies to facilitate access to finance for Small and Medium-sized Enterprises (SMEs), thus strengthening their innovation capacity. Strategies include facilitating credit access for SMEs, enhancing their innovation capabilities, and creating an entrepreneurial ecosystem to foster sustainable business growth (Article 558, Page 123; Article 561, Page 123).

For SDG 8.4, the plan promotes sustainable consumption and production patterns, focusing on circular economy policies to increase resource efficiency. The goal is to combine environmental sustainability with economic growth, ensuring that production methods align with sustainable practices (Article 866, Page 211).

Under SDG 8.5, the plan emphasizes increasing female participation in the labor force and supporting flexible working models. It also includes measures to enhance employment for people with disabilities and ensure inclusive labor force participation. These policies aim to ensure equal opportunities in the labor market (Article 697, Page 163; Article 762.1, Page 184).

With regards to SDG 8.6, youth employment is a key focus, with the plan aiming to provide vocational training and employment opportunities for young people who are neither in education nor employment. It also emphasizes supporting young entrepreneurs through various projects (Article 750, Page 180; Article 698.2, Page 163).

In terms of SDG 8.7, the plan includes measures to eradicate child labor and protect workers from forced labor. This goal is pursued through



social protection policies and ensuring that children are not involved in work that undermines their rights (Article 8.7, Page 150).

To achieve SDG 8.8, the Twelfth Development Plan focuses on ensuring safe working conditions for all workers, including migrant and precarious workers. The plan outlines specific policies for improving labor safety, particularly for vulnerable groups (Article 701, Page 36).

For SDG 8.9, the plan encourages the development of tourism policies that highlight and promote local cultures and products, ensuring that tourism can continue to contribute to economic growth while being sustainable (Article 495.4, Page 101).

Lastly, under SDG 8.10, the plan aims to enhance access to financial services, particularly through microfinance projects that support women's employment and increase household income. These measures aim to ensure that financial services are accessible to all citizens, especially marginalized groups (Article 697.7, Page 163).

The Twelfth Development Plan outlines a comprehensive approach to achieving SDG 8, focusing on inclusive and sustainable economic growth, employment opportunities, entrepreneurship, and ensuring decent work for all.

### ***The Twelfth Development Plan and SDG 9: Industry, Innovation and Infrastructure***

The Twelfth Development Plan of Türkiye sets out various strategies and policies to reach SDG 9, with the overarching aim of advancing sustainable industrial development and infrastructure. Below are the key strategies aligned with SDG 9 from the Twelfth Development Plan.

Under SDG 9.1, the plan outlines the strengthening of industrial infrastructure by enhancing the resilience of Organized Industrial Zones (OSBs), Industrial Zones (EBs), and Small Industrial Sites (KSS). Modernizing and ensuring the sustainability of these infrastructures is a critical aspect of the plan. Additionally, there is a focus on constructing disaster-resistant infrastructure in industrial zones, particularly reinforcing these zones to withstand natural disasters like earthquakes, thus improving their resilience to such events (Article 430, Page 84).

For SDG 9.2, the plan aims to encourage high-value-added production in the manufacturing sector. This will be achieved by promoting innovative, technology-driven investments that enhance production processes and increase the competitiveness and efficiency of the industrial sector. The plan also focuses on strengthening the industrial sector's contribution to economic growth and employment. By bolstering the industrial sector's capacity to create jobs, it seeks to ensure that industrialization contributes to sustainable growth and job creation (Article 426, Page 82; Article 431.1, Page 84).

In line with SDG 9.3, the plan aims to improve SMEs' access to finance, thereby enabling them to enhance their innovation capabilities.

Furthermore, the integration of SMEs into green transformation processes will be encouraged. This will support their involvement in environmentally sustainable projects, helping them align with global trends toward sustainability and green production (Article 558, Page 123; Article 427.5, Page 83).

For SDG 9.4, the plan focuses on the widespread adoption of green transformation and circular economy practices to improve resource efficiency and minimize environmental impacts. These approaches aim to create sustainable production processes while also boosting economic performance. Additionally, increasing energy efficiency in industrial facilities is a priority, with efforts aimed at optimizing energy consumption through improved practices (Article 427, Page 83; Article 427.7, Page 83).

Under SDG 9.5, the plan seeks to increase the share of research and development (R&D) expenditures relative to GDP and raise the number of full-time equivalent researchers involved in scientific research. These efforts aim to support scientific progress and enhance innovation capacity. The plan also includes supporting technology development projects in key sectors such as chips, health, and space technologies, fostering domestic production and innovation in strategic industries (Table 25, Page 122; Article 556, Page 121).

For SDG 9.b, the Twelfth Development Plan aims to increase industrial diversity through technology transfer and the promotion of domestic production. These efforts aim to strengthen the competitiveness of the domestic industrial sector. Additionally, the plan focuses on integrating SMEs into industrial value chains and encouraging their contribution to production processes, thus enhancing their role in industrial development (Article 425, Page 82; Article 558, Page 123).

Lastly, under SDG 9.c, the plan aims to expand broadband internet access. By strengthening broadband infrastructure, the goal is to facilitate access to information and accelerate digital transformation, contributing to broader economic development and innovation (Article 544.6, Page 117).

These strategies in the Twelfth Development Plan outline a comprehensive approach to achieving SDG 9 by focusing on resilient infrastructure, industrialization, innovation, and the sustainable use of resources.

### ***The Twelfth Development Plan and SDG 10: Reduce Inequalities***

The Twelfth Development Plan of Türkiye outlines various strategies and policies designed to address these inequalities, focusing on income distribution, social and economic inclusion, and equal opportunities. Below are the relevant strategies from the Twelfth Development Plan aligned with the targets under SDG 10.

For SDG 10.1, the Plan emphasizes improving income distribution through social transfer programs and equitable taxation policies. These

initiatives aim to address income inequities and enhance the living standards of lower-income groups. Programs such as minimum income support are also introduced to improve the economic conditions of disadvantaged individuals, ensuring that economic growth benefits those in need (Article 775, Page 185; Article 771.2, Page 185).

In line with SDG 10.2, the Plan prioritizes policies supporting the inclusion of individuals with disabilities in education and employment, fostering equal opportunities. It also focuses on increasing the labor force participation of youth and women, with measures to enhance their access to the workforce and provide incentives for greater engagement (Article 235, Page 153; Article 750.8, Page 180).

For SDG 10.3, the Plan introduces strategies to reduce informal employment and create a more equitable labor market. It also emphasizes the importance of legal frameworks to combat discrimination and raising public awareness to create a more inclusive society (Article 777.3, Page 185; Article 821, Page 199).

Under SDG 10.4, the Plan outlines reforms to create a tax system that benefits low-income groups, easing their financial burden and supporting their economic advancement. Additionally, the social welfare system will be restructured to better tie it to employment, encouraging workforce participation and enhancing the effectiveness of social assistance programs (Article 776, Page 185; Article 772, Page 185).

Addressing SDG 10.7, the Plan outlines programs to help migrant workers and individuals under temporary protection integrate into Turkish society. These initiatives will provide vocational training and support social inclusion, facilitating migrant integration into the labor market (Article 749, Page 180). Measures to combat irregular migration will also be strengthened through improved migration management policies (Article 657, Page 153).

Finally, under SDG 10.b, the Plan stresses the need to increase the effective use of development aid and enhance access to international financial resources, helping reduce inequalities and supporting sustainable development (Article 383.1, Page 71).

Through these strategies, Türkiye aims to reduce inequalities across various sectors, ensuring equal opportunities and benefits for all segments of society.

### ***The Twelfth Development Plan and SDG 11: Sustainable Cities and Communities***

The Twelfth Development Plan of Türkiye includes various strategies and policies aimed at achieving the targets under SDG 11. Below are the relevant strategies and policies aligned with SDG 11 in the Plan.

For SDG 11.1, the Plan emphasizes the development of affordable housing projects for low- and middle-income citizens. These projects aim to facilitate housing access for disadvantaged groups. Additionally, the

production of disaster-resistant housing is prioritized, ensuring that urban areas are resilient to natural disasters such as earthquakes (Table 49, Page 210; Article 863.5, Page 210).

