

# **Current Studies in Social Sciences IX**

**Editor**

Yelda DURGUN ŞAHİN



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# PREFACE

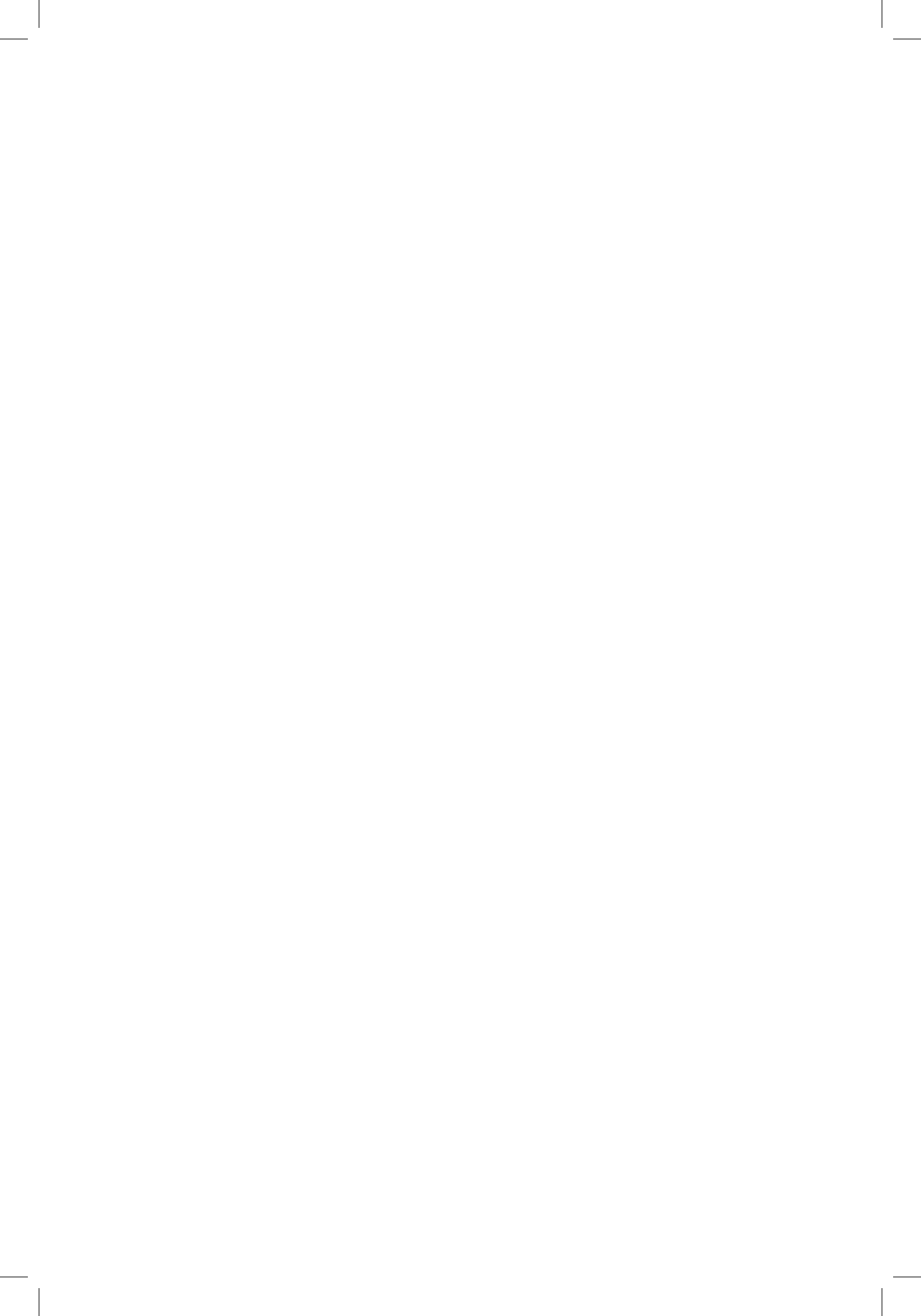
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# Chapter 1

## STRATEGIC PERSPECTIVE ON SUPPLY CHAIN RISK MANAGEMENT: A CRITICAL REVIEW

Serkan YELLİCE<sup>1</sup>  
Ahmet Şükrü PAMPAL<sup>2</sup>

### INTRODUCTION

In today's rapidly changing business environment, where globalization and technological advancements have become the norm, effectively managing supply chain risks has become crucial for organizational resilience and continued success (Um and Han, 2021). Supply chain plays a crucial role in global trade. It is essential to understand supply chain management clearly to achieve better economic, operational, and environmental performance for organizations, sectors, regions, and countries. A comprehensive approach to the supply chain brings different types of risks that can pose a threat to the whole operation (Gurtu and Johny, 2021).

To analyze the intricate relationship between supply chain dynamics and organizational strategy, this study draws upon the foundational principles of risk management theory (RMT) and strategic management theory (SMT). RMT provides a framework for identifying, assessing, and mitigating risks within the supply chain, emphasizing the importance of proactive measures in minimizing disruptions (Korablev et al., 2020). Additionally, SMT guides our exploration of how organizations align their supply chain risk management practices with broader corporate strategies to gain a competitive advantage (Henry, 2021). By integrating these two theoretical perspectives, we aim to offer a complete comprehension of how organizations strategically approach supply chain risk management.

This review critically evaluates the effectiveness of current frameworks and strategies for controlling supply chain risks in addressing strategic problems. Furthermore, it explores how companies incorporate supply chain risk

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management into their overall corporate strategies, considering factors such as coordination, alignment, and communication. In addition, its objective is to pinpoint deficiencies in the existing research and suggest opportunities for further empirical and practical studies. By adopting this theoretical framework, we present the present state of supply chain risk management practices from a strategic perspective, contributing to the ongoing discussion in the field. This review highlights the significance of effectively managing supply chain risks in the current business landscape.

The study analyzes the relevant literature to explore the various approaches and methods used in different locations and sectors. The study will include a broad array of subjects concerning the management of supply chain risks, such as identifying risks, evaluating them, implementing mitigation strategies, and developing contingency plans. The research will also investigate the obstacles and possibilities related to managing risks in the supply chain, including the influence of globalization, upcoming technologies, and shifting market scenarios. The outcome of this study offers valuable knowledge into the present condition of supply chain risk management procedures, and will be of great significance for experts, decision-makers, and scholars involved in this field.

## **SUPPLY CHAIN MANAGEMENT**

In today's fast-paced and interconnected business world, supply chain management (SCM) is a vital driver of success. By optimizing the movement of products and services through various stages of production and distribution, organizations can meet customers' dynamic demands while maximizing operational efficiency. SCM involves strategically coordinating processes related to sourcing, procurement, production, and distribution to facilitate the seamless flow of goods and services from suppliers to end consumers (Stevens, 1989). Drawing on academic literature and industry practices, the studies and practices mainly focus on the complexities of managing global supply chains, the evolution of SCM frameworks, and the integration of technology to enhance efficiency and responsiveness. They also states the challenges organizations face in implementing effective SCM strategies and provides insights into future trends and directions in the field. As businesses strive to stay competitive and meet customer expectations, a strong and effective SCM strategy is crucial (Ellram, 2004).

## **CONTEMPORARY SUPPLY CHAIN RISK MANAGEMENT**

Supply chain risk management (SCRM) is a crucial aspect of modern business operations. With global supply chains becoming increasingly complex and interconnected, disruptions may stem from various sources, such as natural disasters, geopolitical instability, supplier failures, demand fluctuations, and cybersecurity threats. To manage these risks effectively, businesses need to establish robust processes for identifying, assessing, mitigating, and responding to different types of risks that can impede the flow of goods and services within the supply chain network. This includes developing backup plans, forming strategic alliances with trustworthy suppliers, utilizing technology-enabled solutions for real-time monitoring and visibility, and building resilience into supply chain designs through redundancy and flexibility. By taking proactive measures to manage risks, businesses can ensure operational continuity, minimize financial losses, maintain customer satisfaction, and gain a competitive advantage in an uncertain business environment (Thomas et al, 2011).

## **METHOD**

In this study, the critical review technique was employed. In the literature, the critical review technique was widely used by scholars conducting similar studies (Naslund& Williamsun, 2010; Bai et al., 2021). Systematic review means carefully selecting related articles and conducting the study based on the carefully chosen articles, rather than including all the studies in the related literature. Reaching only to the essential articles and including them allows to have insightful results. Thus, conducting a critical review has a great potential for significant progress in the related field (Snyder, 2019).

## **DETERMINING RELATED STUDIES**

The goal of this review article is to comprehensively examine the most recent studies on supply chain risk management (SCRM) published from 2019 to 2024. To ensure a comprehensive and meticulous analysis of relevant scholarly articles, a rigorous methodology was employed. By utilizing the Web of Science database, a methodical exploration was undertaken to locate articles that were published within the designated time period that included the keywords “supply chain” and “risk management” in their titles, abstracts, or keywords.

During the initial search, we found 100 articles that pertain to managing risk in the supply chain. We then applied a set of screening criteria to determine

their relevance to the scope of this review. We included articles that specifically addressed issues related to supply chain risk management and were written in English, while articles focusing on other topics or not meeting the inclusion criteria were excluded from further analysis. After the initial screening, we were left with 35 articles that met the eligibility criteria. We then examined the full texts of these 35 articles to assess their quality, relevance, and contribution to the field of SCRM. During this process, we analyzed each article based on its research objectives, methodologies, key findings, and theoretical frameworks. We paid special attention to the depth of analysis, methodological rigor, and theoretical insights provided by each article. After a thorough examination, we selected the 15 articles that were deemed to provide the most valuable insights and perspectives for inclusion in this critical review. The final selection was based on the articles' significance, originality, and contribution to advancing knowledge in the field of SCRM. The applied filters are presented in the Table 1.

<b>Data Base:</b>	<b>Web of Science</b>
<b>Years:</b>	2019-2024
<b>Source Type</b>	Peer Reviewed Articles
<b>Article Title</b>	'Risk Management, "Supply Chain'
<b>Language</b>	English

The selected articles were analyzed for findings, methodologies, and key insights. They were then organized thematically to identify common trends, gaps, and emerging issues in the literature. The process included categorizing articles based on their main research themes and synthesizing their findings to give a thorough summary of the current research status in SCRM.

After carefully selecting relevant articles, we conducted a thorough evaluation to determine their strengths, limitations, and implications for both theory and practice. This evaluation included a reflective analysis of the methodologies used, the theoretical frameworks applied, and the relevance of the findings to real-world supply chain management contexts. Through this rigorous process, we aim to provide a comprehensive and insightful analysis of contemporary research on supply chain risk management, with the goal of offering valuable direction for future research and practical applications.

## **FINDINGS**

Gurtu and Johny carried out a study in 2021 with the objective of identifying the factors that increase supply chain management risk and how they can be managed in uncertain and competitive business environments. The study analyzed articles containing the word “risk” in their titles, keywords, or abstracts to underscore the criticality of managing supply chain risks. It emphasized the need to mitigate risks and minimize the impact of natural and human-made disasters. The study recommended discussing supply chain risk management to boost business competitiveness and advocated adopting risk mitigation strategies. By investigating the correlation between supply chain management and risk management, the study contributes to improved comprehension of current knowledge in this field. Ultimately, the research aims to promote risk management within supply chains to enhance organizational financial performance and national economies.

Another study conducted in Pakistan investigated the relationship between managing supply chain risks and implementing supply chain integration and quality management practices. The study suggests that integrating supply chain practices and prioritizing quality management can help decrease supply chain risks while enhancing operational performance. Additionally, the study emphasizes the critical role played by supply chain integration and quality management practices in mitigating supply chain risks and strengthening operational performance. (Shahid et al., 2023)

The potential of blockchain technology (BT) to enhance security and transparency in supply chains and minimize risks is explored in another research. By conducting a thorough literature review on supply chain risk management (SCRM) and analyzing case studies, the study reveals how BT can effectively mitigate risks in decentralized and diverse networks. The findings of this research contribute to the existing body of literature by emphasizing the valuable role of BT in SCRM. Practitioners and academics interested in supply chain management and risk management will find these insights particularly informative. (Alkhudary et al., 2020)

In 2024, Rashid et al. investigated the relationship between risk management and the manufacturing industry’s supply chain. Their focus was on how the resilience of the supply chain is influenced by information processing and the digital supply chain. The researchers employed Partial Least Squares-Structural Equation Modeling (PLS-SEM) to confirm a higher- order measurement model. Their research concluded that the capability of digital supply chain and

information processing has a significant impact on supply chain risk management and resilience. The study offers practical guidance to manufacturing firms on how to improve their performance by efficiently handling supply chain disruptions. Furthermore, the research expands on information processing theory by situating it in the framework of supply chain risk management and resilience, providing valuable contributions to both academic theory and practical implications for manufacturing firms.

In 2024, Ngo et al. conducted a study that evaluated the sustainability risks in the supply chain of the garment industry in Vietnam. The study focused on how to manage these risks effectively. The researchers surveyed 254 garment companies to assess the effectiveness of dynamic supply chain management techniques in mitigating sustainability-related risks and enhancing firm performance. The study identified the ways in which companies dealt with sustainability-related supply chain risks and how these risks impacted operational performance. The researchers also created a comprehensive measuring scale for supply chain sustainability risk and evaluated the efficacy of dynamic supply chain management techniques. Overall, this study contributes to both theoretical and managerial knowledge. Moreover, it highlights the benefits of effectively managing sustainability-related risks and provides practical implications for environmental sustainability and businesses.

In their 2020 study, Wang-Mlynek et al. investigated the hindrances to Mitigation of Supply Chain Risk Management (MSCRM) within the automotive and civil aircraft sectors. The authors pinpoint limited information sharing, extensive supplier dependence, and heavy reliance on ICT as major obstacles. Their work offers practical guidance for professionals and researchers seeking to enhance MSCRM practices and proposes promising avenues for further inquiry. Notably, this study presents empirical findings on MSCRM barriers, employing a case study approach and honing in on particular industries.

Krystofik et al. (2020) have developed a comprehensive framework for assessing the risks associated with delaying customer shipments during significant events. Their approach builds on existing manual practices and incorporates data gathering mechanisms to evaluate critical variables such as the probability of an event and the importance of specific shipments. The framework is highly flexible, allowing for multiple probabilistic interpretations and distributions through an elliptical spatial component. The authors demonstrate the practical implementation of the framework in the Python scientific ecosystem, highlighting its effectiveness in rapidly identifying and prioritizing potentially at-risk shipments. This enables

proactive mitigation measures and customer communication, ultimately contributing to enhanced operational resilience and improved customer service. Overall, this research represents a significant contribution to the field of supply chain risk management.

In their 2020 study, Fischer- Preßler et al. conducted a thorough examination of the connection between supply chain risk management (SCRM) and information technology (IT). This international research project, which spanned three years and included a systematic literature review, aimed to identify the key variables associated with IT and SCRM. The study found that IT plays a crucial role in mitigating, identifying, analyzing, and monitoring risks in supply chain operations. To provide a framework for future research, the study proposes a two-dimensional classification system for IT's potential in SCRM. Overall, this research offers important understanding into areas that have been neglected and proposes encouraging paths for further investigation, making it an important asset for both academics and professionals.

In another study conducted by Munir et al. (2020), data from 931 manufacturing companies was analyzed to explore the correlation between supply chain integration (SCI), supply chain risk management (SCRM), and operational performance. The researchers developed a framework that connects SCI, SCRM, and operational performance, and utilized covariance- based structural equation modelling (SEM) on a substantial sample size to test this framework. The findings indicate that SCI has a beneficial influence on both SCRM and operational performance, and that SCRM functions as a mediator between SCI and operational performance. This research offers valuable insights for supply chain management scholars and practitioners alike.

Qiao and Zhao conducted a study in 2023 to investigate the connection between the performance of supply chain financing (SCFP) and the management of supply chain risk (SCRM) capabilities in small and medium-sized businesses (SMEs) in China. The study surveyed 286 Chinese SMEs and utilized structural equation modelling to confirm the research model's validity. The results from the study indicate that SCRM capabilities have a positive effect on SCFP across four dimensions, while supply chain integration (SCI) moderates this relationship. The study emphasizes the importance of prioritizing SCRM capabilities in SMEs to enhance their SCFP and financial provider evaluations, while also highlighting the significance of SCI in achieving favourable SCFP outcomes. Overall, this research provides valuable insights into the connection between SCRM capabilities, SCFP,

and SCI within Chinese SMEs, and presents practical implications for SMEs looking to improve their SCFP.

In their study, Durst et al. (2020) examined the practices of supply chain risk management in organizations from Estonia and Sweden. The research aimed to identify the methods and tools utilized in these countries and shed light on potential differences in supply chain risk management approaches across nations. This preliminary study serves as a stepping stone for a more extensive research project with a larger sample size and additional countries. The paper offers valuable insights into understanding and improving supply chain risk management processes on a broader scale.

In a recent study by Niyonsaba et al. (2023), the challenges, risks, and risk management strategies involved in European insect supply chains were analyzed across four stages. The study collected data from 57 stakeholders through an online survey, evaluating 60 barriers and risks and 20 risk management strategies. The main challenges and risks identified were related to finance, cost, and the market, while legal restrictions were found to limit opportunities for upscaling. To mitigate these risks, the key risk management strategies focused on technological investments to enhance insect quality and quantity stability. This study provides valuable insights for policy development aimed at supporting the growth and development of the insect sector, and offers comprehensive insights into challenges, risks, and risk management strategies in European insect supply chains, stimulating sector upscaling.

In 2022, Foli et al. conducted a study of the influence of different elements on the execution of supply chain risk management (SCRM) in Turkish small and medium-sized enterprises (SMEs). The study focused on young SMEs, considering factors such as demand, cyber risks, security regulations, and relative performance. To provide a comprehensive analysis, the researchers utilized advanced methods such as fuzzy set qualitative comparative analysis (fsQCA). The results of this groundbreaking study show that demand risk plays a crucial role in determining SCRM performance in young SMEs, while both demand risk and relative performance have an impact on mature SMEs. This study provides invaluable insights for academics and practitioners in the field of SCRM, particularly in the unique context of Turkish SMEs.

Tukamuhabwa and Benjamin (2023) undertook a study that examined the impact of supply chain orientation (SCO) on the performance of supply chains (SCP) in agro-food processing firms situated in Uganda. Using Partial Least Square



Structural Equation Modeling (PLS- SEM), the researchers analyzed data from 247 companies, and the results showed that SCO has a positive effect on both SCP and the capacity to manage supply chain risks (SCRM). Additionally, the study found that the ability to manage SCRM partially mediates the connection between SCO and SCP, emphasizing the importance of risk management in enhancing supply chain performance. These findings are significant for stakeholders and practitioners in agro-food processing firms operating in developing countries, as they can enhance their overall performance by prioritizing SCO and building SCRM capabilities. Although the study's applicability may be limited to agro-food processing firms in Uganda, it provides valuable insights for comparable developing economies.

In another recent study by Duong and Ha (2021), the effects of supply chain risk management (SCRM) on integration and performance were explored, along with the moderating role of social sustainability in these relationships. The results showed that prioritizing SCRM can enhance integration and performance, while considering social sustainability can further improve its effectiveness. These findings offer valuable insights for supply chain managers looking to improve their operations. Despite some limitations, the research highlights the critical role of managing risks and promoting sustainability in supply chains for achieving better performance and resilience.

## **DISCUSSION AND CONCLUSION**

The examined studies provide valuable insights into the intricacies of supply chain risk management (SCRM) and its impact on organizational performance and resilience. A key finding that has emerged is the increasing recognition of the significance of SCRM in mitigating risks stemming from both internal and external factors. Researchers have examined diverse topics, ranging from the potential of blockchain technology to improve security and transparency to the relationship between integrating supply chains and implementing quality management practices. Overall, the significance of implementing proactive risk mitigation strategies has been highlighted as critical by these studies.

Moreover, the research showcases the multifaceted aspects of SCRM, shedding light on its interplay with various factors such as IT, sustainability, and social consciousness. For instance, the study on the relationship between SCRM capabilities and supply chain financing performance in Chinese SMEs underscores the interdependence between risk management, financial results, and supply

chain integration. Similarly, the analysis of social sustainability as a moderating element in SCRM highlights the significance of comprehensive approaches to risk management that considers wider societal effects.

In addition, these findings highlight the constantly changing nature of supply chain risks, especially when confronted with new obstacles like cybersecurity dangers, market fluctuations, and environmental sustainability issues. The creation of frameworks and methodologies to evaluate and reduce these risks demonstrates a forward-thinking approach to fortifying resilience and flexibility.

In conclusion, the study research emphasizes the crucial significance of efficient risk management practices in supply chains. Through identifying crucial factors that affect supply chain risks and examining strategies for reducing them, researchers are able to strengthen organizational performance, resilience, and competitiveness. The results underline the requirement for a thorough and unified approach to supply chain risk management, which includes technological advancements, sustainable practices, and strategic alliances.

As we look to the future, organizations must prioritize investments in SCRM capabilities and cultivate collaboration among stakeholders to address the ever-evolving challenges and uncertainties. Drawing on insights from academic research and implementing best practices, businesses can fortify their supply chain resilience and position themselves for sustained success in an increasingly intricate and dynamic global environment.

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## **Chapter 2**

# **ANALYZING THE INTEGRAL ROLE OF FINANCIAL REPORTING IN BUSINESS SUCCESS**

**Serkan YELLİCE<sup>1</sup>**  
**Ali İhsan ÇETİN<sup>2</sup>**  
**Ahmet Şükrü PAMPAL<sup>3</sup>**

### **INTRODUCTION**

In the rapidly evolving business environment, financial reporting is a crucial component for ensuring transparent and accountable corporate governance. It provides essential information that organizations, investors, and other stakeholders rely on to make informed decisions. Financial reporting significantly influences perceptions, decisions, and strategies within the dynamic business landscape (Revsine et al., 2021). The literature on financial reporting spans a variety of topics, including financial performance evaluation, transparency, and accountability (Purnama et al., 2020). Evaluating the impacts of financial reporting on companies necessitates consideration of diverse perspectives within the literature. Some researchers highlight the role of financial reporting in fostering investor confidence, enhancing corporate reputation, and improving transparency, while others critique it for potential manipulation and misrepresentation of a company's true situation (Barauskaite and Streimikiene, 2021).

