



RESEARCHES ON MULTIDISCIPLINARY APPROACHES

MULTİDİSİPLİNER AKADEMİK
YAKLAŞIM ARAŞTIRMALARI

2026 (2)

Continuous Publication

ISSN:2791-9099

ROMAYA JOURNAL

ROMAYA DERGİSİ

RESEARCHES ON MULTIDISCIPLINARY APPROACHES
MULTİDİSİPLİNER AKADEMİK YAKLAŞIM ARAŞTIRMALARI

2026 (2) - Continuous Publication - Language: English

Founder and Publisher

Cerebrumx Yayıncılık Sanayi Ticaret
ve Pazarlama Limited Şirketi
www.cerebrumx.com.tr

Managing Editor - Layout

Eda Baltacı
Aydın Adnan Menderes University

Elif Ekinci
Bursa Uludağ University

Asst. Prof. Dr. Ece Ersoy Yılan
İstanbul Beykent University

Language Editors

Dr. Emre Kerimoğlu
İstanbul Beykent University

İR. Nurdan Yılmaz
Republic of Turkey Ministry of
National Education

Chief Editor

Asst. Prof. Dr. Ebru Bağcı
Balıkesir University

Editors

Prof. Dr. Erkut Altındağ
Doğuş University

Assoc. Prof. Dr. Bora Coşar
İstanbul Beykent University

Assoc. Prof. Dr. Oğuz Doğan
Antalya Bilim University

Asst. Prof. Dr. Ayşe Deliormanlı
İstanbul Beykent University

Asst. Prof. Dr. Cihan Yılmaz
Kırklareli University

Asst. Prof. Dr. Ece Melek
İstanbul Beykent University

Asst. Prof. Dr. Figen Sevinç Başol
Bartın University

Asst. Prof. Dr. Gerçek Özparlak
İstanbul Beykent University

Section Editors

Prof. Dr. Ayla Solmaz Avcıkurt
Balıkesir University

Prof. Dr. İlke Evin Gencel
İzmir Democracy University

Prof. Dr. Özel Şerbetçi
Aydın Adnan Menderes University

Prof. Dr. Özge Yalçiner Ercoşkun
Gazi University

Assoc. Prof. Dr. Abdullah Türk
İstanbul Bilgi University

Assoc. Prof. Dr. Azadeh Rezafar
İstanbul Arel University

Assoc. Prof. Dr. Burcu Gürol
Başkent University

Assoc. Prof. Dr. Dilek Erdoğan
Tarsus University

Assoc. Prof. Dr. Selma Atabey
Muğla Sıtkı Koçman University

Assoc. Prof. Dr. Yeşim Kurt
Balıkesir University

Assoc. Prof. Dr. Zehra Özkeçeci
Necmettin Erbakan University

Asst. Prof. Dr. Ece Melek
İstanbul Beykent University

Asst. Prof. Dr. Gönül Akın
İstanbul Beykent University

Asst. Prof. Dr. Hilal Çelik
İstanbul Beykent University

Asst. Prof. Dr. İpek Kocagil Ersoy
Doğuş University

Asst. Prof. Dr. Sevcen Beşikçi
İstanbul Beykent University

Asst. Prof. Dr. Sevdanur Genç
Balıkesir University

Asst. Prof. Dr. Sultan Gedik Göçer
Kocaeli University

Asst. Prof. Dr. Yeliz Akçay
İstanbul Beykent University

Asst. Prof. Dr. Hıdır Tok
İstanbul Beykent University

Ph.D. Burcu Arisoy
Balıkesir Metropolitan Municipality

Ph.D. Ufuk Özen
ICOC, İstanbul Chamber of
Commerce Strategic Research
Center Directorate

Contact

Researches on Multidisciplinary
Approaches (ROMAYA Journal)

Email: info@romayajournal.com

ISSN: 2791-9099

REFEREES IN THIS ISSUE

Prof. Dr. Abdullah Tanrısevdi
Aydın Adnan Menderes University

Prof. Dr. Aslı Yenipazarlı
Aydın Adnan Menderes University

Prof. Dr. Aziz Öztürk
Selçuk University

Prof. Dr. Ceren Yegen
Mersin University

Prof. Dr. Didem Erten Bilgiç
Kocaeli University

Prof. Dr. Fatma Burcu Savaş Kutsal
Bahçeşehir University

Prof. Dr. Filiz Kutluay Tutar
Niğde Ömer Halisdemir University

Prof. Dr. Gül Erbay Aslıturk
Aydın Adnan Menderes University

Prof. Dr. Handan Kumaş
Pamukkale University

Prof. Dr. Kamil Orhan
Pamukkale University

Prof. Dr. Murat Doğdubay
Balıkesir University

Prof. Dr. Osman Nuri Özdoğan
Aydın Adnan Menderes University

Assoc. Prof. Dr. Ayşe Döndü
Aydın Adnan Menderes University

Assoc. Prof. Dr. Burcu Başaran
Selçuk University

Assoc. Prof. Dr. Bülent Oral
Karabük University

Assoc. Prof. Dr. Cihat Kartal
Kırıkkale University

Assoc. Prof. Dr. Duygu Yetgin Akgün
Anadolu University

Assoc. Prof. Dr. Fatih Çağatay Baz
Osmaniye Korkut Ata University

Assoc. Prof. Dr. Fatma Fidan
Sakarya University

Assoc. Prof. Dr. Halil Göker Gülay
Manisa Celal Bayar University

Assoc. Prof. Dr. Kübra Aşan
Sinop University

Assoc. Prof. Dr. Mehmet Halit Akın
Erciyes University

Assoc. Prof. Dr. Mehmet Özay
Ibn Haldun University

Assoc. Prof. Dr. Miray Beşbudak
Ege University

Assoc. Prof. Dr. Murat Topaloğlu
Trakya University

Assoc. Prof. Dr. Nazan Oskay
Van Yüzüncü Yıl University

Assoc. Prof. Dr. Nihal Acar
Sivas Cumhuriyet University

Assoc. Prof. Dr. Nurşen Işık
Dicle University

Assoc. Prof. Dr. Selçuk Ulutaş
Nevşehir Hacı Bektaş Veli University

Assoc. Prof. Dr. Serhat Koca
Anadolu University

Assoc. Prof. Dr. Sezer Karasakal
Antalya Bilim University

Assoc. Prof. Dr. Şemseddin Gündüz
Necmettin Erbakan University

Assoc. Prof. Dr. Tuğba Kula Atik
Balıkesir University

Assoc. Prof. Dr. Tülay Gümüşer
Selçuk University

Assoc. Prof. Dr. Türker Söğütlüer
Aydın Adnan Menderes University

Assoc. Prof. Dr. Yavuz Selim
Balcıoğlu
Doğuş University

Assoc. Prof. Dr. Yenal Yağmur
Siirt University

Assoc. Prof. Dr. Yener Özel
Balıkesir University

Assoc. Prof. Dr. Yılmaz Onur Ari
Bayburt University

Asst. Prof. Dr. Aysun Gargacı Kinay
Sinop University

Asst. Prof. Dr. Bedri Şahin
*The German Political Science
Association (DVPW)*

Asst. Prof. Dr. Burak Kaplan Istanbul
Okan University

Asst. Prof. Dr. Bülent Akdemir
Giresun University

Asst. Prof. Dr. Cemile Erden Istanbul
Istanbul Arel University

Asst. Prof. Dr. Coşkun Soysal
Gaziantep University

Asst. Prof. Dr. Çağla Aslı Gülduran
*Alanya Hamdullah Emin Paşa
University*

Asst. Prof. Dr. Deniz Macit
Ege University

Asst. Prof. Dr. Engin Yavuz
Amasya University

Asst. Prof. Dr. Gamze Çoban
Afyon Kocatepe University

Asst. Prof. Dr. Hande Ortay
KTO Karatay University

Asst. Prof. Dr. Harun Yılmaz
İskenderun Teknik University

Asst. Prof. Dr. Maryam Saleem
The University of Faisalabad

Asst. Prof. Dr. Mehmet Bağcı
Istanbul Beykent University

Asst. Prof. Dr. Mehmet Büyükaşar
Niğde Ömer Halisdemir University

Asst. Prof. Dr. Mehmet Metin
Çukurova University

Asst. Prof. Dr. Merve Arbak
Istanbul 29 Mayıs University

Asst. Prof. Dr. Mohsen Abbaszadeh
Marzbali
University of Mazandaran

Asst. Prof. Dr. Nazan Ayan
Yalova University

Asst. Prof. Dr. Ömer Faruk Özgür
Düzce University

Asst. Prof. Dr. Selma Çelen Yücetürk
Balıkesir University

Asst. Prof. Dr. Süleyman Akkaşoğlu
Doğuş University

Asst. Prof. Dr. Şengül Erol
Uşak University

Asst. Prof. Dr. Tuncel Öz
Istanbul Ticaret University

Ph.D. Aslı Ercan Önbıçak

Ph.D. Baki Burak Acil
*State Railways of the Republic of
Turkey (TCDD)*

Ph.D. İlknur Zeydan
Zonguldak Bülent Ecevit University

Ph.D. Sinem Bilgin Öztürk

Ph.D. Ümit Yılmaz
Bursa Technical University

Lect. Ayşen Yalman
Akdeniz University

Lect. Nani Debele
Dire Dawa University

Res. Asst. Dr. Elif Altundere
Balıkesir University

CONTENTS

RJ-26

Abdurrahman Akman / Emre Yakut

Evaluating the Effect of Students' Artificial Intelligence Anxiety on Their Attitudes Towards Technology

RJ-27

Mine Tunçok Sarıberberoğlu / Elif Özgen

From Form to Meaning in Basic Design Studio

RJ-28

Musa Yavuz Alptekin / Yılmaz Cankaloğlu / Zilola Nabieva

From the 18th Century to the Present: The Challenges of Malay Muslims in Patani (Southern Thailand) and the Potential Future Impacts of the Kra Canal

RJ-29

Arzu Kazaz

The Encounter of Cinema and Advertising on Digital Platforms: A Netnographic Analysis of YouTube Videos

RJ-30

Recep Tayyip Ünüvar / Mehmet Sarıoğlu

Applicability of Out-of-Class Education in Gastronomy Education in Turkey

RJ-31

Fatma Yelda Gezicioğlu / Fehime Yeşim Gürani / Sema Yalçın

Transformation of Textile Materials: Artistic, Functional Applications in Interior Space

RJ-32

Aslı Güler / İbrahim Al

How Migration Fuels Informal Employment and the Transformative Role of Education Policy in Türkiye

RJ-33

Tüba Karahisar

Network-Based Alternative Media in Türkiye: A Phenomenological Study from the Perspective of Media Managers

RJ-34

Sibel Aybar / Murat Başal

Internal Marketing and Organizational Identification in Services: An Empirical Study

RJ-35

Özkan İmamoğlu

Effects of CBRT Policy Rate Decisions on Money Supply Dynamics: Evidence from a VAR Analysis

RJ-36

Taner Dalgın / Emrah Kara / Burçak Akıncı Ekiztepe / Bilgin Güner / Hüseyin Çeken

Analysis of Cape Jason and the Church Visitor Experiences Based on TripAdvisor Reviews

RJ-37

Yücel Oğurlu / Kamshat B. Baiterekova / Bauyrzhan Mamytbekovich Smatlaev

A Comparative Law Analysis of Social Security and Insurance Against Occupational Accidents

RJ-38

Mehtap Şeker / Mecbure Aslan Teke

The Effects of Job Demands and Job Resources on Subjective Well-Being and Turnover Intention

RJ-39

Yasemin Arı Kovancı

Employee Involvement and Safety Behavior: A Serial Mediation Model

RJ-40

Ezgi Akpınarlı / Şölen Kipöz

Soma-Expressive Diary For Embodied Knowledge In Fashion Design

RJ-41

Süleyman Sırrı Yılmaz

Netnographic Analysis of Audience Engagement with Netflix Türkiye's Instagram Promotions

RJ-42

Murat Çağlayan / Berat Çelebioğlu

The Arshin (Zira) as a Historical Unit of Length in the Islamic World: A Comparative Study

RJ-43

Özel Sebetci

A Hybrid Quantum-Cognitive Framework for Personalized Learning: Simulation-Based Validation and System Design

RJ-44

Doğuş Kılıçarslan

Evaluating DMO Instagram Performance Metrics and Thematic User Feedback

RJ-45

Ümit Yıldız

Global Economic Policy Uncertainty and Bitcoin: A Transient Nexus

RJ-46

Aysel Çetinkaya Kodal / Şemsi Kamile Canbay

Personal, Professional, and Organizational Values in Media Institutions:

RJ-47

Zehra Özkeçeci / Duygu Dumanlı Kürkçü / Ceren İnan

The Uncanny Valley in Digital Journalism: Analyzing Audience Reactions to AI News Anchors on YouTube

RJ-48

Hakkı Çılgınoğlu

The Mediating Role of Organizational Belonging in the Effect of Hospital Food on Employee Motivation

RJ-49

Emre Çalış / Yasemin Kaplan Çalış

The Methodological and Conceptual Practice of Walking in Contemporary Art Production

RJ-50

Tarık Doğan

Impact of AI-Generated Images on Social Media Trust Across Generations

Evaluating the Effect of Students' Artificial Intelligence Anxiety on Their Attitudes Towards Technology

Abdurrahman Akman* / Asst. Prof. Dr. 

Osmaniye Korkut Ata University, Osmaniye Vocational School
abdurrahmanakman@osmaniye.edu.tr

Emre Yakut / Assoc. Prof. Dr. 

Osmaniye Korkut Ata University, Faculty of Economics and Administrative Sciences
emreyakut@osmaniye.edu.tr

*Corresponding Author

Abstract

AI anxiety, which is used to refer to fear and anxiety about out-of-control AI, is of interest to researchers. This study aims to understand students' AI anxiety and attitudes towards technology and to investigate how attitudes towards AI affect attitudes towards technology. This study was conducted using a survey model within the scope of quantitative research methods. The sample of the study consists of 2.035 people. In the study, questionnaire was used as the data collection tool; validity and reliability analyses for the scale, normality analysis, t-tests, and ANOVA tests were performed. The study resulted in the following conclusion: it was determined that gender, age and the duration of using information techno-

logies have statistical effects on students' AI anxiety and attitudes towards technology. Accordingly, it was revealed that women have higher AI anxiety than men, while their attitudes towards technology are lower. It was also understood that as the duration of using information technologies increases, participants' attitudes towards technology improve while their AI anxiety decreases.

Keywords: Technology, Attitude, Artificial Intelligence (AI), Artificial Intelligence Anxiety (AIA), Technology Education.

JEL Codes: D83, O33, I21

Citation: Akman, A., & Yakut, E. (2026). Evaluating the effect of students' artificial intelligence anxiety on their attitudes towards technology. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

The rapid advancement of artificial intelligence (AI) has propelled it from the domain of science fiction into the realm of everyday life. Technologies such as self-driving vehicles, intelligent recommendation systems, image recognition software, and virtual assistants demonstrate the growing presence of AI in many areas of society. These developments have significantly increased public and academic interest in AI and its potential implications for the future. As AI systems become more integrated into social, economic, and technological structures, understanding the human and psychological dimensions of these technologies has become increasingly important. In particular, the use of AI in areas such as online communication, medical diagnostics, and predictive decision-making systems has raised significant ethical and societal concerns regarding trust, bias, transparency, and value alignment (Bonneton et al., 2024).

Alongside the benefits of AI technologies, public debates increasingly focus on potential risks and uncertainties related to their development and use. Questions such as "Are we safe in a future shaped by AI?" have stimulated both academic discussions and public concerns. These concerns have led researchers to examine psychological responses to AI technologies, particularly those related to fear, uncertainty, and perceived risks (Köse, 2018). As AI systems become more visible in daily life, individuals' perceptions of these technologies may influence how they interact with and evaluate them.

One of the most widely discussed psychological responses to AI is AI anxiety, which refers to the feelings of fear, apprehension, or discomfort individuals experience when interacting with or thinking about AI technologies (Çiçek & Çoban, 2024: 1184). AI anxiety can emerge from various concerns, including fears of job displacement, loss of human control over intelligent systems, and the broader societal consequences of automation (Uçar et al., 2024). In recent years, concerns about automation replacing human labor have become one of the most prominent sources of anxiety related to AI. At the same time, some scholars argue that a substantial portion of AI-related anxiety stems from misunderstandings and misinformation about the capabilities and limitations of AI technologies (Johnson & Verdicchio, 2017: 2268). Therefore, examining individuals' perceptions and attitudes toward AI has become an important area of research.

Within educational research, students' attitudes toward technology (ATT) have long been considered a critical factor influencing learning outcomes, career choices, and technological literacy. For more than three decades, researchers have investigated students' attitudes toward technology in order to better understand their engagement with technological subjects and the effectiveness of technology

education programs (Ankiewicz, 2019: 38). Attitudes toward technology are particularly important because they can influence students' willingness to learn about technological innovations and to develop competencies related to emerging technologies (Yurdagül & Aşkar, 2008: 294).

In the context of the Fourth Industrial Revolution, technological literacy has become an essential competence for individuals in modern societies. Rapid technological developments require individuals not only to understand technology but also to adapt to technological change and its implications for everyday life and future careers (Korhonen et al., 2022). Research suggests that individuals' knowledge and experiences with technology significantly influence their attitudes toward it (Ardies et al., 2013: 9). Students who develop a positive attitude towards technology are more likely to take an interest in technological subjects and develop technological literacy. This can be defined as the ability to use, manage, evaluate and understand technological systems (Boser et al., 1998: 6).

However, previous research also indicates that although students often display generally positive attitudes toward technology, their conceptual understanding of technology may remain limited. Many students tend to perceive technology primarily as a collection of tools, products, or artifacts rather than as a broader process involving innovation, design, and problem-solving. In addition, several factors may influence students' attitudes toward technology, including gender, family background, and exposure to technological environments (Ankiewicz, 2016: 10). Understanding these factors is therefore important for improving technology education and supporting students' engagement with emerging technologies.

Despite the growing body of research on both AI anxiety and attitudes toward technology, the relationship between these two constructs has received limited attention in the literature. In particular, few studies have examined how concerns about AI may influence students' broader attitudes toward technology. As AI technologies become increasingly visible in educational, professional, and social contexts, understanding this relationship becomes essential. Investigating whether students' anxiety about AI affects their attitudes toward technology can provide valuable insights for technology education, curriculum development, and the promotion of technological literacy.

Purpose of the Research

Given this gap in the literature, the present study aims to examine the relationship between university students' AI anxiety and their attitudes toward technology. Specifically, the study investigates whether AI anxiety influences different dimensions of students' attitudes toward technology, including ten-

dency toward technology, negativeness of technology, importance of technology, and technology for all, as measured by the PATT framework.

In addition, the study explores whether gender differences exist in both AI anxiety and attitudes toward technology. By addressing these issues, the study aims to contribute to the growing literature on AI perceptions and technology attitudes and to provide insights into how emerging AI-related concerns may shape students' engagement with technology. Accordingly, the research questions of the study are as follows:

1. Do students' AI anxiety levels affect their attitudes toward technology?
2. Do male and female students have different attitudes towards technology?
3. Do male and female students experience different levels of AI anxiety?

2. Literature Review

2.1. AI Anxiety

"AI anxiety", used to refer to the fear and anxiety expressed about out-of-control AI, is defined as panic and nervousness due to the unknown aspects of AI development. Anxiety surrounding artificial intelligence often stems from a focus on the programs themselves, rather than the people and human behaviours that create, deploy, maintain and give meaning to their operations. This raises concerns about the human users and designers of artificial intelligence. Another cause for concern is the idea that AI may have been developed to serve the interests of a select few (Johnson & Verdicchio, 2017: 2268-2270).

A study was conducted with nursing students to understand their perceptions of advanced technology and artificial intelligence in clinical care and education. The following were found: The study revealed that the students had a positive view of the technology, believing it would improve patient care and efficiency and reduce human error. However, they also expressed concerns about job losses, a lack of human interaction, and ethical and legal issues (Abdelaziz et al., 2025). Despite the advantages of AI, there are concerns that this technology will replace human labour. Students remain concerned about ethical education in AI and aspects of human- AI collaboration (Amiri et al., 2024). A study investigating the attitudes and concerns of healthcare professionals towards AI applications in medicine found that 80% of participants believed there could be serious privacy issues associated with AI use, while 40% thought AI was potentially more dangerous than nuclear weapons. While 79% believed that AI could be beneficial in their field, only 10% were concerned that it would replace them at work. Many healthcare professionals do not fully understand the principles

of AI, which is why they are concerned about its potential impact on clinical practice if it becomes widely used (Castagno & Khalifa, 2020). While AI is an algorithm that mimics human intelligence to function, it carries concerns about unintended ethical issues that can increase discrimination and injustice, loss of privacy, control, etc. (Ajonbadi et al., 2024). The main sources of artificial intelligence anxiety are inequality, ethics, privacy, and reliability, professional and social anxiety, unpredictable decisions and loss of control, technology use and adaptation difficulties, artificial intelligence addiction, and decreased creativity (Agca & Korkmaz, 2025).

In the studies conducted on AIA levels in the literature, it was found that nursing students had an intermediate attitude towards AI (Lukić et al., 2023; Ongün et al., 2024; Menekli & Şentürk, 2022); medical students had high levels (Özbek Güven et al., 2024); future nurses had high levels of knowledge, attitudes and anxiety about AI applications (Yiğit & Açıkgöz, 2024); surgical nurses were above average (Alkan, 2025: 11); and health professionals had moderate levels (Filiz et al., 2022: 47). Similarly, teacher candidates' anxiety levels about AI were measured at medium level (Ayduğ & Altınpulluk, 2023); university students' anxiety levels were measured at medium level (Ulukapı Yılmaz & Yılmaz, 2024: 184; Uçar et al., 2024) and low level (Gültekin et al., 2022: 477). It was observed that nurses and nurse candidates had medium-level anxiety about humanoid nurse robots and AI health technologies in patient care (Maraş et al., 2024); the anxiety levels of tourism workers regarding AI were at a low level (Çetiner & Çetinkaya, 2024: 160). It has been observed that service sector employees' future concerns about AI are at a moderate level (Belber & Özmen, 2024). It was measured that nurses who are managers have lower AI anxiety levels, while other employees have higher levels, and those whose working style is shift work have lower AI anxiety levels compared to other employees (Gümüş & Uysal Kasap, 2022).

Looking at the studies on AI concerns in the literature, a low level relationship was found between AI concerns of accounting profession candidates and their career decisions (Köse, 2025: 578). A high negative correlation was found between AIA and spiritual care perceptions of internal medicine nurses (Menekli & Şentürk, 2022). A negative relationship was found between AIA levels and self-efficacy levels of nursing students (Varol, 2025). It has been observed that AIA has a negative effect on job engagement in academicians (Çiçek & Çoban, 2024: 1184). It was found that there was a negative relationship between job performance of surgical nurses and AIA (Alkan, 2025: 11). The relevant advantage of AI and the perceived ease of use of AI were found to have a positive and significant effect on the adoption of blockchain technology (Polas et al., 2022). It has been observed that the positive attitude of me-

dical, dental and nursing students towards AI facilitates the acceptance of AI technology (Amiri et al., 2024). A positive and significant low-level relationship was found between AIA and intrinsic motivation of tourism employees (Çetiner & Çetinkaya, 2024: 160). A moderate positive relationship was found between AIA and unemployment anxiety among university students (Uçar et al., 2024). It was observed that students were concerned that they would lose their jobs due to AI and that they would not be able to find a new job (Gültekin et al., 2022). In undergraduate audiology students, it was observed that as the awareness and usage sub-dimensions of AI literacy increased, AIA decreased (Kuntman & Polat, 2025). In South Korea, the perception of AI was positively correlated with the intention to use AI and the acceptance attitude towards AI, and negatively correlated with anxiety. However, anxiety about AI was negatively correlated with both acceptance and intention (Cho & Seo, 2024).

It can be seen that medical students are more accepting of AI than fearful of technology. Furthermore, a strong positive correlation was found between AI literacy and positive attitudes towards AI, and a weak negative correlation was found between AI literacy and negative attitudes. These results clearly show a correlation between AI literacy and attitudes towards AI (Laupichler et al., 2024). It was found that AIA of university students negatively affected career determination (readiness for career choice). It was observed that learning, job change and sociotechnical blindness sub-dimensions of AIA significantly negatively affected career determination (Gültekin et al., 2022: 477). It was determined that students with negative feelings about AI had higher levels of AIA (Yiğit & Açıkgöz, 2024). It was found that positive general attitudes towards AI increased with higher levels of computer usage and knowledge about AI, while AI learning anxiety had the opposite effect (Kaya et al., 2024).

As AI technologies such as facial recognition and autonomous driving become more widespread in the future, new concerns and security issues are expected to arise. Consequently, as technology progresses, there will be a corresponding increase in the prevalence of anxiety about AI among the general public. In light of the pervasive integration of AI into our daily lives and the associated potential repercussions, it is imperative to acknowledge the societal challenges that arise from this technological advancement, in addition to the technical intricacies inherent to the field (Li & Huang, 2020: 2). In many studies conducted in the literature and mentioned above, it has been reported that individuals have anxiety about AI. Evaluating students' views on AI is of great importance in terms of determining their anxiety levels about this subject and affecting their attitudes towards science and technology in the future.

2.2. Attitude Towards Technology

The digitalization of society and the continuous development of technology make it imperative to provide students with adequate technology education at all levels and, accordingly, to investigate students' ATT. In the contemporary digital era, it is imperative not only to instruct students in the utilisation of technology, but also to cultivate technological literacy, a skill that is indispensable in societies that are increasingly dependent on technology. Technological literacy is defined as the set of skills required to utilise, comprehend, generate and evaluate technologies in a critical manner (Korkeaniemi et al., 2025). ATT is defined as the degree of positive or negative evaluation an individual has of a particular technology. It is an important factor influencing behavioural intention in technology adoption frameworks. The concept under scrutiny herein integrates cognitive appraisals of technology, including its perceived usefulness and user-friendliness, with the propensity to accept or utilise it. Given that perceptions and emotions around technology greatly influence its acceptance, attitude is a significant factor in understanding how professionals interact with emerging technologies such as artificial intelligence (Emon & Khan, 2025: 4).

Technology, defined as any change made to the natural world to meet human needs or wants, is becoming an increasingly popular subject in the school curricula of western countries (Ardies et al., 2013: 8). It has been emphasized that both students' and schools' ATT can play an important role in addressing the expected shortage of technology in the labor market (Ardies et al., 2014). Forming a good concept of technology in students' minds is one of the goals of technology education (de Vries, 2005: 149). Understanding students' technological literacy and ATT is a prerequisite for effective teaching about technology (Ardies et al., 2013: 9). The lack of research focusing on students' ATT has been pointed out. In order to understand students' ATT, detailed research on how and when these attitudes are formed is needed (Ardies et al., 2015). It has been suggested that students' negative or positive ATT will play an important role in guiding and predicting future actions in society (Volk & Yip, 1999).

According to the traditional approach, an attitude towards a concept such as technology comprises two components: the cognitive component, which is made up of beliefs relating to this concept; and the affective component, which is made up of emotional reactions relating to this concept (Ankiewicz, 2016: 3). These responses result in decisions to engage in behaviour, which includes a person's predisposition or readiness to act, as well as their actions related to the 'behavioural object' (Ankiewicz, 2019: 39).

2.3. Research Hypotheses

In the studies conducted on AIA in the literature, it is seen that employees' anxiety generally stems from not being able to fully learn technological innovations and that AIA is a security vulnerability (Belber & Özmen, 2024); there are concerns, fears and uneasiness that AI may get out of control about the future development and may affect people and society in disastrous ways (Johnson & Verdicchio, 2017); the idea that people will lose their jobs because of artificially intelligent robots is one of the biggest concerns about AI technology in recent times (Uçar et al., 2024); regarding the attitudes and concerns towards AI applications in medicine, the participants believe that there may be serious privacy problems associated with the use of AI, they think that AI is potentially more dangerous than nuclear weapons and they are worried that AI will replace them in their jobs (Castagno & Khalifa, 2020); students are worried that they will lose their jobs and will not be able to find a new job because of AI (Gültekin et al., 2022); despite the advantages of AI, there is a fear that this technology will replace human labor (Amiri et al., 2024); students have concerns about ethical education in AI and aspects of human-AI collaboration (Amiri et al., 2024); that AI, although an algorithm that imitates human intelligence to function, may cause undesirable ethical issues that may increase discrimination and injustice, loss of privacy, control, etc. (Ajonbadi et al., 2024); and that the use of online bots, AI-assisted medical diagnoses and predictive algorithms raises important moral questions about trust, bias and value alignment (Bonneton et al., 2024: 654).

In addition, it has been found that students who have negative feelings about AI have higher levels of AI anxiety (Yiğit & Açıkgöz, 2024); anxiety about AI is negatively related to acceptance attitudes towards AI and intention to use AI (Cho & Seo, 2024); there is a positive relationship between AI anxiety and unemployment anxiety (Uçar et al., 2024); there is a positive relationship between AI literacy and positive attitudes towards AI, and a negative relationship between AI literacy and negative attitudes (Laupichler et al., 2024); there is a relationship between AI anxiety and career decisions (Köse, 2025: 578); there is a negative relationship between AI anxiety of students and general self-efficacy (Varol, 2025); there is a negative relationship between AI anxiety of surgical nurses and job performance (Alkan, 2025: 11); AI anxiety has a negative and significant effect on job commitment (Çiçek & Çoban, 2024: 1184); AI anxiety of university students negatively affects career determination (readiness for career choice) (Gültekin et al., 2022: 477); It was found that there was a high negative correlation between internal medicine nurses' AI concerns and their perception of spiritual care (Menekli & Şentürk, 2022).

In the study examining the relationship between ATT and intention to use AI, it was found that ATT had a significant positive effect on intention to use AI (Emon & Khan, 2025: 7) and that computer usage level and knowledge level about AI increased positive general attitudes towards AI, while anxiety about learning AI decreased positive general attitudes towards AI (Kaya et al., 2024). A person's level of knowledge about a technological subject can be related to their attitude towards that subject (Ardies et al., 2013: 9). The strength of an attitude is defined by its influence on thought and action in different situations. Some attitudes are strong and some are weak. Strong attitudes are those that are most important to an individual's thoughts, intentions, and behaviours. This results in attitudes having a greater influence on behavioural intentions and actions. Therefore, important attitudes are real and consequential psychological forces, and studying them provides opportunities to address behavioural change (Howe & Krosnick, 2017: 328). It can be argued that students' having a positive attitude will facilitate their acceptance of AI technology (Amiri et al., 2024), while having a negative attitude will make it difficult to accept these technologies. Based on these studies analyzed in the literature, the following hypothesis was formed based on the fact that people's attitudes towards AI may affect their tendencies towards technology.

H1: There is a negative correlation between AI anxiety and the tendency to use technology.

H2: There is a positive correlation between AI anxiety and the negativeness of technology.

H3: There is a negative correlation between AI anxiety and the contribution and importance of technology.

H4: There is a negative correlation between AI anxiety and technology for all.

It has been suggested that gender factor is an important variable in studies on anxiety about AI, acceptance attitude towards AI and intention to use AI with different professional groups in various sectors in many fields (Ayduğ & Altınpulluk, 2023; Uçar et al., 2024; Cho & Seo, 2024; Çetiner & Çetinkaya, 2024: 160; Köse, 2025: 578; Alkan, 2025: 11; Ongün et al., 2024; Lukić et al., 2023; Pinto dos Santos et al., 2019; Laupichler et al., 2024; Ulukapı Yılmaz & Yılmaz, 2024: 185; Kaya et al., 2024; Filiz et al., 2022: 47; Gümüş & Uysal Kasap, 2022; Başer et al., 2021). Based on these studies, the following hypothesis was formed.

H5: AI anxiety differs according to gender.

The term technological gender gap refers to the idea that men and women have different attitudes, behaviors and skills related to technology. Many studies have investigated the existence of a gen-

der gap that, if ignored, could leave many female students unprepared to deal with the technological challenges of the future. For educators and computer-based instructional designers interested in providing equal educational opportunities for male and female students, the quest to improve the technological gender gap is ongoing (Canada & Brusca, 1991). Significant differences in technology perspectives between boys and girls have been found on a number of items. The interest that students have in technology, their attitudes towards its inclusion in the school curriculum and their opinions on technology-related careers suggest that there may be significant differences between girls and boys (Volk & Yip, 1999; Raat & de Vries, 1985; Weinburgh, 1995: 387; Ian Robertson et al., 1995: 73; Colley et al., 1994: 129; Elvstrand et al., 2012; Bozdemir et al., 2021: 40; Boser et al., 1998: 12; Kılınç et al., 2016; Francis, 1993; Bame, 1993). Based on these differences, the following hypothesis was formed.

H6: ATT differ according to gender.

3. Methodology

Survey model, one of the quantitative research designs, was preferred in the study. Questionnaire method was used to collect the data. The data obtained were analyzed using SPSS 24 and Smart PLS.

3.1. Population of The Study and Sampling Procedure

Data for the study was collected using the survey method. The sample of the study consists of 2,035 randomly selected university students in Osmaniye. The data for this study were collected between 22 May and 22 June 2025. Approval from the ethics committee at Osmaniye Korkut Ata University was received (dated 21.05.2025 and numbered E.234799).

3.2. Measurement

The questionnaire used for data collection consists of three parts. The scales used, except for demog-

raphic and control variables, are in five-point Likert type. The first section includes demographic information such as age and gender of the participants and control variables such as hours used, tools owned, and purpose of use.

The second part includes the "AIA scale" developed by Wang & Wang (2022) and validated and reliably validated in Turkish by Terzi (2020), consisting of 21 statements and four dimensions (learning, job change, sociotechnical blindness and artificial intelligence configuration). The Cronbach's Alpha reliability coefficient was 0.96 for the complete scale (21 items), which belongs to the adaptation study. Sample statements in the scale are as follows: Learning to use artificial intelligence products makes me anxious. I worry that an AI product might replace humans. I worry that an AI product might be misused. I find humanoid AI products scary. The same scale has been used in different studies to measure anxiety levels related to artificial intelligence (Ulukapı Yılmaz & Yılmaz, 2024; Alkan, 2025; Ayduğ & Altınpulluk, 2023; Başer et al., 2021; Kaya et al., 2024).

In the third section, the scale of students' ATT, which was translated into English by Bame & Dugger (1989) and consisted of 58 statements and 6 dimensions (interest, gender, importance, difficulty, education, career), was adapted into Turkish by Yurdağül & Aşkar (2008: 306), and the scale was transformed into a new version with 4 dimensions and 24 statements. The dimensions of the scale are tendency towards technology (8 statements) dimension (I will probably choose a job in the field of technology.); negativity of technology (7 statements) dimension (Technology causes massive unemployment.); contribution and importance of technology (6 statements) dimension (Technology is good for the future of our country.) technology for everyone (3 statements) dimension (Everyone can study in the field of technology.). The Cronbach's Alpha reliability coefficient was 0.93 for the complete scale (24 items, 4 sub-constructs), which belongs to the adaptation study. The same scale has been used in different studies to measure students attitudes toward technology (Boser et al., 1998; Bozdemir et al., 2021).

4. Results

Table 1. Demographic Profile of the Respondents (N=2035)

Variable	N (%)	Attitude towards technology			AI anxiety		
Gender		M	SD	t (p)	M	SD	t (p)
Male	740 (36,36)	3,21	0,67	0,000	2,71	0,96	0,000
Female	1295 (%63,64)	3,08	0,59		3,10	0,91	

Evaluating the Effect of Students' Artificial Intelligence Anxiety on Their Attitudes Towards Technology

Table 2. Technology Tool Ownership (N=2035)

Owned IT tools							
Smartphone							
No	59 (%2,90)	3,23	0,64	0,192	3,03	0,90	0,541
Yes	1976 (%97,10)	3,12	0,62		2,96	0,95	
Tablet							
No	1507 (%74,05)	3,12	0,62	0,253	2,97	0,94	0,397
Yes	528 (%25,95)	3,15	0,63		2,93	0,97	
Laptop							
No	892 (%43,83)	3,05	0,63	0,00	3,06	0,92	0,00
Yes	1143 (%56,17)	3,19	0,61		2,88	0,96	
Desktop computer							
No	1702 (%83,64)	3,11	0,62	0,007	2,97	0,93	0,122
Yes	333 (%16,36)	3,21	0,64		2,89	1,03	

Table 2. Technology Tool Ownership (N=2035)

For what purposes do you use information technologies most frequently?							
Education							
No	591 (%29,04)	3,08	0,66	0,020	2,97	1,00	0,821
Yes	1444 (%70,96)	3,15	0,61		2,96	0,93	
Social media							
No	783 (%38,48)	3,10	0,68	0,108	2,97	0,99	0,831
Yes	1252 (%61,52)	3,14	0,58		2,96	0,92	
Game							
No	1278 (%62,80)	3,10	0,63	0,006	3,05	0,94	0,000
Yes	757 (%37,20)	3,17	0,61		2,81	0,95	
Follow the news							
No	1164 (%57,20)	3,09	0,64	0,001	2,95	0,94	0,776
Yes	871 (%42,80)	3,18	0,59		2,97	0,96	
Financial transactions							
No	1486 (%73,02)	3,10	0,62	0,000	2,98	0,92	0,067
Yes	549 (%26,98)	3,21	0,62		2,89	1,01	
Shopping							
No	927 (%45,55)	3,10	0,67	0,080	2,94	0,95	0,436
Yes	1108 (%54,45)	3,15	0,58		2,97	0,95	
Communication							
No	757 (%37,20)	3,09	0,71	0,059	2,92	0,95	0,192
Yes	1278 (%62,80)	3,15	0,57		2,98	0,94	
Entertainment							
No	1114 (%54,74)	3,08	0,65	0,000	3,00	0,95	0,057
Yes	921 (%45,26)	3,18	0,59		2,92	0,94	

Of the people taking part in the study, 36.4% were male and 63.6% were female; 43.6% were aged 18–20, 24.3% were aged 21–22, 10.6% were aged 23–24, and 21.5% were aged 25 and over. Approximately 68% were 22 years of age or younger. In terms of daily usage time of information technologies, 8.75% use it for 1-2 hours, 41.92% for 3-5 hours, 35.92% for 6-8 hours, and 13.42% for 9 hours or more (as shown in Table 1). In terms of information technology devices they own, 97.10% have a smartphone, 25.95% have a tablet, 56.17% have a laptop, and 16.36% have a desktop computer (as shown in Table 2). In terms of their purposes, 70.96% use information technologies for education, 61.52% for social media, 37.20% for games, 42.80% for news, 26.98% for financial transactions, 54.45% for shopping, 62.80% for communication, and 45.26% for entertainment (as shown in Table 3). They stated that they use information technologies mostly for educational purposes. The mean attitudes of students with laptop computers towards technology were statistically higher than those without laptop computers (3.19 ± 0.61 vs. 3.05 ± 0.63 , (t-test, $p < 0.001$)), and similarly, the mean attitudes of students with desktop computers towards technology were statistically higher than those without laptop computers (3.21 ± 0.64 vs. 3.11 ± 0.62 , (t-test, $p < 0.05$)).

When we evaluated the information technologies in terms of usage purposes, it was seen that those who

used for education purposes (3.15 ± 0.61 vs. 3.08 ± 0.66 (t-test, $p < 0.05$)), those who used for games (3.17 ± 0.61 vs. 3.10 ± 0.63 (t-test, $p < 0.05$)), those who used for news purposes (3.18 ± 0.59 vs. 3.09 ± 0.64 (t-test, $p < 0.001$)), those who used for financial transactions (3.21 ± 0.62 vs. 3.10 ± 0.62 (t-test, $p < 0.001$)), those who used for entertainment (3.18 ± 0.59 vs. 3.08 ± 0.65 (t-test, $p < 0.001$)) were more likely to ATT than those who did not.

Students who did not have a laptop had statistically higher mean AI anxiety levels than students who did (3.06 ± 0.92 vs. 2.88 ± 0.96 (t-test, $p < 0.001$)).

When we evaluate information technologies in terms of their usage purposes, the average AIA levels of students who use them for gaming purposes are statistically lower than those who do not use them for gaming purposes (2.81 ± 0.95 vs. 3.05 ± 0.94 (t-test, $p < 0.001$)).

The mean score of female students is higher than that of male students in terms of overall AI anxiety (3.10 ± 0.91 vs. 2.71 ± 0.96 , (t-test, $p < 0.001$)). Hypothesis H5: AI anxiety differs by gender was supported. The mean of male students was higher than female students in attitude towards technology (3.21 ± 0.67 vs. 3.08 ± 0.59 (t-test, $p < 0.05$)). The hypothesis H6 that ATT differ by gender was supported. (as shown in Table 1)

Table 4. Differences in Measured Variables by Age and Usage Period (N=2035)

Control variable	Dependent variables		Sum of Squares	sd	Mean Square	F	p	Differences Between Groups
Age	Attitude towards technology	Between groups	4,597	3	1,532	3,961	,008	1 - 4
		Within groups	785,556	2031	,387			
		Total	790,152	2034				
	AI anxiety	Between groups	18,760	3	6,253	7,023	,000	1 - 4
		Within groups	1808,291	2031	,890			2 - 4
		Total	1827,051	2034				
Usage period	Attitude towards technology	Between groups	9,345	3	3,115	8,103	,000	5 - 6
		Within groups	780,807	2031	,384			5 - 7
		Total	790,152	2034				5 - 8
	AI anxiety	Between groups	9,375	3	3,125	3,492	,015	5 - 8
		Within groups	1817,677	2031	,895			6 - 8
		Total	1827,051	2034				

Note: (1:18-20 age range; 2: 21-22 age range; 4: 25+ age) (5: 1-2 hour; 6: 3-5 hour; 7: 6-8 hour; 8: 9 + hour)

In order to measure whether the students' ATT and AIA levels differ according to age levels, analysis of variance was conducted for independent groups. The ANOVA table showed significant differences in the means of the students' ATT and AIA levels ($p <$

0.05). A Tukey test, a post hoc analysis, was conducted to see which groups this significant difference occurred between. As a result of the test, it was determined that the mean ATT ($x=3.20$) of the students in the over 25 age group were higher than the mean

for the students in the 18-20 age group ($x=3.08$); the mean AIA level of the students in the over 25 age group ($x=3.13$) was higher than the mean for the students in the 18-20 age group ($x=2.93$); and the mean AIA level of the students in the over 25 age group ($x=3.13$) was higher than the mean for the students in the 21-22 age group ($x=2.86$). In summary, as students' ages increase, their attitudes toward technology also increase. Similarly, as students' ages increase, their concerns about AI also increase. (as shown in Table 4)

An analysis of variance was conducted for independent groups to determine whether students' attitudes toward technology and AI anxiety levels differed based on the duration of daily use of information technologies. The ANOVA table revealed significant differences in the students' average attitudes toward technology and AI anxiety levels ($p < 0.05$). A Tukey post hoc analysis was conducted to identify the groups responsible for this significant difference. The test results revealed that those who used information technologies for 3-5 hours per day ($x=3.11$) had higher attitudes toward technology than those who used them for 1-2 hours ($x=2.95$); those who used them for 6-8 hours ($x=3.13$) had higher attitudes toward technology than those who used them for 1-2 hours ($x=2.95$); and those who used them for

9 hours or more ($x=3.24$) had higher attitudes toward technology than those who used them for 1-2 hours ($x=2.95$). It was determined that those who use information technologies for 1-2 hours a day ($x=3.04$) had higher AI anxiety levels than those who used them for 9 hours or more ($x=2.80$); and those who used them for 3-5 hours ($x=3.00$) had higher AI anxiety levels than those who used them for 9 hours or more ($x=2.80$). In summary, as students' daily use of information technologies increases, their attitudes toward technology improve. On the other hand, as students' daily use of information technologies decreases, their AI anxiety levels increase. (as shown in Table 4)

When we were doing the validity and reliability analysis stage of the research, we looked at internal consistency reliability, convergent validity and discriminant validity on their own before we moved on to the research method analysis. We also calculated the Cronbach alpha coefficient for internal consistency reliability, as well as the CR (composite reliability) coefficients. To analyse discriminant validity, we used the Fornell-Larcker and HTMT (Heterotrait-Monotrait Ratio) values. We're expecting the AVE (Average Variance Extracted) to be 0.5 or greater (Hair et al., 2021; Doğan, 2019).