In line with SDG 11.2, the Twelfth Development Plan highlights investments in public transport and rail systems to improve urban transportation infrastructure. The plan also proposes the implementation of intelligent transportation systems to enhance traffic safety and reduce congestion. Disaster-resistant transportation corridors will be established to improve the resilience of urban mobility systems (Article 884.2, Page 215; Article 613.3, Page 140; Article 886.1, Page 216).

For SDG 11.3, the Plan focuses on sustainable urban development through urban transformation programs aimed at improving the quality of urban life. These programs address housing needs while ensuring environmental sustainability. Additionally, cities will be adapted to climate change by promoting the development of smart, climate-resilient urban areas (Article 843, Page 205; Article 850, Page 206).

Regarding SDG 11.4, the Plan includes strategies to preserve the historical and cultural values of cities during urban planning. These efforts aim to protect the unique identities of cities while preserving their architectural heritage and cultural significance (Article 851, Page 206; Article 853, Page 207).

In accordance with SDG 11.5, the Plan accelerates urban transformation efforts to enhance disaster preparedness, particularly in the context of seismic risks like the anticipated Marmara earthquake. Nature-based solutions and green infrastructure will also be employed to mitigate disaster risks and increase urban resilience (Article 849, Page 206; Article 833.7, Page 203).

For SDG 11.6, the Twelfth Development Plan aims to increase green spaces within urban areas to improve air quality and urban livability. The promotion of zero-waste practices, including waste management and recycling programs, is also prioritized to minimize the environmental footprint of urban centers (Article 851.7, Page 207; Article 882.1, Page 215).

In line with SDG 11.7, the Plan calls for expanding green areas in cities and improving access to these spaces for urban populations. National garden projects will also be promoted as part of an integrated approach to enhance the urban environment (Article 851.7, Page 207).

For SDG 11.a, the Plan emphasizes integrating national and regional development plans to better connect urban and rural areas. This integration seeks to reduce disparities and promote balanced development across Türkiye (Article 852, Page 207).

In relation to SDG 11.b, the Twelfth Development Plan outlines integrated disaster and emergency management policies to enhance the capacity of cities to withstand and recover from emergencies, ensuring urban resilience against future challenges (Article 834, Page 203).

Lastly, for SDG 11.c, the Plan encourages the use of sustainable materials in housing and construction. It promotes energy-efficient and disaster-resistant building designs to support the development of safe and sustainable urban environments (Article 863.5, Page 210).

Through these strategies, Türkiye aims to transform its cities into inclusive, safe, and sustainable spaces.

### ***The Twelfth Development Plan and SDG 12: Responsible Consumption and Production***

The Twelfth Development Plan of Türkiye adopts a comprehensive approach to achieve these objectives, through various strategies and policies aimed at fostering sustainability in production and consumption. Below are the relevant sections from the Twelfth Development Plan aligned with the targets under SDG 12.

For SDG 12.1, the Plan emphasizes integrating best environmental practices across all sectors to promote sustainable consumption and production processes. A key strategy is the adoption of circular economy principles, aiming to develop and expand sustainable models of production and consumption throughout the country (Article 866.1, Page 211).

In alignment with SDG 12.2, the Plan presents a holistic approach to natural resource management. This includes measures to ensure the protection and efficient use of resources, with a strong focus on enhancing water and energy efficiency. Sustainable solutions in these critical sectors are prioritized to ensure long-term resource sustainability (Article 493, Page 101; Article 880.2, Page 215).

For SDG 12.3, the Plan introduces initiatives to raise awareness about food loss and waste, encouraging more mindful consumption habits. Additionally, efforts are focused on improving cold chain logistics infrastructure for agricultural products, preventing spoilage, and reducing food waste (Article 495.3, Page 101; Article 495.1, Page 101).

Addressing SDG 12.4, the Plan outlines strategies to minimize the environmental and human health impacts of chemicals used in production, consumption, and disposal processes. The zero-waste philosophy is adopted in waste management, promoting widespread recycling practices across the country (Article 867.1, Page 211; Article 882, Page 215).

For SDG 12.5, the Plan stresses the implementation of circular economy principles in solid waste management, focusing on enhancing recycling and reusability. The promotion of eco-friendly products, particularly those with environmental certifications, is also emphasized to support the reduction of waste generation and environmental harm (Article 881.3, Page 215; Article 866.5, Page 211).

In accordance with SDG 12.6, the Twelfth Development Plan encourages companies to integrate sustainability reporting into their business practices. This aims to increase transparency regarding the environmental

impacts of companies. Moreover, the plan promotes investments in green transformation processes and digitalization to support the transition of companies towards more sustainable production methods (Article 438.1, Page 87; Article 438, Page 87).

For SDG 12.7, the Plan emphasizes the development of green procurement strategies within public sector operations. These strategies aim to reduce the carbon footprint of government purchases and foster sustainable practices in governmental operations (Article 866.6, Page 211).

In alignment with SDG 12.8, the Plan includes initiatives to integrate sustainable consumption practices into educational curricula. The zero-waste project will be expanded to promote awareness and education on reducing waste production, targeting communities and individuals (Article 350.2, Page 62; Article 882.1, Page 215).

Lastly, under SDG 12.b, the Plan includes policies to encourage sustainable tourism, focusing on the promotion of local cultures and products. This strategy ensures that tourism contributes to both environmental sustainability and economic growth (Article 495.4, Page 101).

Through these strategies, Türkiye aims to foster responsible production and consumption practices that contribute to sustainable development. The policies outlined in the Twelfth Development Plan align with the objectives of SDG 12, helping to create a more sustainable and environmentally conscious society.

### ***The Twelfth Development Plan and SDG 13: Climate Action***

The Twelfth Development Plan of Türkiye outlines various strategies and actions aligned with SDG 13, aimed at strengthening climate action and addressing the challenges posed by climate change. Below are the relevant sections from the Twelfth Development Plan, aligned with the targets under SDG 13.

For SDG 13.1, the Twelfth Development Plan includes strategies for improving disaster preparedness, particularly through the establishment of flood and drought forecasting systems. Increasing flood protection facilities and setting up forecasting systems in all basins are key measures to improve resilience to climate-related hazards. Additionally, the Plan focuses on enhancing disaster-resistant infrastructure and building resilient living spaces, which are crucial steps to help communities adapt to climate change and reduce vulnerability (Article 833.4, Page 203; Article 825, Page 201).

In accordance with SDG 13.2, the Plan targets achieving net zero emissions by 2053, with interim targets and a long-term climate change strategy. This comprehensive framework aims to align national policies and actions with climate change mitigation goals. The creation of sector-specific roadmaps and regulatory measures is planned to ensure each sector contributes effectively to reducing emissions and achieving climate goals (Article 865.2, Page 210; Article 865.4, Page 211).

For SDG 13.3, the Plan focuses on raising awareness of climate change issues within educational institutions and across the population. By integrating climate change education, the Plan aims to cultivate a more informed society. Additionally, the Plan supports research and development (R&D) initiatives aimed at reducing disaster risks and fostering innovations to minimize climate-related risks (Article 839.3, Page 205; Article 840.1, Page 205).

In line with SDG 13.a, the Twelfth Development Plan emphasizes diversifying financial instruments to support green transformation and low-carbon growth. It also prioritizes strengthening international cooperation to ensure the financial sustainability of climate action, including facilitating funding for climate change mitigation and adaptation projects (Article 865, Page 210).

For SDG 13.b, the Plan outlines strategies to prepare disaster management and climate adaptation guides for vulnerable groups such as people with disabilities, the elderly, women, and children. These guides will help ensure that these groups are better equipped to face climate-related challenges. Additionally, the Plan includes the creation of designated gathering areas to enhance resilience for these disadvantaged groups during emergencies and disasters (Article 841.1, Page 205; Article 841.2, Page 205).