The significance of financial reporting for businesses has gained considerable attention in both the corporate and academic realms. This article seeks to contribute constructively to this ongoing discussion by critically examining the existing literature on the effects of financial reporting on businesses. The review aims to navigate the complex landscape of financial reporting, underscoring its importance for organizations, investors, and other stakeholders. By critically

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analyzing the key dimensions and implications of financial reporting, the review provides a comprehensive understanding of its role in corporate governance. By elucidating the pivotal role of financial reporting, this article intends to foster trust, promote informed decision-making, and enhance the stability and efficiency of financial markets. Furthermore, the review explores how accurate and transparent financial reporting can build trust between organizations and their stakeholders. It emphasizes the significance of financial reporting in facilitating informed decision-making by delivering relevant and timely information to stakeholders. Additionally, it highlights the role of financial reporting in shaping the perceptions and strategies of investors, regulators, and other stakeholders.

The current review provides a detailed analysis of the importance of financial reporting in the modern business world. The review emphasizes the necessity for accurate and transparent financial reporting to foster trust, promote informed decision-making, and contribute to the overall stability and efficiency of financial markets. Understanding the advantages and challenges of financial reporting for company management, investors, and other stakeholders is crucial in guiding future research. By doing so, we can help companies better understand the significance of financial reporting and its potential impact on their success.

## **FINANCIAL REPORTING AND BUSINESS SUCCESS**

Financial reporting is the practice of presenting an organization's financial information to a variety of stakeholders, including investors, regulators, creditors, and the public at large. This data is typically conveyed through financial statements such as balance sheets, income statements, cash flow statements, and statements of changes in equity. The overarching goal of financial reporting is to deliver pertinent, trustworthy, and timely information regarding an organization's financial health and position. This enables stakeholders to make knowledgeable economic decisions (Jonas& Blanchet, 2000).

However, achieving business success involves more than just financial performance. It encompasses various dimensions of organizational performance such as operational efficiency, customer satisfaction, market share, innovation, and sustainability. Although financial performance plays a crucial role, it's not the sole factor considered. Business success is evaluated by the attainment of organizational goals and objectives, including profitability, growth, and shareholder value creation, along with the ability to adapt to changing market conditions and achieve sustainable long-term growth (Headd, 2003).

The correlation between financial reporting and business success is intricate and multifarious. Financial reporting is a pivotal aspect of apprising stakeholders about the financial state and performance of the organization, which can impact their beliefs and choices pertaining to the organization. Precise and lucid financial reporting can augment investor trust, expedite access to capital markets, and bolster efficient capital allocation decisions, which are indispensable for the triumph of any business (Hua et al, 2016).

In addition, financial reporting plays an essential role in driving business success by offering valuable insights into the financial drivers of performance. It helps identify strengths and weaknesses, enabling strategic decision-making. Management can effectively allocate resources and assess the effectiveness of business strategies by analyzing financial reports. This, in turn, helps identify areas for improvement, ultimately enhancing the overall performance and competitiveness of the organization.

## **METHODOLOGY**

A comprehensive understanding of the intricate relationship between supply chain practices and the stock market requires a critical literature review. This approach involves identifying, assessing, and analyzing pertinent articles to address a specific research question in a transparent and reproducible manner. The critical literature review is a popular method in business literature that seeks to integrate diverse perspectives and research techniques, as opposed to covering all published articles. With a systematic process in place, researchers can effectively design, conduct, analyze, and structure their review to yield insightful and impactful results. Therefore, conducting a critical literature review is of great value and has the potential to drive significant progress across various fields of study. (Snyder, 2019; Yıldız, 2022)

## **DETERMINING RELATED STUDIES**

In order to meticulously curate the most pertinent materials, we have limited our search to English articles published on the Web of Science Search Engine up until May 1st, 2024. Our goal is to feature a substantial number of exceptional papers that explore a variety of subjects concerning marketing strategies and supply chain dynamics. To accomplish this, we have established rigorous standards and filters, such as the condition that chosen article titles must contain both “Financial

Reporting” and “Business” keywords. For a thorough breakdown of our search criteria, kindly consult Table 1.

<b>Data Base:</b>	Web of Science
<b>Years:</b>	2020-2024
<b>Source Type</b>	Peer Reviewed Articles
<b>Article Title</b>	‘Financial Reporting’, ‘Business’
<b>Language</b>	English

## **ANALYSIS OF THE ARTICLES**

After applying the filters as specified, we were able to gather a total of 15 articles. These papers underwent a thorough examination by our team of authors, who meticulously scrutinized them to ensure their quality. Using a set of specific criteria, we methodically analyzed each paper’s title and abstract to identify the 14 that are most relevant to our research objectives. Our comprehensive review has revealed the intricate correlation between supply chain management and the stock market. To make this information more accessible, we have consolidated a list of the 14 papers in Table 2.

## **LITERATURE REVIEW**

Precise and open financial reporting is an essential instrument to oversee and appraise a business’s performance. Such reports equip managers with the necessary data to make informed decisions and bolster the financial stability of the enterprise. Hence, efficient financial reporting can enhance business operations and serve as a crucial base for sustained prosperity.(Tajuddin and Muhamad, 2022). In this context, the related studies will be examined in this part.

Poretti et al., 2023 examined the impact of an asset-light and fee-focused (ALFO) strategy on financial reporting complexity is explored. They conducted semi-structured interviews with audit professionals in the hospitality industry and found that the ALFO strategy increases the complexity of financial reporting for external auditors, leading to higher audit fees. Secondly, the researchers conducted an empirical test on a sample of global accommodation companies from 2010 to 2019 to examine the relationship between asset lightness and audit fees. The results revealed an inverted U-shaped relationship. These



findings provide valuable insights for investors, board members, and executives of hospitality companies, shedding light on an under-researched outcome of the ALFO strategy and identifying the conditions for maintaining accounting information quality in an increasingly complex environment. The findings of this research could have an indirect influence on job productivity. Specifically, the rise in financial reporting intricacy and its reflection on audit charges could impact the expense structure of organizations. High audit fees have the potential to diminish the profit margins of businesses, which could have a negative impact on their performance. Furthermore, the fresh perspective that this study brings to entrepreneurs, investors, and managers could influence their strategic decision-making processes. For instance, a better comprehension of the effects of the ALFO approach on financial reporting complexity could assist businesses in making well-informed decisions about whether to adopt or alter this strategy. Hence, elements like financial reporting intricacy and audit fees may have an impact on the overall performance of a business, but it is an indirect and intricate effect.

Benford's Law is a principle that highlights the significance of the leading digit being small in collections of numbers. This law is widely used in accounting audits. Patel et al. (2023) conducted a study that explores the numerical patterns in the financial reporting of small and medium-sized enterprises (SMEs) using Benford's Law. The study investigated whether these patterns are linked to the likelihood of businesses failing. They used a sample of 220,583 SMEs in Portugal and found that companies that violate Benford's Law on important accounting items such as cash, net income, current liabilities, assets, and sales are more likely to fail. This suggests that financial reporting manipulations can increase the risk of SME failure, particularly through Benford's Law violations. This research is a significant step in assessing the financial reporting practices of businesses. By examining the link between Benford's Law violations and the possibility of business failure, this study offers valuable insights into how fraud and manipulation in financial reporting can impact business success. Therefore, it contributes significantly to promoting financial transparency in business and creating a more reliable financial environment for business owners, investors, and other stakeholders.

As technology continues to advance at a rapid pace, the accounting and auditing industry has embraced the digital age by implementing Extensible Business Reporting Language (XBRL). XBRL is a state-of-the-art tool used for preparing, presenting, and communicating financial and business information. A recent study conducted by Ashoka et al. (2020) examined the perceived impact of XBRL adoption on financial reporting, auditing, and financial information

communication. This study utilized a combination of primary and secondary sources, as well as statistical analyses like t-tests and Levene's Independent Samples Test. The results of the study indicate that the adoption of XBRL has a noticeable impact on financial reporting, auditing, and financial information quality. This research highlights how technology has transformed accounting and auditing practices, specifically through the adoption of XBRL. The study also underscores how XBRL can enhance the quality of financial information communication, offering valuable insights for businesses and auditors. Consequently, this study is an essential resource for managing the digitalization process in the accounting and auditing field and enhancing the communication of financial information.

In 2023, Arianpoor and Sahooor conducted a research study on the Tehran Stock Exchange (TSE) to investigate how business strategy and annual report readability affect financial reporting quality. They analyzed a sample of 160 companies listed in the TSE, using five accounting-based and market-based measures to assess financial reporting quality. The study aimed to evaluate how well financial reporting accurately reflects a business's financial performance and position, while also exploring the impact of cost leadership and differentiation strategies on competitive advantage. To gauge the readability of annual reports, the study relied on the Fog index, recognizing the importance of presenting financial information in a clear and accessible manner. Ultimately, this research sought to shed light on the intricate relationship between business success and financial reporting, investigating how business strategies and annual report readability can impact financial reporting quality.

Mazumdar and Ragnath's (2020) article examines the latest advancements in information technology and the obstacles that businesses must navigate in managing their data. The authors note that the data generated from commercial and operational activities can be disorganized, opaque, and of little practical value. To address this challenge, the article highlights the significance of business intelligence (BI) tools and how predictive analysis, based on reliable data, can provide insights for critical business decisions, including trend identification and pattern recognition. This insightful study delves into the cutting-edge trends and techniques within the realm of business intelligence. It illuminates how technological progressions have fortified the link between business necessities and information technologies. Moreover, the study scrutinizes the diverse strategies employed by businesses to integrate the business intelligence framework, thereby supporting improved business decisions. Additionally, it underscores the criticality

of business intelligence in the realm of business operations, citing current market tools for business intelligence as prime examples.

The study conducted by Hassan et al. (2021) highlights that businesses have limited knowledge about non-financial activities which can lead to negative impacts during crises like Covid-19 on the global economy. The research recommends that businesses should broaden their perspective and include non-financial aspects in their reporting to improve the quality of their reporting. The research includes an analysis of the Financial Reporting Standard of Businesses, and it is supported by a thorough examination of data collected from various sources. The study aims to evaluate the correlation between the financial performance of businesses and the impact of financial reporting on their success.

The study conducted by Bini et al. (2023) analyzes the effects of regulatory initiatives, such as the European Union Non-Financial Reporting Directive and the UK Companies Act, on the disclosure of business model information. Through an exploratory research method, the study highlights the lack of agreement on a specific business model definition, building blocks, and reporting function. The research involved 35 users and 13 preparers who participated in a survey study, as well as 13 in-depth interviews, and the data gathered from these sources were analyzed. The main objective of the study is to investigate how regulations on business model disclosure can encourage companies to be more transparent. The study also aims to explore how a common perspective among market participants can impact the quality of business model reporting. By analyzing relevant data, the study will evaluate the connection between financial reporting and business success, and how it is influenced by the business model.

The study conducted by Chen et al. (2022) examines the association between a company's business strategy and financial reporting violations and audit fees, using Miles and Snow's (1978, 2003) strategy continuum model. The research focuses on the relationship between the innovative "prospector" strategy and the cost leadership "defender" strategy and evaluates whether business strategy is related to financial reporting violations and audit fees. The study is based on data from China and takes into account several factors, including ownership structure, auditor size, leverage, and business risk. This study assesses how financial reporting affects business success by examining the connection between financial reporting and business strategy, as well as the impact of accounting complexity on the risks associated with financial reporting.

**Table 2. List of Articles**

Authors	Article Title	Language	Author Keywords	Publication Year
Tajuddin, TS, Muhammad, I	BUSINESS ZAKAT REPORTING Evidences from the Islamic financial institutions	English		2022
Porell, C.; Jerome, T; Heo, CY	Business strategies and financial reporting complexity in hospitality firms	English	Asset-light strategy; Audifees; Complexity; Financial reporting; Hospitality industry	2023
Paol, PC; Tsionas, MG; Guedes, MJ	Benford's law, small business financial reporting, and survival	English		2022
Ashoka, M., Abhishek, N; Divyashree, MS	Extensible Business Reporting Language and Its Impact on Financial Reporting and Auditing	English	XBRL; Financial Reporting; Auditing; Quality of Financial Information	2020
Arianpoor, A; Sahoor, Z	The impact of business strategy and annual report readability on financial reporting quality	English	Business strategy; Financial reporting quality; Cost leadership strategy; Differentiation strategy; Annual reports readability	2023
Mazumdar, A; Regunathan, R	Enterprise Reporting Solution on Integrating Business Intelligence for Operational and Financial Data	English		2020
Hassan, A; Elamer, AA; Loh, S; Roberts, L; Nandy, M	The future of non-financial businesses reporting: Learning from the Covid-19 pandemic	English	biodiversity; business reporting; circular economy; integrated reporting; Covid-19 crisis; non-financial reporting; stakeholder engagement; sustainable development	2021
Bini, L; Schaper, S; Simoni, L; Giunà, F; Nielsen, C	Mandatory non-financial disclosure: is everybody on the same page about business model reporting?	English	business model; institutional reality; social construct; reflexive regulation; non-financial information disclosure; corporate transparency	2023
Chen, L; Hu, F; Krishnan, A; Li, LZ	Business Strategy, Financial Reporting Violations, and Audit Pricing in an Emerging Market: Evidence from China	English	business strategy; financial reporting violations; audifees; accounting complexity	2022
Pham, QT; Truong, THD; Ho, XT; Nguyen, QT	The role of supervisory mechanisms in improving financial reporting quality by Vietnam public non-business unit	English	financial reporting quality; supervisory mechanisms; public non-business unit; internal control effectiveness; independent audit; financial inspection frequency	2022
Lamprecht, C; van Wyk, H	Annual Financial Reporting: A Quantitative Analysis of the Temporal Going Concern Status during Business Rescue Proceedings	English	business rescue; Chapter 6; financial distress; financial reporting; going concern; liquidation; solvency	2022
Galeone, G; Onorato, G; Shini, M; DeFalco, V	Climate-related financial disclosure in integrated reporting: what is the impact on the business model? The case of Poste Italiane	English	Integrated reporting; Business model; Climate change disclosure	2023
Popova, TN; Dyachenko, YK; Brizitskaya, AV; Denisova, ES	Initiatives for Promotion of Public Non-Financial Reporting Based on the Concept of Sustainable Development to the Business Community of Russia	English		2020
Kalanbrinis, P; Delegkos, AE; Solichou, E; Papagrigoriou, A	Modern business development and financial reporting: exploring the effect of corporate governance on the value relevance of accounting information: evidence from the Greek listed firms	English	Value Relevance; Corporate Governance; Neural Networks; Panel Data Regression; Accounting Information	2022

In 2022, Phan et al. conducted a quantitative research study analyzing 362 non-public enterprises in Hanoi, Da Nang, and Ho Chi Minh City. The research aimed to examine the effects of independent audits, internal control effectiveness, and financial audit frequency on the quality of financial reporting. The findings indicated that internal control effectiveness is crucial in mediating the relationship between independent audits, financial audit frequency, and the quality of financial reporting. The study underscores the significance of both internal and external audit mechanisms in enhancing financial reporting quality, providing valuable insights for policymakers. It is important to note, however, that the study's scope is confined to non-public enterprises in Vietnam, which may limit its generalizability. Nevertheless, the results offer a deeper understanding of the role of effective audit mechanisms in improving financial reporting quality and can assist in the development of relevant policies and regulations.

In another 2022 study, Lamprech and van Wyk explored how financial reporting standards and legal regulations impact the “going concern principle.” Their research specifically focused on a company listed on the Johannesburg Stock Exchange (JSE) in South Africa while it was undergoing business rescue. Designed as a quantitative cross-sectional study using non-purposive sampling, empirical data were gathered through a structured survey from accounting and business recovery experts. The collected data were analyzed using descriptive and inferential statistics to identify patterns and provide insights into the impact of financial reporting standards and legal regulations on the going concern principle.

The study by Galeone et al. (2023) focuses on companies that are restructuring their business model and corporate reporting tools to prioritize sustainability. Instead of examining the direct relationship between financial reporting and business success, the study analyzes how sustainability and climate change factors are incorporated into the business model and reporting processes. Although the study does not directly address the relationship between financial reporting and business success, it provides valuable insights into how a sustainability-focused business model and reporting processes can contribute to a company’s long-term success.

The study conducted by Popova et al. (2020) analyzes the attitude of international and Russian businesses towards non-public financial reporting. The international business community has already adopted sustainable development principles and publishes non-public reports based on Global Reporting Initiative (GRI) standards. This has resulted in significant benefits for them. However, Russian businesses are still lagging behind in embracing non-public reporting and are unaware of its benefits. To understand the reasons for this difference, the researchers conducted a series of interviews with large, medium, and small businesses. Based on the findings, they proposed several initiatives that are in line with the concept of sustainable development and rely on GRI standards. These initiatives aim to promote the adoption of non-public reporting in Russian businesses.

In a recent study (Kalontonis et al., 2022), the impact of corporate governance reporting on the relevance of accounting information was examined. The study focused on companies traded on the Athens Stock Exchange from 2010-2017 and analyzed how the reporting of corporate governance information affects the value relevance of financial reports. To evaluate this effect, the Ohlson model was utilized, and the study also analyzed various methodological approaches such as OLS, WLS, and neural networks. The results indicate that while factors such

as board independence, female participation, and CEO duality can influence the market value of companies, their contribution to the value relevance of accounting information is limited. Overall, this study provides valuable insights into the relationship between corporate governance reporting and the relevance of accounting information, contributing to a deeper understanding of this important issue.

## **DISCUSSION AND CONCLUSION**

According to financial reporting standards, businesses are mandated to evaluate their financial performance and maintain transparency. This requirement emphasizes the importance of assessing businesses' financial health while ensuring transparency. It is widely acknowledged that the decision-making processes employed by businesses significantly affect the quality of their financial reporting. Consequently, the specific strategies and presentation techniques used by businesses can substantially influence the overall quality of their financial reports. Therefore, it is essential to conduct research on various strategic approaches and reporting methods to better understand their impact on financial performance evaluation.

Recent technological advancements and the increased digitalization of financial systems have led to significant changes in financial reporting processes. Scholars have examined the effects of digitalized reporting tools, such as XBRL, on the quality of financial reporting, auditing, and financial information communication. The implementation of these tools has facilitated standardized reporting, enabling more efficient and effective communication of financial information. However, the use of these tools has also introduced new challenges, including the need for robust quality control and the development of suitable auditing procedures. These challenges have been a primary focus of academic research in recent years, as scholars aim to enhance financial reporting processes in the digital age.

To foster trust and confidence in financial reporting, it is crucial to promote increased transparency in these processes. Additionally, considering the growing concerns around sustainability and climate change, it is vital to integrate these issues into business models and reporting tools. This integration allows stakeholders to be more actively engaged and informed about these important considerations. Investigating the effectiveness of internal and external audit mechanisms is essential for improving the quality of financial reporting in public organizations. By specifically examining the impact of independent audits, the effectiveness

of internal controls, and the frequency of financial audits, transparency can be heightened, and governance standards can be enhanced. These studies offer valuable insights into the relationship between financial reporting and business performance, underscoring the importance of high-quality financial reporting in shaping strategic decisions and improving processes. In order to drive effective business strategies, it is imperative for businesses to consider the impacts of financial reporting on their overall performance.

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## **Chapter 3**

# **CULTURAL NARRATIVES OF TARKONDİMOTOS' ANAVARZA**

**Begüm Sultan ÜNSAL<sup>1</sup>**

### **INTRODUCTION**

“This was the smell of the Anavarza cliffs. Bees, lizards, partridge chicks, nests, eagle nests, rattlesnakes, arrow snakes also smelled like this. It is a pleasant, sweet, anaesthetic smell in this spring sun. Rain on the cliffs of Anavarza also smells different, it smells of wet rock.”  
(Yaşar Kemal, 2020: 8)

Anavarza Castle, located right in the middle of Çukurova, is a historical ancient city that contains many historical artifacts that are still waiting to be discovered under the ground. In this place, which is referred to as the Ancient City of Anavarza in the studies; theaters, churches, baths, water cisterns, walls, mosaic structures are spread over 143 acres of land. In the light of the research, it is known that there are also structures 30 meters below the ancient city. Along with the structures of the ancient city, which still needs to be discovered, its legends should be told, and studies should be carried out on it.

When we look at the historical structure of the ancient city of Anavarza, it gained importance during the Roman Empire and became one of the important ancient cities of Çukurova today. It is in the northeast of Adana, 75 kilometers away from Adana, 8 km north of where the Sumbas and Kesik water, which feeds Ceyhan, meets the Ceyhan River, at the junction of Kadirli, Ceyhan and Kozan districts, within the borders of Kozan. Anavarza Castle is located on the eastern slope of the Late Antique City of Anavarza, right in the middle of Çukurova, on the rocky cliff dominating the city, and due to its location, the castles and the Gulf of Iskenderun can be seen from here (Hançer, 2016, p.281).

Located on a majestic limestone in the center of Cilicia Pedias, right next to the late city of Anavarza, Anavarza Fortress has a strategic position that can be clearly

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traced in terms of the fortresses of Tumlu, Toprak, Yılan, Bucak, and Amuda. Anavarza Castle also dominates the roads extending from north to south, and the Sumbas Stream - which reaches the Ceyhan River - passes to the east (Hançer, 2016: 282). Texier mentions that the name of this ancient city suggests an eastern origin at first, but the historians of antiquity did not provide any information about this period. As Texier points out, the location and architecture of the city are clearly like the Shamiram Fortress in Van. (Texier, 1862, p.580).

It is known that the Shamiram Castle in Van and the Anavarza Castle in Adana bear the character of Assyrian cities. In the light of the studies, it is said that one of the reasons why they resemble Assyrian castles is that they were carved out of a rock and built on it. Both fortresses are quite large, and the inner parts of the fortresses were inhabited, with sections used as shelters and warehouses. The Byzantine historians of the period named Anazarba after a legendary figure thought to be the founder of the city. Stefanos, known as one of the most important historians of Byzantium, suggests that it may have come from the Arabic word Ayn Zarba, due to the yellowish color of the rocks around the ancient city of Anavarza. However, this idea was not confirmed by Pliny.