Table 5. Measurement Model

Constructs	Items	Loading Values	Cronbach Alfa Katsayısı	CR	AVE
OGR	YZK1	0,791	0,903	0,928	0,720
	YZK2	0,882			
	YZK3	0,876			
	YZK4	0,851			
	YZK5	0,842			
ID	YZK6	0,917	0,809	0,913	0,840
	YZK7	0,916			
STK	YZK10	0,841	0,823	0,889	0,728
	YZK11	0,869			
	YZK12	0,850			
YZY	YZK14	0,920	0,915	0,947	0,805
	YZK15	0,929			
	YZK16	0,925			
TYE	TYA1	0,828	0,890	0,912	0,635
	TYA2	0,744			
	TYA3	0,783			
	TYA4	0,829			
	TYA5	0,730			
	TYA6	0,859			

TO	TYA10	0,756	0,853	0,894	0,629
	TYA12	0,832			
	TYA13	0,803			
	TYA14	0,784			
	TYA15	0,788			
TKO	TYA16	0,841	0,862	0,895	0,631
	TYA17	0,738			
	TYA18	0,814			
	TYA19	0,764			
	TYA21	0,810			
HK	TYA23	0,963	0,803	0,902	0,822
	TYA24	0,847			

Note: OGR = Learning, ID = Job replacement, STK = Sociotechnical blindness, YZY = AI configuration, YZK= AI anxiety, TYE = Tendency to technology, TO = Negativeness of technology, TKO = Importance of technology, HK = Technology for

Examining the values in Table 5 shows that the internal consistency reliability is ensured, with Cronbach's alpha coefficients ranging from 0.803 to 0.915 and composite reliability (CR) coefficients ranging from 0.889 to 0.947. Observation of the factor loading values shows a range of 0.730–0.963. The AVE values were 0.501–0.855. If the factor loading is between 0.40 and 0.70, the AVE and CR values should be above the threshold. If the values are below the threshold, it is recommended that the expressions be

removed from the model (Hair et al., 2021). The expressions TYA7 and TYA8 for TYE, TYA9 and TYA11 for TO, TYA20 for TKO, TYA22 for HK, expressions 6, 7 and 8 for OGR, expressions 9, 10, 13 and 14 for ID, and expression 18 for STK, which were below the threshold value of the measured AVE and CR values, were removed from the model and thus convergent validity was ensured (Fornell & Larcker, 1981; Henseler et al., 2015).

Table 6. Structural Model Evaluation Results

Model fit indices	Value	Endogenous variables	R ²	Structural relationship	f ²	Effect size
SRMR (Saturated Model)	0.101	Attitude toward technology tendency (TYE)	0.006	AIA→TYE	0.006	Very small
SRMR (Estimated Model)	0.130	Negativity of technology (TO)	0.076	AIA→TO	0.083	Small
		Contribution and importance of technology (TKO)	0.003	AIA→TKO	0.003	Very small
		Technology for everyone (HK)	0.003	AIA→HK	0.003	Very small

Table 6 presents the structural equation model fit indices, coefficient of determination (R²), and effect size (f²) values calculated and interpreted for the research model.

The Standardised Root Mean Square Residual (SRMR) value was examined in the evaluation of model fit. An SRMR value below 0.08 indicates good model fit, while a value below 0.10 indicates acceptable model fit (Hair et al., 2018). As a result of the analysis, the SRMR value for the saturated model was found to be 0.101 and the SRMR value for the estimated model was found to be 0.130, and it is considered that this relevant indicator value is within acceptable model limits.

Within the scope of structural model analysis, R² values were examined to assess the explanatory power of the model. According to the analysis results in Table 4, it is understood that artificial intelligence anxiety explains the dimensions of the tendency towards technology (R²=0.006), the negativity of technology (R²=0.076), the contribution and importance of technology (R²=0.003), and technology for everyone (R²=0.003) at a low level.

Another indicator in Table 4 is that the f² values were examined to determine the magnitude of the effect of the independent variables on the dependent variable. In this context, f² values of 0.02, 0.15, and 0.35 indicate small, medium, and large effect sizes, res-

pectively (Hair et al., 2018). According to the analysis results, artificial intelligence anxiety has a small effect on the negativity dimension of technology ($f^2 = 0.083$), while the effect size on the dimensions of

technological orientation ($f^2 = 0.006$), technological contribution and importance ($f^2 = 0.003$), and technology for all ($f^2 = 0.003$) is very low.

Table 7. Fornell-Larcker Criterion

	HK	ID	OGR	STK	TKO	TO	TYE	YZK	YZY
HK	0.907								
ID	-0.045	0.916							
OGR	-0.037	0.386**	0.849						
STK	-0.036	0.676**	0.333**	0.853					
TKO	0.374	0.096**	-0.168**	0.185**	0.794				
TO	-0.033	0.159**	0.360**	0.136**	-0.201	0.793			
TYE	0.357**	-0.074**	-0.086**	0.015	0.397**	-0.207**	0.797		
YZK	-0.052*	0.820**	0.613**	0.852**	0.060*	0.272**	-0.077**	0.860	
YZY	-0.045	0.586**	0.382**	0.637**	0.030	0.241**	-0.102	0.708	0.925

Note: * $p < 0.05$, ** $p < 0.01$; HK = Technology for all, ID = Job replacement, OGR = Learning, STK = Sociotechnical blindness, TKO = Importance of technology, TO = Negativeness of technology, TYE = Tendency to technology, YZK = AI anxiety, YZY = AI configuration

In consideration of the discriminant validity analysis results presented in Table 7, Fornell & Larcker (1981) stated that the square root of AVE of the variances in the study should have a greater value than the correlations with other latent constructs. Consequently, the discriminant validity of the research scales was assured. According to the results, a significant and negative correlation was found between stu-

dents' AI anxiety and their tendency to technology ($r = -0.077, p < 0.01$), and between AI anxiety and technology for all ($r = -0.052, p < 0.05$). A positive linear correlation was found between AI anxiety and the negativeness of technology ($r = 0.272, p < 0.01$), and between AI anxiety and the contribution and importance of technology ($r = 0.060, p < 0.05$).

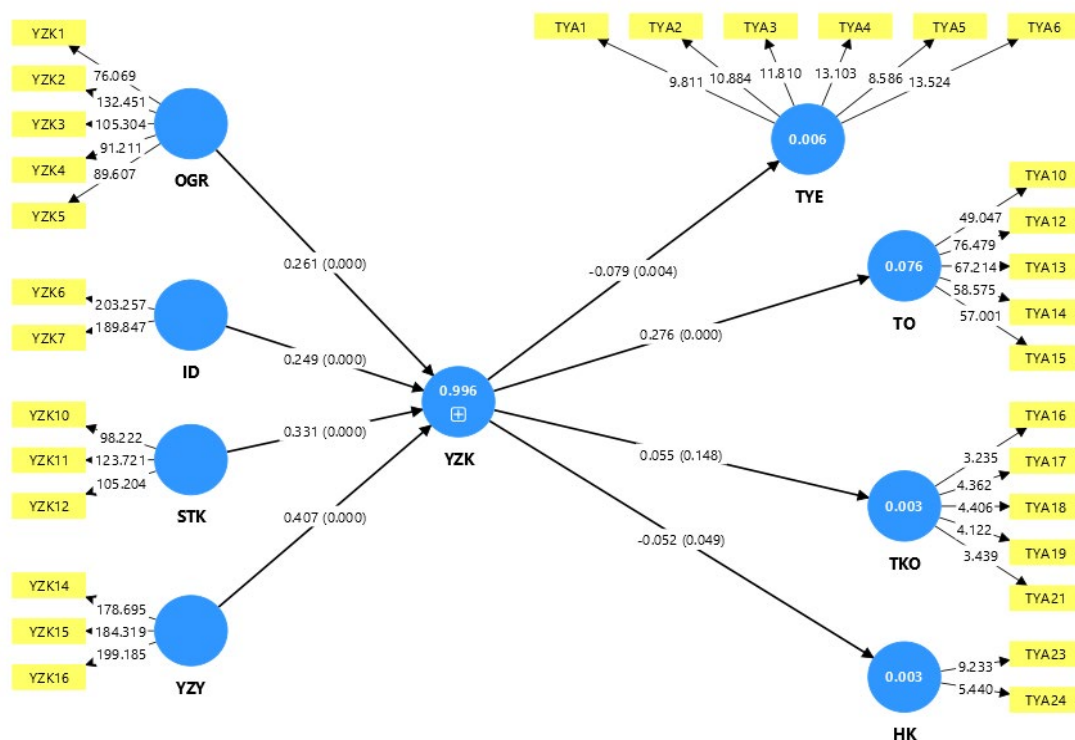


Figure 1. Path Coefficient (PLS SEM Approach)

Source: Figure by the Authors

Note: OGR = Learning, ID = Job replacement, STK = Sociotechnical blindness, YZY = AI configuration, YZK = AI anxiety, TYE = Tendency to technology, TO = Negativeness of technology, TKO = Importance of technology, HK = Technology for all

Figure 1 shows the standardized regression coefficients between the latent variables of the research model and their statistical significance, as well as the

t statistics between the latent variables and the expressions.

Table 8. Hypothesis Testing

Hypothesis	Relationship	β	Standard error	T statistics	p values	Decision
H1	YZK→TYE	-0,079	0,027	2,924	0,004**	Accepted
H2	YZK→TO	0,276	0,023	11,832	0,000***	Accepted
H3	YZK→TKO	0,055	0,038	1,448	0,148	Rejected
H4	YZK→HK	-0,052	0,026	1,971	0,049*	Accepted

The significance of the path coefficients was tested in the first stage of the research model. As seen in Table 8, the H1 hypothesis, which was established for the tendency to technology, that AIA has a negative effect, was supported ($\beta=-0,079$; $p<0,05$). The H2 hypothesis, which was established for the negativeness of technology, that AIA has a positive effect, was supported ($\beta=0,276$; $p<0,001$). The H3 hypothesis, which was established for the contribution and importance of technology, that AIA has a negative effect, was not supported ($\beta=0,055$; $p>0,05$). It was understood that the H4 hypothesis, which was established for technology for all, that AIA has a negative effect, was supported ($\beta=-0,052$; $p<0,05$).

Table 8 presents the β coefficients and hypothesis test results related to the research model. According to the analysis results, artificial intelligence anxiety has a negative and significant effect on the tendency towards technology ($\beta = -0.079$; $p < 0.01$), and this finding shows that as students' anxiety levels towards artificial intelligence increase, their tendency to turn to the field of technology decreases. Therefore, it is understood that the H1 hypothesis established in the research hypothesis is supported.

The study found that artificial intelligence anxiety has a positive and significant effect on the negative aspect of technology ($\beta = 0.276$; $p < 0.001$). This result indicates that as the level of anxiety about artificial intelligence increases, students' negative perceptions of technology also increase. Thus, the H2 hypothesis used in the study is supported.

The study found that the effect of artificial intelligence anxiety on the dimension of technology's contribution and importance was not statistically significant ($\beta = 0.055$; $p > 0.05$). This indicates that students' artificial intelligence anxieties did not significantly affect their perceptions of technology's social contribution. Therefore, Hypothesis H3 was not supported.

The study determined that artificial intelligence anxiety has a negative and significant effect on the technology dimension for everyone ($\beta = -0.052$; $p < 0.05$). Accordingly, it was found that as the level of anxiety towards artificial intelligence increases, students' perception that technology is suitable for

everyone decreases, supporting the established H4 hypothesis.

5. Discussion

The current study investigated the relationship between students' AI anxiety and their attitudes toward technology. It also examined whether gender had an impact on both AI anxiety and attitudes toward technology.

According to the results of the structural equation model tested to examine the relationship between students' artificial intelligence anxiety and the sub-dimensions of their attitudes toward technology, a negative relationship was found between students' artificial intelligence anxiety and their tendency toward technology. According to this result, as predicted in the study, as students' levels of artificial intelligence anxiety increase, their attitudes toward technology decrease (H1 accepted). A positive relationship was found between students' artificial intelligence anxiety and their negativeness of technology. Accordingly, as predicted in the study, as students' levels of artificial intelligence anxiety increase, their views on the negativeness of technology increase (H2 accepted). A statistically insignificant positive relationship was found between students' artificial intelligence anxiety and the contribution and importance of technology (H3 rejected). A negative relationship was found between students' AI anxiety and technology for everyone. Accordingly, as predicted in the study, as students' AI anxiety levels increase, their tendencies toward technology for everyone decrease (H4 accepted). The negative correlation between anxiety about artificial intelligence and the propensity to use technology suggests that anxiety inhibits the use of technology.

The findings of this study indicate a negative relationship between students' artificial intelligence anxiety and their propensity to use technology. This result suggests that higher levels of AI-related anxiety may act as a psychological barrier that discourages individuals from engaging with technological tools and systems. From the perspective of technology acceptance research, this finding is consistent with the

broader literature indicating that anxiety can reduce individuals' willingness to adopt or interact with new technologies. Technology acceptance models emphasize that psychological factors such as perceived risk, uncertainty, and anxiety can negatively influence individuals' attitudes toward technology and their behavioral intentions to use it. Therefore, the negative association identified in this study may reflect the role of AI anxiety as a factor that weakens students' openness to technological engagement.

The results also show that as AI anxiety increases, individuals tend to focus more strongly on the potential negative consequences of technological development, such as unemployment, privacy violations, and the perceived loss of human control over intelligent systems. This tendency may contribute to the formation of more cautious or resistant attitudes toward technological innovation. However, it is important to note that such perceptions may not stem solely from anxiety itself but may also be related to limited knowledge or misconceptions about AI technologies. Previous studies suggest that misunderstandings regarding the capabilities and limitations of AI can amplify risk perceptions and reinforce technology-related fears. As accurate information, transparency, and familiarity with AI technologies increase, individuals may develop a more balanced understanding of both the risks and benefits associated with these systems. In this sense, education and public awareness may play a critical role in mitigating anxiety-driven negative perceptions.

Another important finding of the study is that increasing levels of AI anxiety appear to weaken individuals' belief that technology is accessible and learnable by everyone. This result suggests that anxiety may undermine inclusive perceptions of technology education, leading individuals to question whether technological knowledge and skills can realistically be acquired by all students. Such perceptions may reinforce negative attitudes toward initiatives aimed at promoting technology education for broader segments of society. Nevertheless, the literature emphasizes that inclusive educational policies and appropriate pedagogical approaches can strengthen individuals' confidence in their ability to learn and use technology. Educational environments that emphasize accessibility, support, and hands-on engagement with technology may help counteract the exclusionary perceptions associated with AI anxiety.

Although the direct relationship between AI anxiety and attitudes toward technology has not been widely examined in previous research, related studies provide indirect support for the findings of the present study. For example, Kaya et al. (2024: 504) reported a positive relationship between individuals' level of computer usage and their general positive attitudes toward AI, suggesting that familiarity with technology may reduce uncertainty and foster more

favorable perceptions. Similarly, Emon and Khan (2025: 7) found that attitudes toward technology significantly predicted professionals' intention to use AI in the Bangladeshi context, highlighting the importance of positive technological attitudes in shaping technology adoption behaviors. In the educational context, Amiri et al. (2024) also argued that students' positive attitudes toward AI facilitate their acceptance of AI-based technologies.

Furthermore, research conducted among managers of small and medium-sized enterprises demonstrates that technological knowledge plays a critical role in the adoption of emerging technologies. For instance, Polas et al. (2022) found that AI knowledge had a positive and significant effect on the adoption of blockchain technology. In addition, the perceived advantages of AI and the perceived ease of use of AI were also found to positively influence technology adoption. These findings align with technology acceptance frameworks, which emphasize the importance of perceived usefulness and perceived ease of use in shaping attitudes toward technology and subsequent adoption behaviors. Taken together, these results suggest that increasing individuals' knowledge and familiarity with AI technologies may reduce anxiety and contribute to more positive attitudes toward technology.

Overall, the findings of this study highlight the importance of addressing AI-related anxiety in educational contexts. If students' concerns about AI remain unaddressed, such anxieties may negatively influence their engagement with technological learning environments and their perceptions of technological opportunities. Therefore, educational institutions may play a key role in fostering balanced perceptions of AI by integrating AI literacy, critical understanding of technology, and practical learning experiences into educational programs.

The fifth hypothesis suggests that female students are more anxious about artificial intelligence than male students. Statistically significant differences were found in AI anxiety based on gender. These findings support the findings of previous research that found women's AI anxiety to be higher than men's (Ayduğ & Altınpulluk, 2023; Uçar et al., 2024; Cho & Seo, 2024; Çetiner & Çetinkaya, 2024: 160; Köse, 2025: 578; Alkan, 2025: 11; Ongün et al., 2024; Laupichler et al., 2024; Pinto dos Santos et al., 2019; Lukić et al., 2023). On the other hand, it contradicts studies that show no effect of gender on attitudes towards AI (Kaya et al., 2024; Filiz et al., 2022: 47; Gümüş & Uysal Kasap, 2022; Başer et al., 2021; Ulukapı Yılmaz & Yılmaz, 2024: 185). When considered within a sociocultural framework of risk perception and uncertainty tolerance, the significant difference in AI anxiety between men and women shows that women generally perceive technological risks as higher and are more sensitive to uncertainty and loss of

control. Combined with the 'unpredictability' of AI, this situation can increase anxiety. Women may also be more concerned about the ethical and societal consequences of AI. Conversely, men may downplay technical risks and adopt a more benefit-oriented approach. In the context of social roles and the labour market, AI technologies can directly affect administrative, service and care occupations, which are predominantly performed by women. Considering the potential for automation of AI technologies, this situation may increase job security concerns among women. In terms of perceived technological self-efficacy, women reported lower self-efficacy regarding AI technologies on average. Low self-efficacy is a strong predictor of increased anxiety. Even with the same level of knowledge, this mechanism can explain why women report higher anxiety about AI.

The sixth hypothesis is that the average attitude of male students towards technology is higher than that of female students. These gender-related findings from this study support previous research in the literature. There were significant differences in students' interest in technology, their attitudes towards its inclusion in the school curriculum, and their views on technology-related careers between girls and boys (Volk & Yip, 1999; Raat & de Vries, 1985; Weinburgh, 1995: 387; Ian Robertson et al., 1995: 73; Colley et al., 1994: 129; Elvstrand et al., 2012; Bozdemir et al., 2021: 40; Boser et al., 1998: 12). On the other hand, attitudes towards the use of technology did not differ by gender (Kılınc et al., 2016; Francis, 1993). Although students are interested in technology, research has found that they lack sufficient knowledge of technology-related concepts (Bame, 1993). Another gender-based study reported that interest in technological themes is influenced by early childhood. Therefore, efforts to improve early childhood education and primary school education to increase girls' interest and motivation in technology are emphasized (Rasinen et al., 2009: 367). When considered in the context of gender roles and expectations, this significant difference in attitudes towards technology in favour of men reveals that, in many societies, technology, engineering and computer science fields are considered to be "men's work". Girls are directed towards more social and care-oriented roles, while boys are directed towards technical and instrumental roles. This situation directly affects self-perceived technological competence. Consequently, while men may believe they are more 'naturally inclined' towards technology, women may rate their own competence lower, even if they are successful in technology-related fields. Overall, it is thought that gender differences in attitudes towards technology are not innate, but are largely shaped by sociocultural and educational factors. It is believed that these differences can be reduced or even eliminated through appropriate pedagogical approaches, role models and equal opportunities.

6. Conclusion

The scientific aim of this study is to understand students' AI anxiety and attitudes toward technology and to investigate how attitudes toward AI influence attitudes toward technology. While numerous separate studies have been conducted on AI anxiety and attitudes toward technology, this research stemmed from the need to address this gap, as no studies directly examine the relationship between these two concepts. The study determined that gender, age, and duration of information technology use had statistically significant effects on students' AI anxiety and attitudes toward technology. This study revealed that women had higher AI anxiety than men, while their attitudes toward technology were lower. Furthermore, it was understood that as participants' duration of information technology use increased, their attitudes toward technology improved, while their AI anxiety decreased. Students' AI anxiety levels were found to influence their attitudes toward technology.

When the analysis results are evaluated together, they show that the magnitude of the effect of AI anxiety on the dimensions of attitudes towards technology is generally low, indicating that AI anxiety has a limited effect in explaining students' attitudes towards technology. Thus, these results suggest that students' attitudes towards technology cannot be explained solely by AI anxiety, and it is recommended that other variables that may be effective in future studies be included in the model.

The findings of this study have significant implications, both theoretical and practical, for future research. These implications and recommendations are presented below under separate headings.

The finding that female students have higher levels of AI anxiety suggests that there is a need to examine gender-based technology experiences more deeply. Future research could include qualitatively investigating the reasons for women's AI anxiety, such as self-efficacy perception, frequency of interaction with technology, lack of role models, and ethical and job security concerns. It could also involve testing the effectiveness of supportive training programmes for women, such as mentoring, awareness campaigns and confidence-building practices, in reducing AI anxiety.

The negative relationship between anxiety about artificial intelligence and the tendency to use technology indicates that anxiety inhibits technology use. In this regard: Teaching models for artificial intelligence literacy that are both applied and understandable can be developed. Course content and learning environments could be designed to encourage students to view artificial intelligence as a supportive tool rather than a threat. Experimental studies can examine the effect of psychoeducational programmes aimed at reducing anxiety on attitudes towards technology.

Future studies on the relationship between artificial intelligence anxiety and attitudes towards technology could investigate: The mediating or moderating role of variables such as technological self-efficacy, digital literacy, learning motivation and innovativeness could be investigated. This would enable the relationship to be explained within a more comprehensive theoretical framework.

When interpreting the results of this study, some limitations must be acknowledged. The fact that the study was conducted with only university students in the Osmaniye province limits its generalisability. In this study, analyses were conducted based solely on the gender variable in line with the research objective. Although the participants' unit and department information is included in the data set, these variables were not included in the analysis process because the sample size did not show a homogeneous distribution based on unit/department, and the number of participants in some departments was insufficient for statistical analysis. This situation has been considered a limitation of the study. It is thought that future studies involving larger samples from different universities and regions will make the findings more generalisable. However, using qualitative methods such as in-depth interviews or focus group studies in future studies may allow for a more comprehensive examination of the subject. It may also be worthwhile for future studies to examine the mediating or moderating role of variables such as technological self-efficacy, digital literacy, and innovation.

The results of this study can be generalised by testing them in different groups. For example, comparative studies could be conducted with different age groups, academic disciplines or educational levels (secondary education, graduate education, teachers, etc.). Cross-cultural studies can examine the relationship between AI anxiety and cultural factors, which may provide valuable insights into the role of cultural influences in shaping perceptions of AI and its implications for societal and cultural contexts.

Research findings also inform education policy: For example, it is important to emphasise that students' emotional characteristics should be taken into account when integrating artificial intelligence into educational institutions. The importance of using inclusive and anxiety-reducing language when introducing AI-based applications should be emphasised.

Overall, this study emphasises the significant impact of AI anxiety on attitudes towards technology, highlighting the importance of preventive, supportive and inclusive approaches in future research. Taking gender-based differences into account, in particular, will contribute to the more effective and equitable use of AI technologies in education.

Ethical Approval: Ethics committee approval was received from Osmaniye Korkut Ata University (dated 21.05.2025 and numbered E.234799).

Funding Acknowledgement: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing Interests: The authors declare no competing interests.

References

- Abdelaziz, O., Lee, S., Howard, S., & Lefler, L. (2025). Perceptions and attitudes of registered nurses and nursing students toward advanced technology and artificial intelligence. *CIN: Computers, Informatics, Nursing*, 43(3). <https://doi.org/10.1097/CIN.0000000000001221>
- Agca, R. K. & Korkmaz, O. (2025). Experimental perspective on artificial intelligence anxiety. *International Journal of Technology in Education (IJTE)*, 8(1), 22-44. <https://doi.org/10.46328/ijte.846>
- Ajonbadi, H. A., Khan, S., & Owolewa, M. (2024). Before It Goes South: The Ethical Dilemma of Artificial Intelligence in Human Resource Management—The Bangladesh Workplace Experience. In *HRM, Artificial Intelligence and the Future of Work* (pp. 147–167). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-62369-1_8
- Alkan, T. K. (2025). The effect of artificial intelligence anxiety on job performance of surgical nurses. *International Journal of Advance Research in Nursing*, 8(1), 09–13. <https://doi.org/10.33545/nursing.2025.v8.i1.A.438>
- Amiri, H., Peiravi, S., Rezazadeh Shojaei, S. S., Rouhparvarzamin, M., Nateghi, M. N., Etemadi, M. H., ShojaeiBaghini, M., Musaie, F., Anvari, M. H., & Asadi Anar, M. (2024). Medical, dental, and nursing students' attitudes and knowledge towards artificial intelligence: a systematic review and meta-analysis. *BMC Medical Education*, 24(1), 412. <https://doi.org/10.1186/s12909-024-05406-1>
- Ankiewicz, P. (2016). Perceptions and Attitudes of Pupils Toward Technology. In M.J. de Vries (Ed.), *Handbook of Technology Education*, Springer International Handbooks of Education (pp. 1–15). Springer International Publishing AG. https://doi.org/10.1007/978-3-319-38889-2_43-1
- Ankiewicz, P. (2019). Perceptions and attitudes of pupils towards technology: in search of a rigorous theoretical framework. *International Journal of Technology and Design Education*, 29(1), 37–56. <https://doi.org/10.1007/s10798-017-9434-z>
- Ardies, J., De Maeyer, S., & Gijbels, D. (2013). Reconstructing the pupils attitude towards technology-survey. *Design and Technology Education: An International Journal*, 18(1), 8–19.
- Ardies, J., De Maeyer, S., & Gijbels, D. (2015). A longitudinal study on boys' and girls' career aspirations and interest in technology. *Research in Science & Technological Education*, 33(3), 366–386. <https://doi.org/10.1080/02635143.2015.1060412>
- Ardies, J., De Maeyer, S., Gijbels, D., & van Keulen, H. (2014). Students attitudes towards technology. *International Journal of Technology and Design Education*, 25(1), 43–65. <https://doi.org/10.1007/s10798-014-9268-x>
- Ayduğ, D., & Altınpulluk, H. (2023, September 28). Investigation of Pre-Service Teachers' Artificial Intelligence Anxiety Levels. 36th Asian Association of Open Universities Annual Conference (AAOU 2023).
- Bame, E. A. (1993). Pupils' attitudes toward technology-patt-USA. *Journal of Technology Studies*.

- Bame, E. A., & Dugger, W. E. (1989). Pupils' Attitude Towards Technology: PATT-USA. In PATT 4 Conference Proceedings, 309–319.
- Başer, A., Altuntaş, S. B., Kolcu, G., & Özceylan, G. (2021). Artificial intelligence anxiety of family physicians in Turkey. *Progress in Nutrition*, 23(2), 1–7.
- Belber, B. G., & Özmen, M. H. (2024). Hizmet sektörü çalışanlarının yapay zekâ ile ilgili gelecek kaygıları. *Elektronik Sosyal Bilimler Dergisi*, 23(91), 1085–1101. <https://doi.org/10.17755/esosder.1437531>
- Bonnefon, J.-F., Rahwan, I., & Shariff, A. (2024). The moral psychology of artificial intelligence. *Annual Review of Psychology*, 75(1), 653–675. <https://doi.org/10.1146/annurev-psych-030123-113559>
- Boser, R. A., Palmer, J. D., & Daugherty, M. K. (1998). Students' attitudes toward technology in selected technology education programs. *Journal of Technology Education*, 10(1). <https://doi.org/10.21061/jte.v10i1.a.1>
- Bozdemir, V. A., Kilci, A. K., & Özdayı, N. (2021). Bilim şenlikleri kapsamında spor ve teknoloji ilişkisinin çeşitli değişkenler açısından değerlendirilmesi. *International Journal of Sport, Exercise & Training Sciences*, 7(2), 40–50. <https://doi.org/10.18826/useeabd.934579>
- Canada, K., & Brusca, F. (1991). The technological gender gap: evidence and recommendations for educators and computer-based instruction designers. *Educational Technology Research and Development*, 39(2), 43–51. <https://doi.org/10.1007/BF02298153>
- Castagno, S., & Khalifa, M. (2020). Perceptions of artificial intelligence among healthcare staff: a qualitative survey study. *Frontiers in Artificial Intelligence*, 3. <https://doi.org/10.3389/frai.2020.578983>
- Çetiner, N., & Çetinkaya, F. Ö. (2024). Çalışanların yapay zekâ kaygısı ile motivasyon düzeyleri arasındaki ilişki: turizm çalışanları üzerine bir araştırma. *Alanya Akademik Bakış*, 8(1), 159–173. <https://doi.org/10.29023/alanyaakademik.1297394>
- Cho, K. A., & Seo, Y. H. (2024). Dual mediating effects of anxiety to use and acceptance attitude of artificial intelligence technology on the relationship between nursing students' perception of and intention to use them: a descriptive study. *BMC Nursing*, 23(1), 212. <https://doi.org/10.1186/s12912-024-01887-z>
- Çiçek, B., & Çoban, R. (2024). The effect of artificial intelligence anxiety on work engagement: A study on academicians. 2. International Üsküdar Scientific Research and Innovation Congress, 1184–1193.
- Colley, A. M., Gale, M. T., & Harris, T. A. (1994). Effects of gender role identity and experience on computer attitude components. *Journal of Educational Computing Research*, 10(2), 129–137. <https://doi.org/10.2190/8NA7-DAEY-GM8P-EUN5>
- de Vries, M. J. (2005). The tature of technological knowledge: philosophical reflections and educational consequences. *International Journal of Technology and Design Education*, 15(2), 149–154. <https://doi.org/10.1007/s10798-005-8276-2>
- Doğan, D. (2019). *SmartPLS ile Veri Analizi* (2nd ed.). Ankara: Zet Yayınları.
- Elvstrand, H., Hellberg, K., & Hallström, J. (2012). Technology and Gender in Early Childhood Education: How Girls and Boys Explore and Learn Technology in Free Play in Swedish Preschools. In T. Ginner, J. Hallström, & M. Hultén (Eds.), *Technology Education in the 21st Century: the PATT 26 Conference Stockholm, Sweden*: Linköping University Electronic Press.
- Emon, M. M. H., & Khan, T. (2025). The mediating role of attitude towards the technology in shaping artificial intelligence usage among professionals. *Telematics and Informatics Reports*, 17, 100188. <https://doi.org/10.1016/j.teler.2025.100188>
- Filiz, E., Güzel, Ş., & Şengül, A. (2022). Sağlık profesyonellerinin yapay zekâ kaygı durumlarının incelenmesi. *International Journal of Academic Value Studies (Javstudies JAVS)*, 8(8), 47–55. <https://doi.org/10.29228/jav.57808>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39. <https://doi.org/10.2307/3151312>
- Francis, L. J. (1993). Measuring attitude toward computers among undergraduate college students: the affective domain. *Computers & Education*, 20(3), 251–255. [https://doi.org/10.1016/0360-1315\(93\)90024-D](https://doi.org/10.1016/0360-1315(93)90024-D)
- Gültekin, Z., Urgan, S., & Ak, M. (2022). Yapay zekâ kaygısının kariyer kararlılığına etkisine yönelik bir araştırma: Ondokuz Mayıs Üniversitesi öğrencileri örneği. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 27(3), 477–491.
- Gümüş, E., & Uysal Kasap, E. (2022). Sağlık ekosisteminde yapay zekâ kaygı düzeyi: hemşire örnekleme. *Journal of Artificial Intelligence in Health Sciences*, 2(3), 1–7. <https://doi.org/10.52309/jaihs.v2i2.43>
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2018). *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA: Sage. <https://doi.org/10.3926/oss.37>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R*. Cham, Switzerland: Springer International Publishing. <https://doi.org/10.1007/978-3-030-80519-7>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Howe, L. C., & Krosnick, J. A. (2017). Attitude strength. *Annual Review of Psychology*, 68(1), 327–351. <https://doi.org/10.1146/annurev-psych-122414-033600>
- Ian Robertson, S., Calder, J., Fung, P., Jones, A., & O'Shea, T. (1995). Computer attitudes in an english secondary school. *Computers & Education*, 24(2), 73–81. [https://doi.org/10.1016/0360-1315\(95\)00020-M](https://doi.org/10.1016/0360-1315(95)00020-M)
- Johnson, D. G., & Verdicchio, M. (2017). AI anxiety. *Journal of the Association for Information Science and Technology*, 68(9), 2267–2270. <https://doi.org/10.1002/asi.23867>
- Kaya, F., Aydın, F., Schepman, A., Rodway, P., Yetişensoy, O., & Demir Kaya, M. (2024). The roles of personality traits, ai anxiety, and demographic factors in attitudes toward artificial intelligence. *International Journal of Human-Computer Interaction*, 40(2), 497–514. <https://doi.org/10.1080/10447318.2022.2151730>
- Kılınç, E., Kılınç, S., Kaya, M. M., Başer, E. H., Er Türküresin, H., & Kesten, A. (2016). Teachers' attitudes toward the use of technology in social studies teaching. *Research in Social Sciences and Technology*, 1(1). <https://doi.org/10.46303/ressat.01.01.3>
- Korhonen, T., Kangas, K., Davies, S., Sormunen, K., Salo, L., & Packalén, M. (2022). Framework for Technological Competence in Invention Projects. In *Invention Pedagogy – The Finnish Approach to Maker Education* (pp. 95–114). Routledge. <https://doi.org/10.4324/9781003287360-9>
- Korkeaniemi, A., Lindfors, E., & Kiviranta, L. (2025). Teaching technology to young learners: teachers' individual competencies. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-025-09973-2>
- Köse, E. (2025). Research on the effect of artificial intelligence anxiety in accounting profession candidates on career decision-making. *Fiscaeconomia*, 9(1), 568–582. <https://doi.org/10.25295/fsecon.1556196>
- Köse, U. (2018). Are we safe enough in the future of artificial intelligence? A discussion on machine ethics and artificial intelligence safety. *Broad Research in Artificial Intelligence and Neuroscience*, 9(2), 184–197.
- Kuntman, B. D., & Polat, A. P. (2025). The correlation between artificial intelligence literacy and artificial intelligence anxiety in audiology students. <https://doi.org/10.21203/rs.3.rs-6028948/v1>
- Laupichler, M. C., Aster, A., Meyerheim, M., Raupach, T., & Mergen, M. (2024). Medical students' ai literacy and attitudes towards ai: a cross-sectional two-center study using pre-validated assessment instruments. *BMC Medical Education*, 24(1), 401. <https://doi.org/10.1186/s12909-024-05400-7>
- Li, J., & Huang, J.-S. (2020). Dimensions of artificial intelligence anxiety based on the integrated fear acquisition theory. *Tech-*

nology in Society, 63, 101410. <https://doi.org/10.1016/j.tech-soc.2020.101410>

Lukić, A., Kudelić, N., Antičević, V., Lazić-Mosler, E., Glunčić, V., Hren, D., & Lukić, I. K. (2023). First-year nursing students' attitudes towards artificial intelligence: cross-sectional multi-center study. *Nurse Education in Practice*, 71, 103735. <https://doi.org/10.1016/j.nepr.2023.103735>

Maraş, G., Albayrak Günday, E., & Sürme, Y. (2024). Examining the anxiety and preparedness levels of nurses and nurse candidates for artificial intelligence health technologies. *Journal of Clinical Nursing*. <https://doi.org/10.1111/jocn.17562>

Menekli, T., & Şentürk, S. (2022). The relationship between artificial intelligence concerns and perceived spiritual care in internal medicine nurses. *YÖBU Faculty of Health Sciences Journal*, 3(2), 210–218.

Ongün, P., Gül, B., Muslu, I. E., Meşe, M. M., & Ergün, S. (2024). Determination of artificial intelligence anxiety status of nursing students: cross-sectional-descriptive study. *Bandırma Onyedü Eylül Üniversitesi Sağlık Bilimleri ve Araştırmaları Dergisi*, 6(2), 304–312. <https://doi.org/10.46413/boneyusbad.1455856>

Özbek Güven, G., Yılmaz, Ş., & Inceoğlu, F. (2024). Determining medical students' anxiety and readiness levels about artificial intelligence. *Heliyon*, 10(4), e25894. <https://doi.org/10.1016/j.heliyon.2024.e25894>

Pinto dos Santos, D., Giese, D., Brodehl, S., Chon, S. H., Staab, W., Kleinert, R., Maintz, D., & Baeßler, B. (2019). Medical students' attitude towards artificial intelligence: a multicentre survey. *European Radiology*, 29(4), 1640–1646. <https://doi.org/10.1007/s00330-018-5601-1>

Polas, M. R. H., Afshar Jahanshahi, A., Kabir, A. I., Sohel-Uz-Zaman, A. S. Md., Osman, A. R., & Karim, R. (2022). Artificial intelligence, blockchain technology, and risk-taking behavior in the 4.0ir metaverse era: evidence from Bangladesh-Based SMEs. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(3), 168. <https://doi.org/10.3390/joitmc8030168>

Raat, J. H., & de Vries, M. (1985). What do 13-year old students think about technology? The conception of and the attitude towards technology of 13-year old girls and boys.

Rasinen, A., Virtanen, S., Endepohls-Ulpe, M., Ikonen, P., Ebach, J., & Stahl-von Zabern, J. (2009). Technology education for children in primary schools in Finland and Germany: different school systems, similar problems and how to overcome them. *International Journal of Technology and Design Education*, 19(4), 367–379. <https://doi.org/10.1007/s10798-009-9097-5>

Terzi, R. (2020). An adaptation of artificial intelligence anxiety scale into Turkish: reliability and validity study. *International Online Journal of Education and Teaching (IOJET)*, 7(4), 1501–1515. <http://iojet.org/index.php/IOJET/article/view/1031>

Uçar, M., Çapuk, H., & Yiğit, M. F. (2024). The relationship between artificial intelligence anxiety and unemployment anxiety among university students. *WORK: A Journal of Prevention, Assessment & Rehabilitation*. <https://doi.org/10.1177/10519815241290648>

Ulukapı Yılmaz, H., & Yılmaz, A. (2024). Dijital çağın potansiyel çalışanlarının yapay zekâ kaygılarının belirlenmesi. *Business and Economics Research Journal*, 15(2), 171–188. <https://doi.org/10.20409/berj.2024.440>

Varol, B. (2025). Artificial intelligence anxiety in nursing students. *CIN: Computers, Informatics, Nursing*. <https://doi.org/10.1097/CIN.0000000000001250>

Volk, K. S., & Yip, W. M. (1999). Gender and technology in Hong Kong: a study of pupils' attitudes toward technology. *International Journal of Technology and Design Education*, 9(1), 57–71. <https://doi.org/10.1023/A:1008894006039>

Wang, Y.-Y., & Wang, Y.-S. (2022). Development and validation of an artificial intelligence anxiety scale: an initial application in predicting motivated learning behavior. *Interactive Learning Environments*, 30(4), 619–634. <https://doi.org/10.1080/10494820.2019.1674887>

Weinburgh, M. (1995). Gender differences in student attitudes toward science: a meta-analysis of the literature from 1970 to 1991. *Journal of Research in Science Teaching*, 32(4), 387–398. <https://doi.org/10.1002/tea.3660320407>

Yiğit, D., & Açıkgöz, A. (2024). Evaluation of future nurses' knowledge, attitudes and anxiety levels about artificial intelligence applications. *Journal of Evaluation in Clinical Practice*, 30(7), 1319–1326. <https://doi.org/10.1111/jep.14062>

Yurdagül, H., & Aşkar, P. (2008). An investigation of the factorial structures of pupils' attitude towards technology (patt): a Turkish-sample. *Elementary Education Online*, 7(2), 288–309.

From Form to Meaning in Basic Design Studio

Mine Tunçok Sarıberberoğlu* / Asst. Prof. Dr. 

Bolu Abant İzzet Baysal University, Faculty of Architecture, Department of Architecture
mine.tuncoksariberberoglu@ibu.edu.tr

Elif Özgen / Asst. Prof. Dr. 

Bolu Abant İzzet Baysal University, Faculty of Architecture, Department of Architecture
elif.ozgen@ibu.edu.tr

*Corresponding Author

Abstract

Early design education typically focuses on developing visual literacy through formal principles; however, the systematic integration of conceptual thinking into this process remains limited. Based on the hypothesis that conceptual scaffolding transforms how basic design students employ formal principles, this study investigates how conceptual frameworks function as pedagogical tools through a two-phase studio experiment. In the first phase, 35 first-year architecture students produced visual compositions by intuitively applying principles such as balance, rhythm, and contrast; in the second phase, they reinterpreted these principles through paired conceptual themes-order/chaos, tension/calmness, and introversion/extroversion-as vehicles for meaning-making. Paired visual compositions and short reflective texts were examined through qualitative interpretive comparison, and 18 paired works were purposively selected to represent diverse visual strategies, conceptual interpretations, and levels of compositional complexity. The findings show that conceptual framing altered how students applied fundamental design principles. While

first-phase compositions primarily relied on symmetry, repetition, and formal balance, second-phase works demonstrated a more conscious compositional hierarchy, integrated use of multiple principles, and stronger conceptual interpretation. These improvements in compositional clarity, application of principles, originality, and conceptual depth indicate a shift from formal production toward reflective and critical awareness. Accordingly, the study reveals that the basic design studio serves not only to develop aesthetic competence but also to foster conceptual thinking, cognitive awareness, and meaning-making. The results further suggest that conceptual thinking functions as an interface bridging cognitive and emotional learning in early design education, forming the basis for a new model of instruction grounded in visual-textual integration.