Through these strategies, Türkiye aims to strengthen its climate action efforts, enhance resilience to climate change, and ensure inclusive support for vulnerable communities. The policies outlined in the Twelfth Development Plan align with the objectives of SDG 13, contributing to a more sustainable and climate-resilient future.

### ***The Twelfth Development Plan and SDG 14: Life Below Water***

The Twelfth Development Plan of Türkiye outlines several strategies and policies that contribute to the protection of marine and aquatic ecosystems, the sustainable use of water resources, and the health of marine life. Below are the relevant actions and policies from the Twelfth Development Plan aligned with the targets under SDG 14.

For SDG 14.1, the Twelfth Development Plan focuses on combating marine litter. It includes accelerating efforts to prevent marine litter at its source, as well as mitigating the environmental harm caused by existing marine debris. The plan also highlights measures to prevent industrial pollution and apply clean production techniques to minimize the release of pollutants into marine environments, which is critical for safeguarding the health of oceans and seas (Article 866.4, Page 211; Article 878.3, Page 214).

In line with SDG 14.2, the Plan sets out strategies for increasing the number of protected coastal and marine areas. These protected areas are designed to preserve biodiversity and ensure the long-term health of marine and coastal ecosystems. The creation of ecological corridors is also

prioritized to support the habitat and feeding needs of marine species, helping to sustain aquatic ecosystems (Article 872.1, Page 212; Article 872.2, Page 212).

For SDG 14.4, the Plan emphasizes the protection of fishery resources and the prevention of illegal fishing activities. Strengthening monitoring and control mechanisms for fisheries is a key focus to ensure the sustainability of marine life. Additionally, the Plan highlights the importance of expanding aquaculture by developing new fish farming areas. This will reduce pressure on wild fish stocks, promoting the sustainable use of fishery resources (Article 493.1, Page 100; Article 493.4, Page 100).

In accordance with SDG 14.5, the Plan aims to expand protected marine areas and develop effective management plans for these regions. These actions are vital for the conservation of marine biodiversity and ecosystems (Article 872.3, Page 212).

For SDG 14.7, the Twelfth Development Plan stresses the adoption of sustainable fishing practices and aquaculture techniques. The focus is on balancing economic development with environmental preservation, ensuring that marine ecosystems remain healthy and productive (Article 493, Page 100).

Through these policies, Türkiye aims to safeguard its marine and aquatic ecosystems, promote the sustainable use of water resources, and ensure the long-term health of its marine life. The strategies outlined in the Twelfth Development Plan are aligned with SDG 14, contributing to a more sustainable and resilient marine environment.

### ***The Twelfth Development Plan and SDG 15: Life on Land***

The Twelfth Development Plan of Türkiye outlines a series of strategies and actions designed to preserve terrestrial ecosystems and ensure the sustainable management of land resources. These initiatives align with the specific targets of SDG 15 and contribute to Türkiye's long-term environmental and ecological goals. Below are the relevant actions and policies from the Twelfth Development Plan aligned with SDG 15:

For SDG 15.1, the Plan focuses on increasing protected areas, including both terrestrial and marine zones, to support biodiversity conservation and mitigate climate change. Extending carbon sink areas and restoring degraded ecosystems are key components of the Plan, which aims to enhance the resilience and health of ecosystems across Türkiye (Article 872.1, Page 212; Article 872.4, Page 212).

For SDG 15.2, the Plan emphasizes strengthening the carbon sink functions of forests. It includes the development of management plans to maximize forests' role in climate change mitigation. Additionally, the Plan supports afforestation efforts driven by both the industrial and private sectors to protect and expand Türkiye's forest resources, contributing to a greener



and more sustainable future (Article 500.1, Page 102; Article 501.4, Page 103).

In line with SDG 15.3, the Plan includes targeted actions to prevent land degradation caused by desertification, erosion, and drought, which threaten the stability of terrestrial ecosystems. Soil protection projects, including initiatives in highland areas to control landslides, floods, and avalanches, will also be implemented to strengthen ecosystem resilience and combat land degradation (Article 500.2, Page 102; Article 500.3, Page 102).

Under SDG 15.5, the Plan includes strategies for conserving endangered species, including the establishment of inventories and monitoring systems. It emphasizes the creation of ecological corridors to support species movement and maintain habitat continuity. These efforts will help preserve biodiversity and ensure the resilience of ecosystems (Article 872.5, Page 212; Article 872.2, Page 212).

For SDG 15.6, the Plan highlights the expansion of gene bank capacities to conserve Türkiye's biodiversity and ensure the sustainable use of genetic resources. These actions are vital for the long-term conservation of species and ecosystems (Article 500.1, Page 102).

For SDG 15.7, the Plan sets out measures to combat illegal wildlife trade and prevent the illegal hunting of protected species. Strengthening wildlife management systems and enforcing stricter regulations will be key to protecting endangered species and maintaining biodiversity (Article 872.5, Page 212).

Aligned with SDG 15.8, the Plan includes actions to control invasive species, which pose significant threats to biodiversity and ecosystem stability. These measures aim to manage and mitigate the spread of invasive species, protecting native species and supporting ecological balance (Article 872.6, Page 212).

For SDG 15.a and SDG 15.b, the Twelfth Development Plan places a strong emphasis on green financing models and international cooperation. The Plan seeks to leverage both national and international financial resources to fund forest conservation, sustainable land management, and biodiversity protection projects, ensuring the sustainability of terrestrial ecosystems (Article 870.3, Page 211).

Through these comprehensive strategies, the Twelfth Development Plan ensures that Türkiye's actions are aligned with SDG 15. By focusing on conservation, sustainable management, and combating land degradation, Türkiye aims to protect its terrestrial ecosystems for future generations.

### ***The Twelfth Development Plan and SDG 16: Peace, Justice, and Strong Institutions***

The Twelfth Development Plan of Türkiye outlines various policies and actions that contribute to achieving these goals, demonstrating Türkiye's

alignment with the targets of SDG 16. Below are the relevant actions and policies from the Twelfth Development Plan aligned with SDG 16:

For SDG 16.1, the Plan focuses on increasing transparency and accountability in security services, with an emphasis on adopting human-centered approaches to create a fair and effective system for combating violence. Additionally, community-supported policing methods are promoted to prevent crimes and reduce violence rates (Article 908, Page 225; Article 935.1, Page 228).

In line with SDG 16.2, the Plan emphasizes the restructuring of the juvenile justice system according to the best interests of children and restorative justice principles. This will be a critical step toward eliminating violence against children. The Plan also commits to raising awareness about child labor, aiming to protect children from exploitation and ensure their safety (Article 735, Page 175; Article 734.1, Page 174).

For SDG 16.3, the Plan includes actions to strengthen the independence, impartiality, and transparency of the judiciary, ensuring that justice is administered in a fair and transparent manner. It also supports the integration of digital transformation and artificial intelligence technologies to enhance the accessibility and efficiency of the justice system, making legal processes more streamlined (Article 915, Page 223; Article 920, Page 224).

Under SDG 16.4, the Plan sets out measures to fight illegal activities, such as migrant smuggling and human trafficking, which are essential for reducing organized crime. The Plan also highlights efforts to improve data collection capacities to prevent drug trafficking and monitor criminal activities, thus enhancing crime prevention and law enforcement (Article 932.3, Page 227; Article 931.3, Page 227).

For SDG 16.5, the Plan emphasizes ensuring transparency and accountability in public services. The goal is to establish a transparent and accountable public service framework to combat corruption and bribery effectively (Article 910, Page 225).

Aligned with SDG 16.6, the Plan underscores the importance of delivering citizen-centered public services that are fast and efficient. This enhances the effectiveness and accountability of state institutions. Additionally, the Plan highlights the strengthening of civil society organizations (CSOs) in alignment with principles of transparency and accountability, fostering greater societal participation and oversight (Article 910, Page 225; Article 937.2, Page 229).

For SDG 16.7, the Plan includes provisions to guarantee the active participation of civil society organizations in decision-making and policy processes. This will enhance democratic governance and ensure inclusive participation in decision-making (Article 937.3, Page 229).