Emperor Augustus, who admired the military position of the region during his journey to the East and ensured the growth of the city, bestowed the title of “Caesarea ad Anazarbum” to the city in 19 BC. This information is confirmed when the coins obtained because of the excavations of the ancient city are analyzed (Hançer, 2016, p.282). Smpad; Anarzapa, Vartan; Anavarza, and Mateos from Urfa mentioned and recorded Anavarza, which was the capital of Cilicia II during the Crusader period, as Drovata (New Troy).



**Figure 1.** View of Anavarza Ancient City (Writer’s Personel Archive, 2023).

One of the studies on Anavarza was conducted by Michael Gough in 1952. Michael Gough stayed at the site of the ancient city for six weeks and kept records about the city. According to Gough, today Cilicia can be described as a country within a country. Bordered by the Taurus Mountains to the north and west and the Mediterranean Sea to the south, the region has a distinctive and independent character. Willbrand traveled to the region at the beginning of the 13th century to attend the celebration of the Feast of the Epiphany, also known as the Feast of the Ides, at the court of King Leo II. The German bishop Willbrand of Oldenburg said the following about Anavarza: “This land is very strong because it is surrounded on one side by the sea and on the other side it is protected by well-guarded high and steep mountains with few passes. For example, if a traveler were to enter these lands, it would be very difficult for him to leave without the King’s authorization and knowledge” (Gough, 1952, p.87). During its period, Anavarza Castle was used as a military garrison area by the Roman Empire. Because it was built on sharp and steep cliffs, it is stated that it was not only difficult to enter but also difficult to exit.

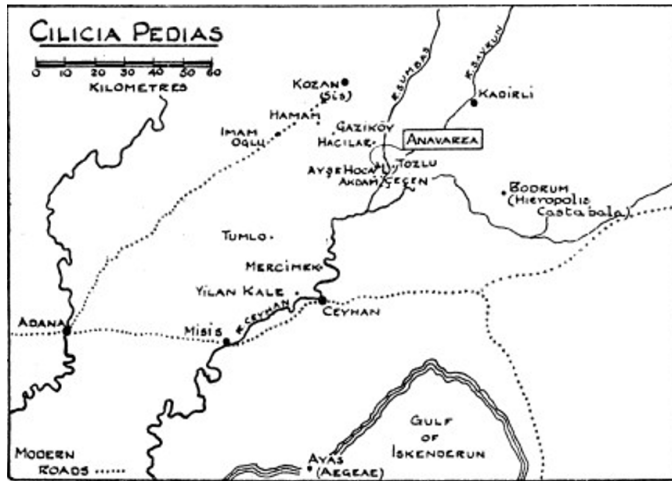


Figure 2. Map of Anavarza and Surroundings (Gough, 1952, s. 86).

Cilicia Plain, a large part of which is within the borders of Seyhan district, is one of the most fertile plains of the geography. Sesame, oats, etc. are the most grown products. The Anavarza region is also particularly suitable for rice production. However, the real wealth of the country lies in cotton production, also known as white gold. The main center of industry is Adana (Gough, 1952). Until the 19th century, the Anazarbus region was virtually unknown to European scholars

and, consequently, ancient artifacts were not recorded. In the 13th century, it is thought that it was Willebrand who visited and recorded its history. Indeed, Charles Texier, one of the first to visit the region in the modern era, wrote: “The location of the ancient city of Anavarza was actually full of uncertainties. Whether it was located by the Euphrates, inland or by the sea has always been debated in academic studies.” Texier had the opportunity to examine the triumphal arch and the castle of this place where he stayed for a day (Gough, 1952, p.90).



**Figure 3.** Triumphal Arch of the Ancient City of Anavarza (Writer's Personal, Archive, 2022)



**Figure 4.** Triumphal Arch (Writer's Personal Archive, 2022)

The arches, which Plinius described as an invention, can be called not only a new architectural element but also a new example of the symbolic representation of central power. With their versatile functional and structural uses, the fact that the arches, which were preferred within the borders of the Roman Empire, took on a different meaning in Anatolia, which also affected their character, has also been emphasized in previous studies. Triumphal arches are at the forefront among the types of structures used as propaganda tools with a symbolic approach reflecting the power of the Roman period. The reasons for the emergence of this structure type specific to Rome are the understanding of victory and traditions of the period (Özgen, 2009, p.1).

This Triumphal Arch located in Anavarza was built to commemorate the victory of the Romans against the Persians in the 3rd century. The empire honored Anavarza with this Triumphal Arch as the eastern camp city. It is known that it was built to represent the power and dominance of the region it was in during its time. With its 22.5 meters width, 10.5 meters height and 5.60 meters wall thickness, we can also state and introduce it as the largest monumental city gate in the ancient world. Triumphal arches are structures built outside of spatial architectural examples for the purposes of propaganda, the blessing of the city by the emperor, gods and goddesses, the recognition of the titles of the emperors, the drawing of the final state of the borders, the appearance and order of the city.



**Figure 5.** Anavarza Ancient City Ali's Cut (Writer's Personal Archive, 2024)

Even when we go to Anavarza and look at this ancient city from a bird's eye view, we can understand that it had a rich civilization during its period. The churches and the amphitheater in the ancient city are such that only great kingdoms or empires could have built them. According to Çelik (2023), it is said that a hilly area of the historical city on which Anavarza is based is almost as if it was cut in half in the middle and a road was opened to get to the other side. This is called "Ali's Cut" among the inhabitants of Anavarza village. It is said that Prophet Ali cut the rocks with his sword Zülfikar in order to pass through here (Çelik, 2023). However, it is thought that this rift was caused by two major earthquakes in the sixth century, which also caused the destruction of part of the Anavarza Castle. According to Emrahoğlu (2011), we can infer that this cleft was most likely formed by the great earthquakes of Çukurova, from the inscription on the "Ali's Cut" located in the Ancient City of Anavarza, which says, "For this reason we will not be afraid, even if the world moves and the mountains are carried to the middle of the sea, even if the waters rise and roar, even if the mountains tremble from the rising water..." (Emrahoğlu, 2016).

## **METHOD**

The aim of this study is to uncover the legends about the Ancient City of Anavarza, located within the borders of Dilekkaya village in Kozan district of Adana province. In this research, the ethnographic field research method, which is accepted as a qualitative research method in social sciences, was used. At the same time, current and historical sources related to the subject of research were meticulously examined. In particular, attention was paid to access primary sources regarding articles written about the Anavarza period, ongoing excavations, and news. Ethnography is a scientific field of study that enables understanding the culture of a society and recording these values so that they are not lost. According to Kartarı (2017), these scientific studies include seeing and interpreting the lifestyle, belief, worldview of the culture under study and the relationship between them (p. 217).

## **CULTURAL NARRATIVES ABOUT ANAVARZA**

Mythologies, legends and stories about the period are told in the places where ancient cities are located. These ancient places are areas that carry the traces of the past and are decorated with mythological stories, making you feel the magic of history. According to Taşdelen (2009), history is like a dark book. As one goes backwards in time, the darkness becomes more intense, and the eyes become blind. Perhaps for this reason, people feel the need to look at the legendary stories

that history tells in its own time. This is also true for ancient cities; they are like a dark book. How can we know or how much can we know about their events and lives that are buried in the pages of history that will never see the light of day again? How much can the interpretations of researchers convey the life there? The ancient city is not a one-dimensional, simple image; it contains thousands of years of changes and layers of meaning. It contains different civilizations, their ways of living and thinking, different times and different conditions. An ancient city takes its place among the closed pages of the history book with thousands of years of accumulation. It will be tried to explain what has been written on those pages over thousands of years with the stories that have been told over time, with its mosaic and symbolic rock.

### **THE STORY OF AYA, DAUGHTER OF THE KING OF ANAVARZA**



**Figure 6.** Mosaic of Aya, Daughter of the King of Anavarza (Writer's Personal Archive, 2024)

The person in the image in the center of the mosaic is “Aya”, the daughter of the King of Anavarza. During the Roman Period, Aya’s name is mentioned everywhere as the most beautiful daughter of Anavarza. Many poems were written on her name in her time. She was so beautiful that they said, “Let the moon not rise, let me rise”. Everyone envied this girl. When we look at the mosaic, on this side is the son of the King of Kozan, this is how the original story starts. Sometimes some things about Aya are told incompletely and that’s how it spreads among the people. So, we are asked not to make too much of the legend. They say that people will be afraid if they know what happened to Anavarza. The one in the dress is the son of the King of Kozan. And this one is the son of the king of Misis. There is a great kingdom of Misis. The sons of these two kings are coming for Aya, the

daughter of the King of Anavarza. The son of the King of Misis said to the King of Anavarza, “My king, I want your daughter. If you do not give her to me, I will wage war; we will break your people.” But both kingdoms are strong. That is, in terms of military. The son of the Kozan King says, “My king, I am in love with your daughter. Give her to me. If you don’t marry me, I will start a war and destroy your people.” Of course, the King of Anavarza begins to think deeply. What can he do? The king’s daughter Aya sees her father. She sees that her father is very upset. “My father, you are lost in deep thoughts. What are you thinking?” The King says, “My daughter, how can I not think? Two kingdoms have come together. Their sons want you. Whichever side I give you to, the other side will start a war.” Aya replied to her father, “But father, the son of the Kozan King is in my heart. What could be easier? Anavarza has very little water. Our people need water. Whoever brings water to Anavarza and pours it here, give me to him.” Aya asks her father to stipulate this situation and both kingdoms are informed about this situation. The sons of the two kings accept this race. Both of them compete. The son of the Kozan King brings water from underground. With toreks, that is, pipes. He makes mosaic stones and ornate rocks while bringing water. Of course, the arrival of the water is delayed due to this situation. The son of the Misis King also brings water over the city wall. He brings water from Alapınar, over Keriz. He builds it quickly with bad stones. Because the arrival of the water is important. The King of Anavarza says, “First, the water has to come because...” Of course, Aya sees that water has come from the castle down to Anavarza and will be poured. The son of the Misis King brings water up to the castle. He builds such walls that Aya is very surprised when she sees the walls.



**Figure 7.** Hatun Dilci’s daughter Şükriye Arıkanlı and the King’s Daughter Aya Mosaic (Writer’s Personal Archive, 2024).



Aya says to the son of the Misis King, “You may have brought the water, but I will not marry you.” Upon Aya’s words, the son of the Misis King says, “Why don’t you marry me? You are my right. You will marry me. I am the winner of this war.” Aya said, “Okay, you may have won this war, but you don’t have my heart.” Aya states that she secretly loves the son of the Kozan King. The son of the Misis King says, “If you do not marry me, I will have my snakes bite you.” In the old days, kings had snakes. Kings became famous and important figures with their snakes. We see this when we look at the mosaic. The son of the Misis King has a whip in his hand. He sends the snake between the two lovers with the whip. We can understand these from the mosaic. The dragon is in front of the girl’s eyes. He wants to kill Aya and the boy she loves. The yellow snake’s tail is also wrapped around him. Then the girl sees that even if the snake bites, there will be a war and the people will be destroyed. Then she thinks the best thing is to commit suicide. She throws herself down from Anavarza castle and the beautiful Aya passes away from this world. Anavarza used to be a cheerful and lively place but after Aya’s death it falls into great mourning. The people begin to live sadly and unhappily. Diseases begin to appear.



**Figure 8.** King’s Daughter Mosaic (Writer’s Personal Archive, 2024)

At that time, every kingdom had sorcerers. The sorcerers and goddesses of the Misis Kingdom cursed Anavarza. After that day, Anavarza became a cursed city. Anavarza experienced three major earthquakes. Such a black magic was cast on this ancient city that diseases started to appear after three major earthquakes. Plague, cholera, typhoid, jaundice, dysentery and other major diseases you can think of. The age of the people dropped to 30-35. There was a constant state of

death. After that, the Persians, Armenians, Arabs and various armies came. The people started to be defeated in this situation. In their defeated thoughts, they started to look for new homes for themselves and migrations began. Whichever tribe came to Anavarza received their share of this curse. None of them could find a proper shelter here. In the end, "Anavarza" became the "cursed city". Then, new people came to this geography and said that we are not happy either. They still think that the effect of this spell continues. At first, they did not like this situation being mentioned and spread by the public. However, when this curse is mentioned on the sarcophagi, people start to learn about it. Because they think that people who know about this curse will not visit this wonderful ancient city. Of course, that is not the case. Those who see the beauty of Anavarza come again. Those who hear Aya's story come to see her mosaic out of respect for her. Instead of talking about the son of the King of Misis; the love between Aya and the son of the King of Kozan is talked about.

### **THE RISE OF THE COMET**

In Anavarza and Damascus, according to the villagers, this story was told a lot. Over time, other villages in Çukurova also started to tell little stories about the rise of the comet. With the arrival of August, people living in this region would start to say sentences like, "I wish a comet would rise and the weather would cool down." Because as soon as the comet was risen there was a coolness around. The rustling in the trees would increase, the sound of birds would be heard more. The rising of the comet was understood when the comet appeared over the castle of the ancient city of Anavarza. This comet could also be seen from Damascus. Those who could not see the comet would know that it was rising in the sky by the fact that the tomatoes were shedding a lot (tomatoes coming out).



**Figure 9.** Anavarza Castle taken by Gertrude Bell in 1905 (Buyruk, 2015).

In fact, the people who tell this story state that their own mothers-in-law, mothers, wise people living in their villages spread this rising by word of mouth. They even say that these tomatoes are cherry tomatoes and that the crops that come out during this period are very abundant. It is even stated that the reason why stargazing started to be practiced in this geography in ancient times was out of gratitude to the comet.

### **LEGEND OF THE NAME DILEKKAYA**

This village, formerly known as Anavarza, is now called Dilekkaya. However, the name Anavarza is used by the people living in the village and the surrounding settlements. The name Dilekkaya (translated as wish rock) comes from a rock fragment located in the ancient city of Anavarza. Since time immemorial, mysterious and symbolic references have been made to certain things in places where ancient cities are located. Here we see this as a cultural code.



**Figure 10.** Wish Rock of Dilekkaya Village (Writer's Personal Archive, 2024)

There is a rock in the photo frame in Figure 10. It is an important piece for the people living in Anavarza village. Those who had illnesses, those who wanted to have a child, those who wished to meet their loved ones came to this rock to make a wish and when they prayed their prayers and threw the stone over the rock to the other side, they told stories with symbolic meaning that their wishes came true.

## **CONCLUSION**

The history of the ancient city of Anavarza is full of unknowns. According to the studies conducted by archaeologists, people from Anavarza started to migrate after the Mamluk attacks in 1375. When the history of the city is analyzed; it is known that Romans, Byzantines, Muslim Arabs, Crusaders, Armenians and Mamluks ruled in this geography after the period of Tarkandimotos in the initial phase. Anavarza, which initially operated as a military garrison, became an important base for the region in time and became a metropolitan city. At the same time, it is one of the rare places where the Olympic Games were played during this period, it reached its economic peak, and it was discovered because of excavations that coins belonging to Anavarza were minted during its period.

Legends are the first oral source for the people of the past to be seen as a social entity and for reality and imagination to meet at one point. Since writing was not yet known or not yet very widespread in certain periods, it is seen that communities used oral sources in order to express and introduce themselves in a

certain format. In this sense, legends and similar oral sources have assumed a very important role in the context of cultural interaction for the society. Over time, these oral products, legends, myths and other related phenomena have become more frequently mentioned in scientific research and social life. Today, with its changing face, legends, culture, society and the people living in the region have accepted their existence with the contributions they have provided to the people and thus have become a socio-cultural phenomenon.

The legendary stories that have left their mark in those mysterious times of history help us to make sense of that period, to reveal the ways of life of the era, and to determine the daily routines of people. Joseph Campbell, who stands out with his work in the field of myth and mythology, said the following about these issues: "I think of mythology as the homeland of museums, of art, of poetry, of inspirations. Myth makes you feel that life is a poem, and you are a part of it." If we look at it this way, every story that has survived to this day has something to say and teach us.

Legends are linked to communities in many ways. In particular, we can say that learning the customs and traditions before the classical period is the most important building block for determining how the social structure was. Stories from ancient times not only tell the mysterious side of a period, but also reveal the developmental stages of societies. One of the most important aspects of these stories is the analyses they offer regarding the formation of peoples who adhere to their traditions. In this context, legends begin to function as a tool designed to find solutions to human problems.

In this research, the stories told among the people about an important ancient city like Anavarza, which has witnessed many important historical events of its period, are included. The names of these stories are as follows; the story of Aya, daughter of the king of Anavarza, the rise of the comet and legend of the name Dilekkaya. The belief patterns of the period and the connection with the sacred make the stories relevant to the present and past societies. In this context, the stories told in this context can be seen as a ritualized application of reality in a social sense. These stories, which date back to the first formation times of ancient cities, refer to the emotions and feelings that are common between the past and the present by preserving their simplicity and being passed down from generation to generation in this way.

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## **Chapter 4**

### **ANALYZING THE VALIDITY OF EKC HYPOTHESIS FOR G7 COUNTRIES**

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#### **INTRODUCTION**

The collecting of data on variables is a crucial stage in economic research. Ensuring the credibility of predictions relies on the meticulous collection of data from trustworthy sources, adhering precisely to the established model. Three prevalent data collection techniques are employed in econometric analysis. Time series data, one of the data collection techniques, refers to data that captures the fluctuations of variables over time, typically measured in units such as days, months, or seasons. Another data collection technique, cross-sectional data, is data that is gathered from various units at certain time intervals. Panel data, another data collection technique, refers to the collection of observations on multiple units over a specific time period. Panel data analysis provides the benefit of investigating both the cross-sectional disparities among units and the temporal evolution of a specific unit (Baltagi, 1995; Hsiao, 1986). Panel data comprises many units, each seen on at least two occasions (Stock & Watson, 2020).

An illustration of panel data includes the wheat production levels of the provinces in Turkey from 1980 to 2015, as well as the count of employees engaged in the manufacturing sector over the period from 1986 to 2017 (Tatoğlu,2022). The panel data for the period 1970-2016 encompassed the ecological footprint values of OECD nations in our analysis.

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## METHOD AND DATA

The research study seeks to assess the validity of the Environmental Kuznets Curve hypothesis by analyzing the correlation between financial development and income distribution inequality in G-7 countries, which are advanced economies. To accomplish this objective, a comprehensive panel data analysis was conducted, encompassing seven nations and spanning the years 1995-2018.

Panel data is a collection of observations for N units (such as countries, companies, individuals) during T time periods (such as annual, quarterly, monthly). These observations are associated with each unit. (Tatoğlu, 2021; Asteriou & Hall, 2021; Karlılar, 2019; Çelik & Kırıl, 2018). Panel data analysis incorporates cross-sectional data and time series data. In this scenario, an increased quantity of significant data, enhanced variability, reduced linear correlation between parameters, improved efficiency, and a bigger number of degrees of freedom enhance the accuracy of the parameter estimate (Gündüz & et. al, 2020; Gujarati, 2021).

Panel data analysis is the method of estimating economic correlations by utilizing panel data. Panel data analysis is a statistical method frequently employed to analyze two-dimensional panel data, which typically consists of both cross-sectional and longitudinal data (Maddala, 2001). Panel data, or cross-sectional data with a temporal component, is data collected over different time periods (Tatoğlu, 2021). For instance, the ecological footprint rate of OECD countries from 1970 to 2016 can be classified as panel data. The 'Panel Data' method is used to analyze data that includes information on several entities. It can be defined as the act of combining observations from different groups throughout a specific time frame.

Panel analysis is a statistical method frequently used in social sciences, econometrics to analyze two-dimensional panel data. This type of data usually consists of both cross-sectional and longitudinal data (Maddala, 2001).

A typical panel data model is structured as follows:

$$Y_{it} = \beta_{0it} + \sum_{k=1}^K \beta_{kit} X_{kit} + u_{it} \quad i = 1, \dots, N; t = 1, \dots, T$$

The model assumes that the error terms  $u_{it}$  follow an independent, essentially normal distribution with a mean of zero and a variance that is constant [ $INN(0, \sigma_u^2$



)] for all units and time periods. In the model, subscripts “i” denote units such as household, individual, firm, city; while “t” signifies time intervals such as day, month, year. The constant term is denoted by “ $\beta_{0it}$ ”.  $X_{kit}$  represents the coefficient of the explanatory variable “i” at time “t” denotes the value for the unit. “ $Y_{it}$ ” refers to the dependent variable “i” at time “t” displays the numerical worth of the unit. The presence of the “i” and “t” indices in the model’s parameters implies that they are influenced by both units and time.

Panel data analysis often involves two distinct concepts: balanced panels and unbalanced panels. A panel is considered balanced when each unit is seen for all time periods. Conversely, an unbalanced panel occurs when data for certain units is missing for certain time periods (Wooldridge, 2010; Tatoğlu, 2021). To ensure a balanced panel, we imposed restrictions on the nations and years included in our research. Table 1 provides an analysis of the advantages and disadvantages of panel data.

Table 1. Pros And Cons of Utilizing Panel Data	
Advantages	Constraints
More accurate inference of model parameters can be made.	Panel data may be limited due to problems with data collection.
Dynamic relationships can be unveiled.	Panel data may be limited due to deviations within the margin of error.
Minimizes forecast bias.	Panel data may be limited due to the problem of short time series.
The influence of variables not included can be controlled.	
Multi-connectivity problem is reduced.	

Source: Asteriou & Hall, 2021; Karlılar, 2019; Tatoğlu, 2021; Hsiao, 2022

## FIXED AND RANDOM EFFECT MODELS

Static analysis relies on both fixed effect and random effect regression calculations. The slope parameters in the fixed effects model continue to exist constant across all horizontal section units. However, the fixed parameter differs from unit to unit due to the inclusion of unit effects. This implies that the constant term assumes a distinct value for every individual unit inside a given cross-sectional dataset. Fixed effect models rely on the assumptions that the independent variables are not

connected with the error terms and are correlated with the unit effect (Al-Mulali et.al., 2015; Tatoğlu, 2021).

$$Y_{it} = \beta_{0i} + \sum_{k=1}^K \beta_k X_{kit} + u_{it} \quad i = 1, \dots, N; t = 1, \dots, T$$

Prior to assessing the validity of the fixed effects model, it is imperative to verify the presence of fixed effects in the model. The fixed effects model is considered accurate if the computed F statistic value surpasses the F critical value (Asteriou & Hall, 2021). The random effects model can be represented by the equation.

$$Y_{it} = \beta_0 + \sum_{k=1}^K \beta_k X_{kit} + u_{it} + \mu_i$$

In the random effects model, the error term can be represented as  $v_{it}$ , which is equal to the sum of  $u_{it}$  and  $\mu_i$  (Tatoğlu, 2021). While the variable  $u_{it}$  indicates errors, the variable  $\mu_i$  represents variations and fluctuations in units over time.