Keywords: Basic Design Education, Conceptual Thinking, Visual Principles, Spatial Composition, Design Pedagogy.

JEL Codes: I23

Citation: Tunçok Sarıberberoğlu, M., & Özgen, E. (2026). From form to meaning in basic design studio. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Basic design education, which represents the first stage of architectural education and introduces students to the visual language and conceptual foundations of design, goes beyond developing aesthetic awareness by providing students with intellectual tools for structuring their thoughts and engaging in creative problem-solving processes. The pedagogical emphasis of this education is not only to produce visually appealing compositions but also to develop the ability to transform abstract ideas into consistent and communicable forms. In this context, basic design education functions as a formative ground where intuition meets analysis, and perception intersects with reasoning.

At this formative stage, visual principles go beyond being merely aesthetic rules and emerge as intellectual frameworks that shape how students perceive, organize, and communicate ideas. Early psychological theories such as Gestalt psychology have shown that human perception is inherently structured and holistic (Wertheimer, 1938; Köhler, 1970; Koffka, 2013). Recent research in the field of visual perception emphasizes that grouping and figure-ground organization remain valid at both behavioral and neural levels, revealing that perception operates through predictive and inferential processes that transform fragmented inputs into meaningful wholes (Wagemans et al., 2012; Manassi & Whitney, 2022). Fundamental concepts such as proximity, similarity, continuity, closure, and figure-ground reveal the human mind's tendency to organize fragmented stimuli into coherent structures. These findings, when incorporated into design education, show that clarity in composition is not merely a visual issue but also a cognitive phenomenon compatible with innate perceptual tendencies.

On the other hand, research on design pedagogy increasingly emphasizes that visual structuring lies at the center of abstraction, idea generation, and discovery processes (Oxman, 1997; Tergan & Keller, 2005; Ware, 2019). Students learn not only to arrange points, lines, and colors, but also to use these elements as conceptual tools for shaping complex and often abstract ideas. Studio-based learning, which is accepted as the distinctive teaching model of architecture, provides a social and reflective environment in which knowledge is constructed through production, critique, and iteration (Schön, 1983; Kampen, 2018). In this context, learning is both an experiential and dialogical process; it allows students to externalize their thoughts through visual experiments. This approach overlaps with the constructivist understanding of learning, which prioritizes active participation, reflection, and learner autonomy (Fosnot, 2005; Schunk, 2012).

Many studies and practices on basic design educa-

tion today are still shaped around formal or stylistic concerns. In exercises, principles such as balance, rhythm, and contrast are often handled as independent rules rather than as cognitive tools that support thinking processes. However, the decisive role of conceptual thinking in the design process has long been emphasized in the literature (Archer, 1966; Dorst, 2011; Carlgren et al., 2016). Design thinking is generally defined as an analytic and creative process that engages a person in opportunities to experiment, create, and prototype models, gather feedback, and redesign (Razzouk & Shute, 2012). Dorst (2011) emphasizes the need to build up a conceptual framework that is fundamental enough to anchor the variety of approaches that designers take and connect the many descriptions of design thinking that have arisen in design research. Nevertheless, the lack of integrated approaches that explicitly link perceptual organization, compositional principles, and conceptual frameworks continues to persist in pedagogical practices. This deficiency reveals the need for studies that investigate how conceptualization can be developed through the conscious integration of perceptual and cognitive dimensions in design education. Addressing this gap, the present study examines how conceptual thinking influences the use of basic design principles in early studio education. In particular, it investigates how conceptual framing shapes students' use of basic design principles and how conceptual integration relates to compositional clarity, originality, and conceptual depth in student works. Through the ways students translate abstract concepts into visual compositions, the study indicates the pedagogical potential of conceptualization in producing layered, symbolic, and emotional meanings, while introducing a visual-textual analytical perspective that makes students' conceptual reasoning visible within their formal design decisions.

In this context, the study approaches design principles not as static rules but as dynamic tools that support processes of abstraction, interpretation, and reflection. The pedagogical framework of the study is grounded in constructivist learning theory, which emphasizes active participation, reflection, and learner autonomy (Fosnot, 2005; Schunk, 2012). Within this perspective, students are positioned not only as producers of form but also as creators and interpreters of meaning. Accordingly, conceptual thinking is considered a pedagogical mechanism that supports reflective engagement and higher-order metacognitive awareness in early studio learning.

2. Theoretical Framework

Basic design education goes far beyond providing students with formal or aesthetic skills; it forms the foundations of visual reasoning and conceptual thin-

king. Perception and cognition together constitute the essential basis of this process, while visual principles function not only as formal guides but also as cognitive tools that enable the externalization, structuring, and communication of abstract ideas. In this context, perceptual organization and conceptual thinking become intertwined learning domains that support students' transition from intuitive experimentation to reflective design practice. This approach also aligns with the goals of higher education, which aims to foster creative and critical thinking beyond formal mastery.

From a cognitive perspective, perception is not the passive reception of external inputs but the active structuring of experience (Arnheim, 1954; Gibson, 1966; Goldstein, 2010; Neisser, 2014; Nes et al., 2023). Arnheim (1954) argues that perception is itself a mode of thinking, asserting that visual organization reflects mental processes and that clarity and coherence in composition are not merely aesthetic achievements but also cognitive necessities. Wong (1993) points out that Gestalt-based visual principles such as proximity, similarity, continuity, closure, and figure-ground provide design students with a framework for transforming fragmented visual data into coherent wholes. Recent studies support these views, showing that grouping and figure-ground organization remain strongly valid at both behavioral and neural levels (Wagemans et al., 2012). Therefore, principles regarded as compositional "rules" are in fact rooted in innate perceptual strategies through which people interpret and organize their surroundings. This perspective also clarifies the significance of attention direction and visual salience for novice learners. Structured contrasts and groupings help students organize visual information without losing meaning amidst complexity (Ware, 2019).

In this sense, the basic design principles gain pedagogical depth beyond technical instruction. Principles such as balance, rhythm, contrast, unity, emphasis, proportion, and scale embody the mind's tendencies to organize experience. Balance reflects the search for stability; rhythm guides perceptual grouping and continuity; contrast sharpens figure-ground relationships; unity synthesizes diverse elements into a coherent whole; and proportion and scale construct hierarchies of meaning and expression. When approached as extensions of perceptual logic, these principles function not only as strategies of formal arrangement but also as scaffolds for conceptual thinking and communicative expression (Gezer, 2019; Öztuna, 2007; Özsoy, 2016; Demircioğlu, 2016; Ocvirk et al., 2012). Explicit definition of such principles supports self-regulatory (metacognitive) processes such as planning, monitoring, and evaluation in the learning process (Flavell, 1979) and

corresponds to the principle of constructive alignment, which ensures coherence among intended outcomes, learning activities, and assessment criteria (Biggs et al., 2022).

On the other hand, visual literacy is increasingly defined not merely as a process of reception but as a reflective practice that externalizes decision-making. Visual reflection is a learning experience that involves reading, writing, thinking, and feeling with and through images (Guglietti, 2023). Studies conducted in higher education studio settings indicate that reflective visual journals, particularly under conditions of visual overload, enhance students' visual thinking and multimodal literacy skills. These journals deepen learning by making iterative decisions visible and open to discussion. Accordingly, reflective visual outputs act as mediators linking formal principles with conceptual intent, foregrounding meaning-making over superficial arrangement (Guglietti, 2023).

Cognitive science, in particular, emphasizes the role of visualization in abstraction and reasoning processes. Visual representation enables learners to externalize complex ideas as structured images (Tergan & Keller, 2005), whereas perception exhibits high sensitivity to spatial order and contrast (Ware, 2019). Research in design cognition demonstrates that sketches, diagrams, and compositions function not only as representational but also as generative practices (Oxman, 2004; Hsieh et al., 2021; Samaniego et al., 2024; Gümüştas Babalı & Erem, 2025). Curriculum models that integrate learning outcomes, activities, and assessments around higher-order thinking emphasize that structured, yet flexible task constraints establish a productive balance between divergent and convergent thinking (Treffinger et al., 2023). In this regard, originality is often conceptualized as a combination of novelty and effectiveness (Runco & Jaeger, 2012). Therefore, the holistic use of design principles develops a layered mode of reasoning in which students negotiate spatial hierarchy, emotional resonance, and symbolic association (Jackson, 2008).

Conceptual thinking transforms visual experimentation into an intellectual process of inquiry. A concept is understood as an abstract yet productive framework that structures perception, intention, and communication (Archer, 1966; Kömürçüoğlu Turan & Altaş, 2011). Concept is also defined as *"the figure of an object, along with other representations, such as attributes or functions of the object, which existed, is existing, or might exist in the human mind, as well as in the real world"* (Taura & Nagai, 2013; Eilouti, 2018). In studio contexts, concepts function not as fixed starting points but as flexible guides that allow reinterpretation and evolution while directing design decisions (Eilouti, 2018). Empirical studies

indicate that the level of abstraction in conceptual representation influences the design process and that concrete concepts tend to yield more successful spatial outcomes (Türkmen, 2020). In general, studies on perceptual contrast and balance (Arnheim, 1954; Wong, 1993), constraint-based creativity (Stokes, 2005), and framing approaches within divergent–convergent cycles (Dorst, 2011; Treffinger et al., 2023) demonstrate that opposing conceptual themes should be treated as productive stimuli for exploratory reasoning and meaning-making. Conceptual thinking plays a critical role in design education by enabling students to structure ideas beyond formal manipulation. Thinking creatively involves generating uncommon yet practical solutions and represents an authentic, innovative way of conceiving and addressing reality (Samaniego et al., 2024), reinforcing the role of conceptual engagement in the studio process.

An increasing number of studies highlight that conceptual thinking fosters a mode of engagement that goes beyond superficial aesthetics. Designing around abstract themes encourages symbolic reasoning and emotional interpretation (Yılmaz et al., 2023). Meaning in design is often shaped through emotional and personal associations (Orth et al., 2018). Accordingly, formal elements such as point, line, plane, and color—when reinterpreted through rhythm, tone, and spatial organization—become carriers of multilayered narratives. The convergence of perceptual clarity and conceptual clarity repositions studio work as a site of meaning production, and this emphasis is reflected in the graduate competencies of design programs.

The cognitive dimension of this process is closely related to the concept of internal modeling. Abstract ideas are mentally represented through internal models that bridge cognition and visual form (Johnson-Laird, 1998). Design thinking, as both a conceptual and practical process, unfolds through cycles of imagining, experimenting, and developing (Carlgen et al., 2016). This cycle also aligns with the stages of experiential learning: concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 2014). At the level of learning outcomes, the revised taxonomy distinguishes conceptual understanding and metacognitive knowledge as explicit targets for teaching and assessment, establishing a shared language between tasks and evaluations (Anderson & Krathwohl, 2001). Complementing these approaches, Daalhuizen and colleagues (2019) define a “design-making architecture” in which iterative cycles of production, reflection, and flexible methodological guidance structure the inquiry process. The design process is described in abstracted phases and steps for a specific design practice intended to provide a comprehensive ac-

count of its structure. This structure provides a clear pedagogical rationale for sequential tasks in early design education.

Finally, the cyclical nature of studio learning aligns with Schön’s (1983) concept of reflective practice: “reflection-in-action” that occurs during the design process and “reflection-on-action” that follows it. Constructivist approaches similarly position learning as the active construction of meaning through studio-based experimentation and dialogue (Fosnot, 2005; Schunk, 2012; Lawson, 2006; Oxman, 2004; Luka, 2019). Taken together, these perspectives offer a coherent framework for integrating perceptual and conceptual processes in early design education and provide a holistic view of how studio routines can foster the reflective and creative competencies valued in contemporary higher education (Cross, 2023; Dorst, 2011; Thoring et al., 2021; Sawyer & Henriksen, 2024).

The design-based research approach extends this framework into a practice-oriented dimension, emphasizing the role of instructional scaffolds—such as fixed materials, model analyses, and explicit criteria—in shaping both student performance and instructors’ professional learning. Findings indicate that such designed scaffolds stabilize practice while allowing reflective adaptation by instructors, thereby strengthening the transformation of principles into purposeful communication (Kuiper & Smit, 2022). In studio-based tasks, these scaffolds connect procedural transparency with meaning-oriented outcomes and guide the learning process.

3. Method of the Study

This exploratory qualitative studio-based study was conducted within the first-year Basic Design studio of an undergraduate architecture program and was structured as a two-phase process implemented over six weekly studio sessions (eight hours each), using the course as an experimental setting to explore students’ transition from formal sensitivity to conceptual awareness. Thirty-five students completed the study as part of the regular course flow; the exercises were naturally integrated into the learning process without any evaluative purpose. Within the scope of the research, eighteen paired works, purposively selected to represent a diversity in visual strategies, conceptual interpretations, and levels of compositional complexity, were identified as the sample for detailed analysis.

In the first phase, students were asked to produce two-dimensional compositions using only basic geometric forms without being given any thematic direction. This exercise encouraged the iterative trial-and-error process that lies at the core of Basic

Design pedagogy, allowing students to discover and apply visual principles such as balance, rhythm, and contrast through direct experience. This stage aimed to develop students' ability to intuitively analyze the interaction of formal elements and establish visual relationships. In the second phase, students

participated in a short presentation introducing conceptual thinking and its role in design, after which they were given conceptual themes to frame the study. The structure and instructional components of this presentation are summarized in Table 1.

Table 1. Structure and Instructional Components of the Conceptual Thinking Presentation

Component	Content of the Presentation
Introduction to conceptual thinking	Short explanation of conceptual thinking in design and its role in linking abstract ideas with visual form
Verbal discussion	Collective discussion of how abstract concepts may guide formal decisions
Visual examples	Selected visual examples illustrating how abstract ideas can be translated into compositional strategies
Conceptual framing	Presentation of binary conceptual themes (order–chaos, tension–calmness, introversion–extroversion)

These themes were designed as productive constraints—concrete enough to be comprehensible for beginners yet open to personal interpretation and meaning construction. Çubukçu and Çetintahra (2010) noted that *“one of the educational techniques that could enhance creative thinking suggests that cues from familiar conceptual domains (or previous examples) can be used to trigger creative idea generation”*. Oppositions such as order and chaos or tension and calmness are, as Arnheim (1954) and Wong (1993) suggest, directly related to the perceptual notions of contrast and balance. Such dualities encourage exploratory framing in the design process (Dorst, 2011; Stokes, 2005) and, as noted in the literature on structured creativity, help establish a productive balance between divergent and convergent thinking (Treffinger et al., 2023).

The transition from the first to the second phase was structured to support students' creative thinking processes. To this end, fixed materials, sample analyses, and explicit evaluation criteria were used as instructional scaffolds. This arrangement provided a guiding framework for students' visual decision-making processes while allowing instructors to reflect on their pedagogical practices. The two-phase structure also aligns with the “architecture of design-making” approach proposed by Daalhuizen et

al. (2019), which conceptualizes learning as iterative cycles of production, reflection, and methodological guidance. The research design and pedagogical logic of the transition between the two phases are summarized in Figure 1, which holistically illustrates the relationships among thematic orientation, conceptual framework, and analytical procedures (Figure 1). The distinctive feature of this study is that students not only produced visual compositions but also articulated their work through short reflective texts. These texts functioned as cognitive tools that revealed the invisible dimension of the design process, aligning with Schön's (1983) concept of reflection-on-action and Oxman's (2004) notion of externalization of design knowledge. Recent research similarly indicates that learning deepens through reflective visual-verbal outputs, as students construct their own conceptual frameworks by verbalizing their design decisions (Luka, 2019; Guglietti, 2023). In this study, the texts were analyzed through qualitative interpretive analysis to identify how students articulated the relationship between conceptual intentions and formal decisions in their visual compositions, offering insight into how conceptual reasoning informed their visual decisions as they described their design choices, the conceptual rationale behind their formal strategies, and their thematic interpretations in their own words.

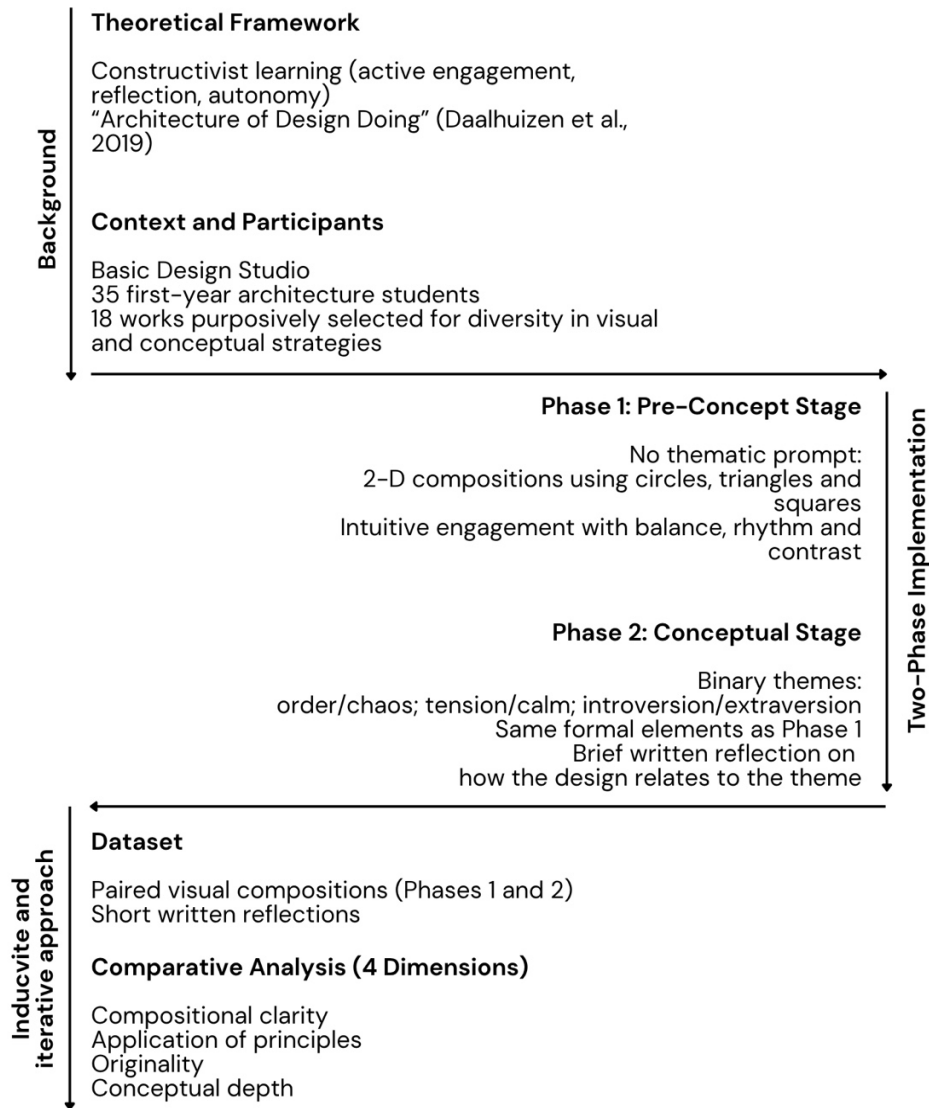


Figure 1. Overview of the Research Design and Two-Phase Implementation Process

During the analysis phase, the paired visual compositions and reflective texts were interpreted through four analytical dimensions-compositional clarity, application of principles, originality, and conceptual depth-as illustrated in Figure 1 and further elaborated in the Analytical Framework section. Each student's first- and second-phase outcomes were compared in paired form, and a trajectory of conceptual development was traced through the relationship between visual and textual expressions. This method made visible not only formal production but also how meaning was constructed, revealing indicators of the transition from perceptual order to cognitive coherence. Relationships among the data were evaluated across three axes: visual-textual coherence, inter-phase transformation, and expansion of meaning. In this way, students' processes of transition from formal experimentation to conceptual thinking were interpreted holistically.

All student works used in the study were anonymized, and no personally identifiable data were reported. Since the exercises were conducted within the regular course flow, the process did not involve any additional intervention or incentive. Students were informed that their works and reflective statements might be analyzed for research purposes.

4. Analytical Framework

Within the scope of this study, which examines how the inclusion of conceptual frameworks in the design process affects both visual quality and intellectual depth, paired student outputs were compared-one developed intuitively without thematic guidance, and the other developed through an assigned binary concept. Through this comparison, the study explored how six basic design principles (balance, rhythm, contrast, emphasis, unity/harmony, and pro-

portion/scale) were interpreted and transformed across two phases. These principles were evaluated through four analytical dimensions: compositional clarity, application of principles, originality, and conceptual depth. This multidimensional analytical framework allows not only the visual assessment of formal production but also the interpretation of how students used design tools as instruments of thought and meaning-making. The findings are organized according to each basic design principle and are supported by selected student works that exemplify

the pedagogical transformations observed during the shift from intuitive to concept-based approaches (Table 2). Each example combines visual observation with interpretive commentary, illustrating how the relationship between form and meaning evolved after conceptual integration and how spatial strategy, expressive intent, and intellectual orientation changed. References are made to the analytical dimensions (compositional clarity, application of principles, originality, and conceptual depth) where relevant.

Table 2. Analytical Dimensions and Observational Criteria Used in the Evaluation

Analytical Dimension	Observational Focus	Indicators in Student Works
Compositional Clarity	Structural organization of visual elements	Presence of clear visual hierarchy, balanced spatial relationships, and coherent figure-ground organization
Application of Principles	Use of design principles within the composition	Integration of multiple principles (balance, rhythm, contrast, emphasis, unity, proportion/scale) rather than isolated or purely formal use
Originality	Creative deviation from repetitive or formulaic arrangements	Novel spatial strategies, unexpected formal relationships, or non-symmetrical solutions
Conceptual Depth	Relationship between visual form and conceptual intention	Degree to which visual decisions communicate symbolic, emotional, or narrative meaning consistent with the selected conceptual theme

4.1. Phase 1 – Intuitive Use of Visual Principles

In the first phase, students primarily used symmetrical or central arrangements to achieve balance and evenly spaced vertical or horizontal elements to create rhythm. Unity similarly emerged through repetition and the use of regular spacing. These strategies reflected a fundamental understanding of visual order and compositional stability. However, the works generally lacked emotional depth and conceptual richness, displaying limited thematic diversity. From an analytical perspective, the compositions in this phase exhibited a high level of compositional clarity, yet the application of principles remained superficial, and both originality and conceptual depth were limited.

Likewise, the principles of contrast, emphasis, and proportion/scale were applied mostly on a formal level and in isolation from one another. Contrast was typically established through variations in color, shape, or scale; while visually striking, it often remained a purely formal device rather than a narrative or expressive one. Emphasis was achieved mainly by enlarging or centering a specific form; although such choices guided attention, they did not convey intentional meaning. Proportion and scale were commonly used to maintain balance or establish contrast. Although students demonstrated a certain level of spatial awareness, their decisions lacked symbolic or interpretive depth. Overall, the compositions in the first phase reflected an intuitive yet formulaic use of

visual principles. Order and clarity were consistently achieved; however, interpretive depth, narrative intent, and conceptual meaning-making remained largely underdeveloped.

4.2. Phase 2 – Conceptual Integration and Expressive Transformation

In the second phase, the inclusion of conceptual themes was observed to change how students approached visual principles. The compositions evolved from structural exercises into tools for expressing thought, emotional nuance, and symbolic tension. This shift became evident as students reinterpreted the principles of balance, rhythm, contrast, emphasis, unity/harmony, and proportion/scale—not merely to ensure order, but to construct reflection and narrative. The following subsections explain this transformation through paired examples.

Regarding the principle of balance, the earlier approach, limited to symmetry and stability, was transformed into an expression of emotional contrasts such as fragility and tension. While in the first phase, students established balance primarily through central arrangements, with the addition of a conceptual framework, this order gained a more narrative quality. For instance, under the order/chaos theme, one student, who in the first phase had created a regular structure with black squares arranged around a green square at the center, described their second-phase reinterpretation as follows: “I wanted to delibe-

rately disrupt the central order with irregular blocks and directional bars so that chaos could fragment the structure." Under the tension/calmness theme, another student constructed a composition with radial lines surrounding a central space and described it as: "The radiating lines around a silent center pull the gaze inward while simultaneously releasing it outward." In the introversion/extroversion theme, a

composition that initially established a fixed order (a blue square surrounded by black rectangles of different sizes) was reconstructed with overlapping transparent layers. The student explained this new configuration as: "Layered transparent squares turn balance inward while extending it outward - creating a fragile equilibrium rather than a static one." (Figure 2).

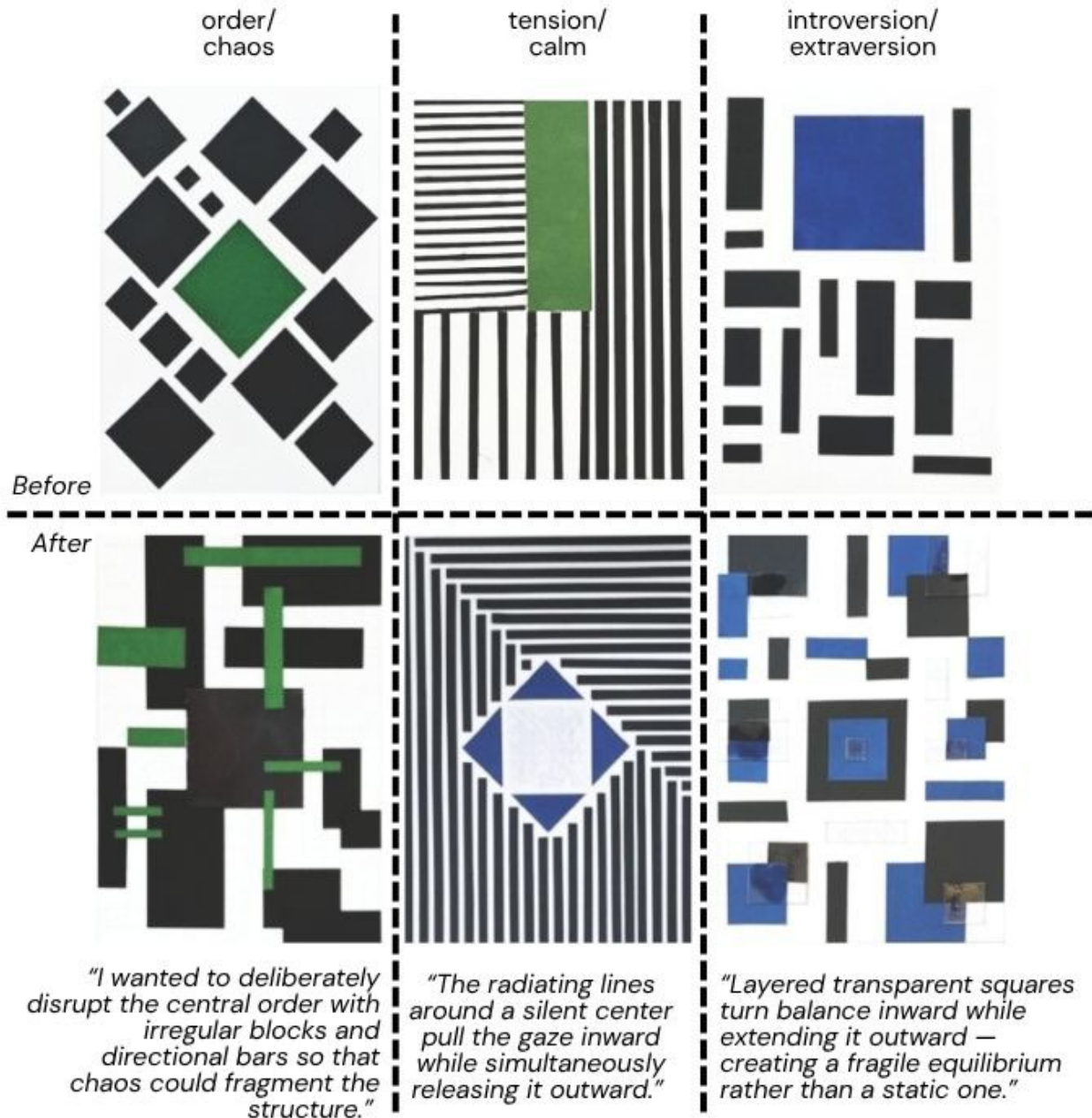


Figure 2. Interpretation of the Principle of Balance Before and After the Conceptual Phase

The principle of rhythm similarly transformed from mechanical repetition into a narrative device focused on expression. In the first phase, evenly spaced elements were typically arranged in vertical sequences or regular rows, creating a stable, metronome-like visual rhythm. However, with the inclusion of the conceptual framework, rhythm became a means of expressing movement, disruption, and narrati-

ve energy. Under the order/chaos theme, one student created a radiating explosion effect extending outward from the center and explained the design as: "An energy suddenly released, like the bursting of a thought." In the tension/calmness theme, another student intentionally disrupted the regular pattern of sequential forms, stating: "I wanted the rhythm to feel interrupted, like a system under tension."

In the introversion/extroversion theme, a student slightly bent the lines to distort the regular grid, explaining: *"I used slanted lines to make the rhythm feel unbalanced, as if going out of control."* Across these

works, rhythm ceased to be merely an indicator of order and became an expression of psychological fluctuation, rupture, and motion (Figure 3).

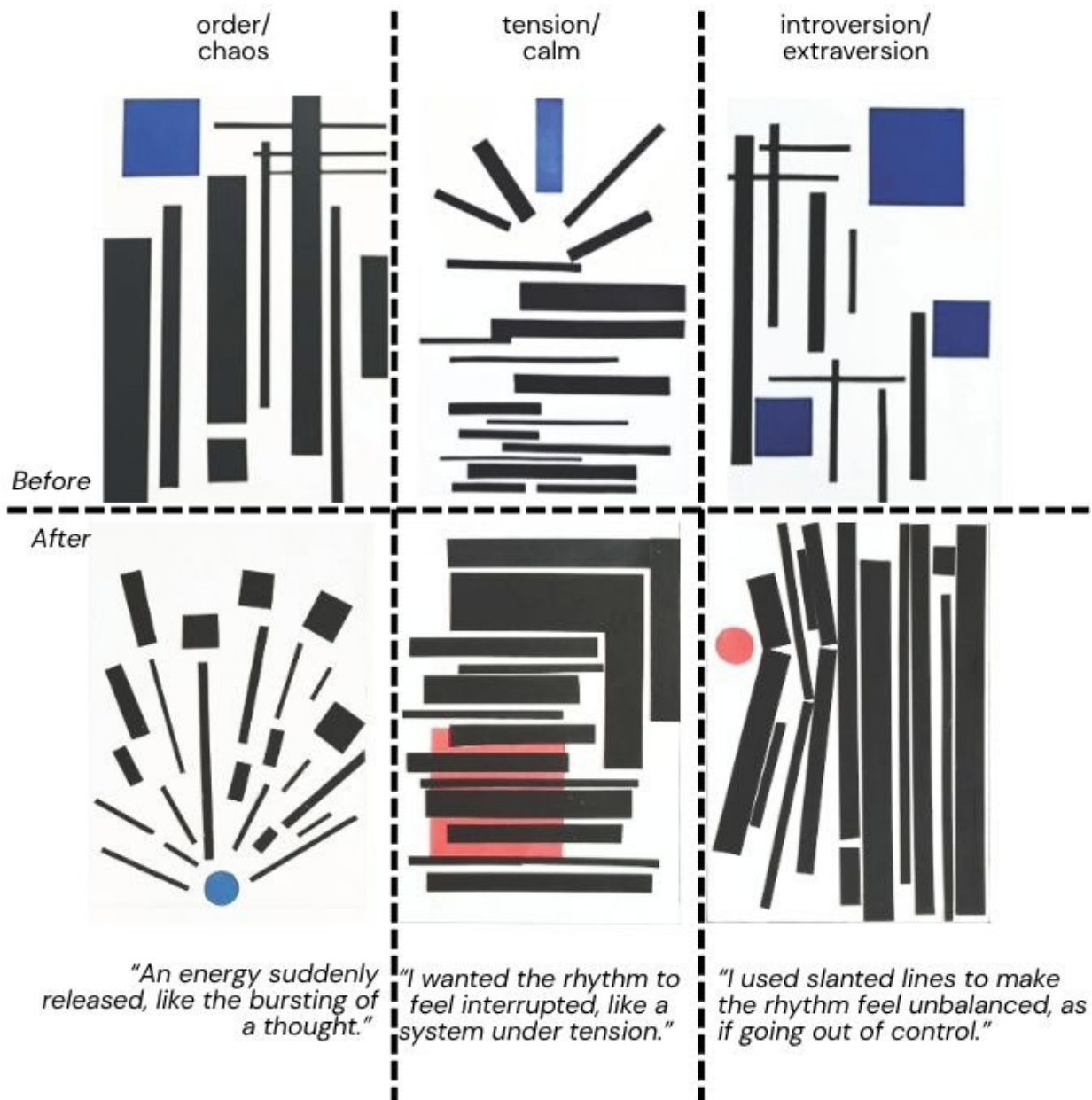


Figure 3. Interpretation of the Principle of Rhythm Before and After the Conceptual Phase

Initially treated merely as a difference in color or shape, the principle of contrast was reinterpreted in this phase as a language of opposition and emotional polarity. Under the order/chaos theme, one student disrupted the integrity of a linear field with a triangular incision and explained this choice as follows: *"I wanted the triangle to interrupt the rhythm of the lines and create a tension between order and disruption."* In the tension/calmness theme, another student placed a red square within a confined area

and noted: *"I wanted the red to feel enclosed, as if something significant were being held under tension."* Under the introversion/extroversion theme, a student used triangles facing opposite directions within an oriented sequence, explaining: *"Each triangle seemed to push against the next - like two opposing forces."* Through these symbolic oppositions, the principle of contrast transcended decorative function and evolved into a visual reasoning tool centered on conflict and equilibrium (Figure 4).

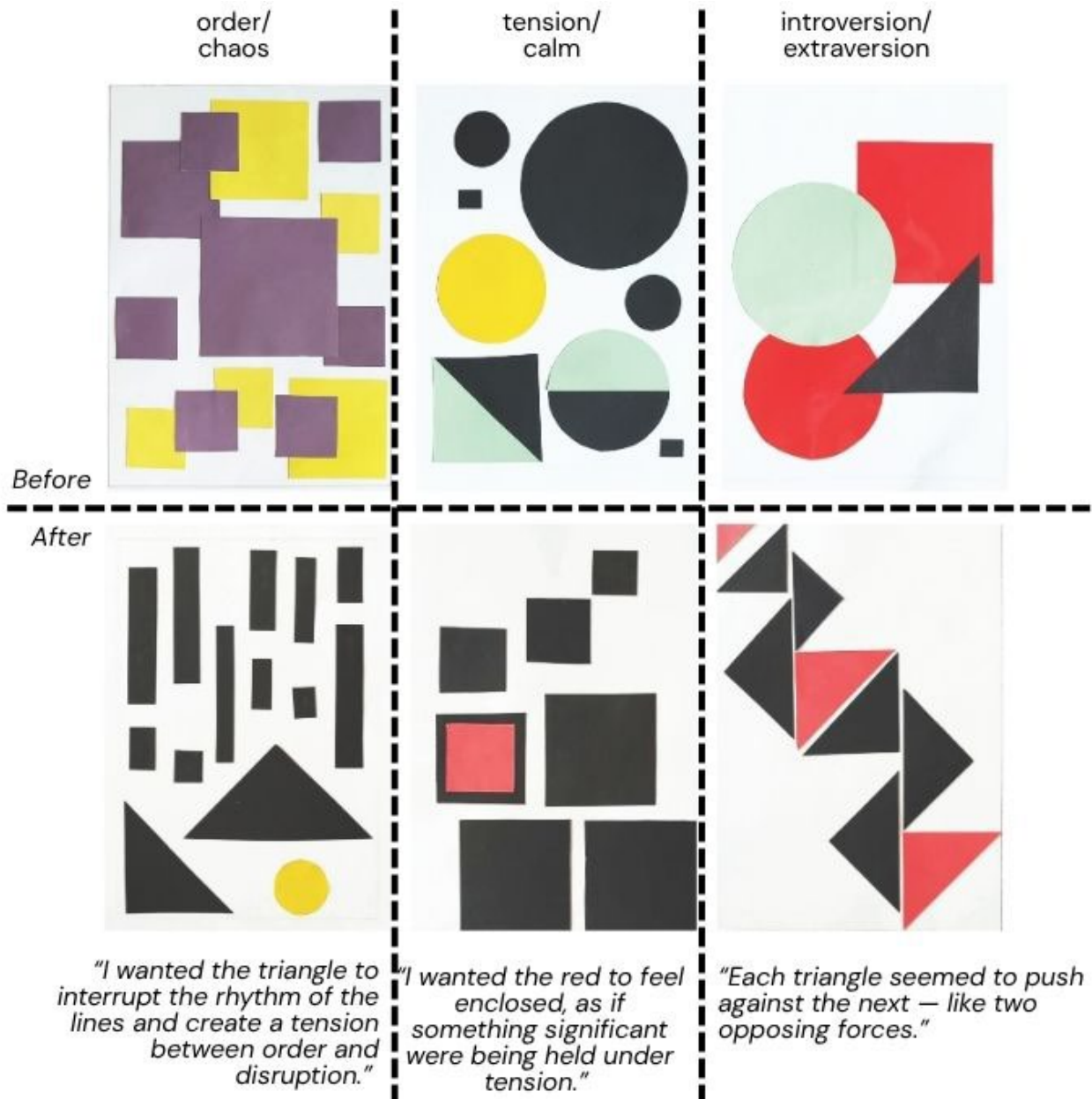


Figure 4. Interpretation of the Principle of Contrast Before and After the Conceptual Phase

The principle of emphasis, similarly, evolved from a simple means of establishing focus into a symbolic narrative device. In the first phase, emphasis was typically achieved by enlarging shapes or placing them at the center, often without consideration of visual hierarchy. However, with the integration of the conceptual framework in the second phase, emphasis became a purposeful and narrative tool for visual direction. Under the order/chaos theme, one student transitioned from a scattered arrangement of triangles to a linear composition in which a blue square was placed off-balance. The student explained this change as: *"The blue square was the focal point at first; now it loses balance, showing how focus can shift."* In the tension/calmness theme, an initial composition featuring a central orange square and black

diagonal bars of varying thickness was transformed into a rigid grid interrupted by a single red accent. The student described: *"I placed the red bar to disrupt the order and create a sense of tension."* For the introversion/extroversion theme, a student who initially used clusters of triangles without a clear focal point later redefined emphasis through outward motion, explaining: *"I wanted to express an outward burst of energy - like the rays of the sun spreading out."* Across these examples, emphasis shifted from a centering device to a deliberate disruption, functioning as a visual and semantic strategy that redirects meaning. Spatial unity was thus reorganized, and emphasis emerged as an active agent shaping the direction of expression (Figure 5).

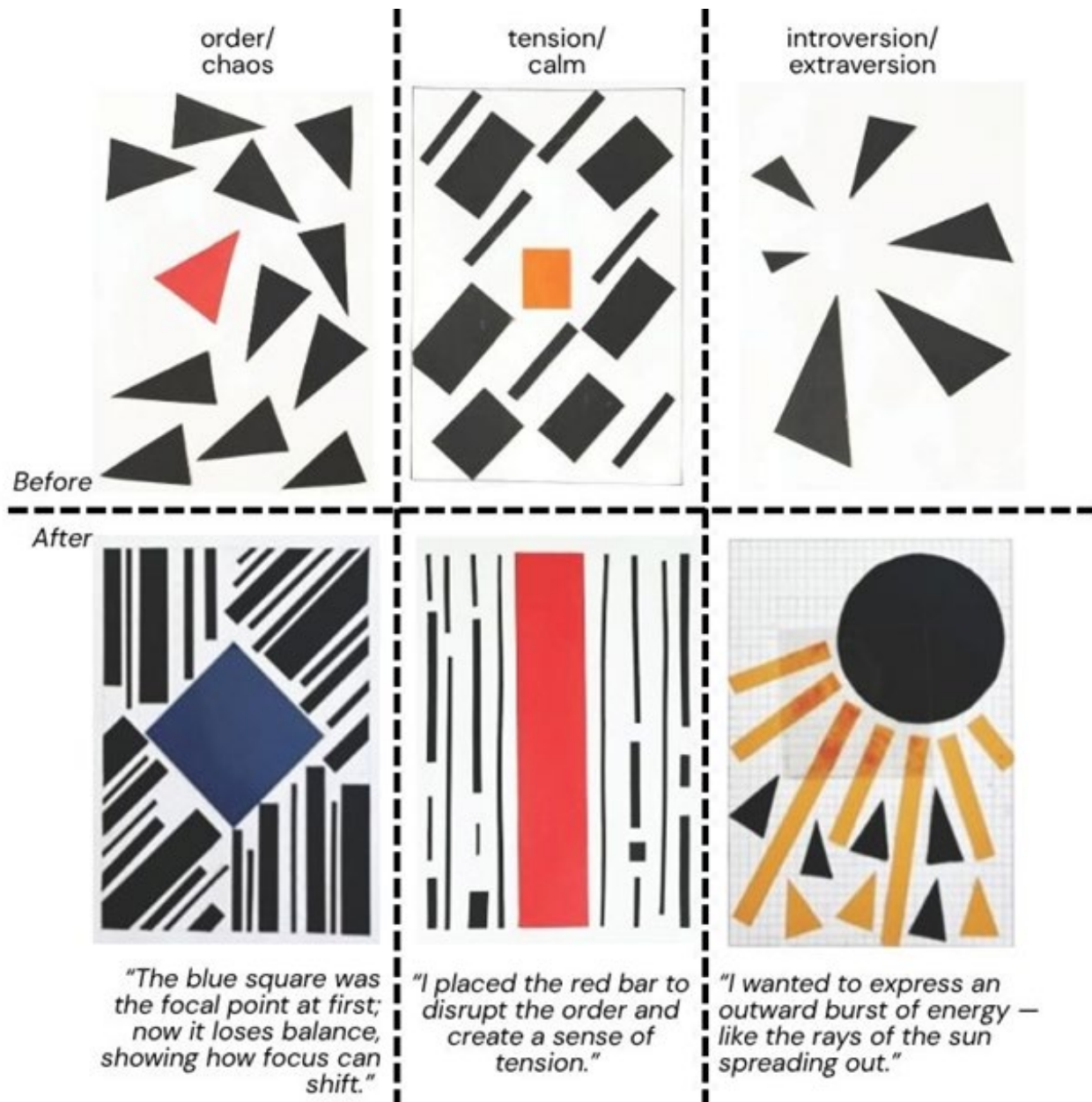


Figure 5. Interpretation of the Principle of Emphasis Before and After the Conceptual Phase

Initially associated with repetition and symmetry, the principle of unity and harmony gained relational depth through the conceptual framework. One student described connecting forms through interlacing lines, stating: *"I integrated the shapes by weaving them together."* In the tension/calmness theme, another student emphasized mutual dependency among elements, explaining: *"I wanted the shapes to feel connected, as if sharing a fragile balance."* For the introversion/extroversion theme, a

student highlighted the ideas of attraction and focus, noting: *"I gathered the small squares like fragments orbiting around the center."* These reflections show that unity no longer represented mechanical consistency but rather an expression of movement, balance, and relational coherence. Consequently, unity and harmony evolved from a repetition-based order into a lived relational mode among forms (Figure 6).