Finally, under SDG 16.10, the Plan emphasizes enhancing access to public information through digital platforms. Increasing the capacity of

digital platforms for accessing information about public institutions' activities will promote transparency and accountability (Article 935.3, Page 228).

Through these targeted actions, Türkiye's Twelfth Development Plan aligns its policies with the objectives of SDG 16. By focusing on peace, justice, strong institutions, and enhancing democratic participation, transparency, and effective governance, Türkiye aims to strengthen its institutions and ensure access to justice for all.

### ***The Twelfth Development Plan and SDG 17: Partnerships for the Goals***

The Twelfth Development Plan of Türkiye outlines various strategies and actions aimed at strengthening both global and domestic partnerships, as well as mobilizing financial, technical, and scientific resources to support the achievement of the SDGs. Below are key actions from the Twelfth Development Plan that align with SDG 17:

For SDG 17.1, the Plan highlights the expansion of the tax base and the development of new policies to ensure taxes are effectively collected across the population. This strategy aims to increase the availability of financial resources at the local level, facilitating the funding of sustainable development initiatives and ensuring that resources are mobilized efficiently (Article 326, Page 57).

In line with SDG 17.3, the Plan outlines the development of the Istanbul Financial Center. This initiative is designed to enhance Türkiye's integration into the global financial system, strengthening its ability to mobilize financial resources effectively for economic growth. The center will play a key role in facilitating international investment and financial flows (Article 383.1, Page 71).

For SDG 17.6, the Plan emphasizes the creation of a robust science, technology, and innovation ecosystem in Türkiye. National initiatives based on knowledge transfer will foster stronger scientific and technological collaborations, enabling Türkiye to advance in innovation and research. Additionally, the Plan prioritizes supporting green and digital transformation technologies, which will foster cooperation in building sustainable and digitally advanced economies (Article 549, Page 117; Article 550.1, Page 119).

In relation to SDG 17.10, the Plan includes strategies to strengthen Türkiye's position in international trade. This includes regional and multilateral trade diplomacy activities to enhance global trade collaborations and support trade partnerships, promoting greater integration into global trade networks (Article 354.1, Page 73).

For SDG 17.16, the Plan stresses the importance of increasing the participation of civil society organizations (CSOs) in policy processes. Additionally, it highlights the use of digitalization to further enhance CSO involvement, ensuring more effective and inclusive multi-stakeholder

partnerships. This approach fosters greater societal participation and strengthens the involvement of diverse stakeholders in governance (Article 937.4, Page 229).

Finally, for SDG 17.18, the Plan addresses this target through the establishment of a risk center in the capital markets and the creation of investor tracking systems. These measures aim to enhance accountability and financial transparency, promoting a more robust and transparent financial system. This initiative is essential for ensuring the integrity of financial practices and fostering trust in economic systems (Article 385.3, Page 72).

Through these strategies, the Twelfth Development Plan seeks to strengthen domestic and international partnerships, foster cooperation across various sectors, and ensure the mobilization of the necessary financial, scientific, and technological resources to achieve sustainable development goals. The policies outlined in the Plan align with the objectives of SDG 17, promoting collaboration and partnerships that are crucial for global sustainable development.

## CONCLUSION

This study thoroughly explores the alignment and relationship between Türkiye's Twelfth Development Plan and the United Nations' 2030 SDGs, assessing Türkiye's progress in its sustainable development journey. The findings indicate that Türkiye's development plans align significantly with the SDGs but also highlight the need for further integration and alignment. Türkiye has set important goals in its Twelfth Development Plan, covering key areas such as economic growth, environmental sustainability, social justice, equality, health, and education. These objectives largely overlap with the SDGs, especially in areas like environmentally friendly production and consumption, climate action, conservation of natural resources, education, and social equality.

However, the study also identifies areas where the Twelfth Development Plan could better address the SDGs. It points out that some targets, particularly those related to the environment, such as SDG 13 (Climate Action) and SDG 14 (Life Below Water), require clearer implementation strategies and more effective resource mobilization. In addition, SDGs related to social justice, such as SDG 10 (Reduced Inequalities) and SDG 16 (Peace, Justice, and Strong Institutions), need further development of concrete policies. The study concludes that Türkiye must adopt a more inclusive and holistic approach to achieve sustainable development. Each goal in the development plan should be integrated with the broader SDG framework, ensuring that social, environmental, and economic dimensions of sustainability are equally addressed.

The importance of increasing and efficiently mobilizing financial resources is also emphasized, as financial backing is essential for achieving the SDGs. Türkiye's reliance on international cooperation and green financing mechanisms will play a key role in ensuring that sustainable development goals are met. Moreover, the study stresses the importance of data-driven policies. To track progress and ensure accountability, Türkiye needs to establish robust data collection and analysis systems, set measurable success metrics, and increase transparency in policy implementation.

While Türkiye has made significant strides in aligning its development plans with the SDGs, the study suggests that more concrete, localized policies are necessary for achieving these goals. The recommendations include prioritizing climate action and developing specific, scalable projects that align with Türkiye's Net Zero Emissions target. In addition, strategies to reduce social inequalities and empower disadvantaged groups, such as women, children, and the disabled, should be strengthened. The study also recommends adopting a more inclusive development approach, focusing not only on economic growth but also on social development, education, and healthcare, ensuring that development policies benefit all sectors of society. Finally, the importance of international collaboration and green financing tools is emphasized to help Türkiye meet its environmental targets.

In conclusion, while the Twelfth Development Plan marks an important step towards achieving the 2030 sustainable development goals, more focused and concrete policies are needed to further integrate these goals into Türkiye's development framework and ensure their successful implementation.

## **LIMITATIONS**

This study has several limitations. Firstly, it relies on publicly available documents from the Twelfth Development Plan, which may not fully capture the practical challenges of implementation. The effectiveness of policies depends not only on their formulation but also on how they are executed in real-world contexts, which can vary due to political, economic, and social factors. Secondly, the study adopts a qualitative approach to assess alignment with the SDGs, but a quantitative analysis with specific indicators would provide a more detailed and objective assessment of progress. Additionally, the research does not delve deeply into the financial constraints and resource mobilization challenges that Türkiye faces in implementing the SDGs. The role of non-governmental actors, such as civil society and businesses, is also not explored, even though their involvement is crucial for sustainable development. Finally, the study does not consider the impact of external factors, such as global economic conditions or the COVID-19 pandemic, which may affect Türkiye's ability to meet the SDGs.

Future research could benefit from addressing these aspects for a more comprehensive evaluation.

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# **Blockchain and Artificial Intelligence: A Voltron for Perfect Value-Stream in International Trade**

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## ABSTRACT

The key to success against the risks that arise due to the nature of international trade is to find perfect process management. Today, Blockchain and Artificial Intelligence are seen as revolutionary technologies for the establishment of reliable, fast, transparent and efficient trade. All that needs to be done here is to adapt the technologies to the application for the most perfect business processes with creative integrations.

**Purpose:** To investigate how the advantages obtained with the integration of Blockchain and Artificial Intelligence contribute to the supply chain process, flow of goods and monetary values, which contain many risk elements in international trade. In this context, it is to discuss the dimensions of Blockchain and Artificial Intelligence integration against the challenges in supply chain and cross-border trade and the obstacles to these technologies.

**Design/Methodology/Approach:** The study presents the conceptual framework, literature and application information regarding the integration of Blockchain and Artificial Intelligence. The effects of the integration on data and information development and processes are evaluated. The ecosystem that both technologies will provide in the supply chain and international trade is defined. Thus, the contribution of the new system to critical elements such as logistics processes, property transfer, payment and information storage has been revealed.

**Originality/Value:** This study presents a compilation that will constitute an important resource for the literature while presenting the integration of Blockchain and AI from a broad perspective. On the other hand, the concrete elements developed and presented provide important ideas for technology developers and implementers on how to model it in practice.