The Hausman test determines whether to use a random effects model or a fixed effects model when analyzing panel data and the test statistics are computed using the following equation:

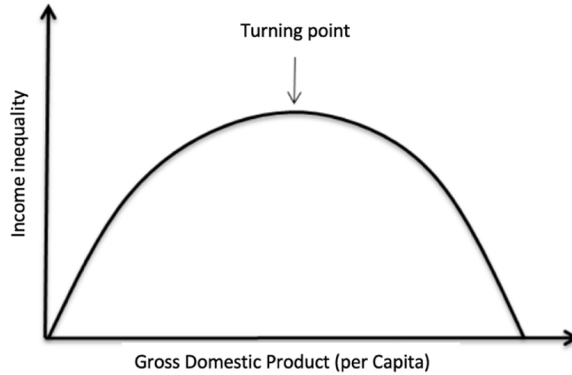
$$H = (\beta_{FE} - \beta_{RE})' [Avar\beta_{FE} - Avar\beta_{RE}]^{-1} (\beta_{FE} - \beta_{RE})$$

The Hausman test hypotheses claim that the  $H_0$  affirms the validity of the random effects model, while the  $H_1$  indicates that the random effects model is invalid (Wooldridge, 2010).

## THE ENVIRONMENTAL KUZNETS CURVE

In his 1955 study, Simon Kuznets established the presence of a correlation between economic development and income distribution. The study found that individuals' income levels rose due to economic advancements, leading to an initial surge in income disparity. Kuznets argues that as economic development progresses, there

is a point at which the rise in income inequality begins to decline. This relationship between the variables can be represented by an inverted-U shape (Kuznets, 2019; Destek et.al., 2018). The Kuznets Curve depicts the relationship between the level of per capita income and income inequality in a graphical form. The Figure 1 illustrates the Kuznets Curve.



**Figure 1.** Environmental Kuznets Curve  
**Source:** Kil, 2023

After examining the Environmental Kuznets Curve, it is clear that income inequality increases in the initial phases of economic growth and then decreases after a specific threshold is reached (Majeed & Mazhar, 2019). Kuznets posits that individuals employed in the agricultural sector have lower income levels compared to those in the industrial sector, and there exists a more equitable distribution of income. According to Dağdemir and Topuz (2016), there is a positive correlation between the rise in people's income levels due to the shift to the industrial sector and the increase in income distribution inequality. The Environmental Kuznets Curve originated in the 1990s because of applying the Kuznets Curve Hypothesis to the field of environmental studies. The Environmental Kuznets Curve depicts the relationship between the average income per person and the level of quality of the environment. The Environmental Kuznets Curve theory suggests that environmental damage increases in the early stages of economic development and then decreases afterwards (Stern, 2004).

## **FINDINGS AND CONCLUSIONS**

The purpose of this study is to evaluate the Environmental Kuznets Curve theory by analyzing the relationship between economic growth and income distribution

inequality in the advanced economies of the G-7. For the purpose of accomplishing this goal, the research makes use of a broader panel consisting of seven countries and encompassing the years 1995 to 2018.

The study hypothesis was formulated as;

$$LECO_{it} = \beta_0 + \beta_1 LGDP_{it} + \beta_2 LGDP_{it}^2 + \varepsilon_t$$

The model incorporates the following parameters:

- $LECO$  : Logarithm of ecological footprint series  
 $LGDP$  : Logarithm of Gross Domestic Product (GDP) per capita series  
 $LGDP^2$  : Logarithm of the square series Gross Domestic Product (GDP) per capita

In the model, the coefficient  $\beta_0$  represents the constant term, while the coefficients  $\beta_1$  and  $\beta_2$  represent the parameter coefficients for the explanatory variables. The term  $\varepsilon_t$  refers to the error term, which captures unexplained effects that undermine the validity of the hypothesis.

In order for the Environmental Kuznets Curve hypothesis to be valid, there are two conditions that must be met. First, the values of the ecological footprint must initially increase as the gross domestic product series increases ( $\beta_1 > 0$ ). Second, at a certain point, the values of the ecological footprint must start to decrease as the gross domestic product increases ( $\beta_2 < 0$ ).

The analysis period encompasses yearly data from 1995 to 2018. The data were acquired from the World Bank Database. The research utilized panel data analysis to examine the years 1995-2018 of the G7 countries.

Table 2. Model Analysis Results				
	Fixed Effect Model		Random Effect Model	
Variables	Coefficients	t-statistic	Coefficients	t-statistic
LnGDP	23.68	3.76 (0,0002)*	22.48	3.58 (0,0004)*
LnGDP2	-2.63	-3.84 (0,0002)	-2.49	-3.66 (0,0003)
C	-52.48	-3,63 (0,0004)*	-49.82	-3.46 (0,0007)*
	$R^2 = 0.89$		$R^2 = 0.18$	
	F – statistic = 174.46 Prob (F – statistic) = 0.00		F – statistic = 18.55 Prob (F – statistic) = 0.00	
	Number of countries = 7			
	Number of observations = 504			
	Hausman test (Chi – Sq. Statistic) = 13.59 Hausman Test Olasılık (Prob.) = 0.001			
	The asterisk denotes (*), statistical significance at the 1% level. The values provided within parenthesis represent probability values.			

Table 2 displays the findings for the G7 country group. The Hausman (1978) test, designed to assess identification mistake, is applicable across multiple disciplines. Additionally, it is employed in panel data models to determine the most suitable estimators. For the purpose of determining which of the two models—fixed or random effects—should be chosen, our analysis made use of the Hausman test. A model with random effects is given by the  $H_0$  hypothesis, while a model with fixed effects is given by the  $H_1$  hypothesis. Based on the statistical significance of the Chi-square test at the 1% level for countries in all income levels, as shown in Table 2, it can be inferred that the fixed effects model is the most appropriate model for the inquiry.

Since the Hausman test statistic is less than the significance threshold of 0.05, we may reject the  $H_0$  and infer that the fixed effects estimator is correct. Although the statistical value of the Hausman test implies a fixed effect model, it is considered reasonable to present both outcomes for consideration in practical terms. After examining the data shown in Table 2, it is clear that for the G7 nations, there is a strong and positive relationship between LGDP and the ecological Footprint.

Nevertheless, the square of LGDP has a detrimental impact with a negative coefficient. This so validates the Environmental Kuznets Curve (EKC) concept. Thus, it can be observed that the coefficients of the gross domestic product, which will determine the credibility of the environmental Kuznets curve hypothesis for the model, are statistically significant. The results of the fixed effect models for the G7 country group confirm the accuracy of the EKC theory.

This research confirms the validity of the inverted-U-shaped relationship between economic growth and income inequality, as suggested by Greenwood and Jovanovic (1990), in the G-7 economies, which are developed countries. The study has determined that the classical Kuznets Curve theory, which is also examined in this research, is a viable hypothesis for the economies of G7 countries.

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## **Chapter 5**

### **SOCIAL AND CULTURAL INFLUENCES IN AGING: THEORETICAL AND PRACTICAL APPROACHES**

**Selman BÖLÜKBAŞI<sup>1</sup>**  
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#### **INTRODUCTION**

Aging is an inevitable reality of life for every individual. Developments in technology have led to noticeable decreases in birth and death rates, resulting in longer life spans and, consequently, an increase in the number and proportion of older individuals in the population. This has contributed to the aging of the general population.

As the level of development in countries increases, so does the proportion of elderly people in their populations. Countries that recognize the problems of the elderly are making necessary arrangements to provide them with better living conditions. Among the issues faced by the elderly, their mental state, social environment, and cultural structure can be influential. Understanding the effects of these variables on elderly individuals is crucial for minimizing their psychosocial and cultural problems, enabling them to continue living in their own environment, fostering a stronger connection to life, and thus preserving their mental health.

#### **AGING**

Aging should not be considered merely as a change in appearance. It also involves withdrawal from society, introversion, and the emergence of problems in bodily functions (Yıldırım & Yıldırım, 2008). It can be categorized generally into chronological, biological, psychological, social, and economic aging (Dogan, 2007).

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Factors affecting the aging process include heredity, environment, chronic diseases, physical disabilities, and the individual's continuous exposure to pain and traumatic experiences (Arpacı, 2005).

### **Social Aging**

The sociological aspect of aging involves changes in an individual's role and status within society. During aging, individuals transition from an active to a passive position. The importance of social support during the social aging phase is considerable and cannot be underestimated.

### **Population Aging**

Humans live with society and continue their existence within it. On one hand, there is the individual, and on the other, society; the unity of opposites has made the social human a powerful being in the universe (Arpacı, 2005).

In the last 40-50 years, the proportion of the elderly population has increased in developed countries. A similar phenomenon, although to a lesser extent, has started to be observed in developing countries as well (Bilir, 2004). As a result, societies with a high proportion of the 60-65 age group within the general population can be described as experiencing population aging.

### **Active Aging**

The concept of active aging was introduced by the World Health Organization (WHO) in the 1990s (Aslan, 2004). Active aging involves maintaining the health of the elderly, allowing them to continue working, and providing them with more opportunities to contribute to society (Metin, et al., 2012).

Every stage of life has its unique characteristics. Just as adolescence is a period of identity formation, the most significant feature of old age is the struggle to find a suitable place among peer groups and the effort to maintain independence (Zastrow & Kirst-Ashman, 2009).

### **OLD AGE PERIOD**

Old age is a variable concept that differs from society to society and from individual to individual. This variability has led to different definitions of old age across various geographies, cultures, and times (Kılavuz, 2003). It refers to the period that begins with a person's birth and extends to a stage of mental and physical dependency before death (Yıldırım, 2007).

As people age, the meaning and characteristics of life change for them; their living conditions and quality of life decline, and physical, psychological, and social problems related to aging emerge. Aging is a continuous process throughout life. The debate on whether individuals aged 60 and above or 65 and above should be considered elderly continues.

## **SOCIAL SUPPORT**

Social support is the assistance one person provides to another to help solve their problems and improve their well-being (Lirio, 2007). It is a general term that includes elements such as being loved, valued, finding security, receiving help, mutual cooperation, and communication in interpersonal relationships. It encompasses the social relationships system and assistance that a person is involved in (Çalışkan, 2007).

There are generally four types of social support:

- Instrumental Support: Involves tangible assistance aimed at solving the individual's problems.
- Emotional Support: Includes behaviors such as listening, providing reassurance, showing compassion, and empathy.
- Structural Support: Refers to having people in the environment who can offer help when needed.
- Informational Support: Involves providing information, advice, and guidance (Savery, 1988).

## **SOCIO-ECONOMIC STATUS**

It is used to mean “situations that concern both the social and economic fields or the connections between them” and can be briefly expressed as “social situations related to economic conditions.”

## **CONCEPTS RELATED TO CULTURE**

Culture is the way a society lives, thinks, and expresses its thoughts (Eren, 2008). The elements that make up culture are beliefs, customs and traditions, rules, and symbols (Aksungur, 2010).

## **ACCULTURATION**

Acculturation is the process of possible changes in behaviors, values, and beliefs as a result of the interaction between multiple cultures. When cultures come into

continuous contact, one or the other becomes dominant, and a new synthesis emerges (Tezcan, 1984). It is a dynamic process, and a consistent change can be observed throughout. For example, families migrating from rural areas to cities cannot resist the dominance of urban culture and gradually strive to urbanize (Eren, 2008).

### **ASSIMILATION**

Cultural assimilation is when one culture dominates another and makes it similar to itself (Eren, 2008). The first stage of assimilation is the forgetting of the previous culture, and the second stage is the adoption of the new culture (Aslantürk & Amman, 2001). The assimilation of Bulgarian Turks into the Slavs and the Devshirme system in the Ottoman Empire are good examples of assimilation (Eren, 2008).

### **DIFFUSION (CULTURAL DISSEMINATION)**

Cultural dissemination is the continuous spread of material and non-material cultural values between societies, either from the inside out or from the outside in (Güvenç, 1993). Dissemination occurs not only in physical or material aspects of culture but also in its non-material aspects. For example, recently, communal iftar meals have started to be held in non-Muslim countries as well. Additionally, the rapid spread of mobile phones in societies has led to changes in cultural behaviors among individuals.

### **ETHNOCENTRISM (CULTURAL EGOISM)**

Cultural egoism is the belief that one's own culture is superior to other cultures (Eren, 2008). These views can lead to consequences such as war, terrorism, and genocide.

### **CULTURAL ALIENATION**

Alienation refers to the process of becoming estranged from oneself, losing fundamental characteristics, and becoming opposed to oneself. From an individual perspective, it is used to describe the loss of harmony with one's environment. In cultural terms, alienation is one of the manifestations of the cooling process. The integrity of life begins to deteriorate, and the hierarchy of values starts to change (Kösoglu, 1992).

## **THEORIES AND APPROACHES TO AGING**

### **Jung's Theory**

Jung proposed that personality development, which he called "individuation," extends beyond childhood and youth into old age, and he was interested in the socio-psychological development of this period (Kayıklık, 2003).

He examines the individuation process in two stages, which he calls the "Life Stages." The first stage of life can be characterized as an entry into external reality, while the second stage is an entry into internal reality. In the first stage of life, the individual tries to fulfill the role of adapting to the external world by acquiring a profession, earning money, getting married, and starting a family. In the second stage of life, the individual begins to direct their energy inward and moves away from the effort to cope with the external world (Kısa, 2005).

Jung acknowledges that individuals see "old age" as a problem. According to him, many individuals reach old age with unfulfilled desires. However, in this situation, it is necessary to have a purpose related to the future, and looking back is dangerous. Religions promise a life after death, providing individuals with a purpose in the second half of life (Kurt, 2000).

### **Erikson's Theory**

Erikson stated that individuals complete their psychosocial development in eight stages. The characteristic of these stages is whether the individual acquires one of two opposing traits, either positive or negative (Arslan, 2008). He describes the period of age 60 and above as "integrity vs. despair (wisdom)." This is a period where individuals look back on what they have done in their lives. As the aging process continues and the individual sees death approaching, they either succeed in integrating their self and existence into a higher and continuous order or fall into despair and depression, believing they will cease to exist with death (Cüceloğlu, 1999).

Integrity is the acceptance of life with all its bitter and sweet, positive and negative aspects (Cüceloğlu, 1999). An individual lacking a sense of integrity fears death and desires to relive life. If the previous stages have been successfully navigated, the individual views old age and death as a natural part of life and feels at peace (Kansu, 2012). However, if one or more of the psychosocial crises in the previous stages have not been adequately resolved, the individual may see themselves and their life as a failure and fall into despair (Kansu, 2012).

### **Disengagement Theory**

This theory suggests that during old age, there is a gradual withdrawal from societal life in physical, psychological, and social aspects. As the elderly individual willingly distances themselves from many activities they previously engaged in, their social circle narrows, and they become more passive. The abandonment of existing roles and the failure to take on new ones push them towards loneliness. This theory supports the notion among people that “the elderly has nothing left to do, so they should withdraw from everything” (Onur, 2006).

### **Activity Theory**

Developed as a response to the disengagement theory, the activity theory argues that, apart from biological changes and health issues, the psychological and social needs of elderly people are the same as those of middle-aged individuals. According to this theory, life satisfaction in old age and adaptation to retirement are possible by continuing the activities from active professional life into old age. This means compensating for the loss of roles, functions, and relationships that occur after retirement with new relationships and active engagements (Şentepe, 2009).

This theory, which focuses on the individual and their relationships, advocates for the activation of the elderly and examines the positive aspects of aging at a micro level. This adaptation becomes particularly important after the retirement period (Kurt, 2008).

### **Continuity Theory**

Continuity theory is a theory that emphasizes the complexity of aging. According to this theory, the usual physical changes that come with advancing age do not incapacitate a person; an individual can use similar strategies in old age as they did in all other developmental periods to cope with problems (Bayraktar, 2004). For instance, someone who becomes excessively anxious when ill will likely respond similarly in old age. Conversely, a calm and unhurried person will probably handle illness much more easily (Gökdağ, 2002). Continuity theory is a theory that emphasizes the complexity of aging (Şentepe, 2009).

## **APPROACHES TO AGING**

### **Functional Approach**

According to the functional approach, it is functional for individuals to accept the physical changes that occur in themselves, considering the fact that they will age,

and to know that death will eventually occur, for the balance of society and the world. Because when individuals age with this acceptance, social maladjustments will show their effects to the least extent. The approach that the elderly is approaching the end of their lives and eventually dying does not take anything away from social life. Preparing the elderly psychologically for this situation is beneficial for society (Demirbilek, 2005).

This approach can be applied from social groups to understanding the whole of society, even to the family.

### **Conflict Approach**

This approach talks about a continuous struggle existing in the world and, contrary to the functional approach, focuses on the processes of change, competition, and tension in society.

According to the conflict approach, people with certain authority can cause resistance and conflicts and force people to adapt. Such conflicts can spread to all segments of society. According to the conflict approach, the unequal distribution of income, power, and prestige in the health system is a social problem. While some groups gain additional benefits in the system, other groups have to lose some opportunities. When it comes to aging, it is possible to talk about the existence of some lost status and social rights (Taşkesen, 2012).

### **Interactionist Approach**

This approach examines the individual and assumes that the individual is a social being. Since societies are made up of individuals, it argues that understanding society is possible by understanding the individual and their relationships.

According to the interactionist approach, individuals learn a role such as being ill, just like other social roles and statuses, and within the framework of this new role they have learned, they are exposed to some feedback from society. For example, an individual with AIDS is subjected to a certain positioning by society (Demirbilek, 2005).

The interactionist approach investigates the priorities and situations that people pay attention to when interacting with each other. It argues that people recognize each other through symbols and develop behavior accordingly. People generally exhibit an average behavior towards those they call and symbolize as “uncle.”

Similarly, when an elderly individual enters society, they must interact with other young or old people. From this perspective, the psychological feedback of

aging can be explained by the interactionist theory. Through social interaction, an elderly individual can ignore some physical limitations brought by age or be psychologically negatively affected by how society positions the elderly.

### **Problems of Old Age**

The aging process increases the likelihood of encountering problems. These problems stem from the elderly's own physical, mental, and economic conditions, as well as some environmental factors beyond the elderly's control.

Essentially, aging is observed today as a "societal" issue rather than an "individual" one. Social security laws and social policies implemented according to the understanding of the welfare state can either increase or decrease the problems faced by the elderly during the aging period (Kurt, 2008).

### **Social Problems**

Due to demographic changes, it is a correct approach to consider aging and old age as social problems, but it is meaningless to expect such a problem to be defined spontaneously. This is because any social situation that does not evoke emotions is not seen as a social problem (Tallman, 1976). Therefore, social problems cannot be "discovered" like physical laws; rather, they are brought about by human perceptions and interpretations. In other words, they can only be "invented" and always stem from human value judgments. Concerns about the current situation of the elderly and the future of social security systems make it necessary to accept societal aging as a social problem (Tufan, 2007).

### ***The Problem of Loneliness and Social Isolation***

During the aging process, individuals experience intense isolation and feelings of loneliness. This feeling is more prevalent during the retirement period when active work life ends. Therefore, the period of social isolation makes the elderly's life unbearable and directly affects their life satisfaction (Kurt, 2008).

Nowadays, the preference for the nuclear family model causes the elderly to be alone and live alone. Elderly individuals who expect excessive attention feel lonely, especially when they are not contacted by their children (Ciprut, 1997).

It is a fact that the feeling of loneliness and isolation is individually based. An elderly person who feels lonely and isolated from society may spend time in coffeehouses in rural areas, while in big cities, due to the limited availability of such opportunities, they may occasionally experience depression and sometimes prefer to go to nursing homes to overcome this feeling.



### ***Accidents***

Age-related changes increase the likelihood of accidents. We can mention three main elements in the occurrence of an accident: the person, the cause, and environmental factors. To reduce accidents, negative environmental factors should be minimized. A polished floor, a high bed, wobbly steps, and furniture with sharp edges and corners will invite accidents. Accidents are more common among elderly people living alone (Kayahan, 1970).

In accidents occurring inside and outside the home, falls and traffic accidents are the most common. Falls often occur due to carelessness, distraction, inability to maintain balance, and decreased muscle strength. The 65+ age group accounts for 33% of deaths resulting from traffic accidents. The reasons can again be listed as inability to maintain balance, carelessness, decreased muscle strength, distraction, and additionally, hearing loss, reduced vision, and decreased adaptation to darkness (Ciprut, 1997).

### ***Post-Retirement Life***

For individuals who have spent most of their lives in an active work environment, retirement represents a role change. It is possible for the individual to perceive themselves as no longer a part of society or to feel useless. Those without hobbies or interests to keep themselves occupied may become more vulnerable during this transition. An elderly person who cannot find an occupation after retirement may experience mental health issues, leading to depression and anxiety (Kamal & Brocklehurst, 1983).

### ***Housing and Accommodation Issues***

Housing should not be considered merely as a commodity; it is a complex entity influenced by political and social components (TMMOB İnşaat Mühendisleri Odası Web Sitesi, 2007). While living spaces are important for people of all ages, the condition of being homebound and the home life are of greater significance for elderly individuals who spend all their activities in this area. In fact, the cognitive abilities, social status, morale, and social adaptation of elderly individuals are affected by their living environment (Ciprut, 1997).

In both developed and developing countries, the mental, social, and economic conditions of elderly individuals living in slums and similar areas are negatively affected, reducing their happiness, status, and personal well-being (Emiroglu, 1995).