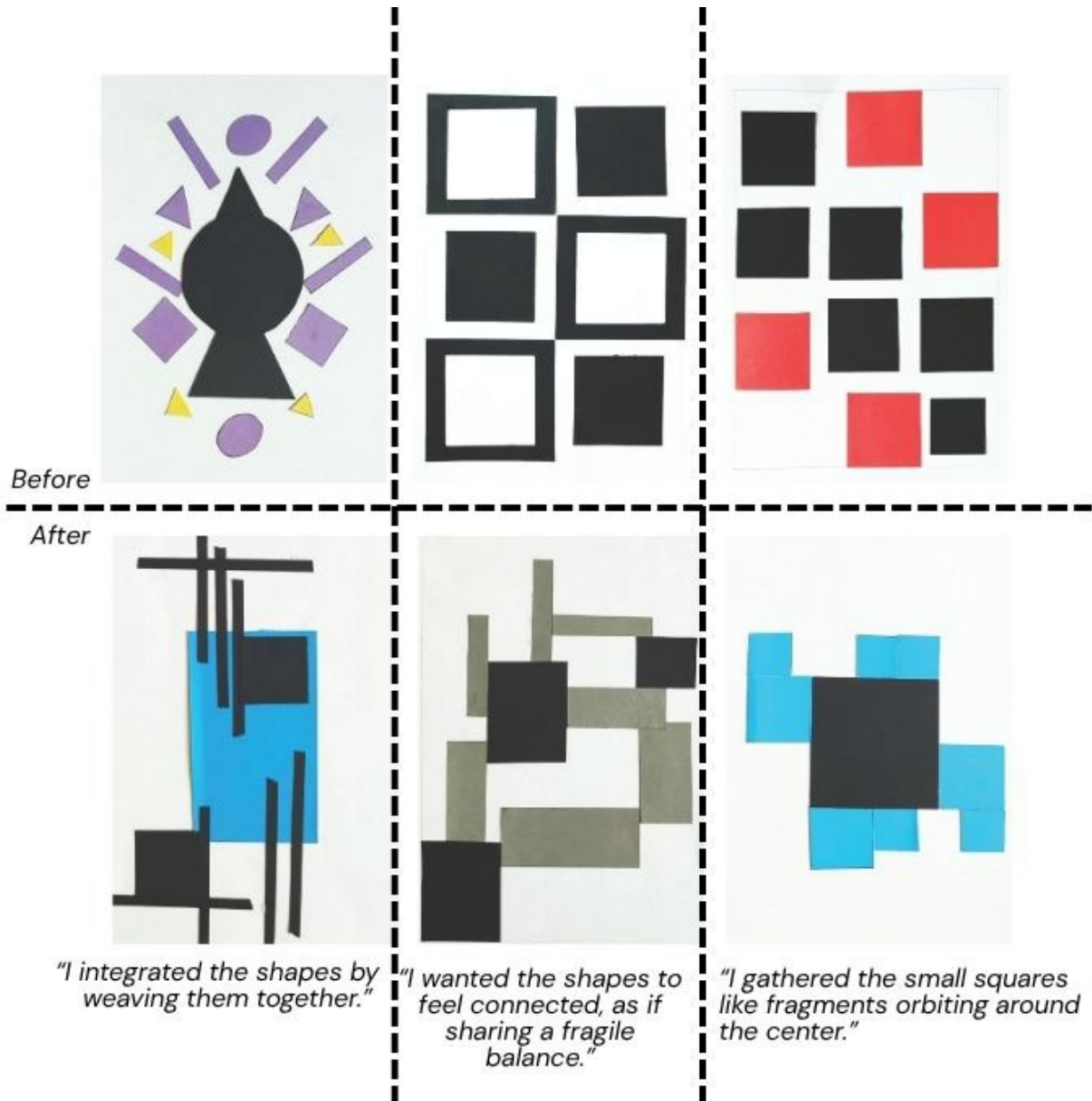


Figure 6. Interpretation of the Principle of Unity and Harmony Before and After the Conceptual Phase

In the final phase, the principle of proportion and scale evolved from a mere tool of order and variety into a carrier of narrative and emotion. Initially, proportion was applied primarily to achieve diversity or balance. However, within the conceptual framework, it transformed into a means of reinforcing specific meanings. Under the order/chaos theme, a student used a directional triangle within a structural layout and explained: *"The triangle gave me a sense of direction - as if I were building an upward structure."* In the tension/calmness theme, another student surrounded a red shape with dense black bars to cre-

ate a feeling of psychological pressure, noting: *"By enclosing the red form with dark black lines, I made it feel fragile - almost compressed."* In the introversion/extroversion theme, a student positioned a small blue square with a deliberate shift in scale and placement to evoke isolation, stating: *"I used the small blue square to convey a sense of distance, as if it were detached from everything."* Collectively, these examples illustrate how proportion and scale evolved beyond compositional regulation, becoming spatial metaphors that articulate themes of structure, constraint, and inward reflection (Figure 7).

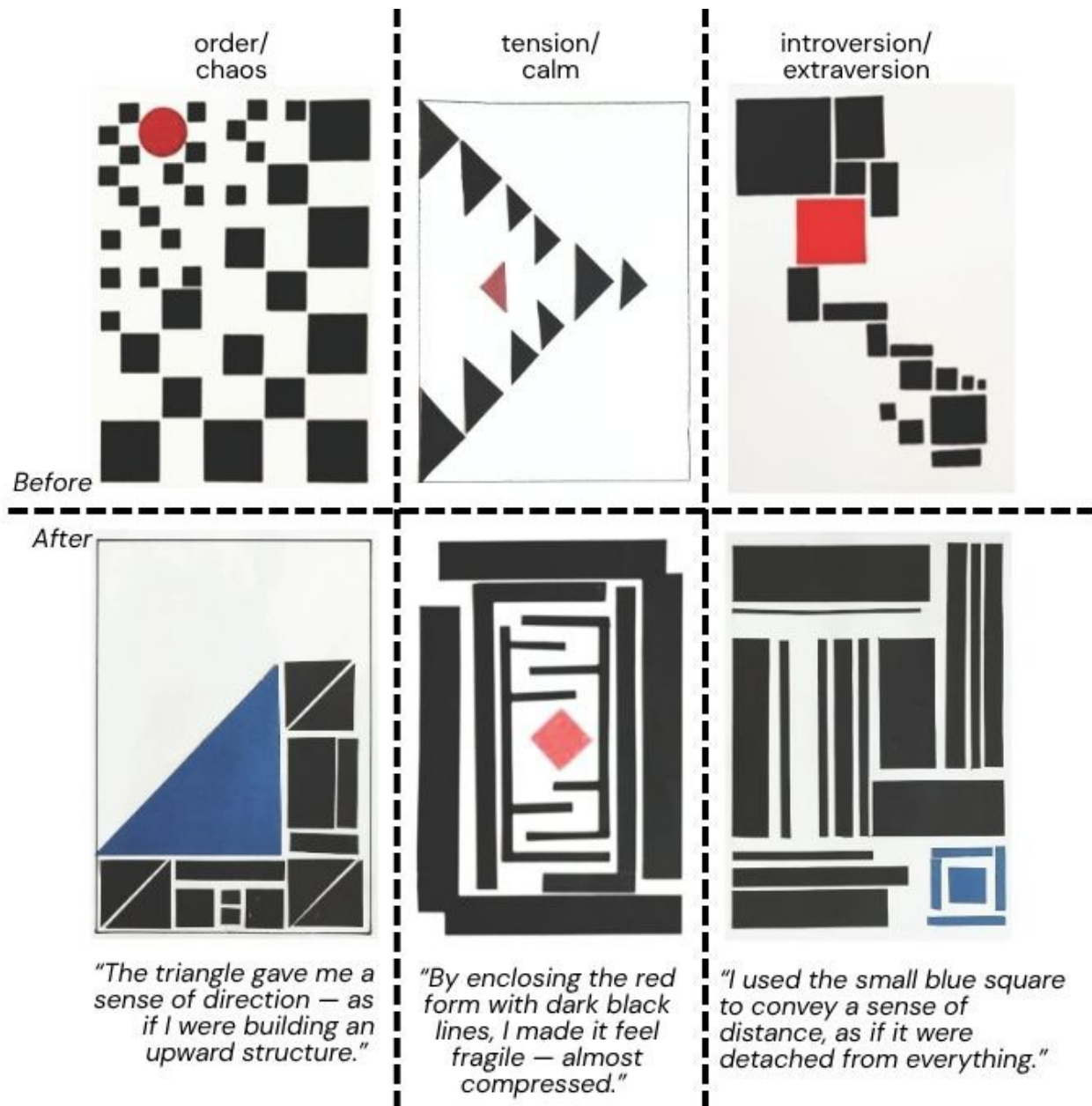


Figure 7. Interpretation of the Principle of Proportion and Scale Before and After the Conceptual Phase

When all examples are considered together, it becomes evident that conceptual integration broadened the pedagogical function of design principles. Each student's reflective text indicated a shift from an intuitive arrangement to a deliberate meaning-making process - from a search for visual order to an awareness of cognitive and emotional intent. Through strategies such as imbalance, interruption, layering, and limitation, students began to externalize their thinking process through form itself. Thus, the study revealed that conceptual thinking transforms formal principles into expressive and interpretive tools, making their potential for meaning-making clearly visible.

5. Discussion

The findings demonstrate a distinct pedagogical transformation in how students applied basic design principles following the integration of conceptual thinking. In the first phase, compositions were primarily guided by visual order, symmetry, repetition, and proportion-strategies that provided stability and coherence yet often lacked interpretive or emotional depth. In contrast, during the second phase, students began to use design principles not merely as formal guidelines but as cognitive and communicative tools. Through thematic framing, form evolved into a medium for expressing emotional tension and abstract meaning, shifting from static arrangements

to dynamic visual arguments. This transformation was analyzed through the four analytical dimensions outlined in the methodology-compositional clarity, application of principles, originality, and conceptual depth. Theoretically, this shift aligns with Gestalt-based theories of perceptual organization and balance (Arnheim, 1954; Wong, 1993; Wagemans et al., 2012), productive constraints and framing approaches (Stokes, 2005; Dorst, 2011), and creative models balancing divergent-convergent cycles (Treffinger et al., 2023).

Compositional clarity demonstrates how conceptual integration enhances the visual hierarchy and structural logic-directly related to Gestalt principles of figure-ground selectivity and grouping tendencies (Arnheim, 1954; Wong, 1993). Application of principles reflects the extent to which students began to use formal tools not only for order-making but also for meaning construction. The explicit articulation of design principles as a shared “visual grammar” (Ocvirk et al., 2012) and the constructive alignment between intended outcomes, activities, and assessment criteria (Biggs et al., 2022) fostered deliberate, meaning-oriented actions. Originality, defined as “the combination of novelty and effectiveness” (Runco & Jaeger, 2012), emerged as a dimension capturing creative deviations from symmetrical or

decorative tendencies, consistent with studies on constrained creativity (Stokes, 2005). Conceptual depth evaluated the degree to which symbolic, emotional, or narrative content was embedded within visual decisions- rooted in theories of concepts as structuring tools for thought (Archer, 1966; Kömürçüoğlu Turan & Altaş, 2011; Eilouti, 2018) and the iterative nature of design thinking (Carlgren et al., 2016; Çubukçu & Çetintahra, 2010).

To concretize these dynamics, Table 3 presents a comparative summary of how students’ use of basic design principles evolved across the two experimental phases. It contrasts intuitive or decorative tendencies from the first phase with the intentional, symbolic, and narrative-oriented practices of the second phase. For instance, rhythm evolved from mechanical repetition to narrative flow; contrast shifted from surface-level variation to thematic duality. This evolution resonates with the classical view of composition as the foundation of meaningful visual communication (Ching, 2002) and with studies highlighting how abstract themes stimulate symbolic reasoning (Yılmaz et al., 2023). Thus, the table not only summarizes empirical outcomes but also serves as a pedagogical map to understand how conceptual frameworks enrich cognitive and expressive dimensions in early design education.

Table 3. Observed Shifts in Students’ Application of Basic Design Principles Across the Two-Phase Experimental Process

Design Principle	Pre-Concept Phase	Post-Concept Phase	Observed Transformation
Balance	Symmetrical, static compositions	Layered, unstable forms; thematic expression	Application of principles + Conceptual depth
Rhythm	Mechanical repetition	Narrative flow with emotional resonance	Compositional clarity + Conceptual depth
Contrast	Simple visual differences	Symbolic opposition and emotional duality	Application of principles + Originality + Conceptual depth
Emphasis	Accidental focal points	Thematic hierarchy	Application of principles + Compositional clarity + Conceptual depth
Unity & Harmony	Formal repetition for cohesion	Relational integration around a theme	Compositional clarity + Conceptual depth
Proportion & Scale	Used for interest or balance	Indicator of hierarchy or isolation	Originality + Conceptual depth

The accompanying reflective texts provided additional insight into students’ cognitive processes. These metacognitive explanations affirm the cyclical interaction between ideation, representation, and reflection identified by Carlgren et al. (2016). In this sense, metacognitive regulation (Flavell, 1979) and the revised taxonomy’s higher-order learning categories (Anderson & Krathwohl, 2001) clarify why short reflective statements effectively bridge formal decisions and conceptual reasoning. Visualization thus functioned not only as a tool of production but also as a

method of inquiry, allowing students to externalize abstract thought, test relationships, and iteratively refine meaning.

Pedagogically, integrating conceptual thinking into early design education encouraged students to move from asking “What am I designing?” to “Why am I designing?”, fostering greater cognitive and emotional awareness. This orientation parallels Aras’s (2024) study on narrative frameworks in first-year architectural education, which emphasized the role of symbolic and imaginative contexts in en-

hancing individual expression and interpretive awareness. While Aras foregrounds narrative frameworks as liberating tools, the present study demonstrates that even non-narrative conceptual dualities can structure meaning-oriented exploration and deepen cognitive engagement. Similarly, findings align with Eilouti (2018) and Kömürcüoğlu Turan & Altaş (2011), which emphasize the function of concepts as flexible drivers of form generation in design pedagogy. It should also be noted that the study was conducted within a single studio context in which the conceptual themes and reflective tasks were introduced as part of the instructional structure. While students' visual and conceptual interpretations remained individually developed, the pedagogical framing may have influenced how conceptual reasoning was articulated during the design process. Nevertheless, the patterns observed across the two phases suggest that conceptual framing can play a constructive role in supporting meaning-oriented engagement in early design learning.

6. Conclusion

Building on these findings, the comparison between the intuitive and concept-driven phases indicates a clear shift in how students employed basic design principles. Across all four analytical dimensions, the second-phase works exhibited a more explicit figure-ground hierarchy and intentional visual order (compositional clarity); synchronized use of multiple principles within individual decisions (application of principles); deliberate deviations from grid-based and centralized patterns (originality); and clear semantic connections among contrasting formal choices (conceptual depth). The short reflective texts made these meaning relations visible, strengthening conceptual awareness by enabling students to articulate their design intentions. These patterns align with classical theories of perceptual organization (Arnheim, 1954; Wong, 1993), productive constraints and framing approaches (Stokes, 2005; Dorst, 2011), and creative models that balance divergent and convergent thinking cycles (Treffinger et al., 2023). Thus, conceptual scaffolding transforms basic design principles from formal rules into cognitive, emotional, and communicative tools.

Pedagogically, the study demonstrates that the relationship between visual reasoning, reflective thinking, and meaning-making can be systematically structured in the early stages of the basic design studio. When students use formal tools not merely to organize but to generate and convey ideas, the studio evolves from an aesthetic practice space into a site of intellectual inquiry. Moreover, the inclusion of short reflective texts alongside visual outputs highlights a rarely systematized data type in early design pedagogy. This method renders students' cognitive logic visible within their formal decisions, providing

a new interpretive lens for basic design research.

The study's limitations stem from its focus on a single studio context and qualitative analysis of visual-textual data. Nevertheless, the findings suggest that basic design education provides a robust foundation not only for formal competence but also for higher-order learning outcomes, such as cognitive awareness, self-reflection, and meaning construction. In this respect, the study empirically illustrates how conceptual thinking can serve as an interface linking cognitive and emotional learning in early design pedagogy, contributing an original perspective to the field through its visual and textual integrative approach. Comparative studies across institutions, varied conceptual themes, and alternative modes of representation would be valuable for testing the transferability of this approach. Future research may also investigate how conceptual scaffolding operates across different stages of design education and how visual-textual reflection practices influence long-term development of design reasoning.

References

- Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives: complete edition. Addison Wesley Longman, Inc.. <http://eduq.info/xmlui/handle/11515/18824>
- Aras, L. (2024). Between real and phantasy: Encouraging creativity in the first year architectural education through fairy tales. *International Journal of Art & Design Education*, 43(1), 82–97. <https://doi.org/10.1111/jade.12494>
- Arnheim, R. (1954). *Art and visual perception: A psychology of the creative eye*. Univ of California Press.
- Biggs, J., Tang, C., & Kennedy, G. (2022). *Teaching for quality learning at university*. 5e. McGraw-Hill Education (UK).
- Carlgrén, L., Rauth, I., & Elmquist, M. (2016). Framing design thinking: The concept in idea and enactment. *Creativity and Innovation Management*, 25(1), 38–57. <https://doi.org/10.1111/caim.12153>
- Ching, F. D. K. (2002). *Mimarlık: Biçim, Mekân ve Düzen* (G. Aydın, Trans.). Nobel Yayınları. (Original work published 1996)
- Cross, N. (2023). *Design thinking: Understanding how designers think and work*. Bloomsbury Publishing.
- Çubukçu, E., & Çetintahra, G. E. (2010). Does analogical reasoning with visual clues affect novice and experienced design students' creativity?. *Creativity Research Journal*, 22(3), 337–344. <https://doi.org/10.1080/10400419.2010.504656>
- Daalhuizen, J., Timmer, R., Van Der Welie, M., & Gardien, P. (2019). An architecture of design doing: A framework for capturing the ever-evolving practice of design to drive organizational learning. *International Journal of Design*, 13(1), 37–52.
- Demircioğlu, N. (2016). *Tasarım ilkelerinden tekrar olgusunun araştırılması ve seramik duvar panolarında uygulanması* (Yayımlanmamış Yüksek Lisans Tezi). Sakarya Üniversitesi.
- Dorst, K. (2011). The core of 'design thinking' and its application. *Design Studies*, 32(6), 521–532. <https://doi.org/10.1016/j.destud.2011.07.006>
- Eilouti, B. (2018). Concept evolution in architectural design: An octonary framework. *Frontiers of Architectural Research*, 7(2), 180–196. <https://doi.org/10.1016/j.foar.2018.01.003>
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906.

- Fosnot, C. T. (2005). *Constructivism: Theory, perspectives, and practice* (2nd ed.). Teachers College Press.
- Gibson, J.J. (1966). *The senses considered as perceptual systems*. Houghton Mifflin.
- Goldstein, E. B. (2010). *Sensation and Perception*. 8th International Edition. Belmont, CA (US): Wadsworth.
- Guglietti, M. V. (2023). Redefining visual literacy in an era of visual overload: The use of reflective visual journals to expand students' visual thinking. *Journal of University Teaching and Learning Practice*, 20(4), 1-19. <https://doi.org/10.53761/1.20.4.03>
- Gümüştas Babalı, S., & Erem, N. Ö. (2025). Drawing as a Language in the Design Process: a Cognitive Bridge Between Thinking and Representation. *disegno*, 16), 77-88. <https://doi.org/10.26375/diseño.16.2025.10>
- Hsieh, Y. Y., Chen, C. C., & Chen, W. Y. (2022). Form development from 2D to 3D: The basic design courses for higher education. *International Journal of Art & Design Education*, 41(1), 96-107 <https://doi.org/10.1111/jade.12377>
- Jackson, I. (2008). Gestalt: A learning theory for graphic design education. *International Journal of Art & Design Education*, 27(1), 63-69. <https://doi.org/10.1111/j.1476-8070.2008.00558.x>
- Johnson-Laird, P. N. (1998). Imagery, visualization, and thinking. In K. R. Boff, L. Kaufman, & J. P. Thomas (Eds.), *Handbook of perception and cognition: Vol. 1. Cognitive science and technology* (pp. 391-407). Wiley.
- Kampen, S. (2019). An Investigation into Uncovering and Understanding Tacit Knowledge in a First-Year Design Studio Environment. *International Journal of Art & Design Education*, 38(1), 34-46. <https://doi.org/10.1111/jade.12171>
- Koffka, K. (2013). *Principles of Gestalt psychology*. Routledge.
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. FT press.
- Köhler, W. (1970). *Gestalt psychology: An introduction to new concepts in modern psychology*. WW Norton & Company.
- Kömürçüoğlu Turan, N., & Altaş, N. E. (2011). Tasarım sürecinde kavram. *İTÜDERGİSİ/a*, 2(1).
- Kuiper, C., & Smit, J. (2022). Scaffolding genre-based writing in the subjects' Lecturers' learning processes in a design-based research project. *Journal of University Teaching and Learning Practice*, 19(5). <https://doi.org/10.53761/1.19.5.8>
- Lawson, B. (2006). *How designers think: The design process demystified* (4th ed.). Architectural Press.
- Luka, I. (2019). Design thinking in pedagogy: Frameworks and uses. *European Journal of Education*, 54(4), 499-512. <https://doi.org/10.1111/ejed.12367>
- Manassi, M., & Whitney, D. (2022). Illusion of visual stability through active perceptual serial dependence. *Science Advances*, 8(2), eabk2480. <https://doi.org/10.1126/sciadv.abk2480>
- Neisser, U. (2014). *Cognitive psychology: Classic edition*. Psychology press.
- Nes, A., Sundberg, K., & Watzl, S. (2023). The perception/cognition distinction. *Inquiry*, 66(2), 165-195. <https://doi.org/10.1080/0020174X.2021.1926317>
- Ocvirk, O. G., Stinson, R. E., Wigg, P. R., Bone, R. O., & Cayton, D. L. (2012). *Art fundamentals: Theory and practice* (12th ed.). McGraw-Hill Education.
- Orth, D., Blessing, L., & Aurisicchio, M. (2018). Designing objects with meaningful associations. *International Journal of Design*, 12(3), 39-53. <http://www.ijdesign.org/index.php/IJDesign/article/view/2916/822>
- Oxman, R. (1997). Design by re-representation: a model of visual reasoning in design. *Design studies*, 18(4), 329-347.
- Oxman, R. (2004). Think-maps: teaching design thinking in design education. *Design studies*, 25(1), 63-91.
- Özsoy, V. (2016). Görsel tasarım: Öge ve ilkeleri. Pegem Akademi.
- Öztuna, H. Y. (2007). Görsel iletişimde temel tasarım. Tıblan Yayıncılık.
- Razzouk, R., & Shute, V. (2012). What is design thinking and why is it important? *Review of Educational Research*, 82(3), 330-348. <https://doi.org/10.3102/0034654312457429>
- Runco, M. A., & Jaeger, G. J. (2012). The standard definition of creativity. *Creativity Research Journal*, 24(1), 92-96. <https://doi.org/10.1080/10400419.2012.650092>
- Samaniego, M., Usca, N., Salguero, J., & Quevedo, W. (2024). Creative thinking in art and design education: A systematic review. *Education Sciences*, 14(2), 192. <https://doi.org/10.3390/educsci14020192>
- Sawyer, R. K., & Henriksen, D. (2024). *Explaining creativity: The science of human innovation*. Oxford university press.
- Schunk, D. H. (2012). *Learning theories: An educational perspective* (6th ed.). Pearson.
- Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.
- Stolterman, E. (2021). The challenge of improving designing. *International Journal of Design*, 15(1), 1-11.
- Stokes, P. D. (2005). *Creativity from constraints: The psychology of breakthrough*. Springer Publishing Company.
- Taura, T., & Nagai, Y. (2013). *Concept generation for design creativity: A systematized theory and methodology*. London: Springer.
- Tergan, S.O., & Keller, T. (2005). Visualizing knowledge and information: An introduction. In S.-O. Tergan & T. Keller (Eds.), *Knowledge and information visualization: Searching for synergies* (pp. 1-23). Springer. https://doi.org/10.1007/11510154_1
- Thoring, K., Gonçalves, M., Mueller, R. M., Desmet, P., & Badke-Schaub, P. (2021). The architecture of creativity: Towards a causal theory of creative workspace design. *International Journal of Design*, 15(2), 17-36.
- Türkmen, A. (2020). Temel tasarımda kavram temsili ve biçim üretimi. *IDA: International Design and Art Journal*, 2(2), 228-247.
- Treffinger, D. J., Isaksen, S. G., & Stead-Dorval, K. B. (2023). *Creative problem solving: An introduction*. Routledge. <https://doi.org/10.4324/9781003419327>
- Wagemans, J., Elder, J. H., Kubovy, M., Palmer, S. E., Peterson, M. A., Singh, M., & von der Heydt, R. (2012). A century of Gestalt psychology in visual perception: I. Perceptual grouping and figure-ground organisation. *Psychological bulletin*, 138(6), 1172. <https://doi.org/10.1037/a0029333>
- Ware, C. (2019). *Information visualization: perception for design*. Morgan Kaufmann.
- Wertheimer, M. (1938). Laws of organization in perceptual forms. In W. D. Ellis (Ed.), *A source book of Gestalt psychology* (pp. 71-88). Kegan Paul, Trench, Trubner & Company. <https://doi.org/10.1037/11496-005>
- Wong, W. (1993). *Principles of form and design*. Van Nostrand Reinhold.
- Yılmaz, S., Baltacı, H., & Alpak, E. M. (2023). Temel tasarım dersinin yaratıcı düşünme üzerindeki etkileri. *Online Journal of Art & Design*, 11(2).

Patani's Malay Muslims and the Future Impact of the Kra Canal¹

Musa Yavuz Alptekin* / Assoc. Prof. Dr. 

Journalism and Mass Communications University, Department of Sociology
Karadeniz Technical University, Faculty of Letters, Department of Sociology
m.yavuzalptekin@gmail.com

Yılmaz Cankaloğlu / Asst. Prof. Dr. 

Karabük University, Department of Philosophy and Religious Studies, Faculty of Theology
yilmazcankaloglu@karabuk.edu.tr

Zilola Nabieva / Asst. Prof. Dr. 

Bucheon University in Tashkent, Department of Social Sciences and Physical Education
nabievazilola0@gmail.com

*Corresponding Author

Abstract

Patani is a historical Malay homeland located at the connecting point between the Malay Peninsula and the Siamese mainland. The region was ceded to Thailand through the Anglo-Siamese Treaty signed in 1909, and since then, reunification with Malaysia has not been possible. The long-standing and often-discussed Kra Isthmus Canal project, planned for the Patani region, could potentially alleviate the economic and political challenges faced by local Muslims. However, the possibility that the canal might bypass Singapore, Malaysia, and Indonesia in maritime trade has led these countries to adopt contradictory positions regarding the project. It is alleged that some of these countries have covertly provided financial support to radical groups in the region, thereby contributing to making Patani an insecure and unstable area. This situation presents one of the most significant obstacles preventing Patani Malay Muslims from benefiting from domestic

democratization, and ironically, two of the countries involved are composed of peoples who are religiously and ethnically close to the Patani Muslims. Thus, Patani Malay Muslims find themselves at the heart of a major contradiction within the context of the Kra Canal. While the most distant and culturally different power, China, is the strongest advocate for the canal's realization, the countries trying to prevent it are the closer, supposedly fraternal nations of Malaysia and Indonesia. The Patani Muslims are striving to build a liveable homeland in the midst of this conflict between close and distant cultural actors.

Keywords: Patani, Muslims of Thailand, Kra Canal, Malaysia, Singapore.

JEL Codes: F18, R11, R23

¹This article is a revised version of the paper presented under the same title at the X. ASC 2025 / Fall Conference, held on October 16–18, 2025, at The University of Faisalabad in Faisalabad, Pakistan.

Citation: Alptekin, M. Y., Cankaloğlu, Y., & Nabieva, Z. (2026). Patani's Malay Muslims and the Future Impact of the Kra Canal. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

This study aims to explore the historical roots of the Malay people living in the Patani region, the political entities they have established in the past, and their demographic and social structures. It also examines the cultural dynamics of the community and attempts to develop a projection regarding the future of the Patani region within the context of its strategic importance. In this regard, an assessment is made on how the proposed Patani Canal, or Kra Canal, which may pass through the region, could potentially impact the future of the region and, consequently, the future of the Malay Muslims in Thailand. Additionally, as will be discussed later, the realization of the Kra Canal may, as in the cases of the Suez and Panama Canals, represent the final stage in the emergence of a new power onto the world stage.

2. Literature on Patani and the Kra Canal

The Patani region in southern Thailand historically existed as an independent Malay sultanate but came under Thai sovereignty with the signing of the Anglo-Siamese Treaty in 1909. This historical rupture lies at the root of the conflict between the Malay Muslim identity in the region and the Thai majority (Che Man, 1990). Today, the Malay Muslim population is concentrated in the southern provinces of Pattani², Narathiwat, Yala, and Songkhla. Due to their ethnic and religious differences, they maintain a tense relationship with the centralized Thai state.

Malay Muslims have long been disturbed by the Thai state's assimilationist policies. The dominance of Buddhist Thai culture in education, language, and public services makes it difficult for the Muslim population to express their identity. The mandatory use of the Thai language in education and the marginalization of Islamic education are significant examples of social exclusion (Liow, 2006). This situation deepens structural inequalities such as violations of cultural rights and a lack of political representation.

Economic inequalities in the Patani region are also noteworthy. Compared to other segments of Thai society, Malay Muslims generally have lower educational attainment and face serious disadvantages in civil service employment, university access, and healthcare services when compared to Buddhists (Funston, 2008). These disparities reveal that the state's development policies in the region are largely unresponsive to the needs and demands of the local population.

In this socio-political context, a low-intensity resistance movement has emerged in Patani. Most of the resistance is shaped by demands for local autonomy or cultural recognition against the secular-centered Thai state. However, in some cases, incidents of violence have occurred, which have been met with increased security-oriented policies by the Thai government (McCargo, 2009). Such security-based approaches fail to address the structural roots of the issue and therefore do not offer sustainable solutions in the long term.

In conclusion, the problems faced by Patani Malay Muslims constitute a multi-layered issue shaped by ethnic identity, religious affiliation, and the hegemonic nature of the centralized state structure (Aras & Sert, 2025). The critical literature agrees that Thailand must build a rights-based and inclusive political system grounded in cultural pluralism (Harish, 2006). Today, the political, social, and economic future of Patani has become closely tied to the existence of the Kra Canal.

The Kra Canal Project is a strategic infrastructure initiative aiming to create a direct passage between the Andaman Sea and the South China Sea by dividing the Malay Peninsula of Thailand along a north-south axis. Although the project was first proposed in the 17th century, it gained renewed geopolitical importance in the early 21st century through its association with China's "Belt and Road Initiative" (BRI) (Chachavalpongpun, 2018).

Sukma (2017) argue that the canal will become as economically significant as the Suez and Panama Canals, reduce excessive maritime traffic in the Strait of Malacca, and accelerate regional trade. Among the positive expectations are that it will boost Thailand's economic growth and attract increased foreign direct investment (Thanapisitikul, 2020). However, academic literature frequently emphasizes that such benefits remain largely potential and that, in practice, the project carries serious geopolitical, environmental, and socio-economic risks.

First and foremost, the construction of the Kra Canal would physically divide Thailand into two parts, potentially endangering national unity. Some studies suggest that the separatist movements already present in Southern Thailand could be strengthened by this division (Che Man, 1990; Funston, 2008). Additionally, since the canal's construction would rely on Chinese capital, there are concerns that China's influence over Thailand's sovereignty could increase. This could weaken Thailand's neutral position within ASEAN (Storey, 2017; Aras & Kandemir, 2023).

² While the name Patani refers to a Malay Sultanate that existed for five hundred years, from the 14th to the 19th century, in what is today southern Thailand, as well as to the Malay population and culture that lived—and continue to live—in this region; the name Pattani is merely the designation given by the Thai administration to only one city within this historical region. It is possible to argue that this constitutes an imperialist practice, similar to the case in which the name Turkestan was assigned by Soviet Russia to a city located in Kazakhstan.

From an ecological perspective, it is highlighted that the canal's construction would destroy tens of thousands of hectares of forest, severely harm biodiversity, and irreversibly damage coastal ecosystems (WWF, 2019). The region's mangrove forests, and marine life would be at serious risk. Moreover, the industrial zones planned along the canal could threaten the livelihoods of local communities (Tha-napisitikul, 2020).

On a socio-economic level, the project's estimated cost ranges between \$28 and \$35 billion, and its return on investment remains uncertain (Yoshikawa, 2016). The "*growth illusion*," commonly seen in large-scale infrastructure projects, applies here as well; the anticipated economic benefits are mostly based on assumptions and carry the risk of deepening social inequalities (Flyvbjerg, 2007; Turhan, 2025).

3. Methodology

The documentation method was used in the writing of this text, and the information and data obtained through this method were refined and interpreted within the framework of the interpretive social science paradigm and based on the historical analysis method (Neuman, 2006). The content was structured in accordance with the subject and purpose of the text.

Historical sociology focuses on understanding how social institutions and structures come into being, change, and acquire their distinctive forms through time. It does not treat history as a simple timeline of events but as a dynamic and interactive process, molded by human relationships and shifting balances of power (Skocpol, 1984). By integrating historical records, archival findings, and sociological interpretation, this approach seeks to explain how societies undergo deep and enduring transformations (Abrams, 1982). From this standpoint, one can more clearly grasp the ways in which earlier political and social arrangements continue to shape contemporary life. In the present study, historical sociology provides the main framework for analyzing the Patani Malay Muslims' three-hundred-year struggle for survival, with particular attention to both the elements of continuity and the moments of rupture in their collective history.

In addition, the method of historical analysis aims to trace how social facts, institutions, and collective processes have evolved and to uncover the conditions under which they assumed their current forms. It draws on a broad range of primary and secondary sources—archival documents, historical narratives, memoirs, literary works, and visual materials—to reconstruct social reality as it unfolded over time. Rather than arranging events in a simple chronological list, this method attempts to uncover causal relationships, the motivations of historical actors, and the

broader social environment in which those actions took place (Skocpol, 1984). Within sociology, historical analysis has become a crucial tool for studying change, the state–society relationship, and deep structural shifts. Connecting the past to the present enables researchers to recognize patterns of persistence as well as the critical turning points that define moments of transformation (Mahoney & Rueschmeyer).

4. Historical Background

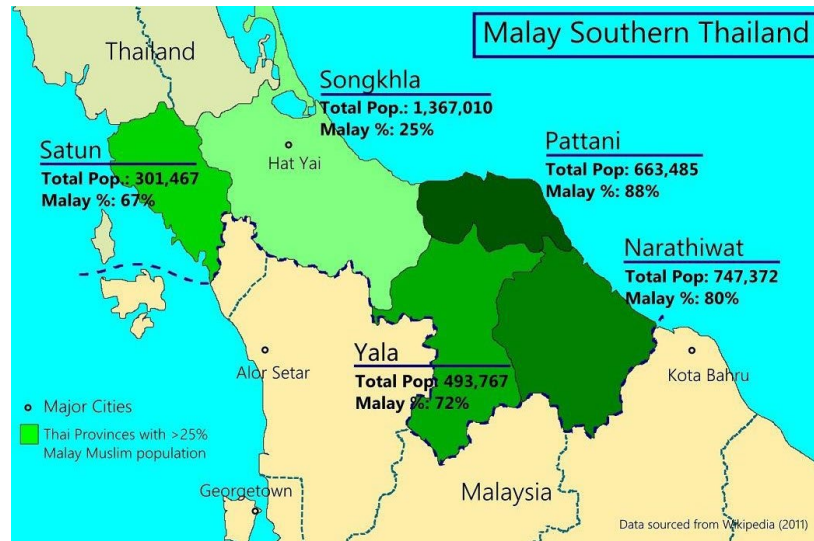
The provinces of Narathiwat, Yala, and Pattani in southern Thailand where Malay Muslims constitute the majority have been collectively known since the 15th century as the Patani region or Greater Patani (Patani Raya) (Funston, 2008, p. 8). This name is still used today to advocate for freedom or autonomy. Precisely for this reason, referring to the region as Patani is often perceived by Thai authorities as separatism or sedition.

According to many sources, one of the earliest Malay Sultanates on the Malay Peninsula was the Patani Sultanate. Chinese records refer to a Malay state in the region as early as the first century AD under the name Langkasuka (in Chinese, Lang-ya-hsiu). Langkasuka eventually disappeared and was replaced by the Patani Kingdom (Che Man, 1990, p. 32). Other sources suggest that the Patani Kingdom was the earliest Malay state, established in the 14th century (Nik Mahmud, 2008, p. 1). Indeed, the Portuguese traveller Tom Pires, who passed through Malacca in 1511, noted that the Patani Kingdom existed before the year 1370. At one point in history, the Patani Kingdom was the largest Malay local state on the Malay Peninsula in terms of both population and economy (Che Man, 1990, p. 32, 34). The region's historical prominence may be attributed to its proximity to the mainland, where resources were more abundant during a period when transportation options were limited.

In 1782, a new expansionist kingdom was established in Siam (present-day Thailand), centred in Bangkok. With its superior military strength, it quickly brought present-day Cambodia, several Malay principalities, and nearby semi-independent states and communities under its control. In 1816, the Patani Kingdom was divided into seven regions by Thai administrators as part of a "divide and rule" strategy. Over time, all administrative functions of these seven regions were gradually transferred to the central government (Che Man, 1990, pp. 34, 35, 63). As in many parts of the world, this "*divide and rule*" policy appears to have been used as a soft transition strategy for permanent and comprehensive occupation. About a century after Siam's rise, France invaded Vietnam in 1883, and Britain colonized Burma in 1886. Shortly thereafter, both powers turned their

attention to Siam, pressuring it to cede parts of its northern territories to France and its southern territories to Britain. This pressure yielded results within two decades, and both colonial powers acquired parts of Siamese territory. With the Anglo-Siamese Treaty of 1909, the Kedah region, including the Malay states of Terengganu, Kelantan, and Perlis, came

under British control, while the Patani Sultanate, located at the furthest edge, remained under Siamese rule. This agreement effectively defined the current borders between the two countries and laid the foundation for the modern nation-state boundaries (Arya, 2006, p. 22).



Map 1. The Five Regions in Patani and Their Demographic Structure³

The formation of the nation-state in Thailand reached a significant stage during the reign of King Chulalongkorn (1868–1910), when a centralized administration was established, accompanied by new policies related to religion, language, and education. This process was later reinforced by a series of legal decrees issued by Phibul during the 1930s and 1940s. One of these decrees stated that the future of Thailand depended on the use of the national language and script. Although Phibul was unable to completely remove other languages from the education system, he succeeded in making the Thai dialect, spoken by a relatively small portion of the population, the language of instruction across the country (Arya, 2006, pp. 34–35).

Today, Patani nationalists consider 1786 as the year Patani lost its independence, when the Siamese (Siam-Thailand) army occupied the region. Since then, although local Malay Muslim administrations continued to exist, overall governance has remained in the hands of Thailand. Ultimately, in 1902, Patani was directly incorporated into Siam. With the 1909 agreement signed between the British and the Thais, Siam relinquished Kedah, Perlis, Kelantan, and Terengganu, forming the modern-day borders (Funs-ton, 2008, p. 8).

However, imperial powers carried out colonization without concern for the unity and integrity of future

nation-states, focusing solely on economic interests. As a result, they were not disturbed by the separation of the Patani Sultanate, an integral part of the ethnic, linguistic, cultural, religious, and social unity of the Malays, from the other Malay Sultanates, nor by the fragmentation of Malay unity and the victimization of millions of people. Clearly, in the 1909 Anglo-Siamese Treaty, the Patani Sultanate should have been included in the British-controlled territories, just like the other sultanates. Indeed, many sources refer to this separation and fragmentation as a “*historical accident*” (Bajunid, 2006, p. 204). After the region was occupied by the Japanese and Thailand collaborated with them, the leaders of the Patani Malays hoped that the British would punish Thailand and incorporate Patani into the other Malay territories under British rule. They even submitted requests directly to the British administration in Malaya. However, the British repeatedly rejected these appeals, primarily because of the United States’ stance against creating additional conflict and because Thailand supplied a significant portion of the rice needed in British colonies (Nik Mahmud, 2008, pp. 47–61). This situation once again confirmed that there is no place for sentimentality or revenge in international relations; instead, national interests prevail. It also highlighted that Britain was the last country one should rely on for such matters.

³Five regions in Patani and their demographic structure, Last Accessed: 13.05.2025. https://www.reddit.com/r/LinguisticMaps/comments/17yldse/malays_in_southern_thailand/?rdt=43190

5. Language and Ethnicity in Thailand

As agreed, upon by many studies, the root cause of tensions between minority groups and dominant populations is primarily language (Aphornsuvan, 2006, pp. 111–112). Language is not merely a means of communication, but also a tool for both unification and division.

In modern Thailand, languages belonging to the Tai language family are spoken by 87% of the population. The remaining 13%, or approximately 8 million people, speak languages outside of the Tai family. Among those who speak Tai languages, 0.6% speak languages such as Phu Tai, Puan, So, Shan, and Lue. Within the main body of Tai speakers, 19.5% speak Standard Thai, 27% speak Central Thai, 22.9% speak the Lao language, 9% speak Kammuang, and 8% speak Paktai. The largest non-Tai language spoken in Thailand is a Sinitic language, accounting for 6.8% of the population. This is followed by Khmer at 2.1% and Malay at 1.9%. In total, approximately 70 languages are spoken in Thailand (Arya, 2006, pp. 37–38).

Toward the end of the 19th century, Central Thai was spoken by only 15% of the population within Thailand's borders. About 55% of the population, particularly in the northern and northeastern regions, spoke Kammuang and Lao. Those who spoke Malay made up around 9%. Education at that time was religious in content and centred around religious institutions for all ethnic and linguistic groups. Buddhists were educated in temples, while Muslims primarily received education in mosques. Muslim primary schools were called as Pondok or Pondoh at past and Tadika in modern times. In 1902, the Thai script Tua Tham was made mandatory for Buddhists,

and schools were gradually transformed into secular institutions (Arya, 2006, pp. 34–35).

6. Social and Demographic Structure

More than 90% of Thailand's population is Buddhist, while the majority of the remaining population is Muslim. Although Muslims are scattered throughout the country, they are heavily concentrated in southern regions such as Patani, Narathiwat, Yala, Songkhla, and Satun. These areas are referred to by Thai authorities as the "Deep South." Malay Muslims distinguish themselves from the Thai majority not only by their religion but also through their ethnic identity (Funston, 2008, pp. 6).