*Keywords – Blockchain, Artificial Intelligence, International Trade, Value Stream, Supply Chain*

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## 1. INTRODUCTION

Blockchain and artificial intelligence (AI) are new technologies that have left their mark on the last years of our age and are considered key elements in the construction of the future. Although their emergence is based on different stories, today, with the combination of these two technologies, ideas are being generated for their contributions to life. While AI has found a place in most areas of life as the highest version of data-based technologies, blockchain has begun to be integrated into many areas of the business world with platforms that include the element of money. Blockchain technology, as in other areas of use, foresees the use of AI methods in the processing of big data to be produced or contained within the system. Thus, it is thought that

the efficiency of elements such as speed, reliability, accuracy and cost in blockchain technology will increase.

After monetary transactions and payment systems, blockchain technology is used in supply chain, logistics, insurance, asset transfer, public transactions, etc. While it has become widespread in many areas, it has already proven that it will change the game in international trade and business and shape the future processes. Cross-platform integration and data analysis for technology's processes based entirely on data use are elements developed to popularize the use and trust in technology. Efforts are being made to develop technology by incorporating AI methods into data processing processes.

In this study, the concepts of block chain and AI are examined, and qualitative research has been conducted on the ecosystem formed by the combination of technologies, the gains obtained and the use of supply chain in international trade.

## 2. CONCEPTUAL FRAMEWORK

### 2.1. *Artificial Intelligence*

AI is systems that enable machines to perform human-like tasks, learn from experience, and adapt to new inputs. On the other hand, AI is a branch of science that focuses on the perception, reasoning and learning abilities of computers (Bar-Cohen, Marom and Hanson, 2009). AI basically aims to simulate human intelligence, improve their competencies and contribute to them. It works by combining large-scale data with intelligent algorithms and iterative processing. In this process, patterns or features of the processed data enable artificial intelligence to learn automatically.

In business, AI is used in various areas, from customer service to supply chain management, depending on the sector. Businesses integrate AI solutions into their processes for automation, predictive analysis and personalized customer experiences. Thus, they make business processes more efficient and predictable.

AI with various functions works with different methods and technologies. These methods and technologies can be summarized as follows;

***Machine Learning:*** It is an important technology that allows AI to imitate human thought and behavior, and most existing AI programs are based on it. Machine learning technology has been developed as a result of long-term studies, and today it has a relatively complete technical framework and mature algorithms, and continues its way with techniques such as deep learning, reinforcement learning and federated learning. By automating the creation of analytical models with machine learning, artificial intelligence can find insights in the data using neural networks, statistics and physics methods without the need for a separate programming process.

Machine learning can generally be divided into supervised learning, semi-supervised learning and unsupervised learning. Supervised learning uses labeled data to train the model used in prediction. K-nearest neighbor, decision tree, neural network, and Support vector machines are all supervised learning algorithms. Unsupervised learning uses a label-free training dataset. The key to unsupervised learning is to analyze the latent structure of the data and find out whether a divisible set exists. Semi-supervised learning combines supervised learning with unsupervised learning, using a few labeled data and a large amount of unlabeled data for training and classification (Wang, et al. 2021: 5)

**Artificial Neural Network:** It includes artificial neural networks consisting of units that process information by responding to external inputs and transferring information between them, thanks to artificial intelligence. With this method, artificial intelligence can find connections between units and derive meaning from data defined through multiple passes.

**Deep Learning Technology:** With this method, AI uses advanced calculation and training techniques to learn complex models of many data units. In this process, it uses large neural networks with multiple layers of processing units.

**Cognitive Computing:** This system enables AI to transfer human-like interaction to machines. Cognitive computing enables AI to interpret images, conversations, and data and then provide consistent feedback to them.

**Advanced Algorithm:** This system enables AI to analyze more data faster and at many levels. Additionally, advanced algorithms are used to understand complex systems, identify and optimize rare scenarios.

**Graphics Processing Units:** Graphics processing units, which provide the computational power needed by artificial intelligence to perform iterative operations, enable the training of neural networks.

## **2.2. Blockchain**

Block chain is a concept that takes its name from its working logic and refers to a technological infrastructure developed with data blocks cryptographically chained to each other in the form of rings (Nakamoto, 2008: 2). It is the distributed ledger technology that is decentralized and impossible or difficult to tamper with, revolutionizing data security and transparency. Blockchain is a data block that allows encrypted transaction tracking and is a type of database that contains raw, unprocessed information. It is a peer-to-peer technology that allows information to be written to a ledger held simultaneously on different computers over a distributed network (Dannen, 2017).

Blockchain consists of a chain of sequentially encrypted blocks that are linked together (Singhal, Dhameja, and Panda, 2018). Each step in sending digital assets constitutes a block. This structure, which consists of a chain of interconnected sequentially encrypted blocks, can record

information through digital signatures and cryptographic hashing (Hill, Chopra, and Valencourt, 2018).

It is useful to understand the prominent features of blockchain.

***Distributed Ledger:*** Blockchain refers to a different structure than a standard database with a central management or network where data is stored and managed. Since there is no such network in which data is stored in the blockchain, there is no central database or control center (Bambara & Allen, 2018: 6). Since this technology has a database that does not require a central network or server, a copy of the data is kept on all devices included in the network. In addition, when a new data or transaction is entered into the system, this data is verified and approved by all devices within the network, not by a central administrator.

***Smart Contracts:*** Smart contracts are one of the most interesting aspects of blockchain technology, especially in the field of international trade. Smart contracts do not constitute a type of blockchain per se, but rather a feature of the blockchain. Smart contracts are software applications that execute themselves autonomously (based on “if... then...” logic) when certain conditions are met (Deloitte, 2018). Unlike a standard legal contract, they can take information as input, analyze it according to the contract rules, and take any agreed-upon action as a result. Such data is fed to the smart contract through so-called “oracles,” which are data feeds provided by external service providers based on predefined conditions.

***Encrypted Transaction Security:*** It is a concept for “cryptographically chained” data security in the blockchain and refers to the encryption of data so that only authorized parties can access the data. These blocks created during information transfer are encrypted and can never be changed or hacked. In order to delete or change the records in the blocks, all blocks in this registry, which has billions of copies, must be changed. It is almost impossible for such an intervention to occur. Thanks to this feature, blockchain is also a secure system for storing data.

***Transparency:*** Blockchain technology consists of blocks and the records that make up these blocks, and these records are transparent. Anyone who wishes can examine all accumulated blocks. The information can only be processed by the buyer and seller specified on them.

***Immutability:*** Since a copy of the records in the blockchain exists on all devices included in the network, any changes or deletions made by either party to their own records will have no validity. No participant can change or tamper with a transaction once it is recorded in the shared ledger. If there is an error in a transaction record, a new transaction must be added to reverse the error, making both transactions visible.

***Consensus Mechanisms:*** Consensus mechanism is a process used to update and maintain the integrity of blockchain technology. It provides a distributed record that does not require trust between different parties, but allows them to be sure that the information they share and accept is accurate,

and furthermore, they can reject any information that is not, if any. Technically, it is the procedure in which a node (network participant) is selected to add a new block to the chain (Valkenburgh, 2017; Allende López and Colina Unda, 2018). There are two important consensus mechanisms.

***Proof of Work (PoW) Mechanism:*** It is the mechanism where users must solve the algorithm required to add blocks to the system. The user who solves the algorithm has the right to add the block to the chain. The factors to consider in the algorithm are processing power and the number of miners. Because the increase in processing power and the number of miners makes the algorithm theoretically safer. The main purpose of this system is to prevent each user from adding blocks.

***Proof of Stake (PoS) Mechanism:*** Although proof of work is currently the most preferred block production and verification mechanism on blockchain platforms, alternative mechanisms have been produced due to high energy consumption, longer block production times and the need for special hardware. In the proof of ownership mechanism that emerges in this context, the block producing peer is given validity approval authority in direct proportion to the share he/she has in the relevant blockchain network. With the proof of ownership mechanism, it is aimed to accelerate block production and verification processes and reduce energy needs (Ünsal and Kocaoğlu, 2018: 56-57).

In summary, blockchain is a set of technologies that provide distributed, transparent, immutable and secure data structures. Transaction information on it is verified, recorded and shared by stakeholders in the network as immutable records. In other words, blockchain is a decentralized and ever-growing ledger where records of transactions are kept in cryptographically linked data structures called blocks.