### ***Literacy and Education Issues***

In Türkiye, elderly individuals who are illiterate or have a low level of education struggle to handle tasks that require education and often need assistance, sometimes resulting in a loss of rights. The low literacy rate among elderly women means that, after the death of a spouse, they are often left alone and have to live dependently on someone else (Özmen, 2013).

### ***Cultural Problems***

The culture surrounding individuals and societies shapes the way they age, as it affects all other determinants of active aging. In Turkish culture, elderly people hold an important place and are approached with feelings of love, respect, compassion, and loyalty. For instance, the proverb “söz büyüğün, su küçüğün” (the elder speaks, the younger fetches water) is one of the main indicators of respect for elders (Akın, 2004).

The various behaviors that society shows towards elderly individuals are based on factors such as environmental conditions, culture, beliefs, traditions, and economy.

### ***Language and Communication Issues***

Language is the most important element of culture. Societies need to use communication to pass on their cultural values to future generations. The ability to communicate through language and speech is an important feature for individuals of all ages. As people age, there are regressions in the organs of voice and hearing that enable them to communicate with the outside world. These regressions cause individuals to experience problems related to social integration in later years. These problems lead to the person becoming introverted, disconnecting from society, and adopting a pessimistic outlook.

Additionally, elderly individuals who cannot adapt to contemporary languages, as well as those who migrate internally from east to west or externally to other countries, experience language issues. These elderly individuals have difficulty expressing their problems and describe themselves as “a mute who speaks.”

### ***Kitchen Culture and Adaptation Problem***

Nutrition is an indispensable phenomenon for all living beings to continue their lives. The food selection and consumption habits of individuals are not only physiological but also depend on the satisfaction of their psychological and social needs, economic opportunities, and customs and traditions (Kılıç & Şanlıer, 2007).

The concept of Kitchen Culture defines a synthetic and unique cultural structure that includes beliefs and practices within the framework of the types of food and beverages and their storage, preparation, cooking, and consumption processes (Çevik, 1997). What an individual chooses, how they obtain it, how they cook it, and how and where they eat it varies according to the habits of the social community they are in.

In our era, influenced by globalization and trends such as fast food, it is observed that young people tend to prefer such foods, while the elderly prefer traditional and local cuisine. This leads to an intergenerational conflict. Additionally, elderly people who migrate internally within Türkiye and are not accustomed to regional culinary differences experience kitchen-related problems in the places they move to. Similarly, it is observed that Turkish citizens, especially the elderly, who migrate abroad, complain about the local kitchen culture.

### ***Cultural Adaptation Problem***

Cultural adaptation (change) is the ability to adapt to life in a different culture or to establish relationships with members of another culture (Karaeminoğulları, Doğan, & Bozkurt, 2009).

When an elderly person starts living in another culture for any reason, they are affected by this complex process, and the more different this process is from their own culture, the more it increases proportionally.

### ***Migration and Migration-Related Problems***

Migration is the movement of individuals from one place to another due to social, economic, cultural, and political reasons. The phenomenon of migration is a situation that has been ongoing since ancient times and is expected to continue in the future, likely to be seen everywhere in the world. According to some views, the new situation that arises as a result of migration is the hybridization of modernity and tradition (Bal, 2008).

Primarily, the elderly population, defined as individuals aged 60 and above, is deeply affected by migration and relocation. This section will detail the effects of migration on the elderly.

### ***Internal Migration Problems***

Internal migration is the temporary or permanent relocation of the population within a country. Internal migration movements, which are caused by social, political, and economic reasons, tend to move from underdeveloped cities and regions to more developed ones within the country (Bal, 2008).

Rural-to-urban migration is the most common type of internal migration in Türkiye. Generally, cities and regions that consist of developed trade and industrial centers receive migration, while others lose population. Therefore, the direction of internal migration in Türkiye is generally from east to west (Gürbüz, 2006).

The internal migration issues experienced by the elderly will be examined under the headings of rural-to-urban migration, regional migration, and migration to metropolitan cities.

### ***Rural-to-Urban Migration Issue***

Türkiye has entered a rapid urbanization process over the last fifty years. In recent years, three main factors have played a role in the rapidly increasing phenomenon of rural-to-urban migration. These are: attractive, repulsive, and communicative forces.

Understanding the living conditions and expectations of elderly individuals migrating from rural to urban areas before they migrate is crucial for comprehending their adaptation and participation process in social life. Explaining these conditions and expectations is important for uncovering the reasons behind adaptation and maladaptation (Metin, et al., 2012).

### ***Regional Migration Issue***

Individuals relocate from one region to another, either permanently or temporarily, for various reasons. In Türkiye, migration occurs from the Eastern Anatolia, Southeastern Anatolia, and Eastern Black Sea regions to the western regions.

In the phenomenon of migration, which is a socio-cultural mobility, and in the construction of society, the relationship and bond that the elderly establish with the place they live play an important role. Elderly individuals in families who are forced to change regions for various reasons face issues such as climate conditions, transportation changes, and changes in environmental and familial relationships. Therefore, individuals who leave their current place of residence voluntarily and for better conditions due to any reason may experience some psycho-social problems. These problems can negatively affect the adaptation process to the new places they settle in and may cause delays in orientation.

### ***Migration Issue to Metropolitan Cities***

A metropolitan city is a term given to major cities that are generally densely populated and hold a superior position socially, culturally, economically, and administratively over the surrounding regions and cities. The formation of these

cities is driven by advancements in agriculture, industry, trade, transportation, and service sectors. Cities like Istanbul, Izmir, Ankara, Antalya, and Bursa are examples of metropolitan cities.

In metropolises, the active participation of women in the workforce outside the family reduces birth rates and subsequently increases the elderly population. Additionally, it reduces the time women allocate for household chores, creating a new dimension where the elderly living with the family are perceived as a burden.

It is important for the elderly to feel useful for their mental satisfaction. However, with industrialization, the contribution of elderly individuals to society has gradually decreased, leading to their marginalization (Er, 2009).

### ***International Migration Problems***

International migration refers to the movement of people between countries. These migrations typically occur due to economic reasons, natural disasters, wars, ethnic discrimination, changes in borders, and population exchanges required by agreements. These migrations can be categorized into types such as forced migrations (asylum migrations), labor migrations, brain drain, population exchanges, and voluntary migrations.

Migrants exhibit different physical, social, and cultural characteristics in their aging processes compared to the local populations.

Consequently, issues and ailments related to average aging tend to emerge earlier among migrants than among the native population.

### ***Generation Issue***

When individuals move abroad for any reason and settle there permanently, continuing to reproduce, their children or grandchildren may either reject the new culture, assimilate into it, or find themselves caught between two cultures. This situation leads to generation issues between the first generation that migrated and the subsequent generations. Generation issues are entirely different from intergenerational conflicts. While intergenerational conflicts occur with little to no influence from an external culture, generation issues are entirely influenced by an external culture.

Elderly individuals facing generation issues are on a path that is increasingly difficult to reverse. These issues grow larger with each passing generation. When the counter-culture is fully adopted or complete assimilation occurs, the influence of the original culture diminishes. The old culture and generation lose their identity and continue to live under the new culture.

### **Issues Related to Population Exchange**

The term “exchange” refers to the mutual relocation of populations between countries under an international agreement. Individuals who undergo this migration are called “exchangers” (Koçak & Terzi, 2012).

An example of such an exchange is the migration between Greece and Türkiye following the Treaty of Lausanne. This agreement caused several issues on both sides, including settlement, movable and immovable properties, demographic, socio-economic, and established (resident) problems. Additionally, the protocol clause stating, “The compulsory exchange of Turkish nationals of the Greek Orthodox religion residing in Turkish territory and Greek nationals of the Muslim religion residing in Greek territory will commence on May 1, 1923,” indicates that the change was religious rather than ethnic (Convention and Protocol Concerning the Exchange of Greek and Turkish Populations, 1923, 1923). As a result of this clause, not only Turks but also Albanians and other Muslims came to our country as exchangers, leading to ethnic, cultural, and language issues.

From the perspective of the exchangers, many individuals experienced psychological trauma due to leaving their birthplaces and migrating to a new country (Bozdağlıoğlu, 2014). Elderly individuals were forced to adapt to a new language, culture, traditions, customs, a new country, a new life, and a new settlement. This sudden change affected their mental state, causing culture shock or leading them to withdraw into themselves when faced with a different culture.

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## **Chapter 6**

### **SCIENCE TEACHERS' TENDENCY TO USE SOME TEACHING METHODS AND TECHNIQUES**

**Ayşe Gül ÇIRKİNOĞLU ŞEKERCİOĞLU<sup>1\*</sup>**  
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#### **INTRODUCTION**

In teaching programmes based on constructivist learning theory, teaching strategies in which students are active are adopted. Teaching methods and techniques appropriate to these strategies should be used in teaching activities. When the teaching methods used in science teaching are examined, there are two types as “teacher-centred” and “student-centred” (Çepni et al. 2005). It was observed that in the science programmes, which were renewed based on constructivist theory, methods that make the teacher active such as lecture, question-answer, demonstration were emphasised less, and student-centred methods and techniques such as problem solving, project, cooperative learning, role-playing, discussion, laboratory, project, excursion-observation, brainstorming were emphasised more and recommended to be used more frequently (MoNE, 2006). When the latest science curriculum is examined, like the previous curricula, student-centred teaching activities such as problem, project, argumentation, collaborative learning, classroom / in-school and out-of-school learning environments, research-inquiry based learning, science, engineering and entrepreneurship practices should be used (MoNE, 2018).

The teacher is the person who directs the teaching process, ensures that the teaching is effective and complete, and at the same time affects the attitudes and behaviours of the students towards the lesson and is an important element because he/she is the main individual who provides learning in the classroom environment and outside the school. In the teaching process, the quality and personality of the teacher is very important (Sönmez, 2007). In addition, in the

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programmes based on constructivist learning theory, the main task of teachers is not to transfer existing knowledge to their students, but to provide them with the skills of accessing and using knowledge. It is possible to understand the importance of the teacher factor from the skill level and achievement differences between students in inter-class or intra-class measurements and observations in schools (OECD, 2009). The teaching method or attitude or character of the teacher may have a positive effect on the learning of one student but may not have a positive effect on another student.

In fact, although the student is seen as active or at the centre in the teaching process in the new programmes, the main task falls to the teacher. The skills that learners should acquire depend on the teacher's use of effective methods and appropriate materials in the teaching process and the ability to actively involve students in the lessons. Teachers should ensure students' conceptual learning, avoid rote learning, teach problem solving and use scientific processes in the face of new problems or situations. For these purposes, in the new curricula of recent years, the teacher's task is defined as guiding and showing students the ways of learning (MoNE, 2005).

Research on the new curricula reveals that curriculum development processes are easier than the implementation and use of the curriculum, but in practice, teachers do not adopt the renewed and developed curricula to the desired extent and think that they are more difficult to implement. (Karamustafaoğlu, 2006; Tekbıyık & Akdeniz, 2008; Yıldırım, 2011). For example, although teachers have a positive approach to the use of materials to enrich teaching in science lessons, there are studies that show that they are generally ineffective in using materials (Karamustafaoğlu, 2006). Another example is the results of Yıldırım's (2011) research in which he examined the data of the Programme for International Student Assessment (PISA) 2006, Trends in International Mathematics and Science Study (TIMSS) 2007 and Teaching and Learning International Study (TALIS) 2008. According to the findings obtained from these studies, it was determined that the teaching strategies suggested to be used by the new programmes were not sufficiently widespread in science lessons at the second level of primary education; the frequency of laboratory-supported experiments and the frequency of using computers was quite low, and the frequency of teaching practices in which students tended to remain passive rather than active was determined. In other studies, on teaching methods and techniques, explanation and question-answer are the most frequently preferred classroom teaching practices of Science and Technology teachers (Önen, et al., 2008). According to the results of another

study, a significant number of Science and Technology teachers stated that they used the lecture method in every subject and supported this method with question-answer, brainstorming and concept mapping (Aydede et al., 2006). Even teachers in Science and Art Centres, where active learning methods should be used more than in other schools, tended to prefer methods such as lectures and demonstrations in their lessons with gifted students (Aktepe & Aktepe, 2009).

Before introducing the teaching methods and techniques used in this research, it is necessary to define the concept of "method". The method, which has been defined with different expressions until today, is the most regular way that is consciously chosen and followed in order to achieve goals such as solving a problem, learning or teaching a subject or concluding an experiment, or in short, it is the shortest path that is predetermined or to be followed in order to achieve the goal (Demirel, 1998). When teaching method is mentioned, the concept of teaching technique also comes to mind. The concepts of teaching method and teaching technique are different concepts and there is an inclusive relationship between these two concepts. In this inclusive relationship, teaching method is more general and comprehensive and includes teaching technique. Teaching method is more comprehensive than the concept of technique and is a way of teaching developed according to a certain view, principles and rules. Technique is the way the teacher puts the teaching method into practice in detail (Büyükkaragöz & Çivi, 1999). In the literature, while the same concept is named as method in some sources, it is named as technique in some sources. The same situation is also valid for concepts such as approach and model. It is essential to take a common decision about this situation. In this study, to decide which practices are methods and which are techniques, a comprehensive scan was made, and it was determined whether they were methods or techniques by naming them as the majority used.

One of the methods and techniques investigated in the research is lecturing. It can be defined as explaining the subjects planned to be taught in the lesson by speaking after forming a certain order. Lecture can also be defined as the teacher conveying information about a subject to the students who sit passively in front of him/her and listen (Büyükkaragöz & Çivi, 1998). In lecturing, it is understood that teachers convey a large amount of information to many students who are passive recipients. It represents a traditional teacher-centred understanding of lecturing, which is mostly used when introducing a certain subject, conveying information about a certain subject, or summarising a certain subject (Saban, 2000, p.185). According to Kaptan (1999), it is based on teacher-centred, presentational

learning approach and it is autocratic transfer of information to students who are passive listeners.

Another method most used in teaching is the question-answer method. This method is important because it enables students to gain thinking and speaking habits through questions and it can be used in every lesson. The question-and-answer method is also called the Socrates method because of Socrates' ability to find the truth by revealing the truth hidden in the mind of the other person with some pre-arranged questions (Demirel, 2008). The question-answer method is a method that should be preferred because it develops students' thinking skills, facilitates understanding, provides a review strategy, provides feedback in teaching, provides a connection between thoughts and increases students' curiosity (Gall, Dunnig & Weathersy, 1971 as cited in Filiz, 2002).

Argumentation method is a teaching method since more than one person puts forward their ideas in the form of mutual conversations to clarify a subject or two or more people exchange ideas and express their opinions on a particular subject (Akgün, 2001). When using this method, the teacher should be a guide and should have the ability to know and use the scientific argumentation method very well. The prominent features of the scientific argumentation method are that it enables interaction between students and the teacher, provides students with the opportunity to give examples from their previous experiences, and gives them the opportunity to think, speak and comment on a specific subject (Demirel, 1999 as cited in Arıcı, 2010).

The case study method is based on the principle of bringing a real or possible event to the classroom environment and solving it by examining it in depth in the classroom (Sönmez, 2007). The case study brings students face to face with real life and enables the link between theory and practice to be established. Some of the techniques used in the method are workshop, problem solving, brainstorming, decision making and talking circle (Stensmo, 1999 as cited in Şahin et al., 2010). Case study method is a method that enables the development of problem solving, critical thinking, reflective thinking, decision making, knowledge transfer, multicultural awareness and historical perspective skills (Şahin et al., 2010).

The demonstration method is a method based on the principle that the behaviour based on the acquisition is first performed by the teacher and watched by all students, then the student performs the behaviour, and the teacher guides this process (Arıcı, 2010). When the application principles of the demonstration method are examined, the first thing to be considered is that all students can see the

demonstration comfortably. Necessary preparations should be made by the teacher before the demonstration. The activity to be performed should be implemented in stages and each stage should be explained. It is important to ensure that the students apply each stage correctly and that the necessary corrections are made immediately by the teacher during the application phase. Students should be able to apply the information they have learnt to different situations, in other words, they should be able to transfer it. Each stage should be taken into consideration when evaluating and evaluation should be made (Oktaylar,2008).

Role-playing technique is the dramatization of a phenomenon or event, an idea or a situation by a group of students as a different person in front of their classmates or in front of a group. In this technique, communication is based on action rather than words. It is mostly used in the realisation of cognitive domain acquisitions at the level of comprehension and above. It is more motivating than traditional science teaching and more suitable for students' personal, affective and social development (Kutlu & Aldağ, 2005). The benefits of role-playing are that it is suitable for students' personal, affective and social development, it is effective in understanding abstract concepts, it contributes positively to the relations between society and students, it helps students to learn to be cool-headed in the face of negative events and to be prepared in advance for the real situations they will encounter, and it enables students' creative aspects to emerge and develop (Doğanay, 2007).

Cooperative learning method is a teaching method that enables students to solve a problem in small groups and learn the subject by working together for a common purpose to fulfil a task (Çepni & Çil, 2010). In cooperative learning, it is aimed to ensure the development of three basic events, which are to ensure that students are academically successful and develop socially, that everyone is different, that these differences are a richness, not a negativity. (Oktaylar, 2008). One of the most important benefits of cooperative learning is that students have the opportunity to work with different students in the lessons where cooperative learning is used, and the development of different skills as a result of interaction with their group mates is one of the most important benefits of cooperative learning (Aktaş, 2006). In addition, co-operative learning has three types of benefits: academic, social and psychological. Academic benefits include increasing achievement, developing high-level scientific strategies, increasing retention, improving verbal communication skills and enabling active participation in the lesson. Social benefits include improving social skills and friendship relations and increasing students' tolerance towards differences. Psychological benefits are that

it positively affects self-esteem, reduces anxiety and increases student satisfaction (Tonbul, 2001; as cited in Çepni & Çil, 2010).

Laboratory method is a teaching method in which students gain a positive attitude towards science by conducting experiments related to subject acquisitions using tools and equipment (Çilenti, 1985 as cited in Önder, 2007). Literature research have proved that the laboratory method is very important, with this method, students' academic achievement is increased, they are better able to construct concepts, they are more willing to learn, the knowledge acquired is more permanent, and cooperation and co-operation among students are more developed. (Telli et al., 2004; Taşkoyan, 2008; Uluçınar et al., 2008). This method is thought to be suitable for the nature of science education. The permanent trace of knowledge in a student depends on the experiences of the student and one of the best methods to provide these experiences is the laboratory method (Aktepe & Aktepe, 2009).

The problem-solving process in daily life is not very different from the problem-solving process in teaching. In the problem-solving method used in the lessons, the ways of coping with a problematic situation are taught to the students through the subjects in the lessons by giving practical activities step by step (Aksoy, 2003). Problem solving develops students' ability to use higher thought functions such as observation, thinking, analysis and creativity together (Ünsal & Moğol, 2007). In addition, this method affects students' higher-order thinking skills and academic risk-taking levels, increases students' cognitive target levels and is much more effective than the traditional method. (Çınar, 2007).

Project-based learning is a teaching method in which students actively participate in the learning environment, based on the principle of identifying, researching and finalising problems related to life that cause students' curiosity (Çıbık, 2006). In project-based learning, the student is in the leading role in the learning process by conducting research on the subject to be learned, collecting information, analysing and evaluating the data, and then synthesising the information with the experience he/she has. In this process, the teacher should present a subject that will arouse students' desire to learn and guide their studies (Öztürk, 2008). In many studies in the literature, it has been found that project-based teaching enables students to develop positive attitudes towards the course and increases academic achievement (Çıbık, 2006; Doğan, 2008; İmer, 2008; Öztürk, 2008; Yurttepe, 2007). In addition, this method ensures that students' attitudes towards science course change positively and learning becomes more effective and permanent (Keser, 2008).

The field trip-observation method is an entertaining method that enables many related elements in the learning environment to be examined together in accordance with the nature of science education (Göğebakan, 2009). It is seen that learning is easier and more permanent with the use of the excursion-observation method, students' desire and motivation to participate in the excursion-observation activity are high and thus they are more successful (Aycan, 2008; Ertuğ, 2007; Göğebakan, 2009; Özay, 2003; Özkan, 2009). At the end of the excursion-observation activity, feedback should be obtained from the students through activities such as narrating, drawing, writing about the excursion and the permanence of the learning should be ensured. Teachers are recommended to use the field trip-observation method more especially with the implementation of the new science programme (MEB, 2005). However, it is seen that many science teachers do not make use of the field trip-observation method, and those working in public schools make less use of this method than those working in private schools (Aktaş, 2006).

The homework technique is applied at all levels of education from primary school to university and is related to the subject to be taught at school and is the work done by the student outside the lesson. The points to be considered while doing homework are that it should not only be in the form of individual work and should also be given in the form of group work. Instead of just repeating the subject, students should be able to apply their achievements to different situations. Homework improves students' scientific thinking skills and their ability to conduct research and organise the information they collect. The student who presents his/her homework in the classroom also develops in the social field and students can make the subject discussed or to be discussed in the classroom more meaningful in their minds thanks to homework (Çepni & Çil, 2010). Family interest in homework and a good home environment play an important role in increasing academic success. Homework can have both positive and negative effects. For example, the positive effect of homework is that it improves study habits, while the negative effect is that it prevents leisure time activities (Türkoğlu et al., 2007).

Literature studies related to the teaching methods and techniques described above were analysed. It was observed that the most frequently used method by teachers was lecture. For example, Doğru and Aydoğdu (2003) determined the seven most frequently used teaching methods of science teachers, and the problems encountered by students while using these methods. A total of 545 secondary school students studying in Edirne province participated in the study. As a result of the study, it was observed that the lecture method was frequently used

by the teachers regardless of the class size, and the question-answer method was frequently preferred just like the lecture method. It was observed that laboratory, discussion, excursion-observation and demonstration methods were less preferred, while problem solving method was used more by teachers with large class sizes. In his study, Yilmaz (2017) analysed the opinions of 32 students enrolled in the department of science teaching who were able to observe in secondary schools by taking courses such as school experience and teaching practice. As a result of the analysis, it was revealed that “lecture” was the most preferred method among the strategies, methods and techniques preferred by science teachers and some new techniques were started to be used by teachers. Binler (2007) also found similar results in his study. As a result of the study conducted on 80 science teachers in Kars province, it was determined that teachers used lecturing frequently and could not use case study and problem-solving methods effectively.