In the 1990 census, the Muslim population was recorded at 4.1%, rising to 4.6% in 2000. However, these figures are debated, and a clearer picture emerges from the Ministry of Foreign Affairs' estimate of 7.5 million Muslims, which corresponds to approximately 12% of the total population (Funston, 2008, pp. 7).

In Narathiwat, Patani, Yala, Songkhla, and Satun, Muslims make up a significant portion of the population. For example, Muslims constitute 82% of the population in Narathiwat, 81% in Patani, 69% in Yala, and 68% in Satun. The total Malay Muslim population in these five provinces is approximately 1,775,000. Across all 14 southern provinces, the number reaches around 2,345,000 (Narongraksakhet, 2006, p. 131).

The population numbers and proportions of Malay Muslims living in the five provinces of southern Thailand (historically known as Patani) are presented in Table 1 (Narongraksakhet, 2006, p. 131).

Table 1. Demographic Status of Muslims in the Patani Region

Bölge Adı	Count of Muslim Population	Ratio of Muslim Population %
Pattani	1,230,750	% 81
Narathiwat	1,135,050	% 82
Yala	1,088,500	% 69
Songkhla	1,036,000	% 25
Satun	514,500	% 68
Toplam	5,004,800	% 77

This region was historically part of the Patani Sultanate. However, in areas like Satun, which has a 70% Muslim population, acts of violence have not occurred (Funston, 2008, p. XIII). This situation is thought to be related to the region's urbanized and educated structure.

Southern Thailand is a socioeconomically underdeveloped region. The majority of the population earns a living through agriculture, fishing, and manual labour. Only 9% of Muslims have completed second-

dary education, and the rate of those able to attend university is just 1.7%. In contrast, these rates are 13% and 9.7% among Buddhists. The rate of public sector employment among Muslims is 2.4%, whereas it is 19.2% among Buddhists. The region also has the highest levels of poverty and unemployment (Funston, 2008, pp. 7–8).

Some Malay Muslims living in Southern Thailand, due to the unrest they have experienced, migrated to Malaysia and acquired citizenship there, beco-

ming dual citizens. Most of these migrants live in Malaysia's northwestern states such as Kelantan, Perlis, Kedah, and Perak (Bajunid, 2006, p. 218; Alptekin, 2015).

On the other hand, between 1960 and 1980, the Thai government resettled 100,000 Buddhist Thais in the Patani region and aimed to expand this policy to 650,000 people. This demographic engineering policy increased the perception of identity threat among Malay Muslims, and in some groups, it led to a turn toward acts of violence (Che Man, 1990, p. 38).

7. The Emergence of Patani-Malay Nationalism or Separatism

The historical tension between Patani Malay Muslims and the Thai state began with the establishment of the Patani Sultanate in 1457 and was shaped by resistance against Thai expansionism (Funston, 2008, p. 70). In the modern sense, separatism became more pronounced particularly from the early 20th century. The uprisings that began in 1921 with the closure of Islamic schools in the south by the Thai government peaked in 1922 under the leadership of Tengku Abdul Kadir Kamaruddin, with support from local leaders and some "Turks". However, these uprisings were suppressed (Nik Mahmud, 2008, p. 15; Che Man, 1990, p. 64).

From the 1930s onward, assimilation policies intensified under the Phibun regime's nation-building project. These included the banning of the Malay language, the closure of Islamic courts, and the enforcement of respect for Buddhist symbols, which further entrenched separatist sentiments (Aphornsuvan, 2006, pp. 102–103; Che Man, 1990, p. 65). During this period, the Thai state attempted to redefine the Malay identity by labeling them as "Thai Muslims," which provoked widespread backlash.

In the post-World War II period, Muslims from Patani attempted to unite with Malaysia, but these efforts proved unsuccessful (Funston, 2008, p. 9; Che Man, 1990, p. 42; Bulut & Aras, 2023, p.30). Political leader Tengku Mahmud Mahyideen's appeals for international support failed, and in 1947, even Soekarno refused assistance (Nik Mahmud, 2008, p. 34). In the same year, religious leader Haji Sulong bin Abdul Kadir issued the "Seven Demands" advocating for Muslim autonomy. However, he was soon arrested and mysteriously killed in 1954 (Arya, 2006, p. 26; Che Man, 1990, p. 68; Bajunid, 2006, p. 203).

The absence of any concrete action on the Patani issue during Malaysia's independence in 1957 led to great disappointment among Patani Muslims. Many leaders opted either to integrate into Thai society or join the diaspora (Che Man, 1990, p. 158). Malaysia's Kelantan state, in particular, became a settlement area for Patani migrants. Political actors like PAS in this region supported the Patani cause. In 1969, PAS

leader Asri Haji Musa openly discussed the idea of a new united Malay state that included Patani. By 1977, 81% of the Malaysian public believed that the government should support the Patani liberation movement (Che Man, 1990, pp. 159–160; Alptekin, 2015).

Nevertheless, the Malaysian government refrained from directly intervening in the Patani issue, as it did not want to strain relations with Thailand. Parliamentary efforts were blocked by the ruling party. This stance is thought to have stemmed from both realpolitik considerations and post-colonial political attitudes.

Malay Muslims in southern Thailand have faced not only systematic assimilation policies but also structural exclusion. Underrepresented in civil service, Muslims have been ethnically marginalized and treated as second-class citizens (Funston, 2008, pp. 9–10). Their political representation has also been extremely limited. A Muslim was elected to parliament for the first time in 1933, followed by a few others, though none held influential positions (Nik Mahmud, 2008, p. 17). In 1995, Wan Muhamad Nor Matha became the first Muslim minister; although Surin Pitsuwan later became foreign minister, he was not of Patani origin (Funston, 2008, p. 15). Between 2001 and 2005, there were only 14 Muslim MPs and a few senators, highlighting the inadequacy of representation (Sugunnasil, 2007, p. 115).

Patani's political elites have been marginalized in Thai politics, while religious leaders have been reluctant to participate in political processes. This stems from not only linguistic and economic barriers but also a lack of belief that political participation could benefit the region (Che Man, 1990, p. 133). As a result, in an environment where legitimate political channels are closed off, it becomes inevitable that some turn to violent forms of resistance.

8. Major Violent Incidents in the Patani Region

Following the violent events in Thailand during the 1960s and 1970s, the 1980s and 1990s were characterized by a relative minimization of violence in Patani. However, the sudden and intense resurgence of violence starting in 2004 prompted widespread debate. One of the most frequently cited factors in these discussions is the approach of Thaksin Shinawatra, a former police chief who became Prime Minister in 2001. Thaksin attempted to establish security through police-driven, militarized methods and an authoritarian style of governance. As McCargo emphasizes, Thaksin's administration sought to build a centrally controlled modern security network by sidelining the long-established and locally respected authorities in the south (McCargo, 2007, pp. 37–38). This move caused widespread dissatisfaction and

provided a significant catalyst for the resurgence of violence in the southern provinces.

On March 4, 2004, Thailand's most well-known Muslim lawyer, Somchai Neelaphaijit, disappeared after reportedly being last seen in police custody. His body was never found as dead or alive. Neelaphaijit was known for defending Muslims detained in connection with incidents in the south (Funston, 2008, p. 2). This was neither an exceptional case nor unique to Malay Muslims. According to Human Rights Watch, since Thaksin came to power in 2001, 18 human rights activists have been either openly or covertly killed in Thailand. These are high-profile national cases, and in addition to them, there have been numerous local reports of disappearances by individuals reporting their relatives or friends missing. The families of the disappeared believe that they were likely killed by security forces (Yusuf, 2006, p. 197).

Two major incidents in 2004 stand out as the most significant episodes of unrest in southern Thailand. The first occurred on April 28, 2004, when approximately 200 insurgents launched attacks on police and military posts in Pattani, Yala, and Songkhla. Five security personnel and 107 insurgents were killed in the clashes. That day became known as the bloodiest in modern Thai history. During this operation, 32 Malay Muslims were killed inside the historic Krue Se Mosque, which drew harsh criticism from human rights organizations. The second major incident took place in October 2004. During a protest by Malay Muslim villagers, 1,300 demonstrators were detained. While being transported to a military base in Patani, 78 of the detainees died from suffocation due to overcrowding in the trucks. Although the government acknowledged the use of disproportionate force by security personnel, no measures were taken to punish those responsible or to resolve the issue (Funston, 2008, pp. 2–3).

The number of casualties in the conflict was recorded as 400 in 2004, 500 in 2005, 900 in 2006, and 870 in 2007. From 2004, when the violence reignited, to March 2008, more than 3,000 people lost their lives (Funston, 2008, p. 5).

9. New Administrative Arrangements in Patani

After decades and even centuries of unrest and resistance in Patani, a new constitution was adopted in 1997, granting significant rights to local populations. The constitution, which envisioned a major devolution of power from the centre to the local level and the establishment of a regional senate, was implemented with great hope. In essence, this system represented an unnamed form of autonomy. However, it is well known that in such countries, written documents alone do not lead to substantial change; the true measure lies in their implementation. Inde-

ed, the same year the constitution was proclaimed (1997) elections were held for the first time in the Patani region to form a local senate and elect local government administrators with expanded powers. In many municipalities in the south, Muslims gained the opportunity to hold local administrative positions.

Although the 2007 constitution continued to uphold similar rights, it introduced a significant difference from the previous constitution by stipulating that half of the senate would be appointed rather than elected (Funston, 2008, p. 15). With this approach, Thailand clearly demonstrated its lack of trust in both democracy and its own Muslim citizens. By ensuring that half of the senate would be appointed by the central government, the state aimed to guarantee its control, but this move only deepened mutual distrust.

10. What Do the People of Patani Want?

According to a 2005 survey conducted with 2,730 people, the people of Patani expressed three main demands: first, improved governance through local participation; second, respect for cultural diversity and local identity; and third, the provision and guarantee of justice and equality (Arya, 2006, p. 27).

Following the violent events in 2004 and the establishment of an investigative commission a year later, several commissions articulated common demands: the implementation of Islamic law, recognition of cultural differences, and, finally, the adoption of the Malay language as either a second official language or a second working language in government offices (Yusuf, 2006, p. 169). The National Reconciliation Commission (NRC), formed by the government on March 28, 2005 after the events at the Krue Se Mosque in Tak Bai, Narathiwat province, submitted its report to the government only on June 5, 2006. Although the report was generally well received, senior statesmen such as General Prem Tinsulanonda objected to the proposal of using the Malay language as a working language in state offices (Yusuf, 2006, pp. 188–189).

As can be seen, neither in Haji Sulong's seven demands, nor in later requests, nor in recent public opinion polls, have the people or leaders insisted on full independence as a non-negotiable condition. The demands primarily revolve around political, social, and cultural autonomy.

Thailand declared a new constitution in 1997, and it was believed that the democratic atmosphere it would usher in would bring an end to Muslim-led violence in Patani. However, as some sources point out, no such positive developments have occurred since 1997 to confirm these expectations (Sugunasil, 2007, p. 114). On the contrary, since 2004, the

most violent clashes and highest casualties of the past two decades have been recorded. Therefore, the extent to which the constitution addresses local demands and more importantly, how effectively it is implemented remains critically important.

11. Economic Value of the Kra Isthmus Canal Project, the Strategic Importance of Patani, and the Future of the Region's Muslims

The Kra Canal Project in Thailand has been primarily supported by military bureaucrats. Whenever the military bureaucrats have gained influence in national politics, the project has once again become a prominent topic of public discussion. "In 2017 a group of businessmen and retired military officers formed the TCASD to advocate for the construction of the canal (which they prefer to call the "Thai canal" rather than the Kra canal). Led by a retired general, Pongthep Tesprateep, the TCASD proposed TAMS' Route 9A—a 120-km long canal from Krabi on the west coast to Nakhon Si Thammarat on the east coast. The proposed eastern terminus of the Thai canal would, they argued, complement the Eastern Economic Corridor (EEC), a US\$40 billion high-tech innovation and transportation hub spanning three provinces across the Gulf of Thailand which is due for completion between 2021 and 2025.¹³ To discuss the proposal further, the TCASD hosted a conference on the canal in Bangkok in September 2017" (Storey, 2019).

According to Sulong, construction of the Canal will make an important economic contribution to the Thailand. "The development of the canal through the isthmus of southern Thailand will not only provide benefits directly to those that will use the canal for transport, but will also stimulate related industries that support it; thus it has the potential to transform Thailand into a centre for trade and economic growth. According to the GIF feasibility study, "the Kra Canal will benefit from an annual trade turnover estimated at 280 billion USD as it straddles a region of 1.2 billion people within a radius of 2,400 kilometres". The Thai government would be able to generate revenue from activities related to the use of the Kra Canal such as from navigation and toll fees, income tax and export tariffs, and shipyard activities (Sulong, 2012).

The Kra Isthmus Canal Project, which aims to connect the Andaman Sea with the Gulf of Thailand in southern Thailand, is a geopolitical and economic initiative that has been debated for centuries. If constructed, the canal would provide an alternative maritime route to the Strait of Malacca and would have significant implications not only for Thailand's economy but also for regional and global trade networks (Chachavalpongpun, 2015).

As Sulong stated, "If the Kra Canal is built, increased maritime traffic would boost business and trade in the region. Another perceived benefit of the development of the Kra Canal is the projected spillover of trade benefits to neighbouring countries, particularly Myanmar, Cambodia and Vietnam. The increased international trade activities brought about by maritime shipping and other businesses and services around the canal will also support the development of the Southern Economic Corridor (SEC). The SEC, which covers Cambodia, Vietnam and Thailand, will transform the coastal regions of these countries through the increased commercial, industrial and tourism activities along the eastern seaboard of Thailand" (Sisovanna 2012 cited in Sulong, 2012). The Strait of Malacca, one of Asia's most heavily used sea passages, is an economic lifeline for countries like Singapore, Indonesia, and Malaysia. However, the high density of traffic in this strait leads to delays in shipping, increased piracy, and security risks. The activation of the Kra Canal would significantly reduce these problems by shortening maritime routes by approximately 1,200 kilometres annually and reducing shipping times by 2 to 5 days (Rattanavich, 2014). In this context, the canal would lower global maritime transport costs and increase trade efficiency.

From Thailand's perspective, the project has strong potential to attract foreign direct investment (FDI). The construction and operation of the canal would stimulate many auxiliary sectors such as ports, shipyards, logistics centres, and industrial zones. This would strengthen Thailand's position as a regional logistics and transportation hub (Wongruang, 2020). In addition, regional development, infrastructure improvements, and increased employment are expected in the areas through which the canal would pass. According to World Bank estimates in 2020, if the canal project is realized, Thailand's GDP could experience an annual increase of 1% to 1.5% (World Bank, 2020).

Despite its economic potential, the project's cost and strategic balance raise serious debates. The estimated cost ranges from \$28 billion to \$35 billion, with financing largely expected to come from China under the "Belt and Road Initiative" (Zhao & Liu, 2019). This has sparked concerns that the project could increase Thailand's economic and political dependence on China. On the other hand, countries such as Singapore, which benefit economically from the Strait of Malacca, oppose the project on the grounds that it could negatively impact their trade volume (Chachavalpongpun, 2015).

Patani is a small but extremely important region in Southeast Asia. Firstly, it has coastal access that connects it to both China and India, giving it significant strategic positioning. Secondly, it lies at the intersection of Muslim Malaysia/Southeast Asia and Budd-

hist Asia, further adding to its geopolitical importance. Thirdly, it is located on the strait that connects the Malay Peninsula to the Asian mainland. However, its most notable strategic importance stems from a potential future project: the canal. This project is comparable to other canal projects around the world, such as the Suez and Panama Canals, which have radically transformed the economies, and consequently the politics, of their respective regions.

For example, the Suez Canal eliminated the need to sail around Africa to reach Southeast Asia and the Far East, significantly reducing transportation costs

and shortening trade routes, thereby making global trade more profitable. However, it also diminished the importance of the Cape of Good Hope, reducing South Africa from a globally significant state to a more regionally significant one. Meanwhile, Egypt rose from regional to global importance. Similar observations can be made about the Panama Canal. Should the Kra Canal materialize, Patani could likewise evolve from a peripheral conflict zone into a strategic economic hub, redefining not only southern Thailand's prosperity but also the future trajectory of its Muslim population.



Map 2. Possible Route of the Patani (Kra Isthmus) Canal and Existing Maritime Routes⁴

Just like the examples of the Suez and Panama Canals, a roughly 44-kilometer-long canal in Thailand's Patani region inhabited by Muslim Malays and connecting the Indian Ocean to the South China Sea, could produce even more impactful results than the first two examples (Rouillard & Saito, 2013, pp. 16–24; Tuhdi & Turan, 2022). The construction of such a canal would first and foremost elevate the lands inhabited by the Muslim Malays to a region of immense strategic importance. As a result, the Malays would gain bargaining power. In the short term, the Patani region could obtain fundamental rights, and in the long term, it could gain broad autonomy. This is because it would not be possible to continue governing a region through an "iron fist" and in isolation from the world when it lies along one of the world's most critical maritime trade routes. This canal would open doors for many sectors, including

tourism. Tourism does not flourish under despotic regimes. As tourism activity develops, the problems faced by the Patani people would become more visible and known to the global community. Over time, due to concerns about maintaining a positive international image, the resolution of these issues could become achievable.

On the other hand, there will be countries negatively affected by this canal. At the top of this list is Singapore. This country earns billions of dollars annually simply from ships stopping at the Port of Singapore for rest, refuelling, shopping, and logistics while passing through. If the "Patani Canal" were opened, Singapore could lose almost all of this income (Heng and Yip, 2018). In other words, this would mark the end of the Singaporean "legend." The two other countries that would be significantly impacted are

⁴Possible Locations for the Passage of the Patani (Kra Isthmus) Canal and Current Shipping Routes, Last Accessed: 13.05.2025, <https://ars.els-cdn.com/content/image/1-s2.0-S2590198222000847-gr1.jpg>

Malaysia and Indonesia. While Malaysia might partially compensate for its losses due to its proximity to the canal region, Indonesia would not be able to do so and could end up as a total loser, much like Singapore.

Today, the canal project is not frequently mentioned. This is because its economic and political consequences would be vast and far-reaching. Therefore, not only Thailand, but also China and other countries refrain from speaking openly about the project. However, the possibility of the project being realized one day in the future was clearly stated as early as 1943 by Sir George Maxwell, the British administrator of Malaysia. In a secret memorandum titled "The Future of the Kra Isthmus" addressed to the Colonial Office, he suggested that the region should be annexed by Britain due to its strategic importance. He noted that this region was Britain's weakest point (the heel of Achilles) and that if such a canal were constructed by Thailand or any other power, Singapore would be directly affected (Nik Mahmud, 2008, p. 158).

The Kra Isthmus is the narrowest land strip connecting Thailand to Malaysia. With the inclusion of the Kra River, the length of the canal would be reduced to 44 kilometres. The highest elevation along the proposed canal route is 75 meters above sea level. The canal idea was first proposed in 1677 when the Thai king asked a French engineer about the feasibility of such a project. It was concluded at the time that it was not possible with the existing technology. The idea was raised again in 1793 by the Thai king's brother, but again, no action was taken. After Britain colonized Burma in 1863, a negative report was issued regarding the project. Eventually, in an agreement signed between Britain and Thailand in 1897, a mutual non-aggression pact was established, a promise of protection against third-party nations was made, and an agreement was reached not to bring the canal project to the agenda in order to protect Singapore's position in the region (Nik Mahmud, 2008, p. 5). It is likely that Thailand pledged not to build the canal in exchange for Britain's commitment to not annex the region and to respect Thailand's territorial integrity.

In Thailand, the Kra Canal is supported by hardline factions that advocate hawkish policies, and they argue that it should be realized. Leading this support are military circles and security forces. Indeed, during the term of Thaksin Shinawatra, an ex-police chief and the most security-oriented and hardline prime minister ever elected in the country, the canal became a prominent topic on the national agenda in 2000. Similarly, in 2014, the military government that came to power through a coup reintroduced the issue at the highest levels (Storey, 2019, p. 4).

It appears that all segments of society are convinced that the canal's construction would generate eco-

nomical income for the country. However, democratic and liberal segments, those in favour of international cooperation, oppose the project, arguing that it would first cause internal security vulnerabilities and then negatively affect global balances. On the other hand, hardline factions believe they can maintain domestic security with iron-fist policies and show a disregard for international equilibrium.

Opponents of the canal raise various objections to its construction. The most prominent of these objections are as follows: 1. The canal will physically divide the country and pose a security risk. Its construction is expected to create a conducive environment for separatist movements in the region, potentially leading to the region being severed from the rest of the country (Thongsin and Looney, 2012). 2. The volume of ship traffic will not be sufficient, and the canal will fail to recoup its costs. In other words, it is claimed that the project is not economically viable enough to pay for itself (Chen and Kumagai, 2016; Yuan et al., 2020). 3. The enormous amount of soil excavated during construction will need to be transported elsewhere, which is considered an almost impossible task. Lastly, 4. It is believed that the excavation of land, the opening of the canal, and the transportation of debris will trigger a chain of environmental disasters in the country (High Beam Research, 1998; Surtyati Sulong, 2012; CCEA, 2015).

If the Ottoman Empire had completed its 1569 project to connect the Don and Volga rivers as a way to secure the Caucasus, it might have reasserted its influence in the region. However, due to the technological limitations and resources available at the time, only one-third of the project could be completed. The construction of the Suez Canal in Egypt reflected the colonial pragmatism of the 19th century. The Panama Canal, constructed in the following century, symbolized the rise of American power. U.S. control over the canal only came to an end with the Torrijos-Carter Treaties in 1977 (Gandáségui, 1993). In the 21st century, the Kra Canal could become a symbol of China's rapid rise. Similarly, in addition to China, countries with coastlines along the northeast and west of the canal, especially Thailand, could become major beneficiaries of this project.

It is believed that China is willing to cover the construction and development costs of the canal, which is expected to take ten years and involve a Chinese contractor employing 30,000 workers. If this expectation is realized, China will naturally seek to become the port operator and exert effective control over the route. Meanwhile, Singapore, anticipating that open opposition could negatively impact the process, is adopting a passive stance and argues that future port and shipping operations will focus more on smart technologies rather than physical location (Kit, 2012; Tseng and Pilcher, 2022; Abdul Rahman et al., 2016; Peng Er, 2018; Lau and Lee, 2016).

12. Conclusion

The Patani Muslims have lived under the direct or indirect power, influence, and rule of Siam/Thailand for nearly three centuries, during which they have been subjected to various forms of obstruction, intimidation, coercion, and suppression. Despite all demographic engineering efforts, the Malay population still maintains its majority in the region. However, neither of the neighboring Muslim-majority countries—Malaysia and Indonesia—has made any realistic or sincere effort to ensure the safety and security of the Patani Muslims. Although autonomy for Patani seems like a distant prospect, meaningful breathing space could at least be achieved through democratization and the empowerment of local governments. Yet, none of these Muslim countries have taken the initiative in this regard.

Realpolitik in global affairs appears in several distinct forms, each leaving, unfortunately, a significant mark on the everyday lives of the Malay community in Patani. Although the international system, realpolitik, and *de facto* situations have so far developed to the detriment of Patani, it is entirely possible that this could be an exception in the future, and the Kra Canal project could very well initiate such a different process.

To begin with, the modern international system—largely shaped and dominated by major powers and institutions such as the United Nations—rests on the principle of state sovereignty. This *de facto* model frequently neglects the realities of ethnic and religious minorities who exist beyond fixed national borders and overlooks the fragmented identities of those excluded from them. Around the world, many such communities have been separated from their ancestral territories, forced to persist as small minorities rather than as integral members of their historical nations.

A second manifestation of realpolitik lies in the dominance of economic priorities in world politics. The current global order seeks above all to maintain stability in international trade and to ensure the uninterrupted functioning of global capitalism. Within this framework, the preservation of economic continuity often outweighs questions of moral justice or historical belonging. Stability, in practice, becomes the ultimate measure of political success.

The third dimension concerns the potential regional and international repercussions of the proposed Kra Canal—a massive maritime route envisioned to link the Andaman Sea to the Gulf of Thailand. In contrast to the first two dynamics, which have largely disadvantaged the Muslims of Patani, the successful completion of this canal might actually serve their interests by altering the region's economic and geopolitical configuration.

For nearly two centuries, the mechanisms of global politics have rarely operated in ways favorable to the Patani Malays. However, the shifting regional environment surrounding the Kra Canal project may present them with an uncommon strategic opportunity. Despite this, Malaysia—a neighboring Muslim-majority nation with deep cultural ties—remains hesitant to endorse the initiative, fearing that the canal could weaken its own economic and geopolitical position within the prevailing world order. Consequently, the Patani Malays find themselves caught in a complex and painful dilemma: positioned between past and present, between the pressures of global politics and the constraints of local governance, and between the authority of the state that rules them and the aspirations of the nation to which they feel they truly belong.

The decades- or even centuries-long delay in resolving the issue and the normalization of this unresolved state naturally gives rise to conspiracy theories. According to local rumours circulating in the region, the construction of the Patani Canal would negatively affect both Malaysia and Indonesia. Therefore, it is alleged that, led by Singapore, these three states are covertly supporting radical fringe groups in the Patani region to foster unrest, disorder, instability, and rebellion rather than peace and stability.

This approach effectively hinders the efforts of sensible and politically realistic Malay Muslim movements that strive for democratization and the devolution of power from the central Thai government to local authorities. While Singapore, Malaysia, and Indonesia try to justify their actions by citing the logistical delivery of humanitarian and social aid to sensitive groups, such explanations are unconvincing. According to the conspiracy theory, this state of turmoil and unrest sustains the status quo, ensuring that the Patani Canal will never be built, thereby preserving the existing economic interests of Singapore, Malaysia, and Indonesia.

Since global international relations are governed not by human rights and justice but by national interests, oppressed nations like the Patani Muslims often fall victim to the insincere and contradictory policies of their own neighbours, relatives, or even religious brethren. The Patani Malay Muslims are among the victims of such pragmatic politics and remain largely unknown to much of the world.

In conclusion, the existence of the Patani Canal project has been perceived by the trio of Singapore, Malaysia, and Indonesia as a commercial and economic threat, overshadowing the humanitarian, religious, and cultural rights of the Patani Muslims. The Patani Muslims find themselves in the midst of a deep contradiction. While the Kra Canal Project, which could offer significant relief and even a long-

term solution to the region's problems is supported by China, a distant country with a different religion and culture, the project is opposed by Singapore, a neighbouring country on the same peninsula, and by Malaysia and Indonesia, which are both religiously and ethnically close.

China, though distant in terms of culture and religion, stands as a potential (albeit unintended) savior for the future, whereas Malaysia and Indonesia, despite their religious and national closeness, serve as obstacles driven by self-interest. The Patani Muslims are trying to build a homeland where they can live with their identity, culture, and beliefs, even at a minimal level, caught between the potential friendship of distant and foreign cultures and the economic whims, contradictions, and duplicity of culturally close nations.

References

- Abdul Rahman, N.S.F. et al. (2016). A Descriptive Method for Analyzing the Kra Canal Decision on Maritime Business Patterns in Malaysia. *Journal of Shipping and Trade*, (1): 1-16.
- Abrams, P. (1982). *Historical Sociology*. Shepton Mallet: Open Books.
- Alptekin, M. Y. (2015). Küçük Asya: Malezya Tarih, Toplum, Kültür, Siyaset ve Ekonomi, Trabzon: KTÜ Yayınları.
- Aphornsuvan, T. (2006). Nation-State and the Muslim Identity in the Southern Unrest and Violence, *Understanding Conflict and Approaching Peace in Southern Thailand*. ed. Imtiyaz Yusuf - Lars Peter Schmidt. 101-112. Bangkok: Konrad Adenaur Stiftung.
- Aras, F.Ç. & Kandemir, E. (2023). Returning to Quad: Indias Search for Regional Security. *Codrul Cosminului*, 29, (2): 401-424. Doi: 10.4316/cc.2023.02.08
- Aras, F.C., Sert, K. (2025). From Non-aligned Movement to Multipolarity: India's Role in Asian Global Politics. In: *Decoding the Chessboard of Asian Geopolitics*. Nandy, D., Das, M. (eds). Singapore: Palgrave Macmillan, 471-490. Doi: 10.1007/978-981-96-3368-5_22
- Arya, G. (2006). Local Patriotism and Need for Sound Language and Education Policies in the Southern Border Province, In: *Understanding Conflict and Approaching Peace in Southern Thailand*. Imtiyaz Yusuf-Lars Peter Schmidt (eds). 22-38. Bangkok: Konrad Adenaur Stiftung.
- Bajunid, O.F. (2006). The Malaysian Factor in the Prospects for Peace in Southern Thailand, In: *Understanding Conflict and Approaching Peace in Southern Thailand*. Imtiyaz Yusuf-Lars Peter Schmidt (eds). 203-218. Bangkok: Konrad Adenaur Stiftung.
- Becker, G.K. (2006). Divided Loyalties: The Moral Basis of Peace in a Multicultural World of Conflict and Humiliation. In: *Understanding Conflict and Approaching Peace in Southern Thailand*. Imtiyaz Yusuf and Lars Peter Schmidt (eds). 224-245. Bangkok: Konrad Adenaur Stiftung.
- Bulut, Y. & Aras, F.Ç. (2023). Within The Framework of Geopolitical Conditions of World War I. Importance of The Caliphate Movement for Turkey and India. *İmgelem*, 7 (12): 25-49. Doi: 10.53791/imgelem.1286644
- Chachavalpongpun, P. (2015). Kra Canal and Thailand's Strategic Future. *Southeast Asian Affairs*, (1): 329-346.
- Chachavalpongpun, P. (2018). Good Coup Gone Bad: Thailand's Political Developments since Thaksin. *Institute of Southeast Asian Studies*.
- Chen, C. & Kumagai, S. (2016). Economic impacts of the Kra Canal: an application of the automatic calculation of sea distances by a GIS. *IDE Discussion Paper*, 568. 2016.
- Che Man, W.K. (1990). *Muslim Separatism*, New York: Oxford University Press.
- Flyvbjerg, B. (2007). Cost overruns and demand shortfalls in urban rail and other infrastructure. *Transportation Planning and Technology*, 30(1): 9-30. Doi: 10.1080/03081060601117463
- Funston, J. (2008). *Southern Thailand: The Dynamics of Conflict*, Washington: East-West Center.
- Gandasegui, M.A. (1993). The military regimes of Panama. *Journal of Interamerican Studies and World Affairs*, 35 (3): 1-18.
- Harish, S.P. (2006). Ethnic and religious conflict in Southern Thailand: A discourse analysis of the Malay-Muslim identity. *Contemporary Southeast Asia*, 28(1): 48-69. Doi: 10.1355/CS28-1D
- Heng, Z. & Yip, Tsz L. (2018). Impacts of Kra Canal and its toll structures on tanker traffic. *Maritime Policy & Management*, 45(1): 125-139. Doi: 10.1080/03088839.2017.1407043
- HighBeam Research (1998). Economists agree over Kra Canal, <http://www.highbeam.com/doc/1P1-15366091.html> Bangkok: The Nation. (Accessed on: 29 May 2015).
- Kit, C. Y. (2012). Kra Canal (1824-1910): The elusive dream. *Akademika*, 82 (1): 71-80.
- Lau, C. Y. & Lee, J. W. C. (2016). The Kra Isthmus Canal: A new strategic solution for China's energy consumption scenario? *Environmental management*, 57: 1-20. Doi: 10.1007/s00267-015-0591-0
- Liow, J. C. (2006). *Islam, Education and Reform in Southern Thailand: Tradition & Transformation*. Singapore: Institute of Southeast Asian Studies.
- Mahoney, J. & Rueschemeyer, D. (2003). (Eds.). *Comparative Historical Analysis in the Social Sciences*. Cambridge: Cambridge University Press.
- Map 1: Five Regions in Patani and the Demographic Structure of the Region, Accessed on: 13 September 2024. https://www.reddit.com/r/LinguisticMaps/comments/17yldse/malays_in_southern_thailand/?rdt=43190
- Map 2: Probable Route of the Patani (Kra Isthmus) Canal and Existing Shipping Routes, Accessed on: 13 September 2024, <https://ars.els-cdn.com/content/image/1-s2.0-S2590198222000847-gr1.jpg>
- McCargo, D. (2009). *Tearing Apart the Land: Islam and Legitimacy in Southern Thailand*. New York: Cornell University Press.
- McCargo, D. (2007). Thaksin and the Resurgence of Violence in the Thai South, *Rethinking Thailand's Southern Violence*, Duncan McCargo (ed.). Singapore: NUS Press.
- Narongraksakhet, I. (2006). Educational Change For Building Peace In Southern Border Provinces of Thailand, *Understanding Conflict and Approaching Peace in Southern Thailand*, Imtiyaz Yusuf and Lars Peter Schmidt (eds). Bangkok: Konrad Adenaur Stiftung.
- Neuman, W.L. (2006). *Toplumsal araştırma yöntemleri. Nitel ve Nicel Yaklaşımlar*. (Trans. S. Özge). İstanbul: Yayın Odası.
- Nik Mahmud, Nik A. (2008). *The Malays of Patani: The Search for Security and Independence*, Kuala Lumpur: MPH Group Printing.
- Peng Er, L. (2018). Thailand's Kra Canal proposal and China's maritime silk road: between fantasy and reality? *Asian Affairs: An American Review*, 45(1): 1-17.
- Rattanavich, S. (2014). The Economic Feasibility of the Kra Canal Project in Thailand. Bangkok: Thai Maritime Institute.
- Rouillard, M. & Saito, A. (2013). Building the Kra Canal and Southeast Asian Development. *Executive Intelligence Review*, 40: 16-24.
- Skocpol, T. (1984). *Vision and Method in Historical Sociology*. Cambridge: Cambridge University Press.
- Storey, I. (2019). Thailand's Perennial Kra Canal Project: Pros, Cons and Potential Game Changers, *Yusuf Ishak Institute Analyse Current Events*, 76: 1-8.

Patani's Malay Muslims and the Future Impact of the Kra Canal

- Storey, I. (2017). China's Strategic Interests in Southeast Asia: Energy Security and the Mekong. *Southeast Asian Affairs*, 35: 58-73.
- Sugunnasil, W. (2007). Islam, Radicalism, and Violence in Southern Thailand, *Rethinking Thailand's Southern Violence*, Duncan McCargo (ed.). Singapore: NUS Press.
- Sulong Sulong, R. (2012). The Kra Canal and Southeast Asian Relations. *Journal of Current Southeast Asian Affairs*, 31(4): 109-125.
- Sukma, R. (2017). The Malacca Strait and the Kra Canal: Strategic Choices and Regional Implications. *Asian Survey*, 57(4): 645-667.
- Suryati Sulong, R. (2012). The Kra Canal and Southeast Asian Relations, *Journal of Current Southeast Asian Affairs*. 31(4): 109-125.
- Thanapisitikul, C. (2020). Thailand's Kra Canal Project: Political and Environmental Challenges. *Journal of Southeast Asian Studies*, 51(2): 297-315.
- Thai Canal, http://en.wikipedia.org/wiki/Thai_Canal (Accessed on: 18 September 2013).
- Thai Chinese Cultural & Economic Association, The Kra Canal: New Gateway to Maritime Silk Road. <http://www.kracanalmaritimesilkroad.com/>. (Accessed on: 19 May 2015).
- Thongsin, A. (2012). The Kra canal and Thai security. California: Naval Postgraduate School.
- Tseng, P. & Pilcher, N. (2012). Examining the opportunities and challenges of the Kra Canal: a PESTELE/SWOT analysis. *Maritime Business Review*, 7(2): 161-174.
- Turhan, T. (2025). National Identity and Conflict Perception: Azerbaijani Diaspora Students' Views on Russia's War in Ukraine. *Romaya Journal*, 5(Special Issue (SI) IXASC 2025): 223-239.
- Wongruang, P. (2020). Kra Canal: Revived Ambitions and Strategic Implications. *Thai Journal of Development Studies*, 39(2): 115-132.
- World Bank (2020). Thailand Economic Monitor: Navigating Uncertainty. Retrieved from <https://www.worldbank.org>, (Accessed on: 15 September 2024).
- WWF. (2019). Environmental Impacts of Mega-Canal Projects in Southeast Asia. World Wildlife Fund Southeast Asia Reports.
- Yoshikawa, T. (2016). Reconsidering the Kra Canal Plan: Strategic Dreams and Economic Realities. *Asian Journal of Political Science*, 24(3): 328-345.
- Yuan, C-Y, Hsieh, C-H. & Su, D-T. (2020). Effects of new shipping routes on the operational resilience of container lines: potential impacts of the Arctic Sea Route and the Kra Canal on the Europe-Far East Seaborne Trades. *Maritime Economics & Logistics*, 22: 308-325.
- Yusuf, I. (2006). The Ethno-Religious Dimension of the Conflict in Southern Thailand, *Understanding Conflict and Approaching Peace in Southern Thailand*, Imtiyaz Yusuf and Lars Peter Schmidt, (eds.) Bangkok: Konrad Adenaur Stiftung.
- Zhao, J., & Liu, H. (2019). China's Belt and Road Initiative and the Revival of the Kra Canal Project in Thailand. *Journal of Contemporary East Asia Studies*, 8(1): 56-75.
- Zuhdi, A. & Turan, E. (2022). Kra Canal Project and Its Influence on World Maritime Trade. *Proceedings of the Institution of Mechanical Engineers, Part M. Journal of Engineering for the Maritime Environment*, 236(2): 493-503.

The Encounter of Cinema and Advertising on Digital Platforms: A Netnographic Analysis of YouTube Videos

Arzu Kazaz / Assoc. Prof. Dr. 

Selcuk University, Ali Akkanat Vocational School, Department of Management and Organization
akazaz@selcuk.edu.tr

Abstract

The relationship between cinema and advertising has increasingly evolved into a hybrid field of production in which aesthetic narration, emotional engagement, and persuasive practices intersect within modern visual culture. This study examines how the relationship between cinema and advertising is constructed on digital platforms and how YouTube users interpret and make sense of such advertisements through a netnographic approach. The research aims to show that viewers do not perceive advertisements produced with cinematic aesthetics as conventional promotional content but rather position them as short films, emotional narratives, and cultural representations. The study sample comprises five advertising videos published on YouTube between 2021 and 2025 that generated high levels of interaction: *Istanbul: Love of the Continents*, *Coca-Cola Masterpiece*, *#BırakmayızSeni*, *Karneni Göster Kitabını Al*, and *Türkiye's Wings Turkish Airlines*. User comments posted on these videos between September and December 2025 were examined, and audience

discourses were analyzed thematically. The findings indicate that the advertisements are interpreted along the axes of cinematic storytelling, emotional intensity, national identity, collective memory, and artistic production. In particular, it is noteworthy that users frequently avoid labeling these videos as advertisements, instead describing them as film, short film, or a cinematic experience. Overall, the study demonstrates that YouTube's comment culture provides a participatory meaning-making space that legitimizes, amplifies, and reproduces the cinematic transformation of advertising, revealing how advertising on digital platforms evolves into an aesthetic and cultural narrative form.

Keywords: Cinema And Advertising, Digital Platforms, YouTube, Netnographic Analysis, Participatory Comment Culture.

JEL Codes: M3, M31, M37

Citation: Kazaz, A. (2026). The encounter of cinema and advertising on digital platforms: A netnographic analysis of YouTube videos. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

The relationship between cinema and advertising has evolved since the early periods of visual culture history through mutual interaction and formal permeability; over time, it has transformed from a purely economic collaboration into an aesthetic, narrative, and cultural intersection. Cinema's capacity to reach mass audiences, its ability to generate emotional impact, and its proficiency in visual storytelling have consistently served as a strong reference point for the advertising industry. For this reason, advertising has sought to establish a more intense and lasting bond with audiences by borrowing cinema's narrative structures, editing rhythms, and visual aesthetic codes. Conversely, advertising has positioned itself within the cinematic field as a significant industrial actor that influences cinema's production practices, financial structures, and modes of circulation. This bidirectional interaction has created a continuous zone of negotiation between cinema's artistic autonomy and advertising's persuasive nature (Kılınçarslan, 2018). Within the traditional media order, advertising was largely perceived as a promotional practice situated outside the film itself and as an interruption of the viewing experience. Advertisements shown before or during films in movie theaters were framed as compulsory pauses external to the narrative, leading to a distanced relationship between advertising and spectatorship. However, with the widespread adoption of digital platforms, this distinction has largely disappeared. On platforms such as YouTube, advertising no longer circulates outside viewing experience but becomes an integral part of it. Advertisements produced with cinematic aesthetics have increasingly transformed into content that viewers willingly watch, share, and repeatedly consume. While this transformation expands the functional boundaries of advertising, it also fundamentally redefines the relationship between audiences and advertising (Gölgeli & Geçen, 2021).

Simultaneously with this aesthetic transformation, digital platforms reposition viewers from passive recipients into active producers of meaning. Thanks to the participatory structure of Web 2.0, users do not merely consume content; through comments, likes, and shares, they directly contribute to its circulation and interpretation (Han, 2012). In this context, YouTube comments constitute a significant cultural data field that makes visible how advertising films are perceived, the emotional and cultural frameworks in which they are interpreted, and how audiences position this content. The process of the cinematization of advertising is shaped not only through production aesthetics but also through audience discourses and participatory comment culture. In this process, the viewer becomes not merely a receiver but a co-producer of meaning (Jenkins, 2006). Advertising films produced with cinematic aesthetics are frequently described in audience comments as short films, nar-

rative cinema, or artistic productions. In addition to many advertising applications carried out in connection with cinema, films also establish their own narratives through the brand and product. These films are called *advermovies* (Bolat, 2022). Such descriptions indicate that viewers are renegotiating the persuasive nature of advertising. Audiences evaluate these advertisements not solely as product or brand messages but within broader frameworks of meaning such as national identity, collective memory, emotional attachment, and cultural representation. Particularly, advertisements that incorporate national narratives, historical references, and emotional intensity generate strong discourses of belonging and shared memory in user comments. This demonstrates that advertising, through cinematic storytelling, has transformed into a field of cultural representation. This study aims to examine, through a netnographic approach, how audiences interpret the relationship between cinema and advertising on digital platforms and within which discursive frameworks YouTube users position advertising films that draw on cinematic aesthetics. The study argues that advertising on digital platforms is reproduced not merely as a marketing tool but as an aesthetic and cultural narrative form, and that this reproduction is legitimized and multiplied through audience comments. In this respect, the research seeks to move beyond production-centered approaches to the cinema–advertising relationship and to address it from an audience-oriented and participatory perspective.