Blockchain is used not only in the production of cryptocurrencies but also for operations such as storing, managing and storing in many different areas. Originally designed for cryptocurrencies, blockchain applications have spread across a variety of industries, including finance, supply chain, and healthcare.

### **3. BLOCKCHAIN AND ARTIFICIAL INTELLIGENCE INTEGRATION**

It is predicted that when blockchain technology is integrated with AI, it can increase data security and data efficiency and contribute to smart decisions (Banerjee et al., 2018). While blockchain securely stores large amounts of data, AI helps analyze and generate insights from data and creates new scenarios and models based on data behavior (Ahmed et al., 2022). Blockchain and AI algorithms can help to make processes more adaptable, responsive, and efficient, while maintaining transaction transparency for the benefit of all members (Pimenidis et al., 2021). As a

result, integration between blockchain technology and AI can strengthen applications in terms of reliability, security, transparency, and trust.

AI provides capabilities that will help blockchain transcend its limits and emerge as a perfect evolution. (Figure 1). We can list these competencies as follows.

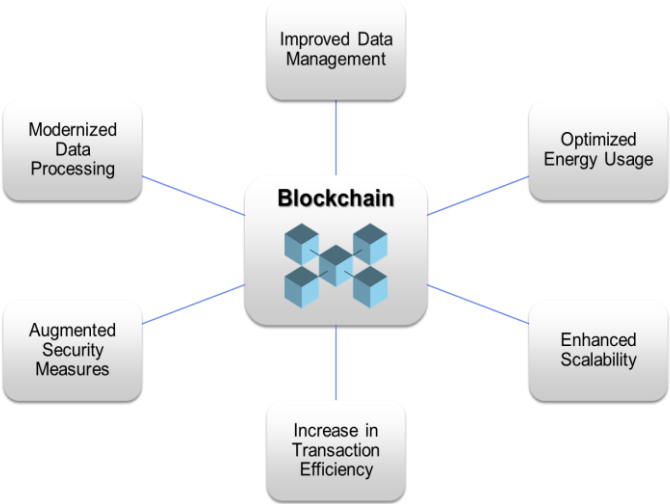


Figure 1: Competencies that Artificial Intelligence Brings to Blockchain

**Improved Data Management:** Blockchain in its current form utilizes hashing algorithms for data mining and is challenged for the right combination. In support of this,, AI offers a smarter alternative by streamlining the data management process and reducing the complexity associated with existing methods.

**Optimized Energy Usage:** The integration of AI into the blockchain improves the data mining process and simplifies operations, reducing the time and effort spent on mining operations. This optimization ensures optimized energy consumption in the blockchain ecosystem.

**Enhanced Scalability:** AI offers solutions to the blockchain scaling problem by offering advanced decentralized machine learning techniques and new data sharing features. This increases efficiency and creates conveniences for businesses in the blockchain ecosystem.

**Increase in Transaction Efficiency:** One of the most sought-after benefits of AI in blockchain is improved transaction efficiency. Peer to peer transactions in a blockchain system incur significant costs due to the unnecessary tasks performed by each node. AI can identify the node most likely to deliver the solution first, allowing others to halt their efforts. This reduces costs and increases system efficiency.

**Augmented Security Measures:** The elements and applications that make up blockchain technology can have flawed architectures that can hinder the technology’s security capabilities. The inclusion of AI brings

language processing, image analysis, and real-time data transformation capabilities to blockchain's peer-to-peer link. This combination allows data miners to micromanage large-scale systems and perform data operations with increased reliability, with the versatility provided by business intelligence applications such as machine learning etc.

**Modernized Data Processing:** The expectation that all data will be stored on a blockchain means that in the future data can be purchased directly from its owners. AI has the effect of monitoring data usage, managing access, and overseeing related tasks. Acting as data gatekeepers, AI will facilitate the flow of blockchain data.

While blockchain artificial intelligence integration is expected to make many contributions to business processes, it is thought that blockchain can replace the artificial intelligence ecosystem incorporated into business processes with the following elements. (Figure-2).

**Better Transactions:** With the help of smart contracts and Consensus models, blockchain ensures that all application data, customer details and financial transactions are immutable, public and recorded in real-time. This ensures the authenticity and accuracy of data and eliminates the need to involve intermediaries, ensuring faster, secure and fair transactions.

**High Quality Data:** AI contributes to various business areas by providing access to real-time data. However, one of the challenges facing AI-powered applications and software is limited access to data. This can be thought to be because a center manages the data and has difficulty in examining data authentication. This means low-quality data analysis and results that become difficult to predict. At this point, the blockchain provides a mass of data that does not belong to a single entity, is immutable and accessible to everyone. However, with the help of smart contracts, it allows certain rules, data and analysis to be harmonized sequentially and securely. This, as a whole, helps obtain high-quality data in real-time without compromising data privacy and security compliances.

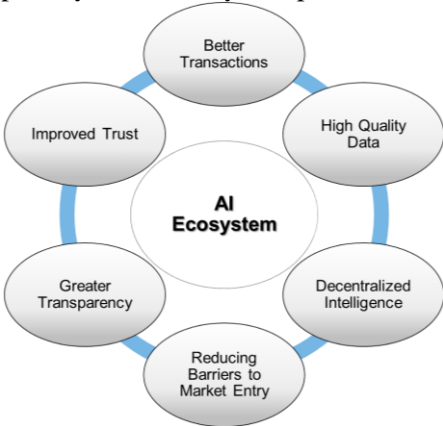


Figure-2: Multiple Benefits of Blockchain Technology 'n the Artificial Intelligence Ecosystem

**Decentralized Intelligence:** Current AI-integrated business development and decision support models face a number of problems due to the centralization of information and data. This can prevent AI from making the best decisions. Since Blockchain provides access to shared and verified information to all parties in the network and a consensus algorithm is formed, it can ensure that the data written on the chain is not limited to any scenario and remains reliable. AI can comprehensively understand data, transaction patterns, working models, and more to reveal previously unnoticed predictions. Deep learning algorithms can use these insights to make accurate decisions consistent with reality and make better predictions for their end users.

**Reducing Barriers to Market Entry:** Applications and software designed with AI integration are affected by factors such as authentication problems, the presence of intermediary platforms, margin of error, centralized data control, etc. The combination of AI blockchain technology can reduce the dominance of a single entity, eliminate intermediaries, and ensure that secure, accurate, and relevant data is verified by stakeholders. This paves the way for entering the market as quickly and profitably as possible.

**Greater Transparency:** The features of blockchain technology will make the use of AI transparent. Publishing all the details of the decision-making process on a blockchain that can be accessed in real time proves AI transparency. In the event of a wrong decision, businesses can benefit from this transparency by reviewing the blockchain when examining the root cause of their failure or the problems encountered and planning a new strategy.

**Improved Trust:** Despite the positive effects of AI on business processes, it still faces great challenges in terms of reliability. In this scenario, the blockchain would contain the data and associated models in the form of a cryptographic digital signature, ensuring the maintenance of a public yet immutable public ledger. Every user has access to real-time information that is authenticated and verified by smart contracts and consensus models. This will eliminate the need to introduce intermediaries and ultimately increase the reliability of the AI ecosystem.

Blockchain and AI taken as a single entity, will solve various challenges and open up countless new opportunities. Some of these possibilities are;

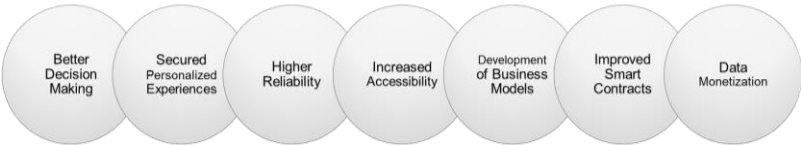


Figure 3: Advantages of Co-Evolution of Artificial Intelligence and Blockchain



**Better Decision Making:** The applications developed will allow the decision-making process to be optimized by integrating AI and blockchain together. AI algorithms can be developed to detect fraud possibilities and various risks in transactions. In addition, blockchain will help increase the accuracy of the data used for AI predictions by providing easy, transparent and secure data auditing.