Yıldırım (2011) investigated which teaching practices are used and how often they are used in science lessons at the second level of primary education in Turkey by using data from the Programme for International Student Assessment (PISA) 2006, Trends in International Mathematics and Science Study (TIMSS) 2007 and Teaching and Learning International Study (TALIS) 2008. The sample of PISA 2006 was 4942 students, the sample of TIMSS 2007 was 4498 8th grade students and 150 science teachers, and the sample of TALIS 2008 was 3224 science teachers. The teaching practices in the science course were analysed in two parts as passive and active, and at the end of the study, it was seen that the teaching practices that made the teacher active and the student passive were used more frequently by the teachers, and the focus was on teaching the concepts discussed in the classroom rather than developing scientific process skills in students. In a study conducted by TALIS (2010) with 4000 second level primary school teachers, the method preferences of 2200 female and 1800 male teachers were investigated, and it was found that female teachers preferred student-centred and structured practices more than male teachers. Karacaoğlu and Acar (2010) determined the problems encountered by teachers in the implementation of the renewed curriculum in their study on 82 teachers who participated in the “Teaching Practices in New Programmes” seminar. Eighteen of the teachers who participated in the study considered that the new curriculum was not suitable for village conditions, inadequacy of the necessary tools and equipment for the lessons, lack of infrastructure (computer, projection, laboratory, classroom) as the deficiencies of the new curriculum. Talaz (2013) investigated the use of active learning activities by 200 classroom teachers teaching 4th and 5th grade



science courses in Bergama district of İzmir province in terms of several variables including class size. It was found that in classes with less than 30 students, active learning activities such as experiment, excursion-observation, problem solving, creative drama and project were more easily implemented. Akkuş and Kadayıfçı (2007) investigated the level of change in the knowledge and skills of 23 teachers who participated in in-service training on laboratory use in Sinop province after the in-service training on new teaching approaches and laboratory use. As a result of the study, it was seen that in-service trainings had a positive effect on teachers in terms of knowing and applying new approaches and techniques. Önen et al. (2008) investigated the knowledge and application level of 43 science teachers working in Tekirdağ province who attended in-service training courses on teaching methods and techniques used in science courses before and after attending the courses. According to the results of the research, it was determined that teachers mostly used question-answer, lecture and experiment methods in their classes, and that teachers who participated in in-service trainings increased their knowledge about methods and techniques, and that teachers with low professional seniority had more knowledge about methods and techniques.

## **METHOD**

In this section, information about the research model, population and sample, data collection tool and statistical methods used in data analysis are given.

## **RESEARCH DESIGN**

This study was conducted to investigate the tendency of Science and Technology teachers working in secondary schools in Balıkesir and Manisa provinces to use some teaching methods and techniques in their lessons.

The study is a descriptive study in survey type. General survey models are survey arrangements carried out on the whole universe or a group, sample or sample to be taken from it to make a general judgement about the universe in a universe consisting of many elements (Karasar, 2006, p. 79).

## **SAMPLE**

In the study, out of a total of 1,120 science teachers, 605 from Balıkesir province and 515 from Manisa province, 615 teachers (55%) constitute the sample of the study (Saraç, 2015). The gender distribution of the science teachers participating in the study according to provinces is shown in Table 1.

<b>Table 1. Gender of participants by province</b>					
Gender	Manisa		Balıkesir		Total
	N	%	N	%	
Female	159	25.9	212	34.5	371
Male	81	13.2	163	26.5	244
Total	240	39.1	375	60.9	615

## **DATA COLLECTION TOOL**

In the collection of data that will shed light on the results of the research, a 4-point rating questionnaire named “Methods and Techniques Used by Science and Technology Teachers in Their Lessons” was used. Care was taken to ensure that the questions forming the questionnaire form were comprehensible, simple and purposeful. After the necessary analyses, various corrections were made, and the application was started. The data collection tool consists of two parts. The first part includes questions about the personal characteristics of the participants. In this part, gender, length of service, participation in in-service training seminars related to methods and techniques, school location and number of students were included. In the second part of the questionnaire, there are 24 questions about how often teachers use 12 teaching methods and techniques and how often they think they should be used.

The Cronbach’s Alpha ( $\alpha$ ) reliability coefficient of the answers was found to be .801. This value is above .80, which is the high reliability limit suggested by Kalaycı (2009). Accordingly, it can be said that the measurement results are highly reliable. The data collection tool, which was prepared for implementation, was presented to the teachers online in electronic environment after obtaining the necessary permissions from Balıkesir and Manisa Provincial Directorates of National Education. The link of the data collection tool was announced to all teachers with an official letter. The survey link was activated on 01/06/2014 and the link was closed on 01/10/2014 since sufficient participation was achieved. The questions were presented to the participants in the “google drive survey” section. The way of transferring the responses to SPSS is as follows.

Sample question:

1. How often do you use the demonstration method?

Never 1 <input type="radio"/>	Rarely 2 <input type="radio"/>	Most of the time 3 <input type="radio"/>	Always 4 <input type="radio"/>
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The participants marked the answer they thought about the related question in the box below. For example, when the participant preferred the “rarely” option, his/her answer was marked as “2” in the “google drive answers” section. The data obtained as numbers in this way were transferred to SPSS and analysed. If the response was marked as “rarely”, it would be necessary to edit the responses one by one and it would be a waste of time. In this way, time was saved.

### ANALYSING THE DATA

The data obtained in the study were analysed with SPSS (Statistical Package for Social Science) 19.0 package programme. In the analysis of the data, in addition to frequency, percentage distribution and arithmetic mean, chi-square tests were used. The significance level was accepted as .05 in all analyses. The questionnaire applied to the teachers was prepared in the form of a 4-point scale and the calculation of the interval limits is given below.

Calculation of the interval limits of the questionnaires:

Number of options= 4

Number of intervals= 4-1 = 3

Interval coefficient= 3/4= 0,75

For easy interpretation of the data obtained, tables were created in the findings section and these findings were interpreted in the discussion section. The interval limits and their meanings are given in Table 2 for mean comparisons.

**Table 2. Arithmetic mean ranges**

Range limit	Meaning
1.00 – 1.75	Never
1.76 – 2.50	Rarely
2.51 – 3.25	Most of the time
3.26 – 4.00	Always

## FINDINGS AND INTERPRETATION

In this section, the findings and interpretations obtained from the statistical analyses of the data will be given according to the sub-problems of the research.

### Findings Related to Personal Information of Teachers

The findings related to the personal information of the science teachers who participated in the study are shown in Table 3.

Table 3. Information about the participants						
N		Manisa		Balıkesir		Total
		%	N	%	N	
Year	1-5 years	101	45.9	119	54.1	220
	Over 5 years	139	35.2	256	64.8	395
In-service training seminar participation	Participated	160	42.3	218	57.7	378
	Did not participate	80	33.8	157	62.2	237
School worked at	Province/district	161	39.1	251	60.9	412
	Village/town	79	38.9	124	61.1	203
Number of students in classes	1-20	99	45.2	120	54.8	219
	21 and above	141	35.6	255	64.4	396

According to Table 3, 220 of the science teachers participating in the study have 1-5 years of service and 101 of the 220 teachers work in Manisa and 119 of them work in Balıkesir. 395 of them have 5 or more years of service and 139 of 395 teachers work in Manisa and 256 of them work in Balıkesir. When the participation of the teachers to in-service training seminars on teaching methods and techniques is analysed, it is seen that 378 of them attended these seminars and 160 of these teachers work in Manisa, 218 of them work in Balıkesir. 237 of them did not attend these seminars and 80 of these teachers work in Manisa and 157 of them work in Balıkesir. When the locations of the schools where the participant teachers work are examined, it is seen that 412 of them work in provincial-district centres and 161 of these teachers work in Manisa and 251 of these teachers work in Balıkesir. It is seen that 203 of them work in village-district schools and 79 of these teachers work in Manisa and 124 of these teachers work in Balıkesir. When the average number of students in the classes of the teachers participating in the study is analysed, it is seen that 219 teachers teach in classes with 1-20 students

and 99 of these teachers work in Manisa, 120 of these teachers work in Balıkesir, 396 teachers teach in classes with 21 or more students and 141 of these teachers work in Manisa and 255 of these teachers work in Balıkesir.

### Teachers' opinions on the frequency of use of methods and techniques and how often they should be used

Percentage and mean values related to how often science teachers use teaching methods-techniques and how often they should be used are given in Table 4.

<b>Table 4. Opinions on the Frequency of Use of Methods and Techniques and How Often They Should Be Used</b>					
Method-Technique	Always (%)	Most of the time (%)	Rarely (%)	Never (%)	Average (X)
Conventional lecturing	<b>0.0</b> –4.4	<b>33.3</b> –30.9	<b>62.8</b> –61.5	<b>3.9</b> –3.3	<b>2.71</b> -2.36
Argumentation	<b>3.3</b> –8.8	<b>42.8</b> –54.3	<b>50.7</b> –35.8	<b>3.3</b> –1.1	<b>2.46</b> -2.71
Demonstration	<b>9.3</b> –19.7	<b>57.6</b> –67.0	<b>28.8</b> –13.3	<b>4.4</b> –0.0	<b>2.72</b> -3.06
Problem solving	<b>8.1</b> –22.4	<b>58.9</b> –61.0	<b>33.0</b> –16.6	<b>0.0</b> –0.0	<b>2.75</b> -3.06
Project	<b>8.8</b> –14.3	<b>48.3</b> –48.3	<b>39.7</b> –34.1	<b>3.3</b> -3.3	<b>2.63</b> -2.74
Observation	<b>4.9</b> –23.4	<b>16.9</b> –47.8	<b>63.4</b> –27.6	<b>14.8</b> -1.1	<b>2.12</b> -2.93
Laboratory	<b>16.9</b> –37.4	<b>60.5</b> –57.6	<b>14.5</b> –3.4	<b>8.1</b> –1.6	<b>2.86</b> -3.31
Question- answer	<b>21.0</b> –22.4	<b>75.8</b> –72.7	<b>3.3</b> –4.9	<b>0.0</b> –0.0	<b>3.18</b> -3.18
Assignment	<b>12.7</b> –14.8	<b>64.2</b> –61.0	<b>23.1</b> –23.1	<b>0.0</b> –1.1	<b>2.90</b> -2.89
Cooperative Learning	<b>4.9</b> –13.2	<b>54.6</b> –62.1	<b>37.2</b> –24.7	<b>3.3</b> –0.0	<b>2.61</b> -2.88
Case study	<b>3.3</b> –15.9	<b>53.8</b> –54.3	<b>40.2</b> –28.6	<b>2.8</b> –1.1	<b>2.58</b> -2.85
Role-playing	<b>6.5</b> –10.9	<b>36.1</b> –49.4	<b>50.2</b> –38.5	<b>7.2</b> –1.1	<b>2.42</b> -2.70

The first values written in bold indicate how often the teachers participating in the research use the methods and techniques, and the values written in light indicate how often they think the methods and techniques should be used.

When Table 4 is analysed, it is seen that the three teaching methods that science teachers use the most are question-answer (X=3,18), homework (X=2,90), laboratory (X=2,86); the three methods that they use the least are travel-observation (X=2,12), role playing (X=2,42) and discussion (X=2,46). The teachers who participated in the research stated that laboratory (X=3,31), question-answer

( $X=3,18$ ), demonstration ( $X=3,06$ ) and problem solving ( $X=3,06$ ) methods should be used the most, respectively.

### Frequency of Use of Teaching Methods and Techniques According to Gender

According to the answers given by male and female science teachers to the question about how often they use teaching methods and techniques, the frequency of use was determined, and chi-square analysis was applied to understand whether there was a significant difference between the methods and techniques used according to gender. Table 5 shows the frequency of using teaching methods and techniques according to gender.

	Never		Rarely		Most of the time		Always	
	F	M	F	M	F	M	F	M
Conventional lecturing	0	0	121	84	233	153	17	7
Argumentation	10	10	189	123	152	111	20	0
Demonstration	20	7	123	54	191	163	37	20
Problem solving	0	0	152	51	169	193	50	0
Project	20	0	159	85	162	135	30	24
Observation	57	34	227	63	77	27	10	20
Laboratory	40	10	61	28	233	139	37	67
Ques- answer	0	0	0	20	306	160	65	64
Assignment	0	0	64	78	290	105	17	61
Coop. Learning	20	0	131	98	210	126	10	20
Case study	17	0	149	98	205	126	0	20
Role-playing	37	7	177	132	137	85	20	20

While female teachers prefer discussion, excursion-observation and question-answer methods more frequently than male teachers, male teachers prefer all other methods-techniques more frequently than female teachers.

In Table 6, no significant difference was found between the answers given to the frequency of use of the lecture method according to gender ( $\chi^2(0,05) (2) = 1.252, p>0,05$ ).

**Table 6. Gender relationship with the use of teaching method**

Method-Technique	$\chi^2$	sd	p
Conventional lecturing	1.252	2	.535
Argumentation	14.756	3	.002*
Demonstration	14.850	3	.002*
Problem solving	78.985	2	.000*
Project	20.199	3	.000*
Observation	18.239	3	.000*
Laboratory	38.039	3	.000*
Ques- answer	41.285	2	.000*
Assignment	90.479	2	.000*
Coop. Learning	23.881	3	.000*
Case study	41.948	3	.000*
Role-playing	13.539	3	.004*

\*p < 0.05

In all other methods and techniques, the difference between the answers given to the frequency of use according to gender is significant.

### Frequency of Using Methods and Techniques According to Years of Service

The significance of the difference between the responses of science teachers to the frequency of using teaching methods-techniques according to their years of service was analysed with chi-square.

**Table 7. Distribution of teachers according to years of service**

Year of Service	N	%
1-5 years	220	35.8
Over 5 years	395	64.2
Total	615	100,0

The distribution of science teachers participating in the study according to their years of service is given in Table 7. Accordingly, 35,8% (220) of the teachers have 1-5 years of service and 64,2% (395) of them have more than 5 years of service.

When Table 8 is analysed, the difference between the responses of the teachers to the frequency of using all teaching methods-techniques according to their years of service is significant.

Table 8. The relationship between years of service and use of methods			
Method-Technique	$\chi^2$	sd	p
Conventional lecturing	9.998	2	.007*
Argumentation	64.742	3	.000*
Demonstration	22.552	3	.000*
Problem solving	11.514	2	.000*
Project	14.722	3	.002*
Observation	28.338	3	.000*
Laboratory	8.865	3	.031*
Ques- answer	52.109	2	.000*
Assignment	24.125	2	.000*
Coop. Learning	45.546	3	.000*
Case study	35.537	3	.000*
Role-playing	34.900	3	.000*

\*p < 0.05

In addition, while teachers with 1-5 years of service preferred homework and case study more, teachers with more than 5 years of service preferred all other methods-techniques more.

### **Teachers' Participation in In-Service Training Seminars and Frequency of Using Teaching Methods**

Chi-square analysis was applied to the answers given in order to find the relationship between the participation of the teachers participating in the research to in-service training seminars related to teaching method-techniques and the frequency of using teaching method-techniques.



**Table 9. Participation in in-service training seminars on methods**

		N	%
Participation in in-service training seminars on teaching methods	Participated	378	61.5
	Did not participate	237	38.5
	Total	615	100.0

According to Table 9, 61,5 % (378) of the 615 teachers participated in the study attended in-service training seminars, while 38,5 % (237) did not.

According to Table 10, there is no significant difference between the frequency of using lecture, project and case study methods and the participation to in-service training on teaching methods and techniques.

Conventional lecturing: ( $\chi^2(0,05) (2) = 1.979, p > 0,05$ )

Project: ( $\chi^2(0,05) (3) = 3.936, p > 0,05$ )

Case study: ( $\chi^2(0,05) (3) = 4.973, p > 0,05$ )

**Table 10. The relationship between attending in-service training seminars and the frequency of using teaching methods**

Method-Technique	$\chi^2$	sd	p
Conventional lecturing	1.979	2	.372
Argumentation	44.639	3	.000*
Demonstration	11.947	3	.008*
Problem solving	23.772	2	.000*
Project	3.936	3	.268
Observation	23.248	3	.000*
Laboratory	19.367	3	.000*
Ques- answer	15.239	2	.000*
Assignment	36.803	2	.000*
Coop. Learning	13.916	3	.003*
Case study	4.973	3	.174
Role-playing	30.637	3	.000*

\*p < 0.05

There is a significant difference between the frequency of using all other teaching methods and techniques and attending in-service training on teaching methods and techniques.

Discussion, demonstration, problem solving, excursion-observation, laboratory, cooperative learning and role playing teaching method-techniques were preferred more by the participants of in-service trainings, while question-answer and assignment method-techniques were preferred more by those who did not participate in in-service trainings.

### **The Relationship Between the Average Number of Students in Classes and the Frequency of Use of Teaching Method Techniques**

Chi-square analysis was applied to the answers given in order to understand whether there is a difference between the number of students that science teachers teach and the frequency of using teaching methods-techniques.

Number of Students	N	%
1-20	219	39,6
21 and above	396	60,4
Total	615	100,0

As seen in Table 11, the average number of students in the classes in which the science teachers participated in the questionnaire were teaching was 219 (39,6%) between 1-20 and 396 (60,4%) between 21 and above.

Method-Technique	$\chi^2$	sd	p
Conventional lecturing	17.779	2	.000*
Argumentation	17.112	3	.001*
Demonstration	12.070	3	.007*
Problem solving	0.667	2	.716
Project	9.907	3	.019*
Observation	114.672	3	.000*
Laboratory	23.787	3	.000*
Ques- answer	10.710	2	.005*
Assignment	22.362	2	.000*
Coop. Learning	15.572	3	.002*
Case study	70.090	3	.000*
Role-playing	83.615	3	.000*

\*p < 0.05

There is no significant difference between the number of students in the classes taught by science teachers and the frequency of using problem solving method ( $(\chi^2(0,05) (2) = 0.667, p>0,05)$ ). There is a significant difference between the frequency of using other teaching methods and techniques and the number of students in the classes. Lecture, discussion and project methods were preferred more by those with an average number of 21 or more students; demonstration, field trip-observation, laboratory, question-answer, homework, cooperative learning, case study and role-playing methods-techniques were preferred more by those with an average number of 1-20 students.

### Location of the School and Frequency of Use of Teaching Methods and Techniques

Chi-square analysis was applied to the answers given to determine whether there is a difference between the location of the school where science teachers work and the frequency of using teaching methods-techniques.

**Table 13. Place of residence of Science and Technology teachers**

Location of the School	N	%
Province/district centre	412	67.0
Village/town	203	33.0
Total	615	100.0

Of the science teachers who participated in the survey, 412 (67.0%) were working in the province-district centre and 203 (33.0%) were working in the villages and towns (Table 13).

**Table 14. The relationship between the frequency of use of teaching methods and the place of residence**

Method-Technique	$\chi^2$	sd	p
Conventional lecturing	47.328	3	.000*
Argumentation	96.702	3	.000*
Demonstration	18.539	2	.000*
Problem solving	48.371	2	.000*
Project	84.398	3	.000*
Observation	17.502	3	.001*
Laboratory	40.509	3	.000*
Ques- answer	37.401	2	.000*

**Table 14. The relationship between the frequency of use of teaching methods and the place of residence**

Method-Technique	$\chi^2$	sd	p
Assignment	11.159	2	.004*
Coop. Learning	13.367	3	.004*
Case study	20.454	3	.000*
Role-playing	9.056	3	.029*

\*p < 0.05

As seen in Table 14, the difference between the location of the school where science teachers work and the frequency of using all teaching methods-techniques is significant.

According to the analyses, teachers working in the village-district prefer homework, role playing, case study method-techniques more than teachers working in the province-district, while teachers working in the province-district prefer lecture, discussion, demonstration, problem solving, project, observation trip, laboratory, question-answer, cooperative learning methods more than teachers working in the village-district. As it is seen, teachers working in the province-district prefer more various teaching methods and techniques more frequently than teachers working in the village-district.

## CONCLUSION AND DISCUSSION

In this study, it was investigated which teaching methods-techniques 615 science teachers working in Manisa and Balıkesir provinces use most frequently and which they think should be used most frequently and the effect of gender, length of service, participation in in-service trainings related to teaching methods-techniques, number of students in the classes they teach, and the settlement where they work on these preferences.

If the data obtained about science teachers are repeated,

1. Many of the teachers participating in the study (60.3%) were female teachers.
2. Many of the teachers participating in the study (64.2%) were teachers with more than 5 years of service.
3. Many of the teachers participating in the study (61.5%) were teachers who attended in-service training seminars.
4. Many of the teachers participating in the study (61.0%) were teachers working in the province of Balıkesir.

5. Many of the teachers participating in the study (67.0%) were teachers working in the province-district centre.
6. Many of the teachers participating in the study (64.3%) had 21 or more students in their classes.

When the results related to how often the teachers currently use teaching methods and techniques and how often they think they should ideally be used are analysed, it is seen that the three most frequently used teaching methods of the teachers are question-answer ( $X=3,18$ ), homework ( $X=2,90$ ), laboratory ( $X=2,86$ ), and the three least frequently used methods are travel-observation ( $X=2,12$ ), role playing ( $X=2,42$ ), discussion ( $X=2,46$ ).

The teachers who participated in the research stated that laboratory ( $X=3,31$ ), question-answer ( $X=3,18$ ), demonstration ( $X=3,06$ ), problem solving ( $X=3,06$ ) methods should be used the most, respectively. This result, which indicates that science teachers stick to traditional teaching methods-techniques in the teaching process, also coincides with the research findings in the literature (Doğru & Aydoğdu, 2003, Önen et al. 2008; Yıldırım, 2011). In addition, the fact that teachers stated that question-answer, laboratory, problem solving, and demonstration methods should be used most in Science and Technology lessons reveals an important contradiction.

According to another result of the research, the most used teaching method among teachers is the question-answer method, which is described as boring and ineffective (Doğru & Aydoğdu, 2003). The fact that the teachers used the question-answer method more than they thought and used the project method and the excursion-observation method less than they thought was interpreted by Yıldırım (2011) as the preference of teaching practices that tend to make the student passive more frequently.