2. Historical and Aesthetic Convergence between Cinema and Advertising

The relationship between cinema and advertising cannot be explained solely through limited practices such as short promotional spots inserted between films; rather, it is historically layered and aesthetically permeable. Since its emergence, cinema has developed as a field that simultaneously embodies narrative construction and the logic of industrial circulation. This dual structure has enabled the continuity of cinema's relationship with advertising and its reproduction across different levels. The use of space, narrative structure, genre preferences, stylistic codes, and audience experience stand out as the primary domains through which advertising has penetrated the cinematic universe. Today, the widespread use of concepts such as brand storytelling, product placement, trailer aesthetics, and *advermovies* demonstrates that this relationship is not a temporary marketing trend but a coherence formed through the long-term interaction of media, economy, and aesthetics (Bolat, 2022; Kılınçarslan, 2015). From a historical perspective, the movie theater and the cinematic experience create a distinctive contact zone that generates a high level of audience attention for advertising. Arslan's study, centered

on the Turkish context, reveals that movie theaters as advertising media are not limited to commercials projected on the screen; rather, they constitute a multi-layered advertising ecosystem through sponsorship practices, promotional activities, and communicative forms established in foyer and lobby spaces. This approach indicates the inadequacy of conceptualizing the relationship between cinema and advertising as a one-directional display practice. While cinema functions on the one hand as a channel for transmitting advertising messages, on the other hand, it becomes an industrial structure sustained through advertising revenues and brand collaborations (Arslan, 2011).

One of the most prominent stages of this industrial convergence at the narrative level is product placement practices. Aydın and Orta emphasize that brand placement plays a central role in the use of cinema as an advertising medium in Turkish films. Unlike traditional advertising, product placement is embedded within the film's narrative and aims to make the advertising message a natural component of the fictional world. In this respect, product placement creates a less interrupted form of contact between advertising and narrative, reducing the likelihood of audience resistance (Aydın & Orta, 2010). However, this historical transformation also brings significant aesthetic debates for the cinematic text. Advertising elements cease to be independent content presented before or during the film and instead become part of the *mise-en-scène*, character relationships, the repertoire of everyday objects, and the viewing experience itself. While this may support a sense of cinematic realism, when advertising becomes overly visible, it can also undermine the narrative's credibility. The film examples examined by Aydın and Orta demonstrate that the boundary between the natural use of brand placement and its perception as artificial is highly fragile (Aydın & Orta, 2010). This convergence can also be situated within broader international theoretical debates on the culture industry and commodification. As Theodor Adorno and Max Horkheimer argue (2007), cultural production under capitalism increasingly operates through standardized forms that blur the boundaries between art and commodity. From this perspective, cinema's historical entanglement with advertising can be interpreted not merely as a functional collaboration but as part of a wider transformation in which aesthetic forms become embedded within circuits of consumption. Similarly, Guy Debord's (1996) notion of the *Society of the Spectacle* suggests that visual culture increasingly organizes social relations through images, positioning both cinema and advertising as central mechanisms in the production of mediated experience.

In this study, product placement is not treated as an isolated marketing technique but as a representative case that makes the broader convergence between

cinema and advertising analytically visible. Within the scope of the research problem, which focuses on the transformation of narrative forms and audience engagement in digitally circulated cinematic texts, product placement serves as a concrete mechanism through which commercial logic becomes embedded within narrative structures. Therefore, its inclusion in the literature review aims to provide a conceptual bridge between aesthetic transformation and consumption-oriented storytelling practices, rather than to offer a purely descriptive account of advertising strategies. Two key elements become decisive in the relationship that product placement establishes with cinematic aesthetics: strategies of visibility and their harmony with the narrative. Er notes that product placement offers an attractive model for advertisers, given opportunities such as box-office success, access to large audiences, and the recirculation of films across different platforms. However, what is decisive is not merely whether a brand appears in a film, but how this presence is realized within an aesthetic configuration. When a brand is positioned in a manner that does not interrupt the narrative flow and remains compatible with the dramatic structure, it is perceived as more acceptable by audiences (Er, 2013). In this context, product placement should be approached not as a purely technical marketing strategy but as an aesthetic problem area. As placement practices become integrated into the *mise-en-scène* and dramatic action, they retain the potential to preserve cinematic integrity; by contrast, didactic or exaggerated uses may weaken the film's narrative autonomy and allow advertising aesthetics to become dominant. This indicates that the relationship between cinema and advertising is grounded not in a fixed form but in an aesthetic balance that is continuously re-established and negotiated within each filmic context (Er, 2013; Bolat, 2022). The convergence between cinema and advertising should not be evaluated solely in terms of the film text's internal structure. How films are marketed also constitutes a crucial domain in which cinematic and advertising aesthetics intersect intensively. Kılınçarslan's study, which examines trailers as marketing elements in cinema, demonstrates that trailers have moved beyond being simple promotional tools and have evolved into short cinematic texts that generate narrative value in their own right. Through rhythmic editing, musical accompaniment, dramatic emphasis, and visual intensity, trailers create emotional anticipation in viewers and facilitate the formation of a preliminary bond with the film. In this respect, the trailer can be regarded as a specific narrative space in which advertising aesthetics are integrated with cinematic narrative forms (Kılınçarslan, 2015). Within international film theory, this integration of commercial elements into narrative structures has also been discussed in relation to realism and representation. Jean Baudrillard's (2008) concept of

simulation is particularly relevant here, as it points to a condition in which distinctions between reality and representation become unstable. Product placement, when seamlessly embedded, contributes to a hyperreal environment in which branded objects appear as natural components of everyday life, thereby reinforcing consumption practices through narrative immersion rather than overt persuasion.

The widespread adoption of trailer aesthetics has significant implications for cinematic narration. Rather than reflecting the film's overall narrative rhythm, trailers often foreground climactic moments and emotionally intense scenes highlighted by marketing strategies. This shapes the audience's expectations of the film through the trailer. Over time, trailer aesthetics, particularly in mainstream cinema, may influence production processes by encouraging the design of certain scenes in accordance with trailer logic. Consequently, the narrative logic of advertising goes beyond merely announcing the film and becomes an element that feeds back into the film's formal design. This feedback relationship illustrates how the aesthetic boundaries between cinema and advertising have become increasingly permeable (Kılınçarslan, 2015). At a more advanced stage of this interaction, advertising no longer merely borrows formal codes from cinema but directly appropriates cinematic narrative form. The feature-length advertising approach discussed by Bolat under the concept of *advermovie* can be considered a qualitative threshold in the convergence between cinema and advertising. In this narrative form, the film becomes a coherent story world constructed around a specific product or brand. The *advermovie* should not be understood simply as storytelling; rather, cinematic narrative tools such as character construction, dramatic structure, spatial atmosphere, and emotional arc are reorganized to align with advertising objectives. This structure produces a bidirectional permeability between the aestheticization of advertising and the commercialization of cinema (Bolat, 2022). This permeability also yields specific consequences for audience experience. As the cinematic narrative qualities strengthen, the advertising text encounters less resistance from viewers and may be perceived as an integral part of the narrative. Advertising opportunities in micro-movies usually include product placement, where the product is simply featured in the film; and custom-made '*advermovies*', when the product becomes a part of the story (Zhao, 2014). Similarly, as advertising narratives approach cinematic forms, the likelihood of establishing an affective bond between the brand and the audience increases. This transformation enables advertising to move beyond being merely a persuasive message and to become an aesthetic and emotional experiential space. This shift can also be interpreted through the lens of branded content and narrative persuasion theories. As Russell Belk (2016) suggests,

consumption increasingly operates through symbolic and experiential dimensions, where brands derive meaning from their integration into cultural narratives. The *advermovie*, in this sense, exemplifies how storytelling becomes a strategic tool for embedding brands within affective and symbolic structures rather than presenting them as external commodities. The symbiotic relationship between cinema and advertising is therefore significant in demonstrating how narrative and consumption practices have become increasingly intertwined within modern visual culture (Bolat, 2022).

Digital platforms provide an environment that renders this convergence more visible and measurable. The analysis conducted by Gölğeli and Geçen of *The Journey*, a film produced by Turkish Airlines, demonstrates that the *advermovie* narrative operates alongside the logic of viral circulation and interaction in new media environments. Such cinematic advertising narratives reach wide audiences and gain cultural circulation through the affordances of digital platforms, namely shareability, interpretability, and recirculability. Consequently, advertising with cinematic narration becomes not merely an aesthetic preference but a strategic narrative form strengthened by the possibilities offered by the digital media ecosystem (Gölğeli & Geçen, 2025). On platforms such as YouTube, the viewer's position is likewise redefined through this transformation. The viewer moves beyond being a spectator who merely encounters content to become an active participant who comments, shares content, and, at times, produces critical discourse. This indicates that the convergence between cinema and advertising is not a process occurring solely between content producers and advertisers; rather, it becomes a relationship that is interpreted and negotiated within audience communities. In this way, cinematic advertising narratives circulate as social texts that are continually reproduced through cultural commentary and debate (Gölğeli & Geçen, 2025). At this point, aesthetic convergence is directly linked to audience reception. The recent study by İncedursun and Sadedil on product placement shows that audiences do not categorically reject such advertising practices; however, compatibility with the narrative and character structure emerges as a decisive condition. The findings reveal that insofar as the advertising element aligns with the internal logic of the cinematic world, it becomes less visible and does not disrupt the viewing experience. By contrast, advertising elements that are detached from the narrative or overly emphasized are perceived by viewers as external interventions and interrupt the experience (İncedursun & Sadedil, 2025). In light of these assessments, as advertising integration into cinema increases, the issue of aesthetic management becomes a central area of debate. The context, intensity, and narrative strategies through which advertising elements are employed

constitute the primary factors determining the acceptability of the relationship between cinema and advertising. Historically, this relationship has not assumed a fixed form; on the contrary, it has been reconstituted within the context of each new narrative and each new platform. This makes it possible to conceptualize the convergence between cinema and advertising not as a static commercial partnership but as a dynamic aesthetic-political field shaped at the intersection of narrative, emotion, attention, and consumption practices in modern visual culture.

3. Digital Platforms, Comment Culture, and Participatory Meaning Production

With the emergence of Web 2.0, digital platforms have adopted interactive internet architecture and have experienced a marked departure from traditional mass communication models. Web 2.0 is a participatory form of the web that enables users to create, share, and respond to content produced by others; through this structure, users move beyond passive spectatorship to become content producers and distributors (Sanofi et al., 2024). In digital environments, the most visible and collective manifestation of this transformation is users' direct participation in meaning-making processes, not only through user-generated content but also through comments on that content. Comments are not merely individual expressions; they also reveal processes of discussion, information exchange, evaluation, and collective judgment within online communities. Our media landscape has undergone a seismic shift as digital technology has fostered the rise of "participatory culture," in which knowledge is originated, created, distributed, and evaluated in radically new ways (Delwiche & Jacobs, 2012). Platforms such as YouTube are widespread spaces where user-generated video content and related forms of interaction coexist. Early studies have shown that Web 2.0 environments facilitate young people's engagement with media production and provide spaces for personal content creation, connection, collaboration, and the dissemination of users' cultural narratives. There is an explosion of youth subscriptions to original content-media-sharing Web sites such as YouTube. These Web sites combine media production and distribution with social networking features, making them an ideal place to create, connect, collaborate, and circulate. By encouraging youth to become media creators and social networkers, new media platforms such as YouTube offer a participatory culture in which youth can develop, interact, and learn (Chau, 2010). In this context, YouTube is evaluated as a platform that combines media production and social networking features, and it is considered a typical example of the processes of co-production, sharing, and network-based interaction that define participatory culture (Burgess & Green, 2018). Due

to its structure, which allows videos to be uploaded easily and enables a wide variety of users to comment on content, the platform has enabled interaction between content producers and viewers at a level previously not possible. In this new state of affairs, cultural participation and renewed public involvement seemingly work in symbiosis with for-profit models, especially as the most famous user-generated content websites, with the notable exception of Wikipedia, aim to host as much content as possible and to make online user participation a central everyday life practice in order to generate profits (Langlois, 2012).

Studies in the academic literature that address YouTube within the framework of participatory culture demonstrate that audiences do not merely consume media products as close-up viewers; rather, by writing comments, providing feedback, and engaging in dialogue with other users, they collectively construct the meaning of media texts (Chau, 2010). This situation confirms the central claim of participatory culture theory: in participatory culture, the boundary between content producer and audience erodes, and a reciprocal, transformative interaction emerges between these two roles. YouTube viewers not only watch videos but also, through their comments, generate themes and modes of evaluation that attract the community's attention; these comments shape other viewers' perceptions and become part of collective meaning-making processes within the community (Waldron, 2013). Discussions of digital media and participatory culture are also associated with concepts such as collective intelligence and media convergence enabled by Web 2.0 technologies. Within this framework, media theorists argue that technology and social networks expand users' interactive knowledge production, content selection, and reproduction practices, thereby allowing user communities to contribute directly to media content (Van Dijck & Nieborg, 2009, as cited in Mueller, 2014). Platforms such as YouTube have thus become spaces where audience comments generate new layers of meaning and opportunities for cultural interaction. This perspective emphasizes that viewer comments on digital platforms are not merely superficial reactions to texts but play a significant role in producing community norms, values, and shared meanings. Comments not only facilitate information exchange among users but also shape common meanings and interpretive strategies related to shared content. This process is also linked to social interaction theories; through comment spaces, users exchange ideas and transfer cultures of social debate into online environments (Alalem, 2023). This transformation indicates that the distinction between audience experience and media production is becoming increasingly blurred. On digital platforms such as YouTube, the role of the viewer is redefined through participation in meaning-making processes

and the opportunity to voice opinions regarding media content. Comments not only enable viewers to evaluate the messages within content but also establish a shared discursive production and a network of cultural interaction involving content creators and other viewers. This reveals that media production is reshaped collectively not only by professional actors but also by audience communities, confirming that digital platforms constitute significant sites of study for participatory culture (Jenkins et al., 2013).

Netnography is a qualitative research approach developed to understand online cultural interactions emerging in digital environments. Based on the theoretical framework proposed by Kozinets (2015), this method offers the opportunity to examine communication patterns, forms of participation, and meaning-making practices within the contexts of online communities. The netnographic approach is not limited to analyzing digitally produced texts through content analysis; rather, it aims to jointly evaluate the internal dynamics of communities, their modes of interaction, and the discursive structures that form within platforms. In this respect, netnography stands out as a holistic method in digital culture studies that makes user practices and collective meaning production visible (Coşkun Onan & Göktepeliler, 2025). Netnographic studies of YouTube demonstrate that both individual and collective meaning-making processes can be traced through users' comments on video content. These studies reveal that comments are not merely personal evaluations; instead, they provide social contexts that disclose the values, identities, discussion topics, and evaluative criteria of user communities. This can be considered a fundamental characteristic of participatory culture. The platform moves away from being a one-directional space of consumption and becomes a multi-layered environment for discourse production, increasing users' public visibility (Highfield, 2016; Toprak, 2023).

One study that foregrounds the netnographic method examined YouTube user comments to reveal how these comments are interpreted. Drawing jointly on the theoretical frameworks of Diffusion of Innovations and Uses and Gratifications, this research analyzed user perceptions, expectations, and experiences through comments on specific product promotion videos. The findings indicate that YouTube comments serve a function beyond emotional reactions and actively participate in processes of social meaning production. In this context, comment spaces emerge as significant interactional grounds where user experiences are shared, and collective evaluations are produced (Özer & Akdağ, 2024). The concept of participatory culture refers to a process in which users, rather than consuming media content passively, add their own perspectives, interpretations, and evaluations to media texts. On digital platforms such as YouTube, viewers are not limited to liking content; through comments, they engage

in discussions, communicate directly with content creators, and contribute to the formation of norms that gain validity within the community. This process transforms the viewer's position within the media field, turning them into an active component of cultural production, and enables comments to circulate within both global and local media discourses (Jenkins, 2006). Another netnographic study focusing on YouTube communities examined the relationship between content creators and audience groups through comment culture. An analysis of more than 1,500 user comments from a makeup channel revealed distinct participant profiles within the community. It showed that these profiles developed distinct commenting practices depending on content type. This finding demonstrates that comment culture is not merely the sum of individual reactions but has a complex structure shaped by intra-community interactions, shared values, and collectively produced meanings (Mutlu & Bazarıcı, 2016).

The algorithmic structure of digital platforms also plays a decisive role in shaping comment culture. Algorithms influence the visibility, circulation, and level of engagement of user comments, allowing certain comments to become embedded within broader networks of meaning. Platform-based ranking, recommendation systems, and mechanisms such as likes and replies can elevate some viewpoints while relegating others to the background (Aytaş & Yavuz, 2024). This reveals that participatory culture does not always offer an unrestricted space for expression; rather, it is shaped by platform governance policies and technical regulations. In this framework, comments on YouTube should be evaluated not merely as expressions of individual opinions but as a field of cultural production where community norms, traditional media discourses, and the logic of digital platforms intersect (Paray Güney, 2025). YouTube user comments constitute a multi-layered field of meaning production in which social values, identity representations, ideological positions, and cultural expectations are articulated, going beyond simple content evaluations. Through comments, users express their personal relationship with the content while simultaneously opening up the social meanings of that content to negotiation. This indicates that comment spaces function not only as venues for sharing individual opinions but also as public arenas where collective debates and shared interpretive frameworks are formed. By interacting directly with content creators, users reinterpret narratives and, through dialogue with other viewers, produce shared norms and values. This reciprocal interaction process is considered one of the core dynamics of digital platform culture (Inwood & Zappavigna, 2023). Within this context, comment culture on digital platforms can be positioned as a space where participatory meaning-making becomes visible, community relations are concretized, and cul-

tural interactions are traceable. Netnography provides researchers with both a flexible methodological framework and a strong theoretical grounding for examining such interactions. Studies of YouTube comments demonstrate that platform users do not remain passive viewers; rather, they become active subjects who continuously construct meaning through cultural representations, value production, and community norms. In this respect, digital platforms can be understood as multidimensional and dynamic fields of cultural production that transcend the limits of classical media analyses through comment culture. In the context of this study, these theoretical frameworks are not used as general background references but as analytical lenses guiding the interpretation of audience comments. The Uses and Gratifications approach provides a basis for understanding how viewers derive emotional, aesthetic, and social value from cinematic advertising narratives, while the Diffusion of Innovations perspective helps explain how these narratives are adopted, normalized, and circulated within digital communities through user interaction and comment culture.

4. Method

4.1. Research Methodology

This study employs a netnographic research method to examine how cinematic narration and advertising practices intersect on digital platforms and how this intersection is interpreted through audience comments. Netnography is a qualitative research approach that analyzes the cultural practices, interaction patterns, and meaning-making processes of online communities within their natural digital contexts. Developed by Robert Kozinets, this method adapts classical ethnographic research techniques to online environments and is widely used to analyze cultural data produced in digital spaces such as social media platforms, forums, blogs, and video-sharing sites (Kozinets, 2002; Kozinets, 2015). The study seeks to reveal how cinematic aesthetics and advertising narratives converge on the YouTube platform and how this convergence is negotiated through audience comments. Accordingly, the research focuses on audience reactions, commenting practices, and collective meaning-making processes related to advertising films that exhibit cinematic narrative characteristics. The netnographic approach enables analysis not only of the textual structure of such content but also of how it is received and reinterpreted within audience communities.

Since the netnographic research method is applied, identifying online communities and interaction spaces is a crucial stage of the study. In the initial phase, research questions were formulated to understand how the relationship between cinema and advertising is constructed through audience discourses on

digital platforms, and the analysis's scope was delineated accordingly. User comments on advertising videos hosted on YouTube were collected and analyzed within their natural digital contexts, in accordance with research ethics. The study addresses the following research questions:

RQ 1) How do YouTube users generally define and position these advertisements?

RQ 2) What are the dominant emotions and viewing motivations highlighted in the comments?

RQ 3) According to which criteria do viewers evaluate the cinematic and aesthetic elements of the advertisements?

RQ 4) How is the use of artificial intelligence discussed in audience comments in the case of Coca-Cola Masterpiece?

RQ 5) How are national identity, history, and collective memory constructed in audience comments?

RQ 6) How do notions of social benefit, public good, and orientation toward everyday action appear in audience comments?

Following the formulation of these questions, the next stage involved identifying content domains capable of providing relevant answers. To access the relevant YouTube content, key concepts were determined, including cinematic advertising, advertising film, short-film-style advertising, brand film, YouTube advertising, cinematic aesthetics, and digital advertising narratives. Using these keywords, advertising films produced with cinematic narrative features and the user comment communities formed around them were identified on the YouTube platform. User comments associated with the selected videos were examined within the framework of the netnographic approach, without disrupting viewers' natural interaction environments, and were incorporated into the analysis process. In this context, the population of the study consists of advertising films published on YouTube that are produced with cinematic narrative aesthetics. The sample was determined using purposive sampling. Purposive sampling allows for the selection of information-rich and highly interactive content that is directly related to the theoretical framework of the study.

Accordingly, five advertising films produced using cinematic language, reaching large audiences and generating intensive comment interaction on YouTube, were selected as the sample:

- *Istanbul: Love of the Continents* (İstanbul. Kıtaların Aşkı, 2021)
- *Coca-Cola Masterpiece* (2024)
- *Türkiye'nin Kanatları* (Wings of Turkey - Turkish Airlines, 2024)
- *#BırakmayızSeni* (2025)

- *Karneni Göster Kitabını Al (Show Your Report Card Get Your Book, 2025)*

The selection of these videos was based on the following criteria: the presence of cinematic narrative elements (such as characters, dramatic structure, music, and visual aesthetics), the manner in which the brand is integrated into the narrative, high numbers of views and comments, and the existence of discussions in audience comments concerning the relationship between advertising and cinema. In this way, the sample enables a comparative examination of cinematic advertising narratives produced by brands from different sectors and the audience responses generated by these narratives.

4.2. Data Collection Process

The research was conducted between September and December 2025. In the data collection process, archival data were used predominantly, in accordance with the principles of the netnographic method. Archival data are based on the examination of content previously recorded on the platform, without the researcher directly interacting with members of online communities (Kozinets, 2002). Within this scope, audience comments, numbers of likes, reply chains, and interaction patterns among comments associated with the five selected YouTube videos were examined.

The total number of user comments available for the selected advertisements is as follows: *Coca-Cola® Masterpiece* (n = 1,231), *Karneni Göster Kitabını Al* (n = 88), *#BırakmayızSeni* (n = 804), *Türkiye'nin Kanatları* (n = 1,309), and *İstanbul: Love of the Continents* (n = 4,131). Given the large volume of data, a purposive and criterion-based sampling strategy was employed to construct the analytical dataset. From this corpus, a total of (n = 520) comments were selected for in-depth analysis. The selection process prioritized comments that generated interaction (e.g., high number of likes or replies) and contained evaluative or interpretive expressions related to cinematic narrative, advertising discourse, and audience perception. In addition, efforts were made to include comments reflecting diverse viewpoints in order to avoid overrepresentation of highly popular opinions. The unit of analysis in this study is individual user comments. For each video, comments that received the highest number of likes, generated the most replies, and included explicit evaluations of the relationship between advertising and cinema were included in the analysis. In selecting comments, attention was paid not only to individual emotional reactions but particularly to viewers' reflections on narrative structure, the brand, cinematic aesthetics, and the nature of advertising itself. Comments that were clearly produced by fake or automated accounts, as well as messages that were not directly related to the content, were excluded from the analysis. This

approach was adopted to enhance data reliability in netnographic research and to make authentic community interactions more visible.

In the netnographic data collection process, three main types of data are typically considered: archival, elicited, and field notes. In this study, archival data served as the primary source, and the researcher systematically examined textual data from YouTube comment sections. In addition, the researcher's observational notes, intended to understand the contextual dimensions of the comments better, were incorporated into the analysis. The collected data were analyzed using a thematic analysis approach. During the analysis process, recurring meaning patterns, discursive tendencies, and shared themes in audience comments were identified. Prominent thematic categories included cinematic perception, advertising awareness, emotional impact, brand perception, authenticity, and commercial discomfort. Comments were coded according to these themes, enabling an examination of how audience communities interpret and negotiate cinematic advertising narratives. The analytical framework of the study is partially informed by Uses and Gratifications Theory and Diffusion of Innovations Theory. These frameworks guided the identification of thematic categories by focusing on how users express motivations (such as emotional engagement, aesthetic appreciation, and social belonging) and how certain interpretations become dominant, reproduced, and normalized within the comment culture.

5. Findings

This section presents findings from a netnographic analysis of emotions, evaluations, and meaning-making practices in user comments on the five selected YouTube advertising videos. The findings are organized in a question-driven structure, aligned with the research questions. From a theoretical perspective, the findings can be interpreted through the lens of Uses and Gratifications and Diffusion of Innovations. Audience comments reflect not only individual gratifications such as emotional satisfaction, aesthetic pleasure, and identity construction, but also collective processes in which certain interpretations gain visibility, are reinforced through interaction, and gradually become dominant within the digital community.

Research Question 1) How do YouTube users generally identify and position these advertisements?

YouTube user reviews indicate that viewers do not perceive the reviewed advertising videos as ordinary promotional content. In the comments, advertisements are often described as cinematic productions, narratives with a short-film aesthetic, or cultural

representations that create an intense emotional experience. This positioning shows that the key element increasing the ad's viewability is not the direct sales call; it points to a common perception that there is narrative, visual aesthetics, and atmosphere. Here are some representative interpretations of how viewers articulate this positioning:

"Why the hell did this feel like a movie?" (Coca-Cola Masterpiece)

"Genuinely an ad I would not skip" (Coca-Cola Masterpiece)

"I watched a movie, not a commercial, as if my eyes were filled with tears" (Türkiye'nin Kanatları - Turkish Airlines)

"Actually a short film, not just a commercial" (Türkiye'nin Kanatları - Turkish Airlines)

"This video is simply a cinematic masterpiece" (Istanbul: Love of the Continents)

"Breathtaking beauty, this is more of a visual feast than an advertisement" (Istanbul: Love of the Continents)

These interpretations clearly reveal that the advertisement has been redefined as a genre and that the distinction between advertisement and film has blurred in the minds of the audience. It also shows that the audience's definition of the advertisement is based on aesthetic intensity and narrative structure. Advertising is not a persuasion text or product promotion in the classical sense; it is positioned as a viewing experience that demands the audience's emotional engagement. Especially in the Coca-Cola Masterpiece and Turkey's Wings videos, the success of the advertisement is not tied to the visibility of the sales message but to the power of storytelling, rhythmic flow, and the ability to create a cinematic atmosphere. In the *Istanbul: Love of the Continents* video, this positioning is taken even further; The quality of being an advertisement is almost completely faded. Comments treat the video as an urban narrative or a visual portrait, without direct references to the brand or promotional purpose. This suggests that cinematic aesthetic intensity can push the functional call of advertising into the background, transforming content into an autonomous audiovisual text.

Research Question 2) What are the dominant emotions and viewing motivations that stand out in the comments?

The comments reviewed indicate that advertising videos have a strong effect on viewers. The motivation to watch is more than obtaining information about the product or service; emotions, impressions, pride, and aesthetic pleasure shape it. Among the recurring emotions in the interpretations, admiration, pride, longing, hope, sadness, and a sense of collective

belonging stand out. This suggests that advertising operates as an emotional experience space rather than a rational call to action for the audience. Some representative interpretations in which viewers directly express their emotions are as follows:

"I had tears in my eyes, goosebumps" (Türkiye'nin Kanatları - Turkish Airlines)

"I cry every time I watch it, there are no words to describe this feeling" (#BırakmayızSeni)

"Watching this made me feel proud in a way I can't explain" (Türkiye'nin Kanatları - Turkish Airlines)

"I've watched this video over and over again, and I'm getting more emotional every time" (#BırakmayızSeni)

"Even through a screen Istanbul takes your breath away" (Istanbul: Love of the Continents)

"This ad gives me hope and makes me want to dream" (Türkiye'nin Kanatları - Turkish Airlines)

These comments show that intense emotional reactions define the ad-watching experience, and that the viewer's relationship with the video becomes a desire to watch it again. The findings reveal that the audience primarily experiences advertisements as an emotional encounter. Especially in the videos #BırakmayızSeni and *Türkiye'nin Kanatları*, the comments go beyond individual affect and produce a collective feeling. Emotions such as pride, longing, and gratitude are not just individual reactions; they are shared and reproduced in the comment area. Thus, the audience ceases to be a solo spectator and becomes a part of a community that shares emotion.

Istanbul: Love of the Continents video, the dominant emotion is mostly shaped by admiration and desire. The desire to visit the city, the beauty, and spatial fascination show that the advertisement motivates the audience to dream. In this context, the motivation to watch is established between emotional influence and an expectation for the future. In interpretations of the Coca-Cola Masterpiece, the feeling of admiration is directed towards creative labor and artistic performance. Viewers explain their reasons for watching the advertisement through aesthetic pleasure, surprise, and respect for creativity. This situation shows that the motivation for watching the advertisement is not the product; rather, it is associated with the perceived artistry of the production process. For YouTube users, the motivation to watch ads largely depends on its capacity to generate affect. The advertisement is watched, shared, and experienced over and over again, to the extent that it appeals to the audience's daily emotional repertoire. This finding suggests that the success of advertising on digital platforms is increasingly defined by emotional intensity and narrative impact.

Research Question 3) By what criteria do viewers evaluate the cinematic and aesthetic elements of advertisements?

YouTube user reviews show that the aesthetic value of ads is valued more on cinematic integrity and emotional impact than on technical perfection. Viewers treat cinematography, editing, music, and narrative rhythm not as singular elements, but as a narrative system that works together. The aesthetic success of the advertisement is not limited to superficial criteria such as pleasing to the eye, presenting impressive images, or exhibiting technological innovation, but is interpreted through the sense of direction, atmosphere production, and emotional continuity of the narrative. Some representative interpretations in which the audience clearly expresses their aesthetic evaluations are as follows:

"Amazing execution, great storytelling" (Coca-Cola Masterpiece)

"Great vision and direction" (Coca-Cola Masterpiece)

"A wonderful Istanbul feast has emerged in the hands of masters" (Istanbul: Love of the Continents)

"The harmony of music with video is incredible" (Istanbul: Love of the Continents)

"Its fiction, story and emotion are very strong" (Türkiye'nin Kanatları - Turkish Airlines)

"How much has been told in a short film" (#BırakmayızSeni)

These interpretations reveal that the audience evaluates the advertisement as an aesthetic whole and considers the audio-visual elements to serve the narrative as a basic criterion. The findings show that the audience evaluates the aesthetics of advertising with criteria specific to the language of cinema. Cinematographic quality, use of music, and editing gain meaning in the eyes of the audience only to the extent that they contribute to the integrity of the narrative. The emphasis on vision, direction, and storytelling that stand out in Coca-Cola Masterpiece interpretations reveals that the aesthetic success of the advertisement is associated with creative direction and narrative purpose. Here, the advertisement is perceived as a deliberately constructed visual story rather than a technical show. *Istanbul: Love of the Continents* video, aesthetic evaluation is made through the representation of space and the creation of atmosphere. Viewers value the fact that the city is not only presented with beautiful images but also represented in a narrative that carries history, soul, and emotion. In this context, aesthetics is associated with the capacity to establish an urban memory and emotional connection beyond visual allure. In the videos of *Türkiye'nin Kanatları* and *#BırakmayızSeni*, the aesthetic criterion directly coincides with emotional intensity. For viewers, a good aesthetic is one

that establishes a narrative that makes them cry or feel proud and draws them into the story. Providing strong emotional impact in a short time is one of the main reasons these advertisements are considered aesthetically successful.

Research Question 4) How is the use of artificial intelligence discussed in the audience comments in the case of Coca-Cola Masterpiece?

Comments on the Coca-Cola Masterpiece video discuss the use of artificial intelligence in terms of creative labor, ethical responsibility, and artistic intent rather than a technical innovation. Audiences position AI either as a tool to supplement human creativity or as a cost-cutting strategy that substitutes for creative labor. This dual framework does not limit the aesthetic evaluation of the advertisement to the visible text alone; it also makes perceptions of the production process a direct part of the discussion. Here are some statements that represent two opposing approaches that stand out in the comments:

"It wasn't made by AI. It was made by humans using AI. So I can feel the feelings of the person who made this ad."

"The AI was simply a tool in the repertoire of artists alongside conventional methods."

"How did we go from this to AI generated slop?"

"The newest commercials have no substance, blatantly pushing AI to replace artists."

"This ad has purpose and direction; the AI just helped the process."

"Coca-Cola ought to be ashamed of themselves for replacing artists with AI."

These interpretations suggest that the audience is not viewing AI as a positive or negative technology in itself, but rather as a technology that is integrated into the creative process. The findings reveal that the viewer's evaluation of the use of artificial intelligence is directly related to the aesthetic experience. Artificial intelligence is seen as an acceptable and even commendable tool when used in conjunction with human will and artistic vision that guide the creative process. In this approach, the success of advertising is defined through the concepts of perceptible labor, narrative aspect and artistic purpose. Viewers therefore position the Masterpiece ad as a benchmark, comparing it to later AI-heavy ads. On the other hand, in interpretations where artificial intelligence is perceived as a substitute for creative labor, aesthetic failure is considered alongside an ethical problem. In this context, it is emphasized that advertising is soulless, aimless, and profit-oriented; the use of artificial intelligence is presented as the reason for the loss of artistic quality. Thus, criticism of technology is closely linked to the brand's values and production policies.

From a netnographic perspective, the example of the Coca-Cola Masterpiece transforms the YouTube commentary space into a kind of cultural negotiation. Through advertising, viewers discuss the role of artificial intelligence in contemporary creative industries, the protection of artist labor, and aesthetic responsibility. This situation means that advertising is no longer just a communication tool; It shows that it has become a text that starts a public debate on technological transformation and cultural values.

Research Question 5) How are national identity, history and collective memory established in audience interpretations?

The reviewed interpretations show that advertising is strongly associated with national identity, historical continuity and collective memory, especially in the #BırakmayızSeni and Türkiye'nin Kanatları -Turkish Airlines videos. In these videos, the viewer does not see the advertisement as an up-to-date promotional content; It positions it as a narrative that establishes a connection between the past and the present, reminds national values and creates a common emotional space. Beyond individual reactions, the field of interpretation transforms into a collective discourse space based on remembrance, remembrance and the production of belonging. Here are some representative comments that clearly reflect this theme:

"Remembering the anniversary of the death of an immortal is an honor unique to us in the world" (#BırakmayızSeni)

"We did not leave you; we will not leave you, Atam. You are forever in our hearts" (#BırakmayızSeni)

"This nation loved Atatürk, my brother, there is nothing to do" (#BırakmayızSeni)

"We were proud even if it was in the advertisement" (Türkiye'nin Kanatları - Turkish Airlines)

"Turkish Airlines commercials are like a movie; our eyes fill with tears every time" (Türkiye'nin Kanatları - Turkish Airlines)

"Only such a noble nation can advertise like this" (Türkiye'nin Kanatları - Turkish Airlines)

These comments reveal that the advertisement is read by the audience as a symbolic carrier of national identity and show that the advertising narratives are integrated with national identity and collective memory in the eyes of the audience. In #BırakmayızSeni video, the comments produce a discourse of commemoration and gratitude centered around the figure of Atatürk. Viewers express the emotions they experience while watching the advertisement not as a personal reaction, but as part of a historical responsibility and collective memory. In this respect, the interpretation area functions as a digital commemoration space and the advertisement turns into a symbolic practice of remembrance rather than a corporate content. In the video Türkiye'nin Kanatları

collective memory is built on the narrative of national success, continuity and pride. Turkish Airlines is not only a company; It is positioned as an institution that represents the country, carries the flag and connects the historical heritage to the present. The expression of the audience that we are proud even if it is in the advertisement shows that the quality of being an advertisement is pushed into the background and the content is evaluated with the power to produce national belonging. In both videos, the comments show that the viewer does not want to advertise as a consumption-oriented communication; It reveals that it reads as a cultural text that reinforces national identity, reproduces common values and establishes an emotional bond between the past and the present. This shows that, on digital platforms where cinematic narrative and advertising merge, brands can elicit strong emotional resonance through representations of national memory and identity.

Research Question 6) How do social benefits, public interest, and orientation towards daily action appear in audience comments?

Among the advertisements examined, the Karneni Göster Kitabını Al video yields a limited but meaningful set of comments centered on the themes of direct social good and public good. In this video, audience reactions are shaped by the campaign's social function and aspects that touch daily life, rather than by aesthetic or emotional intensity. Comments show that the advertisement prompts the audience to take concrete action, and that the practical implications of the content come to the fore. Here are some user reviews that represent this trend:

"I sent news to my grandchildren, so that they would get it" (Karneni Göster Kitabını Al)

"Thank you very much, it is really a very meaningful campaign" (Karneni Göster Kitabını Al)

"It's a perfect advertisement" (Karneni Göster Kitabını Al)

"When I first saw this ad, I was scared, then I was excited" (Karneni Göster Kitabını Al)

"Big bank, thank you İşbank" (Karneni Göster Kitabını Al)

The findings reveal that the Karneni Göster Kitabını Al video produces a different form of reception than other ad examples. The audience does not consider this ad as a cinematic narrative or an emotional experience, but as an application that directly generates social benefit. While aesthetic praise or narrative analysis is limited in the comments, the concrete impact of the campaign on daily life comes to the fore. The expression "I released news to my grandchildren" indicates that the relationship that the advertisement establishes with the audience does not remain at the level of consumption or symbolic belonging; It shows that it has gained a function

that directs daily behavior. In this respect, advertising turns into a call to action rather than a content watched by the audience. The acceptance of social benefit-oriented advertising is directly related to the brand's perception of corporate responsibility. From a netnographic perspective, this video provides a meaningful example despite the low volume of comments. The limited number of comments suggests that the content's capacity to generate cultural negotiation is narrower compared to other videos. However, current interpretations reveal that advertising is positioned as a functional, reliable and benefit-based public communication in the eyes of the audience. This finding shows that ad reception on digital platforms cannot be reduced to a singular aesthetic or emotional framework; It shows that audience motivations can differ on the axes of affect, identity, ethics or practical benefit depending on the type of content.

6. Conclusion

The relationship between cinema and advertising possesses a historically deep-rooted and aesthetically permeable structure that cannot be explained solely by the insertion of promotional content between films. Since its emergence, cinema has been shaped simultaneously as a narrative art form and an industrial field of circulation; this dual structure has provided the ground for advertising to borrow cinematic narrative forms and, over time, to reposition itself within these forms. Especially with the widespread adoption of digital platforms, advertising has moved beyond classical persuasive discourse. It has transformed into a narrative form that engages audiences through storytelling, visual atmosphere, emotional intensity, and cinematic aesthetics. By examining audience comments on YouTube advertising films produced with cinematic narrative aesthetics using a netnographic approach, this study reveals how advertising is defined, experienced, and meaningfully interpreted on digital platforms. The findings indicate that advertising is increasingly distancing itself from being perceived merely as a promotional text in the narrow sense; instead, it is being reconfigured through cinematic language, emotional narration, and cultural representation. The five videos analyzed offer strong examples that concretize the advertising–cinema relationship not only at the level of formal similarity but also through audience perceptions and commenting practices.

The initial findings demonstrate that YouTube users tend to define and position these advertisements not primarily as advertising, but rather as short films, cinematic narratives, or audiovisual experiences. Particularly in cases such as *Coca-Cola Masterpiece* and *Türkiye'nin Kanatları*, viewers evaluate the persuasive power of advertising less through product or brand information and more through its capacity

for storytelling, atmosphere creation, and emotional intensity. In *Istanbul: Love of the Continents*: the advertising dimension is almost entirely relegated to the background, with the content perceived as a city portrait and an aesthetic object for viewing. This suggests that on digital platforms, the legitimacy of advertising is increasingly tied to its capacity to produce aesthetic experience. The dominant emotions and viewing motivations highlighted in audience comments clearly demonstrate that advertising is experienced as an affective encounter. Emotions such as admiration, pride, longing, melancholy, and hope do not remain merely individual reactions; through sharing in comment spaces, they generate a collective affective environment. Especially in the cases of *#BırakmayızSeni* and *Türkiye'nin Kanatları*, comment sections go beyond individual viewing experiences and transform into spaces of shared emotional expression and the production of belonging. In this context, YouTube comments function as an important cultural space that renders visible and amplifies the relationship audiences establish with advertising. Evaluations of the cinematic and aesthetic elements of the advertisement reveal that audiences assess advertising aesthetics using criteria specific to cinematic language. In the comments, aesthetic value is defined not primarily through technical perfection or visual spectacle, but through narrative coherence, a sense of direction, harmony between music and editing, and the power of emotional transmission. For viewers, a successful advertisement delivers intense emotional impact quickly and constructs a narrative that draws the audience into its story world. This suggests that the aesthetics of advertising on digital platforms increasingly overlap with those of cinema.

Discussions surrounding the use of artificial intelligence in the case of *Coca-Cola Masterpiece* demonstrate that audiences evaluate advertising not only through its visible text but also through production processes and ethical considerations. In the comments, artificial intelligence is accepted when positioned as a tool that supports human creativity. In contrast, it is met with criticism when perceived as replacing creative labor or as a cost-reduction strategy. This finding indicates that, in contemporary advertising reception, aesthetic value is considered alongside production regimes and labor politics. In this respect, advertising becomes not merely a marketing product, but also a carrier of public debates concerning technological transformation and cultural values.

Themes of national identity, history, and collective memory become particularly prominent in the *#BırakmayızSeni* and *Türkiye'nin Kanatları* videos. In these cases, viewers position the advertisements not as contemporary promotional content but as narratives that establish a connection between past and present, recall shared values, and reinforce national

belonging. The comment sections transform into digital spaces of commemoration and remembrance; advertising is embraced less as a corporate message and more as a symbolic cultural text. This demonstrates that cinematic advertising narratives can function as powerful instruments in the construction of collective memory and identity. By contrast, the socially oriented *Karneni Göster Kitabını Al* video reveals that advertising reception is not confined to a singular aesthetic or emotional framework. In this example, audience comments focus on the campaign's tangible impact in everyday life, its capacity to generate practical benefit, and its ability to prompt action. While aesthetic discussions recede into the background, the campaign's social function and its direct effects come to the forefront. This finding indicates that the reception of advertising on digital platforms varies by content type and the value it offers. Advertising may thus be positioned at different times as an aesthetic viewing experience, an emotionally charged space of collectivity, an arena for ethical debate, or a call that produces social benefit. The netnographic analysis makes this multi-layered meaning production visible, demonstrating that the relationship between advertising and cinema on digital platforms is not merely a formal convergence, but a dynamic cultural process constructed through audience practices and comment culture.