**Secured Personalized Experiences:** The combination of AI and blockchain will enable users to experience a personalized experience. AI can continue to work with highly personal data in a sensitive manner. Blockchain allows data to be used securely and immutably while using cryptographic encryption. This will create a secure area for positions where AI cannot provide users with a healthy personalized experience due to data theft and cyberattacks and breaches.

**Higher Reliability:** With the integration of artificial intelligence and blockchain technology, it will be possible for users to monitor how their sensitive data is stored, managed and used within the framework of privacy and security. Thus, it will be possible to control the decision-making process and increase participant trust.

**Increased Accessibility:** The integration of the two technologies will contribute to reducing disruptions and reliability problems in payment systems. Blockchain-based cryptocurrencies will create an alternative space to the current monetary system and create an incentive attraction in international trade against the difficulties experienced in the exchange rate. In applications, AI will increase operational efficiency, reduce costs and contribute to high reliability.

**Development of Business Models:** The integration of the two technologies will accelerate the implementation of new business models. Blockchain provides an ecosystem that allows all participants to contribute to the process with immutable data without worrying about ownership in the network. AI will be able to provide an opportunity in this ecosystem to make the right decisions with deep insights beyond stereotyped and determined behaviors. Thus, new business models can be created.

**Improved Smart Contracts:** Smart Contracts provide business with higher speed, minimal friction, improved data storage, etc. It offers various advantages such as: However, their use is limited due to the complexity of the program. AI will integrate with blockchain, making it possible for smart contracts to encode and verify complex business relationships on a blockchain. Thus, advanced smart contracts will emerge. Additionally, self-executing contracts will provide different levels of quality based on price changes managed by AI-based systems.

**Data Monetization:** The combination of these two technologies also contributes to information validation. The monetization of the information obtained is the biggest source of income for social media organizations. The

threat of selling information to organizations for profit means that information is used as a weapon against the user. On the other hand, feeding AI creates unrealistic costs for those who do not produce their own insights. While there is a process of purchasing information from data centers for the development of AI algorithms and the provision of machine learning, it will allow giant social media companies to work with a much more honest strategy than they do today. It will also pave the way for more small companies to implement AI.

**Smart Computing Power:** Working on a blockchain that contains all the encrypted information on a computer requires a huge amount of processing power. For example, the hashing algorithms used to mine Bitcoin blocks take a "brute force" approach of efficiently and systematically identifying all potential candidates for a solution and checking that each candidate satisfies the statement of the problem before approving an agreement. Artificial intelligence algorithms that can improve in real time and in practice when their learning is enhanced will directly contribute to the development of the system.

#### **4. BLOCKCHAIN AND ARTIFICIAL INTELLIGENCE IN SUPPLY CHAIN AND INTERNATIONAL TRADE**

Blockchain and artificial intelligence are disruptive technologies, and their combination can lead to radical changes in current business processes. The power created by the combination of these two technologies can essentially be thought of as the voltron of digitalization. As the basic action, it creates the smart commerce matrix with the digitalization of classical business processes of commercial transactions.

##### ***4.1. Blockchain and Artificial Intelligence in Supply Chain***

Blockchain technology increases supply chain transparency by providing an immutable distributed ledger account of goods and financial flows. Each stakeholder in the supply chain can record data on the blockchain, creating a single source of truth that authorized parties can access. This transparency achieved through multiple participation helps verify the origin of products, combat counterfeit goods, and ensure compliance with national and global product/customs regulations.

AI is increasingly being used in customs processes to increase efficiency and accuracy. Machine learning algorithms are used to analyze large data sets of import and export transactions, allowing customs authorities to identify high-risk shipments more effectively. Risk Management systems in customs use AI to assess risks associated with cargo shipments by analyzing patterns and anomalies in trade data. Again, customs are significantly reducing documentation times by implementing AI-driven systems to automate document processing and inspection procedures. The

use of image recognition technologies allows shipping containers to be scanned and analyzed quickly, identifying prohibited or undeclared items without manual intervention.

Blockchain integrated with AI has the potential to transform supply chain management. By combining smart contracts and predictive analytics, companies can analyze historical data and predict demand trends using AI algorithms. AI algorithms analyze bids and predict outcomes, enabling fair, data-driven decision-making without central control. The blockchain can then automatically adjust inventory levels, order supplies, and optimize distribution through smart contracts. This integration reduces inefficiencies and can minimize the impact of outages. Additionally, while smart contracts establish trust, AI can reduce dependence on humans to understand human emotions and predict the next step to take, ultimately increasing levels of automation and performance.

Blockchain technology has the potential to revolutionize customs control by increasing transparency and traceability in the supply chain. By creating a secure and decentralized record of transactions, blockchain can provide customs officials with a complete picture of the origin and movement of goods, reducing the risk of fraud and improving overall efficiency. One potential application of blockchain in customs control is in the field of supply chain management. By creating a secure and transparent record of all transactions, it can help ensure that goods are produced and transported sustainably and ethically. This can be particularly important for products that are subject to strict regulation, such as endangered species or hazardous substances.

Blockchain can help ensure international trade is safe, secure and sustainable by providing customs officials with a complete and accurate picture of the movement of goods. The application of advanced technologies such as AI, biometrics and blockchain in customs control has the potential to revolutionize the way international trade is managed and regulated. These technologies can increase efficiency, improve security, and increase transparency in the supply chain; thus, it can lead to better outcomes for businesses, consumers and governments.

Another potential application of blockchain in customs control is in the field of import/export documentation. It can help reduce the risk of fraud by creating a secure record of shipping declarations and other documents and ensure that all required documentation is in place and meets delivery dates.

#### ***4.2. Blockchain and Artificial Intelligence in International Trade***

Using a single electronic document instead of classic paper documents to bring together all parties involved in foreign trade transactions is of great importance in improving many processes of trade. The logic here is to combine all the functions on classic paper documents in a single electronic document (Civelek and Seçkin, 2017). In this way, the integration of

processes will be ensured. Such online documents, which allow multi-party use, are compatible with the blockchain philosophy (Civelek and Özalp, 2018) and make it possible to integrate the positive gains of technology into business processes and make radical changes in bureaucratic processes. In classic commercial processes, a reliable third party is needed for the delivery of goods and money transfer. While the reliable party in transportation is the carriers, the reliable party in payment is the banks. Due to their responsibilities, these institutions conduct business with consistent, accurate and original documents in order to protect their customers in the delivery of goods or money transfers and to take precautions against fraud and legal consequences. They also try to verify the authenticity of these documents and the accuracy of the information they contain with other documents or evidence. This situation has led to an increase in intensive documentation, procedures and business processes. Thus, it causes inevitable time losses, costs and extraordinary fee payments.

The first use of blockchain-based technologies in foreign trade was for these burdensome applications. In order to prevent these problems, reliable payment methods such as electronic bills of lading and similar digital documents and letters of credit have begun to be used. Blockchain technology eliminates the trusted third party and brings the element of trust based on documentation to the digital environment.

With Blockchain, all parties involved in foreign trade transactions can be connected to each other on a single platform and transactions can be carried out through a single integrated electronic document.

Blockchain technology, with its features of data traceability and immutability of records, plays a critical role in international trade in establishing trust between parties to trade, such as the origin of goods and the authenticity of documents, compliance with quality and regulatory regulations. Blockchain's decentralized system allows transactions and actions to be recorded in a tamper-proof manner. An immutable chain of records with timestamps that are linked to the previous one is created using cryptographic hashes. This system means that all stakeholders, from the producer to the consumer, can trace the history of a product from its origin to its final destination. This ability makes it particularly useful for sectors such as food, pharmaceuticals, strategic products or luxury goods, where quality and safety standards must be strictly adhered to. The system protects against fraud and counterfeit product entrepreneurship, as it requires consensus from the entire network in any attempt to change a transaction and immediately highlights any inconsistencies, making unauthorized changes almost impossible.