If the results of the research on the frequency of science teachers' use of teaching methods-techniques according to their gender are reminded, there is no significant difference between the frequency of teachers' use of "lecture" according to their gender. However, there is a significant difference between the frequency of using all other teaching-method techniques and gender variable. Discussion, problem solving, excursion-observation, question-answer, assignment methods-techniques are preferred by female teachers more than male teachers. Male teachers prefer demonstration, project, laboratory, cooperative learning, case study, role playing teaching method-techniques more than female teachers. However, this result is partially inconsistent with the research result of TALIS (2010), which

states that “female teachers emphasise the direct transmission approach less than male teachers, while they apply structured and student-oriented practices more than their male colleagues”.

Another result of the study is the frequency of teachers’ use of teaching methods and techniques according to their years of service. Accordingly, except for homework and case study methods, all other methods and techniques are preferred more frequently by teachers with more than 5 years of service. The situation in favour of teachers with more than 5 years of service in the study is incompatible with some studies in the literature. However, the result of the study conducted by Önen et al. (2008) with 43 Science and Technology teachers in the central district of Tekirdağ “It can also be said that teachers show a more idealistic approach in the first years of their professional experience and are advantageous in using different and effective teaching methods and techniques and teaching materials to apply their knowledge.”

According to the results related to the participation of science teachers in in-service training seminars and the frequency of using teaching methods and techniques, there was no significant difference between the participation of teachers in in-service training seminars and the frequency of using lecture, project and case study teaching methods and techniques. In addition, the teachers who used question-answer more frequently were the teachers who did not attend in-service training seminars. However, the teachers who used discussion, demonstration, problem solving, travel-observation, laboratory, homework, cooperative learning, role playing teaching method techniques more frequently were the teachers who attended in-service training seminars. While in-service training seminars did not achieve their purpose in terms of the frequency of using some teaching methods and techniques, they achieved their purpose for a total of eight teaching methods and techniques. The results of the research conducted by Akkuş and Kadayıfçı (2007) with 23 teachers in Ankara support this finding. It was revealed that there was a significant positive change in the perspectives of the teachers who participated in the courses towards new teaching approaches.

According to the results related to the average number of students in the classes in which science teachers teach and the frequency of using teaching methods and techniques, there is no significant difference between the number of students in the classes in which science teachers teach and the frequency of using problem solving method. There is a significant difference between the frequency of using other teaching methods and techniques and the number of students in the classes. Lecture, discussion and project methods were preferred more by those with an

average number of 21 or more students in their classes; demonstration, field trip-observation, laboratory, question-answer, homework, cooperative learning, case study and role-playing methods-techniques were preferred more by those with an average number of 1-20 students in their classes. In the research conducted by Talaz (2013) in Bergama district of İzmir province, which was related to the use of active learning activities (role playing, project, cooperative learning, problem solving) applied by 4th and 5th grade teachers consisting of 220 students in Science and Technology course, it was concluded that active learning activities can be applied more easily in classes where the number of students is less than 30. This result is in harmony with the research result.

According to the results related to the frequency of use of teaching methods and techniques according to the location of the school where science teachers work, teachers working in the village-district prefer assignment, role playing, case study method techniques more than teachers working in the province-district, while teachers working in the province-district prefer lecture, discussion, demonstration, problem solving, project, travel-observation, laboratory, question-answer, cooperative learning method techniques more than teachers working in the village-district. As a result, teachers working in the province-district use more various teaching methods and techniques than teachers working in the village-district. In the study conducted by Karacaoğlu and Acar (2010) with a sample of 82 teachers in Yenipazar district of Aydın province, the fact that the teachers stated that the learning activities in the new curriculum were prepared without considering the village conditions is in line with the findings of the research.

The teaching methods and techniques investigated in this study are lecture, discussion, demonstration, problem solving, project, field trip, laboratory, question-answer, homework, cooperative learning, case study, role playing. However, the number of new methods and techniques developed to be used in teaching is increasing day by day. For example, argumentation (Atasoy et al, 2022; Şevik & Yıldırım, 2024), drama in education (Çirkinoğlu Şekercioğlu & Yılmaz Akkuş, 2019; Yıldırım et al, 2018), peer teaching (Atasoy et al, 2014; Çirkinoğlu Şekercioğlu & Demirci, 2009), flipped learning (Çirkinoğlu Şekercioğlu & Yünkül, 2021), digital games (Arnavut & Çirkinoğlu Şekercioğlu, 2023), modelling (Ayvacı & Bülbül, 2022; Dinç Bilgin & Zorlu, 2023), concept cartoons (Atasoy et al, 2022; Yurtyapan & Çirkinoğlu Şekercioğlu, 2024), STEM (Deligöz & Han Tosunoğlu, 2023; Sungur et al, 2022), game-based learning (Okur & Koca Akkuş, 2021), prediction-observation-explanation (PTA) (Bolat & Karamustafaoğlu, 2021; Karamustafaoğlu & Ertuğrul, 2022), quantum learning (Çağlı & Sıvacı, 2020).

In addition to the methods and techniques used in this study, current research should be conducted on the frequency of use of new methods and techniques by science teachers and their use should be encouraged instead of traditional teaching methods and techniques.

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## **Chapter 7**

# **PREDICTORS OF MARITAL SATISFACTION: PERFECTIONISM, FORGIVENESS, HAPPINESS AND BIG FIVE PERSONALITY TRAITS**

**Sezen GÜLEÇ<sup>1</sup>  
Bilge UZUN<sup>2</sup>**

### **INTRODUCTION**

Ninety per cent of the world's population marry at least once in their lives and most of them expect their marriages to last happily (Shackelford et al., 2002). However, in reality, only one third of marriages last a lifetime and two thirds end in divorce (Caarls, K. & de Valk, 2018; Coşkun & Sarlak, 2020; Whisman et al., 1997). While research studies on marriage have been going on for many years, the topics that researchers have addressed about marriage have been changing in recent years. As the divorce rate increases, researchers are interested in the factors that may be related to the longevity of marriages and marital satisfaction (Levenson et al., 1993).

In recent years, marital satisfaction is one of the most frequently analysed topics in the marital literature. Marital satisfaction, which includes the personal evaluation of the marital relationship, is defined as a process that is affected by changes over time (Sano, 2001). Theorists focus on two different perspectives, relational and personal, to understand marital dynamics. Accordingly, the personal dimension includes variables such as personality traits, cognitive and emotional formation, while the relational dimension includes variables such as communication, happiness, interpersonal similarities and differences (Whisman et al., 1997).

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One of the personality traits that are likely to predict marital satisfaction is undoubtedly forgiveness. Especially after the development of positive psychology, forgiveness is accepted as one of the concepts predicting the concept of subjective well-being in married individuals (Arinze & Obunadike, 2024; Elliot, 2010; Fincham et al., 2004). Enright (1996) explains forgiveness as 'the voluntary abandonment of feelings such as anger, negative judgement and indifference towards someone who has unjustly hurt another person by encouraging undeserved feelings such as love, generosity and compassion' (p. 113). Like this definition, some researchers define forgiveness as giving up negative emotions that harm oneself and one's environment. The process of forgiveness in marriage may result in attempts to reconstruct and reorganise the beliefs of individuals about their spouses and themselves. In this context, it is emphasised that spouses' forgiving each other in marriage may be related to perfectionism personality trait (Koydemir et al., 2005). In their study, Hewitt et al. (1995) found that perfectionist personality trait contributed negatively to marital satisfaction. Accordingly, it was determined that individuals with perfectionist personality trait support their spouses less and make unrealistic demands, which decreases the happiness level of their spouses and negatively predicts marital satisfaction (Furman et al., 2017; Hewitt et al., 2017; Hoffmann et al., 2015). In addition to this, researchers emphasise the importance of personality traits in marriage and that personality traits can be categorised into five factors (Olaru et al., 2023; Somer & Goldberg, 1999). Accordingly, personality traits categorised in five factors may include extraversion, agreeableness, conscientiousness, emotional instability and openness to experience. On the other hand, it is known that marital satisfaction is positively related to the feeling of happiness that individuals feel in the relationship (Dimitrovsky et al., 2002). According to Bradbury and Fincham (1990), while happy spouses produce attributions that increase the quality of the relationship, unhappy spouses make attributions that maintain the problems experienced. In this direction, it can be said that happiness in the relationship can predict satisfaction.

In line with this information, the following question were sought to be answered in the research: "Does marital satisfaction of individuals differ according to demographic variables (gender, age, education level, number of children and duration of marriage) and do the level of happiness in relationships, perfectionist personality trait, forgiveness trait, big five personality traits (extraversion, agreeableness, conscientiousness, emotional instability and openness to experience) predict marital satisfaction?"

The general purpose of this study is to examine the extent to which relational and personal characteristics predict marital satisfaction. The study is expected to contribute to the literature on marriage and shed light on the programmes to be prepared in order to increase the duration and satisfaction of marriage. It is estimated that successful marriage and couple counselling programmes in this direction will also affect the divorce rate. Relationship satisfaction is important for many people and therefore it is valuable to understand how the marital relationship develops and changes over time. There are individuals whose marriages continue with satisfaction and from whom we can learn the magic of this success. As far as duration is concerned, the duration and success of long-lasting marriages are unique. Studies on marriages will help us to understand some important issues about why and how the process lasts long. In this framework, the aim of this study is to understand the contribution of relational and personal characteristics to marital satisfaction in a multidimensional way.

## **METHOD**

In this section, firstly the model of the research, secondly the research group, then the data collection tools and their characteristics, and finally how the data were collected and analysed are given. Perfectionism trait, forgiveness trait, big five personality traits (extraversion, agreeableness, conscientiousness, emotional instability and openness to experience), gender, age, education level, number of children and duration of marriage, which were determined as personal variables in the study; happiness in relationships, which was determined as relational variable, represented the independent variables of the study; while marital satisfaction was determined as the dependent variable of the study.

## **RESEARCH MODEL**

This research is based on the correlational model. Correlational models are research models that aim to determine the presence and/or degree of covariance between two or more variables. In such an arrangement, the variables between which a relationship will be sought are symbolised separately (Karasar, 2008). In this study, it was tried to explain the effect of the level of happiness in the relationship and personality traits such as forgiveness, perfectionism and extraversion, agreeableness, conscientiousness, emotional instability and openness to experience, which are included in the sub-dimensions of the big five personality theory, on the level of satisfaction of married individuals with

their marriages and whether this level of satisfaction is affected by gender, age, education level, number of children and duration of marriage variables.

## **PARTICIPANTS**

In the study, data were collected from 378 (178 men and 200 women) married individuals living in the centre of Sivas province, who volunteered to participate in the study and were reached by convenient sampling method and snowball technique. Convenient sampling method is the method of selecting the sample from accessible, easily applicable units due to the limitations in terms of time, money and labour force (Büyüköztürk et al., 2012). Different from this, the reason for choosing this sampling method in this study is the nature of the research subject rather than the limitations in time, money and labour force. As a matter of fact, marriage and marital satisfaction has been observed as a subject that people cannot easily open themselves and avoid giving information as much as possible.

The age range of the individuals included in the research group varies between 25 and 55. The duration of marriage of the participants varies between 1 year and 25 years. The education levels of the participants ranged from primary school to postgraduate education, and the status of having children was also taken into consideration. These demographic variables were used in the analyses to evaluate the effects on marital satisfaction. In addition, the occupational characteristics of the participants in the study cover a wide range of professions such as teacher, lecturer, medical doctor, architect, civil servant, non-commissioned officer, nurse, dentist, policeman, merchant, technician/technician, engineer, administrator, driver, religious worker, labourer, sociologist, accountant, inspector, psychologist, pharmacist, psychological counsellor, retired, farmer, banker, coach, social worker, lawyer, economist, veterinarian, dietician and no profession.

## **MEASURES**

In this study, in addition to the Demographic Information Form created by the researcher, the following scales were used: the Marital Life Scale (Tezer, 1996), the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991), the Forgiveness Scale (Berry et al., 2005), the Adjective-Based Personality Scale (Bacanlı et al., 2009), and the Happiness in Relationships Scale (Fletcher et al., 1990). Details about the scales used are presented below.



### ***Demographic Information Form***

This form, organized by the researcher to determine the demographic characteristics of the participants, requests information from the participants regarding age, spouse's age, gender, (if applicable) number of children, education level, spouse's education level, occupation, spouse's occupation, and duration of marriage.

### ***Marital Life Scale (MLS)***

The Marital Life Scale was developed by Tezer (1996) to measure the general satisfaction level that married individuals derive from their marriages. The scale consists of 10 items using a 5-point Likert type, and the items are aggregated into a single dimension. In terms of the validity and reliability of the Marital Life Scale, the Cronbach Alpha internal consistency coefficient was found to be .91 in the first administration and .89 in the second. The reliability coefficient was determined to be .85 based on test-retest administration conducted three months apart. The findings indicate that the Marital Life Scale has an adequate level of reliability.

### ***Multidimensional Perfectionism Scale (MPS)***

The Multidimensional Perfectionism Scale was developed by Hewitt and Flett (1991) to measure individual differences in perfectionism. The scale consists of 45 items using a 7-point Likert type and includes three sub-dimensions: Self-Oriented Perfectionism, Other-Oriented Perfectionism, and Socially Prescribed Perfectionism. The Turkish adaptation of the scale was carried out by Oral (1999), who conducted the adaptation study on Turkish university students. Oral (1999) reported that the total variance explained by the three factors was 31%. Looking at the Cronbach Alpha coefficients, the values were found to be .91 for the self-oriented perfectionism subscale, .73 for the other-oriented perfectionism subscale, and .80 for the socially prescribed perfectionism subscale.

### ***Forgiveness Scale (FS)***

The Forgiveness Scale was developed by Berry, Worthington, O'Connor, Parrot, and Wade (2005) to measure the trait of forgiveness. The scale consists of 10 items using a 5-point Likert type and is unidimensional. The Turkish adaptation of the scale was carried out by Sarıçam and Akın (2013). In the confirmatory factor analysis conducted for structural validity, it was found that the 10 items conformed to a single dimension consistent with the original form ( $\chi^2 = 106.47$ ,  $df = 32$ ,  $RMSEA = .077$ ,  $CFI = .89$ ,  $GFI = .95$ ,  $AGFI = .91$ ,  $SRMR = .062$ ). The

Cronbach Alpha internal consistency reliability coefficient of the scale was found to be .67. In the criterion-related validity study, a positive correlation was found between the Forgiveness Scale and the Heartland Forgiveness Scale results ( $r = .84$ ), as well as between the Forgiveness Scale and the Humility Scale results ( $r = .52$ ). The reliability coefficient from the test-retest application was found to be .88 for the entire scale (Sarıçam & Akın, 2013). Based on these results, it can be seen that the Forgiveness Scale is a valid and reliable measurement tool.

### ***Adjective-Based Personality Scale (ABPS)***

The Adjective-Based Personality Scale was developed by Bacanlı, İlhan, and Aslan (2009) to measure the five-factor personality dimensions using adjective pairs. The scale consists of 40 items using a 7-point Likert type and includes five sub-dimensions: Extraversion, Agreeableness, Conscientiousness, Emotional Instability, and Openness to Experience. Regarding the reliability of the ABPS, the internal consistency coefficients of the dimensions range from .73 to .89. The highest internal consistency coefficient is observed in Extraversion (.89), while the lowest is in Emotional Instability (.73). These findings provide evidence of the scale's reliability (Bacanlı et al., 2009).

### ***Happiness in Relationships Scale (HRS)***

The Happiness in Relationships Scale was developed by Fletcher, Fitness, and Blampied (1990) to measure perceptions related to love, happiness, overall satisfaction, and commitment level in relationships. The scale consists of 6 items using a 7-point Likert type and is unidimensional. The Turkish adaptation of the scale was conducted by Tutarel-Kışlak (2002). The internal consistency (Cronbach Alpha) coefficient of the scale was found to be .80. The test-retest reliability coefficient is .86. Regarding the validity of the HRS, the Marital Adjustment Scale (MAS) was used to investigate criterion-dependent validity. The correlation coefficient between the total scores of the HRS and MAS was determined to be .69, which is significant at the .01 level (Tutarel-Kışlak, 2002). These findings demonstrate that the scale is valid and reliable.

### **Process**

In this study, initially, due to the perception that the research topic is difficult to share in the context of Turkey, the data collection tools were physically presented to the participants along with an envelope to increase the validity and reliability of the data collected. The data were returned in closed envelopes.

The data collection was conducted between January and May 2014 in the central district of Sivas. Participants were first briefly informed about the research topic, and those willing to participate were provided with the data collection tools and an envelope. After informing them that the data would be used solely for research purposes, that no personal information would be requested, and that confidentiality would be ensured, participants were asked to fill out the data collection tools individually. No specific time was given to the participants for completing the scales, and those who finished submitted their data in the closed envelope. All phases of the study adhered to the principles outlined in the Helsinki Declaration.

### **Data Analysis**

In this study, the Marital Life Scale, Multidimensional Perfectionism Scale, Forgiveness Scale, Adjective-Based Personality Test, and Happiness in Relationships Scale, as detailed above, were applied to married individuals. After entering the collected data into the SPSS 19.0 software, descriptive statistical analyses were first performed on the data. Subsequently, in line with the sub-problems of the research, to determine whether marital satisfaction:

- Varies significantly by gender: a t-test was conducted,
- Varies based on age, education level, number of children, and duration of marriage: One-Way ANOVA was used,
- Is predicted by the happiness variable in relationships and overall perfectionism, self-oriented, other-oriented, socially prescribed perfectionism, forgiveness, extraversion, agreeableness, conscientiousness, emotional instability, and openness to experience personality traits: Pearson Product-Moment Correlation Analysis and Hierarchical Linear Regression Analysis were utilized.

### **RESULT**

In this section, the analysis of relational and personal variables affecting marital satisfaction is presented. The findings are discussed in relation to demographic variables such as gender, age, education level, and duration of marriage, as well as factors like personality traits, forgiveness, and perfectionism. According to the research findings:

- Marital satisfaction levels show a significant difference based on gender,  $t(376) = 2.42, p < .05$ . The level of marital satisfaction for men ( $M = 35.07$ ) was found to be higher than that for women ( $M = 33.85$ ).
- • A significant difference was found between age and marital satisfaction,

$F(3,374) = 3.63, p < .05$ . To determine the source of the difference, post hoc Tukey tests were conducted, which indicated that the level of marital satisfaction for individuals aged 41-51 is lower than that of those aged 52 and above ( $p < .05$ ).

- After categorizing the participants' education levels as below bachelor's degree and bachelor's degree and above, a One-Way ANOVA was conducted to compare marital satisfaction levels. The analysis revealed no significant difference between marital satisfaction levels and individuals' education status,  $F(1, 376) = .617, p < .05$ .
- Participants were categorized into those with no children, one child, two children, and three or more children, and a One-Way ANOVA was performed to compare marital satisfaction levels. The analysis found no significant difference between marital satisfaction and the number of children,  $F(3, 374) = 1.87, p < .05$ .
- A significant difference was found between marital duration and marital satisfaction,  $F(5, 372) = 2.61, p < .05$ . To determine the source of the difference, post hoc Tukey tests indicated that individuals married for 16-20 years have a significantly lower level of marital satisfaction compared to those married for 0.5-5 years ( $p < .05$ ).
- A positive and significant relationship was identified between the Happiness in Relationships Scale scores and the Marital Life Scale scores,  $r = .52$  ( $p < .001$ ). In other words, as the level of happiness in relationships increases among married individuals, so does their level of satisfaction with their marriage. The standardized regression coefficient for happiness in relationships predicting marital satisfaction was found to be  $\beta = .516$ . When examining the significance of this standardized regression coefficient using a t-test, it was found that happiness in relationships significantly predicts the marital satisfaction of married individuals ( $t = 11.68, p = .000$ ). According to the results of the regression analysis, happiness in relationships is a significant predictor of marital satisfaction among married individuals ( $R = .516, R^2 = .27, F(1, 376) = 136.46, p < .05$ ). In other words, the level of happiness in relationships alone explains 27% of the marital satisfaction.
- No significant relationship was found between the total perfectionism scores of the Multidimensional Perfectionism Scale and the Marital Life Scale scores. However, a positive and significant relationship was identified between self-oriented perfectionism scores and Marital Life Scale scores,  $r = .11$  ( $p < .005$ ). In other words, as married individuals' levels of self-oriented

perfectionism increase, so does their level of satisfaction with their marriage. No significant relationship was found between other-oriented perfectionism and socially prescribed perfectionism scores and the Marital Life Scale scores. Therefore, only the self-oriented perfectionism sub-dimension shows a significant relationship with marital satisfaction.

The standardized regression coefficient for self-oriented perfectionism predicting marital satisfaction was found to be  $\beta = .115$ . Upon examining the significance of this standardized regression coefficient using a t-test, it was observed that self-oriented perfectionism does not significantly predict marital satisfaction for married individuals ( $t = 1.90, p = .059$ ). According to the results of the regression analysis, it was concluded that self-oriented perfectionism is not a significant predictor of marital satisfaction among married individuals.

- A positive and significant relationship was found between the Forgiveness Scale scores and the Marital Life Scale scores,  $r = .13$  ( $p < .005$ ). In other words, as married individuals' levels of forgiveness increase, so does their level of satisfaction with their marriage. The standardized regression coefficient for the personality trait of forgiveness predicting marital satisfaction was found to be  $\beta = .128$ . Upon examining the significance of this standardized regression coefficient using a t-test, it was observed that forgiveness significantly predicts the marital satisfaction of married individuals ( $t = 2.51, p = .013$ ). According to the results of the regression analysis, forgiveness is a significant predictor of marital satisfaction among married individuals ( $R = .128, R^2 = .02, F(1, 376) = 6.28, p < .05$ ). In other words, the personality trait of forgiveness explains 2% of marital satisfaction on its own.
- Significant relationships were found between the scores of some subdimensions of the five-factor personality traits measured by the Adjective-Based Personality Scale and the Marital Life Scale scores, while no significant relationships were found with other subdimensions. The findings are as follows: A positive and significant relationship was found between the Extraversion subscale scores and the Marital Life Scale scores,  $r = .13$  ( $p < .005$ ). In other words, as married individuals' extraversion traits increase, their level of satisfaction with their marriage also increases. A negative and significant relationship was found between the Emotional Instability subscale scores and the Marital Life Scale scores,  $r = .12$  ( $p < .005$ ). This means that as married individuals' emotional instability traits increase, their level of satisfaction with their marriage decreases. No significant relationships were found between the

scores of the Agreeableness, Conscientiousness, and Openness to Experience subscales and the Marital Life Scale scores.