References

- Adorno, T. W., & Horkheimer, M. (2007). *Kültür endüstrisi*. İstanbul: İletişim Yayınları.
- Alalem, A. (2023). Digital storytelling for cultivating a participatory culture in first-year composition. *Computers and Composition*, 69, 102792.
- Arslan, E. (2011). Sinema Reklamcılığı: Sinema Salonunun Bir Reklam Mecrası Olarak Kullanımının Türkiye Örneğinde İncelenmesi. *İstanbul Üniversitesi İletişim Fakültesi Dergisi*, 1(39), 5-27. <https://doi.org/10.17064/iüifhd.50064>.
- Aydın, D., & Orta, N. (2010). Sinemanın Reklam Aracı Olarak Kullanımı 'Türk Filmlerinde Marka Yerleştirme Uygulamaları'. *İstanbul Üniversitesi İletişim Fakültesi Dergisi*, 1(36), 7-23. <https://doi.org/10.17064/iüifhd.97576>.
- Aytaş, M., & Yavuz, G. (2024). Netflix Çağı: Dijital Seyir Platformları Ve Belgesel Sinemada Anlatının Dönüşümü. *Idil: Journal of Art & Language*, 13(113).
- Baudrillard, J. (2008). *Simulakrlar ve simülasyon* (O. Adanır, Çev.). Doğu Batı Yayınları.
- Belk, R. (2016). The self in consumption. In *Routledge international handbook of consumer psychology* (pp. 185-202). Routledge.
- Bolat, N. (2022). Reklam Film (Advermovie): Uzun Metraj Film Olarak Reklam. *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 8(2), 651-670. <https://doi.org/10.31592/aeusbed.1039102>
- Burgess, J., & Green, J. (2018). *YouTube: Online video and participatory culture*. Polity Press.
- Chau, C. (2011). YouTube as a participatory culture. *New directions for youth development*, 2010(128), 65-74.
- Coca-Cola®. (2021). *Coca-Cola® Masterpiece* [Video]. YouTube. <https://www.youtube.com/watch?v=VGa1imApfdg>
- Coşkun Onan, B., & Göktepeliler, Ö. (2025). Netnografik Araştırmaların Sistemik İncelemesi. *Gaziantep Üniversitesi Sosyal Bilimler Dergisi*, 24(2), 574-599. <https://doi.org/10.21547/jss.1548503>
- Debord, G. (1996). *Gösteri toplumu*. İstanbul: Ayrıntı Yayınları.
- Delwiche, A., & Jacobs, H. J. (2012). Introduction: What is participatory culture?. In *The participatory cultures handbook* (pp. 3-9). Routledge.
- Er, E. (2013). Reklam ve Sinema: Sinema Filmlerinde Ürün Yerleştirme. *Ege Üniversitesi İletişim Fakültesi Yeni Düşünceler Hakemli E-Dergisi*(7), 145-160.
- Gölgeli, K., & Geçen, C. (2025). Reklamda Sinemasal Anlatı Kullanımı: The Journey Filmi Örneği. *Elektronik Sosyal Bilimler Dergisi*, 24(1), 211-237. <https://doi.org/10.17755/esosder.1517158>
- Inwood, O., & Zappavigna, M. (2023). Conspiracy theories and white supremacy on YouTube: Exploring affiliation and legitimization strategies in YouTube comments. *Social Media+ Society*, 9(1), 20563051221150410.
- İncedursun, K., & Sadedil, S. N. (2025). Sinema Filmlerinde Ürün Yerleştirme Reklamları Üzerine Disiplinlerarası Bir İnceleme. *Dicle Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, (39), 448-473. <https://doi.org/10.15182/diclesosbed.1696504>
- İş Bankası. (2025). *Karneni göster kitabını al* [Video]. YouTube. <https://www.youtube.com/watch?v=YnHZ5ayAkOw>
- Highfield, T. (2016). *Social media and everyday politics*. Polity Press.
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York University Press.
- Jenkins, H., Ford, S., & Green, J. (2013). *Spreadable media: Creating value and meaning in a networked culture*. New York University Press.
- Kılınçarslan, Y. (2015). Sinemada Bir Pazarlama Unsuru Olarak Film Fragmanları. *Karadeniz Teknik Üniversitesi İletişim Araştırmaları Dergisi*, 5(2), 32-53.
- Koç Holding. (2025). *#BırakmayızSeni* [Video]. YouTube. <https://www.youtube.com/watch?v=c--p8rmzC4Q&t=1s>
- Kozinets, R. V. (2015). *Netnography: Redefined* (2nd ed.). Sage.
- Kozinets, R. V. (2002). The Field Behind the Screen: Using Netnography for Marketing Research in Online Communities. *Journal of Marketing Research*, 39(1), 61-72.
- Langlois, G. (2012). Participatory Culture and the New Governance of Communication: The Paradox of Participatory Media: The Paradox of Participatory Media. *Television & New Media*, 14(2), 91-105. <https://doi.org/10.1177/1527476411433519> (Original work published 2013)
- Mutlu, B., & Bazarcı, S. (2016). YouTube İçerik Üreticileri ve Kanal Toplulukları Üzerine Netnografik Bir Analiz. *Akdeniz İletişim Dergisi*, 39(1), 61-72.
- Özer, B., & Akdağ, M. (2024). Çevrim İçi Kullanıcı Yorumları Üzerine Netnografik Bir Araştırma. *Selçuk İletişim Dergisi*, <https://doi.org/10.18094/JOSC.1482923>
- Sanofi, Z., Dewi, E. A. S., Sjachro, D. W., & Arifin, H. S. (2024). A bibliometric analysis of web 2.0 in election campaign. *Heliyon*, 10(22).
- Poray Güney, M. (2025). Katılımcı Kültür ve Sosyal Ağların Yakınsaması Ekseninde Seçmen Etkileşiminin Youtube Üzerinde Yansımaları. *Maltepe Üniversitesi İletişim Fakültesi Dergisi*, 11(2), 262-288.
- Timelab Pro. (2021). *İstanbul: Love of the continents / İstanbul. Kıtaların aşkı* [Video]. YouTube. <https://www.youtube.com/watch?v=eV6ITEY95yY>
- Toprak, A. G. (2023). Dijital İletişim Çağında Mekânsal Bilginin Üretimi: Dijital Haritalar, Topluluklar ve Katılımcı Kültür. *İletişim Kuram ve Araştırma Dergisi*, (62), 168-187.
- Turkish Airlines. (2024). *Türkiye'nin kanatları* [Video]. YouTube. <https://www.youtube.com/watch?v=nPryMbKwt-s>
- Van Dijck, J., & Nieborg, D. (2009). Wikinomics and its discontents: A critical analysis of Web 2.0 business manifestos. *New Media & Society*, 11(5), 855-874. <https://doi.org/10.1177/1461444809105356>

Waldron, J. (2013). User-generated content, YouTube and participatory culture on the Web: Music learning and teaching in two contrasting online communities. *Music Education Research*, 15(3), 257-274.

Zhao, E. J. (2014). The micro-movie wave in a globalising China: Adaptation, formalisation and commercialisation. *International Journal of Cultural Studies*, 17(5), 453-467.

Applicability of Out-of-Class Education in Gastronomy Education in Turkey¹

Recep Tayyip Ünüvar* / Ph.D. Stu. 

Balikesir University, Institute of Social Sciences, Department of Gastronomy and Culinary Arts
receptayyipunuvar03@gmail.com

Mehmet Sarioğlu / Prof. Dr. 

Balikesir University, Faculty of Tourism, Division of Gastronomy and Culinary Arts
mehmets@balikesir.edu.tr

*Corresponding Author

Abstract

This study aims to determine the applicability of out-of-class education in gastronomy education in Turkey. The research was designed based on a phenomenological approach within qualitative research methods. The study group consists of eight administrators involved in organizing such activities. Data were collected through semi-structured interviews and analyzed using content analysis.

The findings revealed several themes related to the definition, advantages, limitations, planning processes, and implementation dimensions of out-of-class gastronomy education. The results indicate that these activities contribute to the development of students' professional skills, enhance the permanence of learning, and provide valuable industry experience. However, factors such as cost, time constraints, organizational challenges, and safety concerns were

identified as key elements limiting the applicability of these practices. In addition, effective planning processes, stakeholder collaboration, and institutional support were found to play a critical role in successful implementation.

This study contributes to the literature by offering a definition of out-of-class gastronomy education and providing conceptual and practical insights into its applicability. The findings are expected to guide educators and practitioners in planning and implementing such educational activities.

Keywords: Culinary Education, Out-of-Class Education, Vocational Education.

JEL Codes: I20, I21, I23

¹This study was prepared based on the doctoral thesis titled "Applicability of Out-of-Class Education in Gastronomy Education in Turkey (Türkiye'de Gastronomi Eğitiminde Sınıf Dışı Eğitimin Uygulanabilirliği)" submitted to Balikesir University.

Citation: Ünüvar, R. T., & Sarioğlu, M. (2026). Applicability of out-of-class education in gastronomy education in Turkey. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

One of the biggest obstacles to learning is a lack of motivation for school and coursework (James & Williams, 2017). This lack of motivation stems from students being deprived of interaction in the environments where they receive education (Ertürk, 1998). In contrast, humans are organisms constantly interacting with their environment (Yazıcı & Çobanoğlu, 2017). In response to this problem, there has been an increase in initiatives to enhance out-of-class activities that boost students' motivation in courses (Füz, 2018). This allows students to improve both their academic development in that course and their sensory abilities through active activities (Cho et al., 2019).

Philosophers and educational scientists such as Comenius, Rousseau, Pestalozzi, and Dewey laid the foundations for out-of-class education (Smith, 1995). In its modern sense, out-of-class education is considered a new method (Gilbertson et al., 2006). In this context, out-of-class education was accessible in the official programs of Broad Oaks Schools in the 19th century. This method was first included in primary education programs in 1912 (Stine, 1997). Out-of-class education was observed to be implemented within the scope of scouting and camping activities in the early 20th century (Sharp, 1943). The "Human and Environment" conference held in 1972 accelerated environmental activities, and the Tbilisi Declaration was published in 1977. This declaration emphasized the necessity of out-of-class educational activities (Yazıcı & Çobanoğlu, 2017).

Out-of-classroom education is frequently discussed by educational science researchers today. However, there is limited research on this topic specifically within vocational and gastronomy education. In Turkey, existing studies on gastronomy education mainly focus on issues such as curriculum development (Aslan & Aktaş, 2011; Çalışkan, 2022; Çarbuğa et al., 2018; Deveci et al., 2017; Güdek & Boylu, 2017; Öney 2016; Temizkan & Sever, 2021; Yıldız & Aslan, 2019), practical training (Akoğlu et al., 2017; Beyter et al., 2019; Çavuşoğlu, 2021; Öney, 2016; Sevim & Gökem, 2015), internship studies (Akin, 2018; Babaç & Öncel, 2018; Beyter et al., 2019; Özer, 2020), the inadequacy of practical education (Akoğlu et al., 2017; Aydemir & Buyruk, 2019; Babaç & Öncel, 2018; Beyter et al., 2019; Çavuşoğlu, 2021; Öney, 2016; Sevim & Gökem, 2015), and the conceptualization of gastronomy education (Cizrelioğulları & Altun, 2019; Özer, 2020; Yılmaz, 2018). Although these studies contribute to understanding different aspects of gastronomy education, research examining teaching methods and techniques that can be applied in gastronomy education remains limited.

Previous studies indicate that out-of-classroom education provides significant educational benefits. For instance, Lee et al. (2025) reported that it increases

academic achievement, provides psychological benefits, creates a sense of belonging, and positively affects student motivation. Dewi et al. (2025) noted that these activities enhanced student participation, strengthened the connection between theory and practice, and improved overall learning outcomes. Similarly, Mann et al. (2022) observed that nature-based out-of-class activities contributed positively to students' personal, academic, and social development. Gastronomy education already includes various out-of-class activities such as on-the-job training, gastronomy workshops, gastronomy tours, gastronomy events, and internships (Sarıoğlu et al., 2024). Despite these examples, the applicability of out-of-classroom education as a structured educational approach in gastronomy education has not been sufficiently examined. Therefore, this study aims to determine the applicability of out-of-classroom education in gastronomy education in Turkey and to contribute to the more effective implementation of vocational and gastronomy education.

2. Literature Review

Education refers to activities carried out in a planned or unplanned manner that aim to develop and transform individuals' cognitive, physical, emotional, and social abilities and skills (Akyüz, 2012). In recent years, vocational education has rapidly increased both in importance and prevalence (Nguyen, 2023). Countries that place greater emphasis on vocational education tend to experience higher rates of development (Yörük et al., 2002).

Since the 21st century, the tourism sector has continued to grow steadily. Within this context, there has been an increasing demand for qualified personnel in the sector (Solmaz & Erdoğan, 2013). The schools established to provide tourism education aim to meet this demand (Emir et al., 2010). In this regard, gastronomy education has become an important field within educational sciences (Sarıoğlu, 2016).

Gastronomy is defined as a discipline that guides individuals on what to eat and drink, where, when, in what manner, and in which combinations (Santich, 2004). Gastronomy tourism has been steadily increasing its economic value within the tourism sector (Dixit, 2019). The foundations of gastronomy education date back to the 17th and 18th centuries in France, where training programs were organized to provide high-quality service to the nobility (Zopatis et al., 2014). In Turkish culture, the foundations of education in this field are based on the Ahi Organization (Civelek, 2014). After the 2000s, gastronomy education has become a globally popular field of education (Çalışkan, 2022).

Agyeiwaah et al. (2019) categorize gastronomy tourism into three main types: observational, experiential, and participatory. These activities are also

widely used in out-of-class education practices. Out-of-class learning is carried out through hands-on activities such as lessons outside the classroom, nature and environmental activities (Sari & Paidi, 2018), artistic activities, camps, sports, drama, games, excursions, and observations (Öztürk Aynal, 2013). Considering the definition of out-of-class activities, out-of-class educational activities in gastronomy education include workshops (Boyras et al., 2018), field trips to food and beverage businesses (Seçim, 2020), and on-the-job training activities (artuklu.edu.tr, 2026; erbakan.edu.tr, 2026; Sarioğlu et al., 2024; turizm.aku.edu.tr, 2026). Additionally, internships are conducted by both formal and informal institutions providing tourism education, enabling students to develop their practical skills (Lam & Ching, 2007). This allows students to receive training in a real business environment (Dario & Štetić, 2017).

2.1. Out-of-Class Education in Gastronomy Education

Within the scope of this study, out-of-class gastronomy education activities that fit the definition of out-of-class education are discussed under this heading.

2.1.1. On-the-job training

In recent years, some gastronomy and culinary arts departments have included courses such as “*Business Education*” or “*On-the-Job Training*,” which involve out-of-class learning activities. These courses are generally offered as electives and may replace several theoretical elective courses. Through this system, students gain practical experience in real work environments for an extended period. Thus, in addition to their theoretical education at school, students have the opportunity to develop professional skills through hands-on training in businesses outside the classroom (artuklu.edu.tr, 2026; erbakan.edu.tr, 2026; Sarioğlu et al., 2024; turizm.aku.edu.tr, 2026).

2.1.2. Gastronomy workshops

Workshops refer to groups of people who come together to discuss a specific topic and carry out practical activities. Seminars and training sessions may also be included within this scope (dictionary.cambridge.org, 2026). In gastronomy education, workshops are frequently used to reinforce theoretical knowledge through practice and to develop professional skills. In this context, workshops are organized on topics such as coffee preparation, cake and pastry making, chocolate production, world cuisines, and Far Eastern cuisine. These activities are generally conducted by professional chefs (Boyras et al., 2018).

2.1.3. Gastronomy trips

This method involves planned, scheduled activities outside of school to reinforce the topics students learn in school (Demirel, 2009). Gastronomy trips generally include activities such as participating in local cooking competitions, attending gastronomy-themed festivals, visiting food production facilities, visiting famous restaurants, attending exhibitions of local food and beverages, and tasting (Hall & Mitchell, 2007).

2.1.4. Culinary education organizations

Gastronomy and food festivals, culinary days, and cooking courses are organized in Turkey to support gastronomy education (Sormaz et al., 2020). The Mengen National Cooking Camp is one such event designed for this purpose. This week-long event offers various gastronomy training programs, with participation from students and academics from across Turkey (Kurnaz et al., 2018).

2.1.5. Internships

Internships are programs that allow students to apply theoretical knowledge and gain practical experience in real work environments while developing professional skills. In gastronomy education, internships play a significant role (Akin, 2018), as workplace experiences help students progress toward their career goals (Dolmacı & Duran, 2017). They also benefit workplaces and the industry, partially meeting the sector's need for qualified personnel through interns from vocational institutions (Tektaş et al., 2016).

As discussed above, many gastronomy education activities can be considered within the scope of out-of-class education. However, studies examining the applicability of these activities in gastronomy education remain limited. Therefore, investigating the applicability of out-of-class education in gastronomy education is important for improving both educational quality and professional competencies.

2.2. Related Research

A number of studies have examined out-of-class education, and selected examples are presented below:

Wang (2024) emphasized the increasing need for out-of-class education activities, particularly as students' progress to higher educational levels, and explored the correlation between these activities and academic achievement. The study highlighted the importance of activities outside the classroom in developing students' cognitive and social abilities and provided recommendations for institutions, educators, and students to ensure effective implementation.

Nassar et al. (2025) examined the impact of out-of-class education on students' academic performance, university experience, and institutional reputation. The results indicated that such activities positively influence student success, enhance university experiences, and contribute to the institution's reputation.

Yusupbayevna (2023) focused on primary school students and reported that sports, art, and community service activities enhance cognitive, social, and emotional learning. The study emphasized that structured participation in these activities can improve overall student development.

Muharom et al. (2022) investigated the use of digital devices in out-of-class English education with 267 students and found that these tools significantly enhance learning outcomes and student engagement.

Avcı and Gümüş (2020) conducted a six-week study with control and experimental groups and determined that students participating in out-of-class activities developed a more positive attitude towards social studies compared to those in the control group.

Aslan and Demircioğlu (2019) reported that chemistry students who engaged in out-of-class activities achieved necessary learning outcomes more effectively, highlighting the practical benefits of such approaches.

Ocak and Korkmaz (2018) explored preschool and science teachers' perspectives on out-of-class learning environments. Findings indicated that these activities facilitate learning by doing, promote long-term retention, and support overall student development, although challenges such as crowded classrooms, financial constraints, and safety concerns were noted.

Türkmen (2018) examined middle school teachers' views and found that out-of-classroom environments help link theoretical knowledge to real-life applications. The study also identified limitations, including economic and bureaucratic obstacles and inconsistent implementation across subjects.

Avcı Akçalı (2015) investigated teachers' and prospective teachers' opinions on out-of-class history education. Semi-structured interviews revealed that well-structured activities can enhance understanding, engagement, and teaching effectiveness in history classes.

3. Method

3.1. Purpose of the Research

This study aimed to determine the applicability of out-of-class gastronomy education in Turkey. It also aimed to define out-of-class gastronomy education and identify its limitations and positive aspects.

3.2. Research Method (Model)

Qualitative research is an umbrella term encompassing numerous concepts that cannot be explained in a single sentence (Yıldırım, 1999). The concept of qualitative research can also be expressed as research used to collect qualitative data, such as observation, interview, and document analysis (Yıldırım & Şimşek, 2008).

This study, conducted to determine the applicability of out-of-class gastronomy education in Turkey, employed phenomenology, a qualitative research method. This method investigates the existence of events and phenomena by seeking answers to the question What is reality? (Baş & Akturan, 2017). In phenomenology, the researcher does not simply take the information obtained through the experiences of the individuals interviewed for the study as it is. In addition, they interpret these statements in depth (Creswell & Poth, 2018). Two approaches are used in phenomenology: descriptive and interpretive (Yalçın, 2022). In descriptive phenomenology, pioneered by Husserl, the aim is to reveal and understand lived experiences. In interpretive phenomenology, the details within experiences are explored and interpreted. The pioneer of this approach is Heidegger (Kıral, 2021). In this study, interpretive phenomenology was employed.

3.3. Qualitative Data Collection Tool

Interviewing individuals involved in a topic or event is one of the most effective ways to examine it in detail, within a cause-and-effect framework (Turnuklu, 2000). Semi-structured interviews are important because they allow the participant to ask a variety of questions, in addition to the questions prepared in advance by the researcher, as the interview progresses (Yıldırım & Şimşek, 2005).

In this study, interviews, a qualitative data collection method, were used to determine the applicability of out-of-class education in gastronomy education in Turkey. To develop this tool, a semi-structured interview form was created based on a detailed review of the literature. In this context, very limited sources were available regarding out-of-class learning in gastronomy education. The interview questions were developed based on the studies of Torun (2021) and Türkmen (2018). In this context, an eight-question pool was subjected to expert opinion. To ensure scale validity (Yurdugül, 2005), the opinions of two professors, two associate professors, and one assistant professor were obtained within the scope of the expert opinion. The semi-structured interview form, comprising four main questions and demographic items, was developed based on the research objectives. Following expert review, the draft form

was subjected to a pilot study to assess its clarity and applicability, and it was finalized in line with the feedback obtained. Accordingly, the questions included in the semi-structured interview form are as follows:

- What is Out-of-Class education in gastronomy education? What does it mean to you?
- What contributions can Out-of-Class education activities make to gastronomy education? Should this method be used in gastronomy education? Why?
- Where are the Out-of-Class education environments that can be used in gastronomy education? What activities can be done within the scope of Out-of-Class education in gastronomy education?
- What limitations/problems are encountered when implementing Out-of-Class education activities? How can these problems be solved?

3.4. Study Group

Managers possess numerous competencies to ensure success in their institutions (Bolat et al., 2008) and possess conceptual, analytical, and decision-making skills (Çetinkaya & Özkutlu, 2010). To obtain in-depth information on the subject, the study's population consists of managers of institutions that provide non-formal gastronomy education. Managers were specifically selected because they are actively involved not only in the administrative processes of educational activities but also in the planning, organization, and sometimes the implementation of gastronomy training events. Therefore, they possess comprehensive knowledge regarding the organization, management, and practical execution of out-of-class gastronomy education activities. Face-to-face interviews were conducted with managers of institutions providing non-formal gastronomy education within this population. This allows for a smaller participant group compared to quantitative research. In-depth research is conducted with a predetermined population (Baltacı, 2019).

The sample size for the qualitative study was determined using theoretical sampling. In this context, a sample is not determined in advance, and data collection is terminated at the saturation point, determined by the similarity of the data obtained from the research. This approach does not include a specific target participant logic at the beginning of the study. The data collection process is terminated when the data obtained through the research repeat themselves and reach saturation (West, 2001). In theoretical sampling, the sample is determined incrementally as the research continues (2000, Cutcliffe). In other words, new interviews are conducted based on the analyses conducted after the interviews, and new participants are included in the sample (Baş & Akturan, 2017).

The "Semi-Structured Interview Form on the Applicability of Out-of-class Education in Gastronomy Education in Turkey," developed for the research, was administered to eight individuals selected through theoretical sampling. A total of 24 participants were offered interviews during the process; however, 16 individuals declined to participate and the interviews were conducted with eight volunteer participants. Voluntary participation is also important for the accuracy and reliability of the information obtained in qualitative research (Güler et al., 2015).

During the interview process, the emergence of new codes was monitored continuously. While a high number of new codes emerged in the initial interviews, the number of new codes gradually decreased and no new codes appeared after the sixth interview. The seventh and eighth interviews confirmed this pattern. A total of 55 codes were identified in the study, and the repetition of codes indicated that data saturation had been reached. Therefore, the data collection process was terminated after the eighth interview and the data analysis phase began.

3.5. Research Implementation Process

The semi-structured interview form developed for the research was administered to eight volunteer participants between February 15 and June 15, 2025. The interviews were carried out through a combination of face-to-face and online sessions. Face-to-face interviews were audio-recorded using a mobile phone, whereas online interviews were conducted and recorded using Zoom. The audio recordings of eight participants totalled 3 hours, 31 minutes, and 20 seconds.

3.6. Preparing Qualitative Data for Analysis

Audio recordings from interviews conducted within the scope of qualitative research must first be transcribed and then read repeatedly (Glesne, 2014). A total of 8 pages of summaries and 60 pages of extended notes were taken during the interviews. Afterwards, the relationships among the data are revealed, different variations in the data are examined and legitimized, and the analysis is presented within a logical framework (Engel & Schutt, 2017). The same procedure was applied in the present research. Accordingly, the participants were analyzed by naming them as P1, P2, etc.

3.7. Analysis of Qualitative Data

Categorizing/organizing the data obtained from the research around a specific concept is another step in analyzing qualitative data. The notes taken during this stage are analyzed word by word and paragraph

by paragraph. This process is referred to as coding (Güler et al., 2015). Coding is discussed under two headings: theoretical coding and open coding. These coding methods are also referred to as coding based on predetermined concepts and coding based on concepts obtained from the data (Yıldırım & Şimşek, 2006). In this study, the open coding technique was used. In open coding, the concepts under analysis are defined. These are then identified in detail according to their dimensions and characteristics (Güler et al., 2015). MAXQDA Analytics Pro 2020 was used to code the data set in this study. The data obtained from the analyses are presented in graphs and tables.

3.8. Limitations of the Research

The fact that financial resources, energy, time, and organization are concentrated under the responsibility of a single person during the research process can limit the research's scope (Yıldırım & Şimşek, 2013). This study also has certain limitations, such as the number of researchers and financial constraints. This study was conducted with administrators who plan out-of-class learning activities in gastronomy education. As these participants are directly involved in designing such programs, they provide immediate and valuable insights into the subject.

Table 1. Participant List

No	Participant Code	Professional Experience	Gender	Education	Receiving Out-of-Class Education	Duration (Min:Sec)
1	P1	25 years	Female	Faculty of Education	Taken	20:34
2	P2	26 years	Female	Faculty of Vocational Training	Taken	22:28
3	P3	22 years	Male	Faculty of Education	Taken	31:31
4	P4	18 years	Male	Faculty of Education	Taken	25:23
5	P5	30 years	Male	Graduate Program	Taken	35:10
6	P6	7 years	Male	Gastronomy and Culinary Arts PR	Taken	22:30
7	P7	24 years	Female	Faculty of Education	Taken	22:44
8	P8	28 years	Female	Faculty of Education	Taken	31:00

As part of the study, interviews were conducted with managers of eight volunteer institutions providing non-formal gastronomy education across Turkey. Names and institutional information were kept confidential to allow participants to freely express their opinions.

Seven participants had 20 or more years of professional experience, while one participant had 7 years and one had 30 years. This indicates a relatively high average level of professional experience. Participants generally graduated from education faculties, but also received training in gastronomy and culinary arts, vocational training faculties, and a master's degree. This demonstrates that participants have significant experience in education and gastronomy

While including other stakeholders could have broadened the perspective, the current participants offer an important source of information regarding program planning. It should also be noted that these administrators have had only brief experience in practical gastronomy education or are currently serving in managerial roles. Perspectives from instructors or students could have offered alternative viewpoints that differ from those of administrators. Their inclusion might have contributed additional insights that further enrich the interpretation of the findings.

This study was ethically approved by the decision of Balıkesir University Social and Human Sciences Research Ethics Committee dated 29.11.2024 and numbered 2024/11-40 (Document Date and Number: 13.12.2024 - E.458038). The research was conducted in accordance with the relevant board's decision and within the framework of established ethical principles.

4. Findings

This section of the study presents the data obtained regarding the applicability of out-of-class gastronomy education in Turkey. Participants' demographic and professional characteristics are summarized in Table 1.

Furthermore, all participants had previously played an active role in organizing, managing, or planning out-of-class educational activities. All of these data demonstrate the study group's qualifications in out-of-class gastronomy education.

4.1. Findings Regarding the Applicability of Out-of-Class Gastronomy Education in Turkey

To determine the applicability of out-of-class gastronomy education in Turkey, the opinions of administrators on the subject were examined and discussed under the following headings.

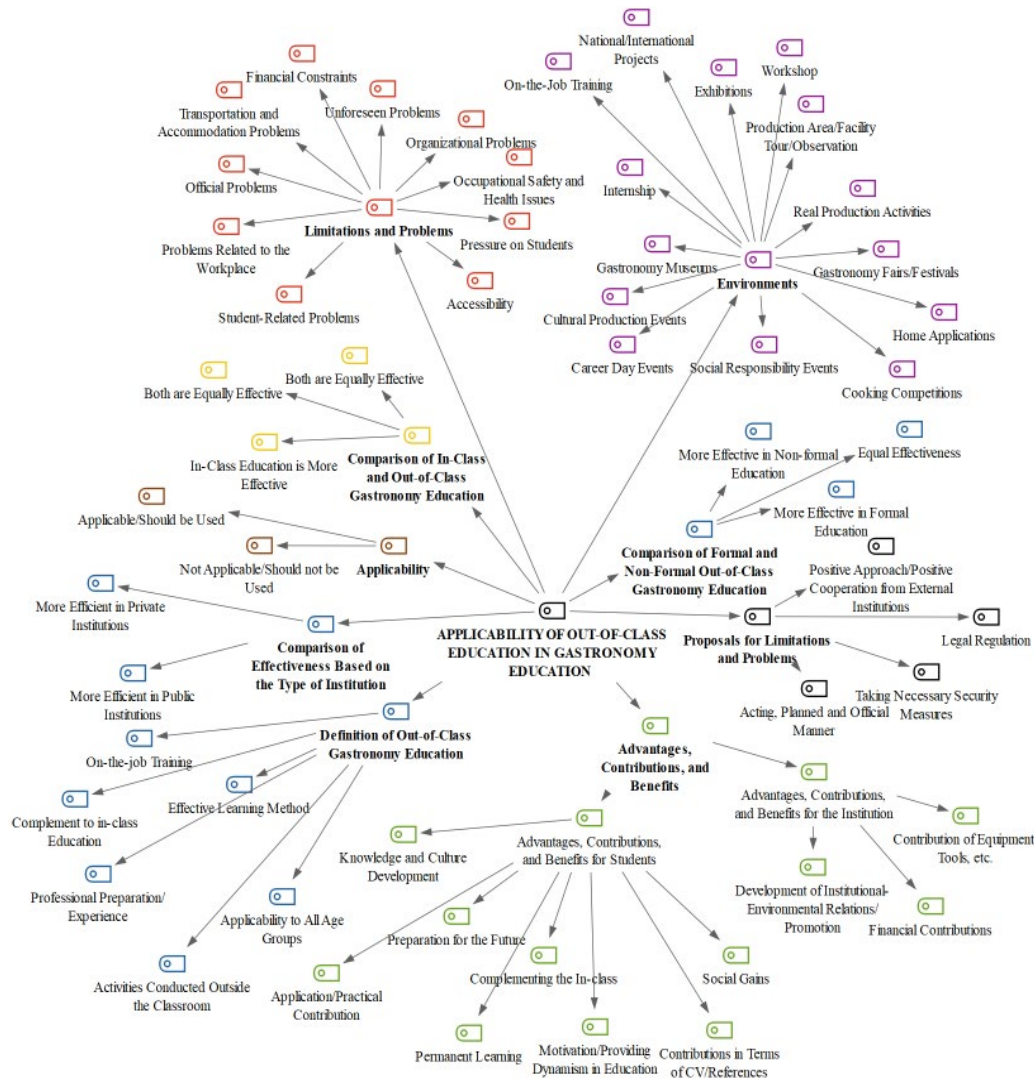


Figure 1. Themes and Codes in MaxMaps Graph

Figure 1 illustrates the study's themes and codes. Thematic analysis identified 9 themes, 2 sub-themes, and 55 codes. Participants mainly discussed the definition, environments, benefits, challenges, and solutions of out-of-class gastronomy education, along with other related experiences.

4.1.1. Definition of out-of-class gastronomy education

The literature review revealed no clear definition of out-of-class gastronomy education. To address this, participants were asked to define it. Participant statements were organized into six key themes, with frequencies presented in Table 2.

Table 2. Data Distribution of Definition of Out-of-Class Gastronomy Education

Theme	Definition of Out-of-Class Gastronomy Education	
Code	f	Example Participant Statement
Professional preparation / experience	3 (37.5%)	"We can describe out-of-class gastronomy education as professional preparation activities. I can also describe it as activities designed to gain experience." P3
Complement to in-class education	7 (87.5%)	"Indoor gastronomy is essential. We learn the foundation of education in the classroom. Education conducted outside the classroom to make it more permanent, broaden students' horizons, add new perspectives, encourage them to think about different things, or capture students' attention is also out-of-class gastronomy education. In other words, it's more like a polishing agent. It's complementary." P1
Applicability to all age groups	3 (37.5%)	"This education can be conducted not only with formal education students but also with adults. It can be small or large. It encompasses everyone." P2

Activities conducted outside the classroom	5 (62.5%)	"In other words, all gastronomy education that takes place outside of school can be considered out-of-class gastronomy education." P7
Effective learning method	1 (12.5%)	"As you know, education is no longer limited to desks and classrooms. One of the best learning methods is providing education outside of the classroom." P1
On-the-job training	7 (87.5%)	"Training that can be provided on-the-job in businesses, cafes, and restaurants, for example." P6 "In other words, I think it's more about doing the job in the kitchen, on-site. This way, students can improve themselves." P1
Analyzed documents 8 (100%)		

Based on the definitions above, this study defined out-of-class gastronomy education. In this context, the following definition emerged for out-of-class gastronomy education: *"It is an effective learning method for on-the-job gastronomy education that complements classroom learning, applies to all age groups, includes all educational activities outside the classroom, and provides professional preparation and practical experience."*

4.1.2. Out-of-class education environments in gastronomy education

Although out-of-class education is common in gastronomy, the literature lacks a clear classification of its environments and types. To address this, interviews identified the out-of-class environments used or potentially used in gastronomy education. Participants' statements focused on 14 topics, whose frequencies are presented in Table 3.

Table 3. Data Distribution of Out-of-Class Gastronomy Education Environments

Theme		Environments
Code	f	Example Participant Statement
Career Day Events	3 (37.5%)	"We can visit the businesses of people pursuing careers in the field. Career days can be organized. It broadens students' horizons." P1
Exhibitions	3 (37.5%)	"For example, we hold exhibitions and charity bazaars. Trainees also gain many other benefits at these events. This year, we exhibited a variety of our chocolates." P8
Social Responsibility Events	2 (25%)	"In this regard, we can reach others through municipalities or social assistance organizations. For example, we can offer treats to nursing homes. These can be offered to those in financial distress. There can be many social responsibility activities." P4
Real Production Activities	4 (50%)	"In places where mass meals are served, students can also organize activities related to cooking for large groups of people." P5
Gastronomy Fairs/Festivals	3 (37.5%)	"I think fairs are one of the out-of-class activities in gastronomy. We've seen great benefits in this regard. Fairs are very useful. A group of participants we visited before still asks, 'Teacher, when will this happen again?' P2 "So, they've generally turned them into something like this. I give examples of Hatay Cuisine, Elazığ Festivals, Diyarbakır Festivals—the municipality and similar institutions also attach great importance to this." P8
Gastronomy Museums	4 (50%)	"This can be implemented starting at the elementary school level. For example, we took students to a museum. They created a workshop within the museum. They explained the process, and then the masters demonstrated different application techniques to the students. They're a perfect learning environment outside the classroom. First, they provide training and explain the museum's history, then take them on a tour. Then, they take them to the workshop. At the end of the workshop, they give you the products." P7
Home Applications	2 (25%)	"Gastronomic education actually starts in our homes. Home is also a learning environment." P7
National / International Projects	8 (100%)	"Projects conducted in national or international regions are very effective. They conduct week-to-ten-day workshops in kitchens abroad." P1

Cultural Production Events	3 (37.5%)	"Villages have special places that reflect the traditional food of our culture. In other words, students can be provided with opportunities not only to engage in gastronomy education and activities within urban culture, but also to travel to more rural areas, such as villages, and experience the live preparation of traditional dishes. This would be beneficial both for the students and culturally." P5
Production Area / Facility Tour / Observation	8 (100%)	"For example, tours of production facilities would be very useful. There's a flour factory around here. You could go there. There could be a yogurt factory. There's a wine production facility. They also work on hotels and meat." P2
Internship	5 (62.5%)	"I think internships would be appropriate as part of out-of-class learning. Duration is especially important in internships. If they're done for a longer period, not just a week or 10 days, they'll have continuity." P1
Workshop	6 (75%)	"We also hold workshops. We specifically offer workshops for students. The reason we offer these is to teach gastronomic arts, for example." P7
Cooking Competitions	3 (37.5%)	"Organizers hold competitions. They choose the first and second-place winners in these competitions." P8
On-the-Job Training	5 (62.5%)	"You could visit places like food factories and catering companies that serve mass food. Students can take part in production activities there." P5
Analyzed documents 8 (100%)		

As indicated in Table 3, the interviews identified 14 distinct environments for out-of-class gastronomy education. According to participants, the use of these environments is encouraged by national education authorities and provides significant benefits for both students and institutions, which are further discussed under a dedicated heading on the benefits of these activities. Production area/facility tours and national/international projects were highlighted as the most effective for lasting learning, as they allow students to observe and engage directly with the production process, providing experiences substantially different from in-class activities. Additionally, workshops, internships, and other hands-on or community-based activities contribute positively by enabling students to develop technical skills, receive direct guidance from field experts, and broaden their professional, social, and cultural perspectives. Collectively, these diverse environments create a comprehensive learning experience that enhances students' competencies and prepares them for both

practical and theoretical aspects of gastronomy.

4.1.3. Advantages, contributions, and benefits of out-of-class gastronomy education

This section examines participants' views on the advantages of out-of-class gastronomy education. Based on the interviews, these benefits were categorized into two main groups, with student benefits examined under eight headings and institutional benefits under three.

4.1.3.1. Advantages, contributions, and benefits for students

This heading discusses the advantages, contributions, and benefits of out-of-class gastronomy education for students. Frequency values are presented in Table 4.

Table 4. Data Distribution of Advantages, Contributions, and Benefits of Out-of-Class Gastronomy Education for Students

Advantages, Contributions, and Benefits for Students		
Sub-Theme		
Code	f	Example Participant Statement
Knowledge and Culture Development	8 (100%)	"At the very least, their knowledge, manners, and culture will increase, and this knowledge will be further strengthened." P5
Application / Practical Contribution	8 (100%)	"The practical aspects are multiplied. They learn how to use those kitchen tools. In our out-of-class training, they both observed and took notes based on the chef's explanations." P2
Permanent Learning	7 (87.5%)	"Outside the classroom, students learn by doing the activity firsthand. It will remain something they will never forget. Its most important feature is its theoretical permanence. It ensures lasting learning because it is applied." P2
Complementing the In-class	7 (87.5%)	"Both trainings have their place. In-class is essential. We learn the foundation in the classroom. Out-of-class is also necessary to make it more permanent. It's like a complement." P1

Preparation for the Future	7 (87.5%)	"We can describe it as preparing a person for positive or negative situations they may encounter later, through observation." P3
Motivation / Providing Dynamism in Education	7 (87.5%)	"In other words, using the same, monotonous methods and techniques doesn't always develop a person. In other words, it adds dynamism by breaking away from the monotonous classroom curriculum." P7
Social Gains	5 (62.5%)	"A participant leaves in the morning, for example, they've had an argument with their spouse or are angry with their child. They come here, and it's therapy for them. It boosts their self-confidence." P8
Contributions in Terms of CV / References	6 (75%)	"Some of our students who received certified training activities outside of the classroom now have employment opportunities in various places with the certificates they received." P3 "It's beneficial because participants can communicate directly with people in the industry. It helps them develop their network." P2

Analyzed documents 8 (100%)

The findings in Table 4 show that out-of-class gastronomy education supports students' cultural and knowledge development while strengthening their practical skills. Participants indicated that these activities promote permanent learning, reinforce in-class content, and help students prepare for future professional situations. The activities also increase motivation by breaking classroom monotony, offer meaningful social gains, and contribute to students' professional profiles through networking, references, and CV-enhancing opportunities. Overall, the advantages cover cognitive, practical, social, and career-oriented dimensions. In addition, participants emphasized that exposure to authentic learning environments enables students to contextualize theoretical knowledge more effectively. Such experiences also foster a deeper sense of professional identity, helping learners better understand their potential roles within the gastronomy sector.

Such experiences also foster a deeper sense of professional identity, helping learners better understand their potential roles within the gastronomy sector.

4.1.3.2. Advantages, contributions, and benefits for the institution

This section discusses the advantages, contributions, and benefits of out-of-class gastronomy education for the institution receiving the training. The relevant frequency values are expressed in Table 5.

Table 5. Data Distribution of Advantages, Contributions, and Benefits of Out-of-Class Gastronomy Education for the Institution

Sub-Theme Advantages, Contributions, and Benefits for the Institution		
Code	f	Example Participant Statement
Development of Institutional-Environmental Relations/Promotion	7 (87.5%)	"So, from the institution's perspective, it has an advantage. It makes the institution visible and demonstrates what it can do. This is an advantage." P7
Contribution of Equipment/Tools, etc.	4 (50%)	"Since our institutions lack detailed and well-equipped equipment, businesses are more comfortable because they are equipped to do so. We can implement professional, industrial applications. During training outside the classroom, they can see tools and equipment that are not available at the institution in the business." P7
Financial Contributions	4 (50%)	"From the institution's perspective, carrying out projects outside the classroom has also contributed significantly. Our institution has contributed equipment, etc., which has contributed nearly 1 million liras." P4

Analyzed documents 8 (100%)

Table 5 shows that out-of-class gastronomy education offers several institutional benefits. Participants emphasized that these activities strengthen the institution's visibility and its relationships with the surrounding environment, contributing positively to institutional promotion. In addition, access to professional equipment and tools in collaborating businesses allows institutions to compensate for

their own infrastructural limitations. Financial contributions obtained through projects further support institutional capacity and create new opportunities for implementing out-of-class activities. Overall, the findings indicate that the institutional advantages extend across promotion, equipment enhancement, and financial support.

4.1.4. Limitations and problems of out-of-class gastronomy education

This section outlines the main limitations and chal-

lenges encountered in the implementation of out-of-class gastronomy education. The themes identified based on participant views are presented in Table 6.