Smart contracts offered by blockchain technology automatically execute actions defined in the protocol when certain conditions are met. With this technological advantage, it can automate various processes such as payment agreements, shipment tracking and consistency verification in

international trade. Once the terms of the trade agreed in the protocol are placed in the code, the smart contract system eliminates the need for manual intervention, eliminating the need for 3rd party control and approval and thus the dependency on intermediaries. For example, a smart contract protocol can be programmed by coding such that the payment will be released to the exporter after the importer confirms that the goods have been received by verifying the documents recorded in the blockchain and adding technological materials such as IoT (Internet of Things) sensors. Buyers and sellers, insurers, logisticians and public institutions can be integrated into the system. Since the contract terms are managed by the codes without human and institutional interpretation, disputes, trust and sanctions arising from differences in authority and custom in cross-border applications are minimized.

The integration of Blockchain with AI provides a feature that increases data quality and reliability to improve analysis and decision-making and facilitate trade. Data from various parties added to the Blockchain can be considered high-quality because it is real, consistent and resistant to change. AI contributes this high-quality data to the system to produce accurate insights with its algorithms. When AI models are trained on reliable data, the predictions and recommendations they produce are more consistent, reliable and useful.

In this integrated platform, artificial intelligence also allows the transaction to be carried out without any human intervention. The integration of artificial intelligence into the platforms developed for the preparation and reliability of the data to be used in Blockchain makes the system smart. This smart trade integration will provide autonomous processes, seamless integration and high efficiency in tracking and monitoring in logistics, transportation and storage applications. When trade models are analyzed with AI to predict and identify supply chain disruptions or optimize logistics processes, on the other hand, when blockchain ensures the integrity of the input data, stakeholders have AI-driven outputs, thus ensuring the security of trade.

Since the transparent structure of Blockchain allows tracking and verifying the history of data, AI systems can increase compliance with regulations that require accountability in learning, explainability and automated decision-making processes. This synergy between Blockchain and AI fosters a data ecosystem where quality and trust are paramount. The advanced AI models resulting from this collaborative effort can provide more accurate forecasts in areas such as demand forecasting, risk assessment, and anomaly detection in trade activities, leading to greater efficiency and innovation. Optimized AI algorithms can lead to better strategic decisions, reduced operational costs, and improved competitiveness in the global marketplace.

### ***4.3. Integration Challenges***

In an increasingly digital and interconnected global world, economic cooperation and trade facilitation efforts require leveraging the potential benefits of technology. However, the implementation of blockchain and AI technologies, which have generated a lot of enthusiasm and initiative from those involved, requires careful consideration of technical, legal and organizational factors.

**Technical Challenges:** One of the challenges to consider is the potential technical difficulties in integrating these technologies. In the current trade ecosystem, stakeholders such as government agencies, logistics companies, financial institutions, etc. use very different and numerous technology elements and platforms within their infrastructures. Many of them usually consist of different formats, data systems, protocols, and standards. The lack of common protocols and standards among these systems is a factor that prevents blockchain networks from interacting. The main challenge here is the lack of universal standards and interoperability frameworks that can bridge the gap between heterogeneous systems.

There is a need to standardize data formats and protocols to ensure that all participants in a supply chain can participate in blockchain. This becomes a challenge when different countries or regions have different regulations or data storage requirements.

Data privacy and security are another challenge in integration. Due to the distributed structure of data in the blockchain network, the fact that participants can see the data also brings privacy and security concerns. This transparency is seen as a challenge brought by the system when it is necessary to protect sensitive data and commercial information. In this case, when techniques such as data encryption and access blocking must be added, a centralization phenomenon contrary to the nature of the blockchain comes to the fore again. AI systems also create concerns about data privacy, especially when dealing with personal or sensitive information. When training AI models, the need for stakeholders to develop joint participatory learning and privacy techniques in the use of big data will come to the fore.

On the other hand, if the protocols of smart contracts are not coded correctly, they can be vulnerable to malicious interventions. This can lead to financial loss and damages that damage trust between stakeholders. Security breaches in smart contracts can lead to significant financial losses and damage trust between stakeholders. In order to reduce these risks, it is necessary to develop robust security protocols and conduct comprehensive audits of smart contracts.

Another challenge is the potential for increased complexity in supply chain management. Blockchain can generate large amounts of data, and managing this data effectively can be a significant challenge. In addition, blockchain needs to be properly monitored and maintained to ensure it remains secure and frequent. At this stage, AI is a great savior in terms of

data usage, monitoring, integration, and standardization. AI is incorporated into processes with applications such as algorithms, data clustering, machine learning, and artificial neural networks.

Integrating AI with blockchain requires that the performance of the trade respond to the intensive business processes and ensure that operations are carried out without interruption. This necessitates taking into account the combined computational demands to ensure that they remain within acceptable parameters. Otherwise, the current structure of Blockchain technology will be insufficient in customs, logistics and finance areas where thousands of transactions are made per second due to limited transaction volume and delays. On the other hand, if AI also causes delays in real-time predictions in algorithms and learning models, it may become impossible to benefit from it.

**Regulation and Legal Challenges:** The adoption of this perfect integration is seen as difficult due to the lack of legal regulations that take into account its unusual and unconventional features. Since the current trade regulations are prepared according to centralized structures, they have led to uncertainty about the legal status of blockchain transactions and smart contracts. As long as elements such as national and international legal definitions, legislative regulations, compliance between stakeholders, and dispute resolution are not provided, the hesitation in adoption will continue. The studies, recommendations and pilot applications of international organizations are required to eliminate this gap, confusion and concern.

National public security and economic stability sensitivities require strict regulatory oversight and challenge in tax and security matters. This highlights the importance of centralized policies. However, blockchain is not inherently centralized. The transparency of blockchain can help compliance by providing immutable records, but it also poses a fundamental challenge in terms of tracking, auditing, and compliance with legal obligations. However, AI algorithms used in decision-making must be explainable to meet regulatory standards. Black-box AI models that lack transparency can lead to compliance issues, especially if they result in biased or discriminatory outcomes. Developing AI systems that are both effective and compliant with regulations is a complex task that requires careful design and continuous monitoring.

**Business Culture and Qualification Challenges:** Blockchain and AI technologies represent a significant change in traditional business processes. Individuals and institutions may be reluctant, fearful and skeptical about changing their current order. This attitude leads to resistance due to concerns about disrupting current workflows, potential job losses due to automation, or perceived risks associated with new technologies. Stakeholders need to be educated about the advantages of blockchain and AI, convinced with information sharing and pilot projects that will create confidence in using

new systems, and effective institutions need to take the lead with leadership and strategic transformation arrangements.

However, the lack of special knowledge and expertise of individuals and institutions that will use the technologies is also a significant challenge. In this field, the lack of skilled professionals in both national and global areas needs to be closed and qualified personnel must be trained through cooperation between industry, academia and governments.

## CONCLUSION

Despite the independent commercial improvements and successes of AI and blockchain in commerce applications, there is a significant prediction that these technologies will further accelerate trade facilitation when developed in an integrated manner. The synergy between AI's predictive analytics and blockchain's secure data management could revolutionize commerce processes.

The technology developed with the integration of Blockchain and AI creates a voltron effect. The advantages of both technologies create a great power that can reshape the future. It is expected that this power will lead to significant cost reductions in all processes of trade, elimination of time losses, and concrete improvements in efficiency, productivity, transparency and stakeholder cooperation. In addition, the trust environment and ease of transactions created will allow for an increase in existing business volumes and the emergence of new business areas.

However, in order to realize these benefits, strategic collaborations by businesses and supportive policy frameworks from governments are required. Stakeholders are expected to have collaborations that combine their technical infrastructures, legislative regulations that eliminate legal uncertainties and know-how and knowledge that break institutional resistance in order to benefit from opportunities. Ultimately, for this voltron that will shape the future of international trade, it is important for all stakeholders of technology to proactively interact and focus their economic policies on this area with a more efficient, inclusive and sustainable global cooperation.

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