The standardized regression coefficient for the personality trait of extraversion predicting marital satisfaction was found to be  $\beta = .180$ . Upon examining the significance of this standardized regression coefficient using a t-test, it was shown that the personality trait of extraversion significantly predicts the marital satisfaction of married individuals ( $t = 2.47, p = .014$ ). According to the results of the regression analysis, extraversion is identified as a significant predictor of marital satisfaction among married individuals.

The standardized regression coefficient for emotional instability predicting marital satisfaction was found to be  $\beta = -.113$ . The t-test results examining the significance of this standardized regression coefficient indicated that emotional instability significantly predicts marital satisfaction in the opposite direction ( $t = -2.19, p = .029$ ). According to the results of the regression analysis, emotional instability is also found to be a significant predictor of marital satisfaction among married individuals.

Among the five-factor personality traits, two personality factors (Extraversion and Emotional Instability) are identified as predictors of marital satisfaction, while three personality factors (Agreeableness, Conscientiousness, and Openness to Experience) do not predict it. When the results are examined in a general context, the established regression model is found to be significant ( $p < .05$ ). The five-factor personality traits show a low-level significant relationship with marital satisfaction ( $R = .190, R^2 = .036, F(5, 372) = 2.78, p = .018$ ). The five-factor personality traits explain 2% of the total variance in marital satisfaction. According to the standardized regression coefficients ( $\beta$ ), the relative importance of the predictor variables on marital satisfaction is as follows: extraversion, emotional instability, openness to experience, conscientiousness, and agreeableness. Upon examining the t-test results for the significance of the regression coefficients, it is seen that extraversion and emotional instability are significant predictors of marital satisfaction.

## **DISCUSSION**

According to the research results, the level of marital satisfaction shows a significant difference based on gender. Statistical analyses indicate that men's levels of marital satisfaction are higher than those of women. Çelik (2006) found results close to the significance threshold when comparing marital satisfaction

by gender in his study on the family subscale. The results suggest that women's satisfaction levels are lower, which is consistent with the findings of this research. However, Kubat (2012) reached the conclusion that marital satisfaction does not differ by gender in his study. In a study by Bir-Aktürk (2006) comparing marital satisfaction based on marital status (first marriage, remarriage after divorce, remarriage after the death of a spouse) and gender, it was determined that men have higher marital satisfaction than women. Üncü (2007), as well as Yaşın-Dökmen and Tokgöz (2002), found that marital satisfaction varies by gender in their research. According to Azizoğlu-Binici (2000), gender is a variable that predicts marital satisfaction. Güngör-Cihan (2007) also identified in his study, where he developed a model on marital satisfaction, that men's levels of marital satisfaction are higher than those of women. Additionally, Yıldız (2012) found in his thesis that marital adjustment scores vary by gender, with men having higher marital adjustment.

According to the research results, a significant difference was found between age and marital satisfaction. Analysis results determined that the level of marital satisfaction for individuals aged 41-51 is lower than that of those aged 52 and older. Zeytinoğlu (2013) and Kubat (2012) did not find a significant relationship between age and marital satisfaction in their thesis studies. However, Yaşın-Dökmen and Tokgöz (2002) identified age as a significant predictor of marital satisfaction. It is thought that the differences in the studies may be due to certain statistical reasons, such as unequal sample sizes between categories. Further research in this area could help clarify the situation.

For the analysis comparing the level of marital satisfaction with educational status, participants were categorized as having education lower than a bachelor's degree and those with a bachelor's degree or higher. The analysis found no significant difference between the level of marital satisfaction and individuals' educational status. Çağ and Yıldırım (2013) concluded that educational level significantly predicts marital satisfaction. Literature in this area shows that educational status is indeed related to marital satisfaction. The finding in this study that marital satisfaction does not differ according to educational status is surprising, and it is thought to be due to most of the sample being at the bachelor's degree level. Additionally, Zeytinoğlu (2013) examined whether there is a significant relationship between the self-esteem, jealousy levels, conflicts experienced in marriage, and marital satisfaction of married individuals, and whether these variables differ based on gender, age, educational level, duration of marriage, type of marriage, and number of children. He categorized educational

level in the same way (lower than bachelor's degree and bachelor's degree or higher) and found no significant difference with marital satisfaction. Similarly, Kubat (2012) did not find a significant relationship between marital satisfaction and educational level in his thesis study. However, O'Rourke and Cuddy (2017) found in their study that increasing the level of education of women significantly increases marital satisfaction, but this effect is more complex for men.

Married individuals were categorized as having no children, one child, two children, or three or more children, and a one-way ANOVA was conducted to compare their level of marital satisfaction. The analysis revealed no significant difference between the level of marital satisfaction and the number of children. Hatipoğlu (1993) obtained a similar finding in his thesis study. According to the results of a study conducted by Çağ and Yıldırım (2013), which aimed to determine how much variables such as gender, educational level, number of children, spousal support, duration of marriage, age difference between spouses, family income level, sexual life satisfaction, and sharing of household responsibilities predict marital satisfaction, the number of children did not predict marital satisfaction. This finding appears consistent with the research results. Additionally, Çelik (2006) examined whether there was a significant difference in the average marital satisfaction scores of married individuals based on gender and number of children and found no significant difference. Berk (2009) concluded in his study that the perception of marital satisfaction does not vary based on whether individuals have children, meaning that the perception of marital satisfaction is independent of the factor of childbearing. Zeytinoğlu (2013) also found no significant relationship between the number of children and marital satisfaction in his thesis study. It seems that the research findings align with the literature. However, there are also studies emphasising the effect of children on family dynamics. Buehler and Gerard (2002) emphasise in their study that the increase in the number of children may make communication between parents more difficult and this may negatively affect marital satisfaction. More children usually mean more economic obligations. Doss et al. (2004) in their study states that economic stress may negatively affect marital satisfaction. Economic difficulties may lead parents to experience conflict and thus marital satisfaction may decrease. Children can create an emotional bond between parents. However, many children may harm the individual needs of parents and the relationship between spouses. Heller and Watson (2013) showed that increasing the number of children can lead to emotional distance in the parents' relationship.



According to the research results, a significant difference was found between the duration of marriage and marital satisfaction. The analysis results indicated that individuals married for 16-20 years had a significantly lower level of marital satisfaction compared to those married for 0.5-5 years. This finding is consistent with the studies of Dökmen and Tokgöz (2002) and Espinoza (2003). Conversely, Zeytinoğlu (2013) did not find a significant relationship between duration of marriage and marital satisfaction in his correlation analysis. However, Çelik (2006) did obtain findings related to marriage duration, indicating that women married for 1-5 years had the lowest satisfaction level in terms of the family subscale, while married men had the highest satisfaction level between 11-17 years in terms of the self subscale. These findings parallel the research results. Kubat (2012) also categorized participants by their marriage duration as 0-3 years, 3.5-10 years, and 11-25 years and found a significant difference between marital satisfaction and marriage duration. Moller et al. (2021) found that increasing the duration of marriage strengthens emotional ties and this increases marital satisfaction. However, more conflicts and problems may occur between couples in long-term marriages. Kahn et al. (2020) stated that communication problems and difficulties in conflict management are more common in long-term marriages and emphasised that this situation negatively affects marital satisfaction. As the marriage lasts longer, the needs and expectations of couples may change. In their study, Dyer et al. (2022) revealed that the relationship between the length of marriage and marital satisfaction is complex and that changing expectations over time may affect this situation.

The research found a positive and significant relationship between self-oriented perfectionism and marital satisfaction. In other words, as married individuals' levels of self-oriented perfectionism increase, their levels of marital satisfaction also increase. However, according to the results of the regression analysis conducted, self-oriented perfectionism is not a significant predictor of marital satisfaction, with a borderline score. Koydemir, Sun-Selişik, and Tezer (2005), in their study aimed at determining the relationship between marital adjustment and the three dimensions of perfectionism among 50 married couples, concluded that there is no significant relationship between marital adjustment and self-oriented perfectionism. On the other hand, Bitirgen (2013) found a negative and significant relationship between marital adjustment and self-oriented perfectionism in her study with classroom teachers and administrators. However, in a study by Bıyıkoğlu (2012), which examined the concept of marital adjustment in relation to perfectionism (self-oriented, other-oriented, and socially prescribed

perfectionism), coping strategies (problem-focused coping, emotion-focused coping, and seeking social support), and gender variables, individuals with self-oriented perfectionistic traits exhibited higher levels of marital adjustment. Additionally, this study revealed that self-oriented perfectionism plays a decisive role in marital adjustment among women. It can be said that the findings of this study are consistent with those regarding self-oriented perfectionism. In the analyses conducted in this research, no significant relationship was found between other-oriented perfectionism and marital satisfaction. Furthermore, according to the results of the regression analysis, other-oriented perfectionism does not significantly predict marital satisfaction. Koydemir, Sun-Selişik, and Tezer (2005) reached a similar conclusion in their study, finding no significant relationship between marital adjustment and other-oriented perfectionism. This finding is consistent with the results of the current research. Bitirgen (2013), in her study aimed at investigating the relationship between marital satisfaction and perfectionism among classroom teachers and administrators, did not find a significant relationship between other-oriented perfectionism and marital satisfaction. According to the research results, no significant relationship was found between socially prescribed perfectionism and marital satisfaction. Additionally, the regression analysis conducted in the study revealed that socially prescribed perfectionism does not significantly predict marital satisfaction. However, Bıyıkoğlu (2012) found that socially prescribed perfectionism plays a decisive role in marital adjustment among men. Tuncay (2006), in his study examining marital adjustment and perfectionism in an interpersonal context, found a significant negative relationship between socially prescribed perfectionism and marital adjustment. Bitirgen (2013) also obtained the same finding in her research on the relationship between marital satisfaction and perfectionism. Koydemir, Sun-Selişik, and Tezer (2005), in their study with 50 married couples aimed at determining the relationship between marital adjustment and the three dimensions of perfectionism, also found no significant relationship between socially prescribed perfectionism and marital adjustment. This finding aligns with the results of the current research. There are also studies in the literature stating that perfectionism can lead to communication problems and conflicts between couples. Kerns et al. (2021) found that perfectionist individuals experience more disappointment when they cannot meet their spouses' expectations, and this situation negatively affects marital satisfaction. Curran and Hill (2020) stated that perfectionist tendencies may reduce marital satisfaction because perfectionist individuals tend to constantly feel themselves and their spouses inadequate.

Perfectionism can affect the relationship dynamics between couples. Smith and Cavanagh (2022) showed in their study that perfectionistic individuals have less emotional bonding with their spouses and this situation decreases marital satisfaction. Perfectionism can increase stress and anxiety, which negatively affects marital satisfaction. Flett and Hewitt (2016) stated that perfectionist individuals experience high levels of anxiety and this anxiety damages marital relationships.

The research results indicated a positive and significant relationship between forgiving personality traits and marital satisfaction levels. The study reveals that as married individuals' levels of forgiveness increase, their levels of marital satisfaction also increase. Duman-Temel (2013), in her study aimed at investigating the mediating role of marital satisfaction in the relationships between infidelity type-forgiveness, positive emotions-forgiveness, and coping-forgiveness, found that marital satisfaction plays a mediating role in the relationships between positive emotions-forgiveness and emotion-focused coping-forgiveness. This finding is consistent with the results of the current research. The regression analysis results regarding whether the forgiving personality trait predicts marital satisfaction also revealed that the forgiving personality trait significantly predicts marital satisfaction. In other words, the forgiving personality trait, which is one of the personal variables in the study, is a predictor of marital satisfaction. Taysi (2007) found that spouses find it more difficult to forgive when they believe that an injurious behavior was intentional, and couples with lower marital adjustment perceive each other's behaviors as more intentional. Thus, it can be concluded that marital adjustment predicts forgiveness. Based on the findings of this research, it can be concluded that forgiveness and marital satisfaction are mutually predictive variables. Forgiveness can improve communication in relationships. In their study, Montalvo et al. (2020) stated that forgiveness increases marital satisfaction because forgiveness provides a better understanding between spouses. Forgiveness can strengthen emotional bonds between couples. Worthington et al. (2017) found that forgiveness increased couples' commitment to each other and this positively affected marital satisfaction. Forgiveness plays an important role in conflict management. Runtz and Schallow (2018) showed that forgiveness reduces conflict in marriages, and this increases marital satisfaction. Forgiveness has positive effects on individuals' psychological health. Ho et al. (2021) stated that forgiveness both increases marital satisfaction and improves the general psychological well-being of individuals. Current research shows that forgiveness contributes positively to the relationships between couples. Fincham et al. (2022) presented findings that forgiveness increases overall satisfaction in marriages.

According to the research results, the extraversion personality factor is one of the two factors related to marital satisfaction. A significant positive relationship was found between the trait of extraversion and marital satisfaction. In other words, as married individuals' extraversion traits increase, their levels of marital satisfaction also rise. Additionally, the results of the regression analysis indicate that the extraversion personality factor is one of the two factors that significantly predicts marital satisfaction among the five personality traits. Thus, extraversion is a personal variable that predicts marital satisfaction. Erişti (2010) found a significant positive relationship between extraversion and marital adjustment in his thesis study. Since extroverted individuals tend to develop better social relationships, this may help them feel more happiness and satisfaction in their marriages. Roberts et al. (2019) stated that extroversion increases marital satisfaction. This result aligns with the findings of the current research. In the analyses conducted in the study, the agreeableness personality factor was identified as one of three factors that do not relate to marital satisfaction. No significant relationship was found between agreeableness and marital satisfaction. Moreover, the regression analysis results show that the agreeableness personality factor is one of three factors that do not significantly predict marital satisfaction among the five personality traits. In other words, the agreeableness personality trait is not a significant predictor of marital satisfaction for married individuals. Güngör-Cihan (2007), in his study aimed at developing a model to explain marital satisfaction, found no significant effect of agreeableness on marital satisfaction. These results are consistent with the current research. However, Malouff et al. (2020) showed that individuals with high agreeable have higher marital satisfaction.

The research results indicate that the conscientiousness personality factor is another factor that does not relate to marital satisfaction. No significant relationship was found between conscientiousness and marital satisfaction. Additionally, the regression analysis results reveal that the conscientiousness personality factor is one of three factors that do not significantly predict marital satisfaction among the five personality traits. However, the correlation analysis indicates a positive relationship between conscientiousness and relationship happiness. Relationship happiness is also positively related to marital satisfaction and serves as a significant predictor of it. Therefore, it can be suggested that conscientiousness has an indirect effect on marital satisfaction. Güngör-Cihan (2007) identified conscientiousness as one of the least predictive traits for marital satisfaction in her study. Conscientious individuals can make better decisions in their relationships and are more effective in solving problems. Malouff et al.

(2020) found that individuals with high levels of conscientiousness also had high levels of marital satisfaction. Based on the analysis results, the emotional instability personality factor is another factor related to marital satisfaction. A significant negative relationship was found between emotional instability and marital satisfaction. This means that as married individuals' emotional instability traits increase, their levels of marital satisfaction decrease. Furthermore, the regression analysis results show that emotional instability is one of two factors that significantly predicts marital satisfaction among the five personality traits. Therefore, emotional instability can be regarded as a personal variable that predicts marital satisfaction negatively. Güngör-Cihan (2007) found no significant effect of emotional instability on marital satisfaction in his study. However, he identified a significant effect of self-efficacy in marriage on the relationship between emotional instability and marital satisfaction, suggesting that emotional instability indirectly affects marital satisfaction and is negatively related to it. The findings partially align with those of the current research. Literature reviews indicate that emotional instability is related to marital satisfaction (Kelly & Conley, 1987) and predicts marital satisfaction (Russell & Wells, 1991), which supports the findings of this research. Emotional stability (neuroticism) is an important factor affecting marital satisfaction. It has been found that individuals with high emotional instability experience more conflict in their marriages and thus have low marital satisfaction (Moor et al., 2021).

Finally, in the analyses conducted, the openness to experience personality factor is the last of the three factors that do not relate to marital satisfaction. No significant relationship was found between openness to experience and marital satisfaction. Additionally, the regression analysis results indicate that the openness to experience personality factor is one of the three factors that do not significantly predict marital satisfaction among the five personality traits. However, the correlation analysis shows a positive relationship between openness to experience and relationship happiness. Relationship happiness is positively related to marital satisfaction and also predicts it. Therefore, it can be interpreted that openness to experience has an indirect effect on marital satisfaction.

According to the results of the correlation analysis, when looking at marital satisfaction in terms of the five-factor personality traits, a significant relationship was found between marital satisfaction and two personality factors: Extraversion and Emotional Instability. In contrast, there is no significant relationship with the three personality factors of Agreeableness, Conscientiousness, and Openness to Experience. Buss (1991), in his study examining the role of personality in the

actions of angry and provoked partners, found that marital satisfaction is related to emotional instability, conscientiousness, and openness to experience. The results of the regression analysis indicate that the five-factor personality traits show a low-level significant relationship with marital satisfaction. The relative importance order of the predictor variables on marital satisfaction is as follows: extraversion, emotional instability, openness to experience, conscientiousness, and agreeableness. Studies highlight the negative effects of emotional instability on marital satisfaction while indicating that the dimensions of agreeableness, openness to experience, and conscientiousness positively influence marital satisfaction (Güngör-Cihan, 2007). Five factor personality traits are in a complex interaction that affects marital satisfaction. Zięba et al. (2022) emphasised that personality traits shape marital satisfaction by interacting together, therefore all traits should be taken into consideration.

Although there are few studies that examine each of the independent variables in relation to marital satisfaction individually, the findings of these studies have been discussed by comparing them with the results of the current research. However, there is no existing research that examines all these variables together. As a result, the research findings indicate that according to the analyses conducted on the predictive role of the five-factor personality traits regarding marital satisfaction, the personality factors of extraversion and emotional instability significantly predict marital satisfaction, while agreeableness, conscientiousness, and openness to experience do not. Therefore, it can be concluded that these two factors are personal variables that predict marital satisfaction. Overall, the analyses suggest that forgiveness, extraversion, and emotional instability are personal variables that predict marital satisfaction.

## **CONCLUSION**

The aim of this research is to examine the relational and personal variables that predict marital satisfaction. In this context, relationship happiness is chosen as the relational variable of the study, while the personal variables include personality traits such as perfectionism, forgiveness, extraversion, agreeableness, conscientiousness, emotional instability, and openness to experience, along with demographic variables such as gender, age, education level, number of children, and duration of marriage. The findings indicate that relationship happiness is significantly positively related to marital satisfaction. As relationship happiness increases, marital satisfaction also rises. Additionally, it has been determined that relationship happiness is a significant predictor of marital satisfaction.

Regarding the personal variables, a significant positive relationship was found only between self-oriented perfectionism and marital satisfaction. As self-oriented perfectionism scores increase, the level of marital satisfaction also increases. However, no significant relationship was found between overall perfectionism and its other dimensions other-oriented perfectionism and socially prescribed perfectionism and marital satisfaction scores. Furthermore, the results show that none of the dimensions of perfectionism predict marital satisfaction. The research results indicate a significant positive relationship between forgiveness scores and marital satisfaction scores. As forgiveness increases in married individuals, the level of marital satisfaction also rises. It has also been determined that the personality trait of forgiveness is a significant predictor of marital satisfaction. According to the findings regarding the relationship between the Big Five personality traits and marital satisfaction, there is a significant relationship between extraversion and emotional instability and marital satisfaction. This relationship is positive with extraversion and negative with emotional instability. Thus, it can be said that as extraversion increases and emotional instability decreases, marital satisfaction also increases. No significant relationship was found between the other three Big Five personality traits agreeableness, conscientiousness, and openness to experience and marital satisfaction.

In examining the relationship between demographic variables and marital satisfaction, the research findings suggest that marital satisfaction varies according to gender, age, and duration of marriage, while no significant relationship was found between the number of children, education level, and marital satisfaction. According to the results, men's marital satisfaction was found to be higher than that of women. Additionally, the satisfaction level of individuals aged 41-51 was found to be lower than that of those aged 52 and above. Finally, it was determined that the level of marital satisfaction of individuals married for 16-20 years is significantly lower than that of individuals married for 0.5-5 years.

## **LIMITATION AND RECOMMENDATION**

The research data was collected in 2014 and is limited to a total of 378 married individuals. Additionally, due to the nature of the study, a convenience sampling method was preferred, and data were collected using the snowball sampling technique. The reason for choosing this sampling method is the limitations encountered in finding participants due to the subject of the research; during the data collection phase, individuals who refused to participate in the study cited the topic as private. Although the closed envelope method, which is explained

in detail in the data collection section, was used as a precaution, this created a limitation. If the study adopts a cross-sectional design, it may limit the ability to establish causal relationships between research variables. Longitudinal studies would provide stronger evidence of causality. Reliance on self-report measures for variables may introduce response biases and social desirability effects, impacting the validity of the results. Participants may underreport experiences due to social stigma or personal discomfort, leading to an underestimation of the true prevalence and severity of these issues. Another limitation of the study is that in marital adjustment research, data collected from spouses are generally paired; however, this application was not preferred in this study because it could reduce the sample size and affect the validity of the study. The fact that no significant difference was found between education level, number of children, and marital satisfaction may suggest that a significant portion of the sample consists of individuals with a bachelor's degree and those with two children. This topic could be studied with more equally distributed samples regarding these variables. In this study, the data of married individuals were not matched with those of their spouses, and some participants' spouses were not included in the research. This study can be replicated by matching the data of spouses. Based on the variables that positively correlate with marriage and predict marital satisfaction, group work programs can be developed. Groups can be formed for married individuals who exhibit emotional instability, which negatively affects marital satisfaction, to provide support in this regard. Marriage and family therapists can work in accordance with the findings that the personality traits of forgiveness, extraversion, and emotional stability predict marital satisfaction and that self-oriented perfectionism shows a positive relationship with marital satisfaction.

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