Table 6. Data Distribution of Limitations and Problems of Out-of-Class Gastronomy Education

Sub-Theme	Limitations and Problems	
Code	f	Example Participant Statement
Organizational Problems	8 (100%)	"Getting to the site, transporting materials, and properly managing the planning and coordination can all be problematic." P4
Financial Constraints	8 (100%)	"Financially, it's not much of a problem in non-formal education when adults are involved, but in formal education, students' resources can be insufficient for out-of-classroom education." P4
Official Problems	6 (75%)	"I think the biggest, most important, are the official procedures. Official correspondence and procedures are one of the biggest problems." P2
Unforeseen Problems	6 (75%)	"Staff might be sick that day. They might have an accident. Or transportation. A relative might have passed away. Unforeseen things can happen. Even if we take precautions for foreseeable things, some unforeseen events can occur." P6
Transportation and Accommodation Problems	5 (62.5%)	"These kinds of problems arise with transportation and, if necessary, accommodation. If the trip is to be held in very remote locations, there can be problems there." P5
Problems Related to the Workplace	5 (62.5%)	"The people you want to be with at the workplace may not have the time. The high number of people working in the gastronomy field. They don't spend time on out-of-class activities, which is a major problem. Some don't want their facilities or businesses to be seen, and so on." P2
Occupational Safety and Health Issues	2 (25%)	"There may be security issues during trips. Transportation problems may occur. Accidents can occur. These kinds of problems can occur." P6
Pressure on Students	1 (12.5%)	"Businesses don't want to hire regular staff when there are interns and students receiving on-the-job training. It's more profitable for them financially. Students may be subjected to mobbing by businesses during out-of-class training activities. Because they're not tied to a classroom, their human rights may not be protected." P6
Accessibility	1 (12.5%)	"The lack of courses is a significant problem. New courses should be offered as a government policy." P1
Student-Related Problems	4 (50%)	"Fights and arguments can occur in interpersonal relationships outside of the classroom." P6 "The student will bring materials so we can do the activity. Someone else doesn't. The activity remains." P1
Analyzed documents	8 (100%)	

The findings in Table 6 show that the challenges in implementing out-of-class gastronomy education primarily relate to organizational demands, formal procedures, and operational preparedness. Participants noted that planning requires substantial effort and that formal procedures may both hinder and, at times, facilitate implementation. Practical issues such as transportation, material preparation, and workplace coordination emerge as key obstacles. Concerns regarding safety and student behavior further increase administrators' perceived responsibility. Overall, the results indicate that the feasibility

of out-of-class education largely depends on institutional support and coordination capacity.

4.1.5. Solution proposals for limitations and problems in out-of-class gastronomy education

This section presents the solution proposals regarding the limitations and challenges of out-of-class gastronomy education, and the themes derived from participant views are summarized in Table 7.

Table 7. Data Distribution of Solution Proposals for Limitations and Problems in Out-of-class Gastronomy Education

Sub-Theme			Proposals for Limitations and Problems
Code	f	Example Participant Statement	
Legal Regulation	4 (50%)	"All these problems could be resolved with legal regulation, if desired." P6	
Taking Necessary Security Measures	2 (25%)	"Vehicle must be well-maintained. It must be inspected. It must have insurance, a valid visa, and the vehicle must be free of any damage." P6	
Acting, Planned and Official Manner	3 (37.5%)	"For example, if you're planning an event, if you start correspondence the day before, you won't have the chance to make it on time. It's good to have a formal and planned event. You have a good precaution against any potential problems." P4	
Positive Approach/ Positive Cooperation from External Institutions	6 (75%)	"Institutions, in particular, need to provide financial support. Both the sector and the Ministry need to provide support." P2	
Analyzed documents			8 (100%)

Out-of-class gastronomy education often depends on coordination with external institutions, making systematic planning and clear communication critical for successful implementation. The findings suggest that many of the challenges encountered during such activities could be alleviated through more supportive and flexible legal frameworks, as well as stronger inter-institutional cooperation. In particular, participants emphasized that adequate financial backing, proactive planning, and reinforced safety measures play key roles in ensuring the effectiveness

and sustainability of out-of-class learning processes.

4.1.6. Applicability of out-of-class gastronomy education

This section examined the applicability of out-of-class gastronomy education in Turkey. Participant responses were categorized and are presented in Table 8.

Table 8. Data Distribution of Applicability of Out-of-Class Gastronomy Education

Sub-Theme			Applicability
Code	f	Example Participant Statement	
Not Applicable / Should not be Used	0 (0%)		
Applicable / Should be Used	8 (100%)	"Out-of-class education should definitely be used. Even breathing the atmosphere there has a positive impact on students. It makes students more enthusiastic and sparks ideas. I definitely recommend out-of-class education." P6 "It should definitely be used. I won't say 100%, it should be used 500%. I've said it again, yes, it's implemented in practice here too. Of course, the theory is explained first, and then it's implemented in practice. The entire kitchen wasn't wasted; lessons are taught so that practice can be put into practice. Nevertheless, even if you put it into practice here, what is the equivalent in the field? I definitely highly recommend out-of-class education to see this." P4	
Analyzed documents			8 (100%)

Table 8 shows unanimous support for the use of out-of-class gastronomy education. Participants emphasized that real professional environments boost students' enthusiasm, enhance motivation, and help translate theory into practice. This consensus indicates that such activities are both applicable and necessary.

4.1.7. Comparison of in-class and out-of-class gastronomy education

This section compares in-class and out-of-class gastronomy education in Turkey. Interviews explored which methods are more effective, and participant opinions were categorized, with frequencies presented in Table 9.

Table 9. Data Distribution of Comparison of In-Class and Out-of-Class Gastronomy Education

Sub-Theme	Comparison of In-Class and Out-of-Class Gastronomy Education	
Code	f	Example Participant Statement
Out-of-Class Education is More Efficient	5 (62.5%)	"In the classroom, that is, to give an example from our own course. We can practice according to the equipment in the classroom. For example, it can be difficult to get a macaroni to stick in a classroom setting. But this wouldn't be difficult in a business or out-of-class setting. Because they do those jobs constantly, their equipment, fixtures, environment, kitchen environment, coolers, shelves—everything is designed accordingly, so there's no problem." P6 "In-class education is easier to implement than out-of-class education. However, maintaining student motivation through this approach can be challenging. When out-of-class gastronomy education activities are implemented, students tend to demonstrate more positive and motivated learning behaviors." P4 "Changing and adapting educational environments can make a significant difference for learners. For example, awareness of local products can be developed through activities conducted outside the classroom. As a result, students achieve more effective learning outcomes." P5
In-Class Education is More Effective	1 (12.5%)	"In-class education takes up more time than out-of-class education. That's why I think in-class education is more effective." P3
Both are Equally Effective	2 (25%)	"Whether an adult or a child, a person must first acquire theory. In other words, how can one transition from theory—that is, without receiving that training in the classroom—to out-of-class practice outside the classroom? They complement each other. Otherwise, the chain will break." P7
Analyzed documents		8 (100%)

The findings in Table 9 show that most participants considered out-of-class gastronomy education more effective, largely due to the wider practical opportunities, access to professional environments, and increased student motivation it provides. One participant viewed in-class education as more effective because of the extended instructional time it offers. At the same time, the data highlight that in-class and out-of-class methods complement one another; the theoretical foundation gained in the classroom strengthens the effectiveness of practical work outside the classroom, and using both approaches together leads to a more balanced learning experience. Overall, while out-of-class activities are seen as more

efficient, combining the two methods is considered essential for effective learning.

4.1.8. Comparison of the implementation of out-of-class gastronomy education in formal and non-formal education

This section examined the implementation of out-of-class gastronomy education in formal and non-formal settings in Turkey. Interviews aimed to determine which setting is more effective, and participant opinions were categorized, with frequencies presented in Table 10.

Table 10. Data Distribution of Comparison of the Implementation of Out-of-Class Gastronomy Education in Formal and Non-Formal Education

Sub-Theme	Comparison of Formal and Non-Formal Out-of-Class Gastronomy Education	
Code	f	Example Participant Statement
Equal Effectiveness	3 (37.5%)	"It doesn't matter which has the best resources—formal or non-formal. I think it would benefit everyone. It would be beneficial for both. Both are important. Because both are students in non-formal education and students there. Both can benefit from it." P1
More Effective in Formal Education	1 (12.5%)	"In formal education, students are generally younger, so their vital responsibilities are lower. They don't have responsibilities like running a household or caring for children. Therefore, they are better able to participate in out-of-class activities. Some activities can last several days." P4

More Effective in Non-formal Education	4 (50%)	"Of course, it is more practical in non-formal education. In formal education, the subject matter must be covered thoroughly, and practical applications can only be implemented if there is sufficient time. Furthermore, implementing this with younger students, typically aged 16–18, is generally more challenging in formal education. Therefore, it is more efficient in non-formal educational settings." P2 "Out-of-classroom learning is not considered suitable in formal education. In contrast, in non-formal education, participants engage in programs for purposes such as socializing, acquiring knowledge, personal development, and self-realization. Therefore, out-of-classroom gastronomy education represents a more effective and appropriate option within non-formal educational settings." P8
Analyzed documents 8 (100%)		

Participants indicated that out-of-class gastronomy education may be more effective in non-formal settings, where participation is voluntary and learners include both young and adult individuals. Some participants noted that whether the training is formal or non-formal does not significantly influence the benefits obtained. However, one participant emphasized that the structured nature of formal education may, under certain conditions, lead to more favorable outcomes.

4.1.9. Comparison of the effectiveness of out-of-class gastronomy education based on the type of institution

This section examines the effectiveness of out-of-class gastronomy education in different types of institutions in Turkey. Interviews aimed to determine which type of institution is more effective, and participant opinions were categorized, with frequencies presented in Table 11.

Table 11. Data Distribution of Comparison of the Effectiveness of Out-of-Class Gastronomy Education Based on the Type of Institution

Sub-Theme Comparison of Effectiveness Based on the Type of Institution		
Code	f	Example Participant Statement
More Efficient in Private Institutions	7 (87.5%)	"It would be better in a private institution due to financial reasons." P1 "It can be carried out more easily in a private institution. Because they are not subject to all the rules we are. They can act a little more freely." P4
More Efficient in Public Institutions	1 (12.5%)	"When a budget is allocated for projects, etc., in a public institution, quite large resources can be generated. There is no such power in a private institution. Therefore, it would be better in a public institution." P3
Analyzed documents 8 (100%)		

The majority of participants indicated that out-of-class gastronomy education would be more effective in private institutions, primarily due to their financial capacity and the fact that participants are typically adults and volunteers. However, one participant (P3) argued that in certain cases, public institutions may be more effective, emphasizing that project-based budgets in state-run settings can sometimes provide substantial resources.

5. Discussion and Conclusion

As part of the research, administrators of institutions providing non-formal gastronomy education were interviewed to discuss the applicability of out-of-class gastronomy education in Turkey. To this end, the definition of out-of-class gastronomy education was primarily focused on.

Given the absence of a clear definition of out-of-class

gastronomy education in the literature, participants were asked to provide one. Based on their responses, a general definition was developed. Accordingly, out-of-class gastronomy education is defined as *"A structured, practice-based, and experiential form of gastronomy education conducted outside formal classroom environments that complements theoretical learning, supports professional preparation across all age groups, and serves as an effective approach to integrating theory and practice."* This definition aligns with the conceptualizations of out-of-class education proposed by Payne (1985), Ford (1986), Knapp (1996), Dahlgren & Szczepanski (1998). Another issue with out-of-class gastronomy education is the nature of out-of-class learning environments. The literature indicates that out-of-class learning environments typically encompass museums, science centers (Eshach, 2007), nature trips, botanical gardens, science fairs, observatories, anatomy

exhibitions, and parks (Yıldırım, 2020). Kuş (2024) further categorizes these environments into three groups: (a) real-life environments (e.g., workplaces, outdoor settings, and everyday living spaces such as homes); (b) designed learning environments (e.g., museums, libraries, zoos); and (c) school-based out-of-class environments (e.g., school gymnasiums and art studios). While the literature lists activities and environments that fit the definition of out-of-class education, semi-structured interviews were conducted to obtain more comprehensive information on this topic. As a result of the interviews, it was concluded that the out-of-class gastronomy education environments are "Career Day Activities", "Exhibitions", "Social Responsibility Events", "Real Production Activities", "Gastronomy Fairs/Festivals", "Gastronomy Museums", "Home Applications", "National/International Projects", "Cultural Production Events", "Production Area/Facility Tour/Observation", "Internship", "Workshop", "Cooking Competitions" and "On-the-Job Training". The out-of-class gastronomy education environments identified in this study are consistent with those reported in the literature. Furthermore, additional out-of-class environments specific to gastronomy education and vocational training were identified, thereby contributing to the existing body of knowledge.

Out-of-class education is widely recognized as an important component of student development (Christison, 2013), and numerous studies have documented its contributions to various educational outcomes. Previous research has demonstrated that out-of-class education enhances academic achievement (Wang, 2024; Randler et al., 2012), increases interest in courses (Behrendt & Franklin, 2014; Falk & Needham, 2011; Falk et al., 2014), supports motivation (Ramey-Gassert et al., 1994), and improves research, communication, and social skills (Katz et al., 2011; Smith et al., 2010; Sözer & Oral, 2016). It has also been shown to contribute to scientific skills (Bodur, 2015) and long-term retention of learning (Bozdoğan et al., 2015; Guisasola et al., 2005; Guisasola et al., 2009). In addition, its ability to connect theoretical knowledge with real-life experiences makes it particularly valuable in vocational education contexts (Chin, 2004; Erten, 2016).

The findings of the present study are largely consistent with the existing literature, suggesting that the benefits commonly associated with out-of-class education are also applicable to gastronomy education. However, the results also indicate that these benefits take on a more practice-oriented and sector-integrated form within the context of gastronomy education. In particular, the emphasis on practical application, professional readiness, and direct engagement with industry environments highlights the distinctive nature of this field.

Furthermore, the study expands the existing literature by identifying not only student-related outcomes but also institutional-level contributions. While prior studies predominantly focus on student gains, the present findings suggest that out-of-class gastronomy education also contributes to institutional visibility, stakeholder relations, and resource development. These findings indicate that such practices may offer multi-dimensional benefits that extend beyond individual learning outcomes and support the broader educational ecosystem. Furthermore, these findings are consistent with studies examining the impact of educational practices on institutional reputation and external stakeholder perceptions (Nassar et al., 2025). In this regard, the identified benefits appear to function as important motivating factors influencing the applicability of out-of-class gastronomy education.

The literature on out-of-class learning highlights several inherent limitations associated with its implementation (Griffin, 2004). In addition to examining the advantages and contributions of out-of-class gastronomy education, this study also considered the structural and operational challenges encountered during its implementation. The findings suggest that the application of this approach may involve organizational, financial, and regulatory constraints. Moreover, issues related to transportation and accommodation, risks stemming from the activity environment, occupational health and safety considerations, student-related pressures, accessibility barriers, and other learner-specific factors may influence the overall process.

In this regard, these challenges may not merely represent technical obstacles but rather systematic issues that require comprehensive planning, institutional support, and regulatory attention. Accordingly, the proposed strategies such as legal regulation, strengthened safety measures, structured and official procedures, and enhanced collaboration with external institutions may contribute to mitigating these limitations and improving the sustainability of out-of-class gastronomy education. Supporting these findings, studies in the literature emphasize that out-of-class education activities should be carefully planned (Bozdoğan, 2012; Bozdoğan, 2018; Ertaş et al., 2011; Yıldırım, 2018).

The study also examined the comparison between in-class and out-of-class gastronomy education. In evaluating the findings, it is important to consider that in-class gastronomy education includes both workshop-based practices and theoretical instruction. Three main opinions emerged within this framework: out-of-class education is more effective, in-class education is more effective, and both are equally effective. The majority of participants indicated that out-of-class gastronomy education is

more effective. However, these evaluations were not limited to the independent implementation of out-of-class education; rather, they emphasized its comparatively greater effectiveness when used as a complementary component alongside in-class instruction. These results support the argument that out-of-class education is most effective when used as a complementary component alongside classroom instruction (Yıldırım, 2020).

Feng (2023) argued that private educational institutions tend to provide more effective education due to their inclusion of out-of-class activities. In line with this perspective, the present study compared the implementation of out-of-class gastronomy education in formal and non-formal education settings. This study concluded that out-of-class gastronomy education can be more effective in non-formal educational institutions. In addition, the effectiveness of out-of-class gastronomy education was examined based on the characteristics of the institutions. Private and public educational institutions were considered in this context. The analysis indicated that out-of-class gastronomy education would be more effective in private educational institutions. Among the results obtained are that the student body and economic situation of private educational institutions are more influential in this outcome.

Following an interview with participants about the applicability of out-of-class gastronomy education, all participants stated that it is feasible and even necessary.

The findings are consistent with Experiential Learning Theory and Vocational Training Theory, which emphasize practice-based learning processes that bridge the gap between theoretical knowledge and real-life experience and support the development of professional competencies (Kolb, 2014; Zaman & Mozammel, 2017). In this context, the prominence of out-of-class activities and real-world learning environments in the findings demonstrates the importance of integrating experiential and vocational approaches in gastronomy education.

These results provide practical guidance for improving the implementation of out-of-class gastronomy education in the fields of education and vocational training. The findings suggest that universities and gastronomy education programs should integrate more structured out-of-class learning activities into their curricula in order to strengthen the connection between theoretical knowledge and practical experience. From an educational policy perspective, the results highlight the importance of developing institutional frameworks that support experiential and practice-based learning environments in vocational education. In addition, the findings indicate that stronger collaboration between educational institutions and the gastronomy sector could enhance the effectiveness of professional preparation by providing students with authentic learning environments.

Furthermore, the study contributes to the conceptualization of out-of-class gastronomy education and offers a structured framework for future research. By clarifying its scope, environments, benefits, and limitations, this study strengthens the theoretical positioning of out-of-class gastronomy education within vocational education literature. Future research could further enrich this field by examining out-of-class gastronomy education from the perspectives of different stakeholders such as educators, students, and industry professionals. Conducting studies with broader participant groups from gastronomy, culinary arts, and related disciplines would further strengthen both the theoretical and practical foundations of this field.

Acknowledgments

This work is delivered from the first author's ongoing doctoral thesis.

References

- Afyon Kocatepe University: <https://turizm.aku.edu.tr/2019/12/10/gastronomi-ve-mutfak-sanatları-bolumu-isbasi-uygulamali-egitim-hakkında/> [Erişim Tarihi: 8.3.2026]
- Agyeiwaah, E., Otoo, F. E., Sunkul, W., & Huang, W.-J. (2019). Understanding Culinary Tourist Motivation, Experience, Satisfaction, and Loyalty Using a Structural Approach. *Journal of Travel & Tourism Marketing*, 36(3), 295-313. doi:10.1080/10548408.2018.1541775
- Akın, A. (2018). Gastronomi Turizminde Staj Eğitiminin Önemi: Gaziantep Üniversitesi Örneği. *İğdır Üniversitesi Sosyal Bilimler Dergisi*, 16(4), 483-518.
- Akoğlu, A., Cansızoğlu, S., Orhan, N., & Özdemir, Z. (2017). Gastronomi ve Mutfak Sanatları Eğitimi Alan Öğrencilerin Sektörde Çalışmaya Yönelik Bakış Açıları. *Journal of Tourism and Gastronomy Studies*, 5(2), 146-159.
- Akyüz, Y. (2012). *Türk Eğitim Tarihi* (22. Baskı), Ankara: Pegem Akademi Yayınları.
- Aslan, A., & Demircioğlu, G. (2019). Etkileşimli Sınıf Dışı Kimya Ortamı Tasarımı ve Katılımcıların Deneyimlerinden Ortamın Etkililiğinin Değerlendirilmesi. *Van Yüzüncü Yıl Üniversitesi Eğitim Fakültesi Dergisi*, 16(1), 278-314.
- Aslan, H., & Aktaş, N. (2011). Turizm Ön Lisans Öğrencilerinin Gastronomi Turizmine Yönelik Tutumları ve Gastronomi Davranışlarının Belirlenmesi. *Social Sciences*, 6(3), 363-373.
- Avcı Akçalı, A. (2015). Kuram ve Uygulamada Sınıf Dışı Tarih Öğretimi Algısı: Öğretmen ve Aday Öğretmen Görüşleri. *Eğitim ve Bilim*, 40(181), 117-137.
- Avcı, G., & Gümüş, N. (2020). Sınıf dışı Eğitime Dayalı Etkinliklerle İşlenen Sosyal Bilgiler Dersine Yönelik İlkokul 4. Sınıf Öğrenci Tutumlarının İncelenmesi. *Batı Anadolu Eğitim Bilimleri Dergisi*, 11(1), 89-106.
- Aydemir, D. A., & Buyruk, L. (2019). Gastronomi ve Mutfak Sanatları Eğitimi Alan Üniversite Öğrencilerinin Kariyer Beklentileri: Lisans Öğrencilerine Yönelik Bir Araştırma. *Journal of Tourism and Gastronomy Studies*, 7(4), 3225-3248.
- Babaç, E., & Öncel, S. (2018). Anadolu Üniversitesi Gastronomi ve Mutfak Sanatları Bölümü Öğrencilerinin Özyeterliklerine Yönelik Nitel Bir Araştırma. *Journal of Tourism and Gastronomy Studies*, 6(2), 282-298.
- Baltacı, A. (2019). Nitel Araştırma Süreci: Nitel Bir Araştırma Nasıl Yapılır? *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 5(2), 368-388.

- Baş, T., & Akturan, U. (2017). Sosyal Bilimlerde Bilgisayar Destekli Nitel Araştırma Yöntemleri, Ankara: Seçkin Yayıncılık.
- Bazaz, R. Y., & Akram, M. (2022). Exploring Informal Vocational Training (IVT) and Its Missing Accreditation Link with Formal Vocational, Technical and Professional Education and Their Implications: A Sociological Study in A City of India. *Journal of Education Culture and Society*, 13(2), 317-340.
- Behrendt, M., & Franklin, T. (2014). A Review of Research on School Field Trips and Their Value in Education. *International Journal of Environmental and Science Education*, 9(3), 235-245. doi:10.12973/ijese.2014.213a
- Beyter, N., Zivalı, E., & Yalçın, E. (2019). Türkiye’de Lisans Düzeyinde Gastronomi Eğitiminin Değerlendirilmesi, IV. Uluslararası Gastronomi Turizmi Araştırmaları Kongresi.
- Bodur, Z. (2015). The Effect of Outdoor Class Activities in the Solar System and Beyond Unit on Seventh Grade Student's Academic Achievements, Scientific Process Abilities and Motivation. Unpublished Master's Thesis, University of Marmara, Institute of Educational Sciences, İstanbul.
- Bolat, T., Aytemiz Seymen, O., Bolat, O. İ., & Erdem, B. (2008). Yönetim ve Organizasyon, Ankara: Detay Yayıncılık.
- Boyras, M., Çetin, A., Mutlu, H., & Soybalı, H. H. (2018). Gastronomi ve Mutfak Sanatları Öğrencilerinin Workshop Etkinlikleri Algısının Değerlendirilmesi: Afyon Kocatepe Üniversitesi Örneği. *Journal of Tourism and Gastronomy Studies*, 6(4), 132-149. doi:10.21325/jotags.2018.3001
- Bozdoğan, A. E. (2012). The Practice of Prospective Science Teachers Regarding the Planning of Education Based Trips: Evaluation of six different field trips. *Educational Sciences: Theory & Practice*, 12(2), 1050-1072.
- Bozdoğan, A. E., Okur, A., & Kasap, G. (2015). A Sample Application for A Planned Field Trip: A Factory Trip. *The Black Sea Journal of Social Sciences*, 7(14), 1-12.
- Bozdoğan, A.E. (2018). Science Education Outside School, (Ed.) Tekbiyık, A. & Çakmakçı, G.: Science teaching and STEM activities, Ankara: Nobel Publishing.
- Çalışkan, S. (2022). Temel Beceriler Odağında Orta Öğretimde Gastronomi Eğitimi (Gastronomy Education in Secondary Education with a Focus on Basic Skills). *Journal of Tourism & Gastronomy Studies*, 10(2), 1128-1146.
- Cambridge Dictionary: <https://dictionary.cambridge.org/> [Erişim Tarihi: 08.03.2026]
- Çarbuğa, Ü., Aydın, M., Sormaz, Ü., & Yılmaz, M. (2018). Gastronomi Eğitimi Veren Yükseköğretim Kurumlarının Uygulamalı Meslek Derslerinin Değerlendirilmesi. *Çatalhöyük Uluslararası Turizm ve Sosyal Araştırmalar Dergisi*, (3), 14-23.
- Çavuşoğlu, F. (2021). Lisans Düzeyinde Gastronomi ve Mutfak Sanatları Eğitimi Alan Öğrencilerin Akademik Motivasyonlarını Belirlemeye Yönelik Bir Araştırma. *International Journal of Contemporary Tourism Research*, 5(2), 136-150.
- Çetinkaya, M., & Özkutlu, H. (2010). Üst Düzey Yöneticilerin Sahip Olması Gereken Yönetmelik Yetkinliklerin Belirlenmesine İlişkin Ampirik Bir Çalışma. *Dumlupınar Üniversitesi Sosyal Bilimler Dergisi*, 1(26), 221-236.
- Chin, C. C. (2004). Museum Experience: A Resource for Science Teacher Education. *International Journal of Science and Mathematics Education*, 2, 63-90.
- Cho, A., Herrera, R. G., Chaidez, L., & Uriostegui, A. (2019). The "Comadre" Project: An Asset-Based Design Approach to Connecting Low-Income Latinx Families to Out-Of-School Learning Opportunities, Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems.
- Christison, C. (2013). The Benefits of Participating in Extracurricular Activities. *BU Journal of Graduate Studies in Education*, 5(2), 17-20.
- Civelek, H. (2014). Ortaöğretim Düzeyindeki Turizm Öğrencilerinin, Turizm Sektörüne İlişkin Görüşleri, Yayınlanmamış Yüksek Lisans Tezi, Okan Üniversitesi, Sosyal Bilimler Enstitüsü, İstanbul.
- Cizrelioğulları, M. N., & Altun, Ö. (2019). Zorunlu staj eğitimi alan turizm ve gastronomi öğrencilerinin staj memnuniyetinin incelenmesi: Doğu Akdeniz Üniversitesi örneği. *Journal of Tourism and Gastronomy Studies*, 7(4), 2447-2465.
- Creswell, J. W., & Poth, C. N. (2018). Qualitative Inquiry and Research Design (4th ed.), California: Sage.
- Cutcliffe, J. R. (2000). Methodological Issues in Grounded Theory. *Journal of Advanced Nursing*, 31(6), 1476-1484. doi:10.1046/j.1365-2648.2000.01430.x
- Dahlgren, L.O. & Szczepanski, A. (1998). Outdoor Education-Literary Education and Sensory Experience, Linköping: Kinda Education Centre.
- Dario, Š., & Štetić, S. (2017). The Role and Importance of Internship Programs as Part of Formal Education: Students' Perceptions: The Case of College of Tourism. *Turističko Poslovanje*, (19), 51-60. doi:10.5937/TurPos1719051S
- Demirci, B., Sarıkaya, G. S., & Erol, E. (2020). Türkiye’de Gastronomi Ve Mutfak Sanatları Eğitiminin Değerlendirilmesi. *Türk Turizm Araştırmaları Dergisi*, 4(4), 3311-3324.
- Demirel, Ö. (2009). Öğretim İlke ve Yöntemleri: Öğretme Sanatı (15th ed.), Ankara: Pegem Akademi Yayıncılık.
- Deveci, B., Deveci, B., Karaman, N., & Aymankuy, Y. (2017). Mutfak Departmanına Yönelik Tutum: Gastronomi ve Mutfak Sanatları Öğrencileri Üzerine Bir Araştırma. *Akademik Bakış Uluslararası Hakemli Sosyal Bilimler Dergisi*, 64, 717-732.
- Dewi, R., Mulyadi, M., & Syam, N. (2025). The Effect of Contextual Learning Model Based on Outing Class on The Learning Outcomes of Class V Students. *ALENA: Journal of Elementary Education*, 3(1), 83-93.
- Dixit, S. K. (2019). Gastronomic Tourism: A Theoretical Construct. (Ed.) Dixit, S. K., The Routledge Handbook of Gastronomic Tourism, Abingdon, UK: Routledge. doi:10.4324/9781315147628
- Dolmacı, N., & Duran, Y. (2017). Ön Lisans Düzeyinde Öğrenim Gören Öğrencilerin Zorunlu Staj Uygulamasına İlişkin Görüşleri, Sorunları ve Çözüm Önerileri: Isparta Meslek Yüksekokulu Örneği. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 9(21), 254-257. doi:10.20875/makusobed.316226
- Emir, O., Pelit, E. & Arslan, S. (2010). Turizm Alanında Önlisans Eğitimi Alan Öğrencilerin Staj Öncesi ve Sonrası Görüşlerinin Karşılaştırılması (Afyon Kocatepe Üniversitesi Örneği), *Elektronik Sosyal Bilimler Dergisi*, 9(33), 141-165.
- Engel, R. J., & Schutt, R. K. (2017). The Practice of Research in Social Work (4th ed.), California: Sage.
- Ertaş, H., Şen, A. İ., & Parmaksızoğlu, A. (2011). The Effects of Out-Of-School Scientific Activities On 9th Grade Students' Relating the Unit of Energy to Daily Life. *Necatibey Faculty of Education Electronic Journal of Science and Mathematics Education*, 5(2), 178-198.
- Erten, Z. (2016). Development of Out-Of-School Learning Activities Regarding in Science Curriculum and Evaluation of the Effects of Scientific Processes Skills of Students, Unpublished Master's Thesis. University of Erzincan, Institute of Science and Technology, Erzincan.
- Ertürk, S. (1998). Eğitimde Program Geliştirme (10th ed.), Ankara: Meteksan Matbaacılık.
- Eshach, H. (2007). Bridging in-School and Out-Of-School Learning: Formal, Non-Formal, And Informal Education. *Journal of Science Education and Technology*, 16(2), 171-190.
- Falk, J. H., Needham, M. D., Dierking, L. D., & Prendergast, L. (2014). International science centre impact study final report: https://www.pavconhecimento.pt/media/media/1832_iscis-final-report.pdf [Erişim Tarihi: 02.01.2026]
- Falk, J.H., & Needham, M. (2011). Measuring The Impact of a Science Center on Its Community. *Journal of Research in Science Teaching*, 48(1), 1-12.
- Feng, W. (2023). Education Curriculum Comparison Between Private and Public Schools in China. *Journal Of Education, Humanities and Social Sciences*, 17, 225-229.

- Ford, P. M. (1986). Outdoor education: Definition and philosophy (ERIC Digest). Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools: <https://files.eric.ed.gov/fulltext/ED267941.pdf> [Erişim Tarihi: 02.01.2026]
- Füz, N. (2018). Out-Of-School Learning In Hungarian Primary Education: Practice And Barriers. *Journal of Experiential Education*, 41(3), 1-8.
- Gilbertson, K., Bates, T., McLaughlin, T., & Ewert, A. (2006). *Outdoor Education: Methods and Strategies*, Champaign: Human Kinetics.
- Glesne, C. (2014). *Nitel Araştırmaya Giriş* (A. Ersoy & P. Yalçinoğlu, Trans., 4th ed.), Ankara: Anı Yayıncılık.
- Griffin, J. (2004). Research On Students and Museums: Looking More Closely at the Students in School Groups. *Science Education*, 88(1), 59-70.
- Güdek, M., & Boylu, Y. (2017). Türkiye’de Yükseköğretim Düzeyinde Gastronomi Eğitimi Alan Öğrencilerin Beklenti ve Değerlendirmelerine Yönelik Bir Araştırma. *Journal of Tourism and Gastronomy Studies*, 5(4), 489-503.
- Guisasola, J., Morentin, M., & Zuza, K. (2005). School Visits to Science Museums and Learning Sciences: A Complex Relationship. *Physics Education*, 40(6), 544-549.
- Guisasola, J., Solbes, J., Barragues, J. I., Morentin, M., & Moreno, A. (2009). Students Understanding of The Special Theory of Relativity and Design for A Guided Visit to A Science Museum. *International Journal of Science Education*, 31(15), 2085-2104.
- Güler, A., Halicioğlu, M. B., & Taşkın, S. (2015). *Sosyal Bilimlerde Nitel Araştırma* (2th ed.), Ankara: Seçkin Yayıncılık.
- Hall, C. M., & Mitchell, R. (2007). *Gastronomic Tourism: Comparing Food and Wine Tourism Experiences*, (Ed.) Novelli M.: Niche Tourism, London: Routledge.
- James, J. K., & Williams, T. (2017). School-Based Experiential Outdoor Education: A Neglected Necessity. *Journal of Experiential Education*, 40(1), 58-71. doi:10.1177/1053825916676190
- Katz, P., McGinnis, R., Hestness, E., Riedinger, K., Marbach, G., Dai, A., & Pease, R. (2011). Professional Identity Development of Teacher Candidates Participating in An Informal Science Education Internship: A Focus on Drawings as Evidence. *International Journal of Science Education*, 33(9), 1169-1197.
- Kazakova, M. A. (2024). Vocational, Formal and Non-Formal Education and Training–The Adequate Response to Education 4.0, 2024 12th International Scientific Conference on Computer Science (COMSCI).
- Kiral, B. (2021). Nitel Araştırmada Fenomenoloji Deseni: Türleri ve Araştırma Süreci. *Eğitim ve Öğretim Araştırmaları Dergisi*, 10(4), 92-103.
- Knapp, C. E. (1996). *Just Beyond the Classroom: Community Adventures for Interdisciplinary Learning*. Washington, DC: ERIC Clearinghouse on Rural Education and Small Schools: <https://files.eric.ed.gov/fulltext/ED104590.pdf> [Erişim Tarihi: 02.01.2026]
- Kolb, D. A. (2014). *Experiential Learning: Experience as the Source of Learning and Development*, New Jersey: FT Press.
- Kurnaz, A., Babür, E. T., & Kurnaz, H. A. (2018). Gastronomi Eğitiminde Bir Sosyal Sorumluluk Projesi Örneği: Mengen Ulusal Aşçılık Kampı. *Uluslararası Toplum Araştırmaları Dergisi*, 8(Special Issue), 504-520. doi:10.26466/opus.361117
- Kuş, M. (2024). Conceptualization of Out-of-school Mathematics Education, *Journal of Education for Life*, 38(1), 245-257. doi:10.33308/26674874.2024381644
- Lam, T., & Ching, H. (2007). An Exploratory Study of An Internship Program: The Case of Hong Kong Students. *International Journal of Hospitality Management*, 26, 336-351. doi:10.1016/j.ijhm.2006.01.001
- Lee, K. C., Wu, S. M., & Mapaling, C. (2025). Out-of-Classroom Learning: Revisiting Value And Impact. *Scholarship of Teaching and Learning in the South*, 9(1), 1-4. doi:10.36615/yj14d149
- Lischewski, J., Seeber, S., Wuttke, E., & Rosemann, T. (2020). What Influences Participation in Non-Formal and Informal Modes of Continuous Vocational Education and Training? An Analysis of Individual and Institutional Influencing Factors. *Frontiers in Psychology*, 11, 1-19.
- Mann, J., Gray, T., Truong, S., Brymer, E., Passy, R., Ho, S., Sahlborg, P., Ward, K., Bentsen, P., Curry, C., & Cowper, R. (2022). Getting Out of The Classroom and Into Nature: A Systematic Review of Nature-Specific Outdoor Learning on School Children’s Learning and Development. *Frontiers in Public Health*, 10, 1-12. doi:10.3389/fpubh.2022.877058
- Mardin Artuklu University: <https://www.artuklu.edu.tr/turizm-fakultesi/isbasinda-mesleki-egitim> [Erişim Tarihi: 08.03.2026]
- Muharom, F., Nugroho, A., & Putra P, H. R. (2022). Self-Directed Use of Digital Devices for Out-Of-Class English Learning. *International Journal of Education in Mathematics, Science and Technology*, 10(1), 257-271.
- Nassar, F. S., Abbas, A. O., Al-Saify, H., & Ali, O. M. (2025). The Impact of Extracurricular Activities on Developing Academic Standing, Student Satisfaction, Performance, And Bolstering the Academic Reputation of Higher Education Institutions from The Perspective of SDGs. *Journal of Lifestyle and SDGs Review*, 5(1), 1-23.
- Necmettin Erbakan University: <https://erbakan.edu.tr/tr/birim/gastronomi-ve-mutfak-sanatları/sayfa/isbasi-egitim-uygulaması> [Erişim Tarihi: 08.03.2026]
- Nguyen, L. D. (2023). The Importance and Factors Affecting the Accreditation of Vocational Education Quality in Vocational Colleges. *Conhecimento & Diversidade*, 15(36), 469-500.
- Ocak, İ., & Korkmaz, Ç. (2018). An Examination of The Views of Science and Pre-School Teachers On Nonformal Learning Environments. *International Journal of Field Education*, 4(1), 18-38.
- Öney, H. (2016). Gastronomi Eğitimi Üzerine Bir Değerlendirme. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 35, 193-203.
- Özer, O. (2020). Gastronomi Kongrelerinde Inovasyon ve Verimliliklerini Etkileyen Faktörlerin Analizi: Uygulamalı Gastronomi Kongresi. *Journal of Tourism Research Institute*, 1(1), 1-14.
- Öztürk Aynal, Ş. (2013). Haydi Çocuklar Doğaya ve Bahçelere Açılıyor: Mekân Dışı Eğitim İsveç’ten Örnekler. *International Journal of Social Science*, 6(1), 371-384.
- Payne, M. R. (1985). *Using the outdoors to teach science: A resource guide for elementary and middle school teachers* (ERIC Document No. ED264059). Las Cruces, NM: ERIC Clearinghouse on Rural Education and Small Schools, New Mexico State University.
- Ramey-Gassert, L., Walberg, H., & Walberg, H.J. (1994). Museums as Science Learning Environments: Reexamining Connections. *Science Education*, 78(4), 345-363.
- Randler, C., Kummer, B., & Wilhelm, C. (2012). Adolescent Learning in The Zoo: Embedding A Non-Formal Learning Environment to Teach Formal Aspects of Vertebrate Biology. *Journal of Science Education and Technology*, 21(3), 384-391.
- Santich, B. (2004). The Study of Gastronomy and its Relevance to Hospitality Education and Training, *Hospitality Management*, 23, 15-24. doi:10.1016/S0278-4319(03)00069-0
- Sari, K. M., & Paidi. (2018). Analysis of Potential Objects for Outdoor Learning in Natural Science for Junior High School Students. *Journal of Physics: Conference Series*, 1097(1), 1-7. doi:10.1088/1742-6596/1097/1/012046
- Sarioğlu, M. (2016). A Model Proposal for The Improvement of Internship Activity in Offering Gastronomy Education Programs at The Higher Education Institutions, *International Journal on New Trends in Education and Their Implications*, 7(1), 69-73.
- Sarioğlu, M., Sarioğlu, A. B., & Üzüvar, R. T. (2024). Applicability of Out-of-classroom Education in Gastronomy Education in Turkey, Lyon: Livre de Lyon. doi:10.5281/zenodo.10790728
- Seçim, Y. (2020). Gastronomi Eğitimi Alan Öğrencilerin İşletme Mutfaklarına Yönelik Tutumları. *Türk Turizm Araştırmaları Dergisi*, 4(1), 641-652. doi:10.26677/TR1010.2020.335
- Sevim, B., Görkem, O. (2015). Gastronomi ve Aşçılık Programlarında Gıda Güvenliği Donanım Altyapısının Değerlendirilmesi. *Uluslararası Alanya İşletme Fakültesi Dergisi*, 7(1), 59-67.

- Sharp, L. B. (1943). Outside the Classroom. *The Educational Forum*, 7(4), 361-368.
- Smith, E. F., Steel, G., & Gidlow, B. (2010). The Temporary Community: Student Experiences of School-Based Outdoor Education Programs. *Journal of Experiential Education*, 33(2), 136-150. doi:10.1177/105382591003300204
- Smith, J. W. (1995). *Outdoor Education for American Youth*. Washington, D.C.: American Association for Health, Physical Education, and Recreation.
- Solmaz, S. A. & Erdoğan, Ç. (2013). Turizm Eğitimi Alan Ön Lisans ve Lisans Öğrencilerinin Turizm Endüstrisine Bağlılık Düzeylerini Belirlemeye Yönelik Bir Araştırma, 14.Ulusal Turizm Kongresi.
- Sormaz, Ü., Arman, A., & Erdem, Ö. (2020). Uygulamalı Mutfak Eğitimi Organizasyonlarının Öğrencilerin Mutfak Bilgi ve Beceri Düzeyine Etkisi: Ulusal Aşçılık Kampı örneği. *Turizm Akademisi Dergisi*, 7(1), 209-223.
- Sözer, Y., & Oral, B. (2016). Supplementary Active Outdoor Learning Process for Classroom Learning: A meta-synthesis study. *International Journal of Eurasia Social Sciences*, 7(22), 278-310.
- Stine, S. (1997). *Landscapes for Learning*, New York: John Wiley & Sons.
- Tektaş, N., Yayla, A., Sarıkaş, A., Polat, Z., Tektaş, M., & Ceviz, N. Ö. (2016). Ön lisans Öğrencilerinin Staj Uygulamalarının Değerlendirilmesi: Marmara Üniversitesi örneği. *Eğitim ve Öğretim Araştırmaları Dergisi*, 5(6), 310-318.
- Temizkan, S., Sever, Y. (2021). Gastronomi Eğitim Mutfaklarının Temel Mutfak Uygulamaları Kapsamında Planlanması: Gerekçeleştirme. *Gastroia: Journal of Gastronomy and Travel Research*, 5(2), 388-419.
- Torun, Ü. (2021). Sosyal Bilgiler Öğretmenlerinin ve Öğretmen Adaylarının Okul Dışı Öğrenmeye Yönelik Görüşleri, Yayınlanmamış Yüksek Lisans Tezi, Ahi Evran Üniversitesi, Sosyal Bilimler Enstitüsü, Kırşehir.
- Türkmen, H. (2018). Ortaokul öğretmenlerinin sınıf-dışı ortamlarda öğretime bakış açıları. *Ege Sosyal Bilimler Dergisi*, 1(1), 12-26.
- Turnuklu, A. (2000). Eğitim Bilim Araştırmalarında Etkin Olarak Kullanılabilecek Nitel Bir Araştırma Tekniği: Görüşme. *Kuram ve Uygulamada Eğitim Yönetimi*, 24, 543-599.
- Wang, L. (2024). The Relevance of Off-Campus Activities to The Achievement of College Students. *International Journal of Education and Humanities*, 16(2), 137-140.
- West, W. (2001). Beyond grounded theory: The Use of a Heuristic Approach to Qualitative Research. *Counselling and Psychotherapy Research*, 1(2), 126-131.
- Yalçın, H. (2022). Bir Araştırma Deseni Olarak Fenomenoloji. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 22(Özel Sayı 2), 213-232.
- Yazıcı, T., & Çobanoğlu, E. O. (2017). Türkiye’de Sınıf Dışı Eğitim ve Tarihsel Kökenleri. *Uluslararası Türk Eğitim Bilimleri Dergisi*, 5(9), 385-401.
- Yıldırım, A. (1999). Nitel araştırma yöntemlerinin temel özellikleri ve eğitim araştırmalarındaki yeri ve önemi. *Eğitim ve Bilim*, 23(112), 7-17.
- Yıldırım, A., & Şimşek, H. (2005). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri* (5th ed.), Ankara: Seçkin Yayıncılık.
- Yıldırım, A., & Şimşek, H. (2006). Eğitimde kuram ve uygulama. *Journal of Theory and Practice in Education*, 2(2), 113-118.
- Yıldırım, A., & Şimşek, H. (2008). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*, Ankara: Seçkin Yayınları.
- Yıldırım, A., & Şimşek, H. (2013). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri* (9th ed.), Ankara: Seçkin Yayıncılık.
- Yıldırım, H. İ. (2018). The Impact of Out-Of-School Learning Environments On 6th Grade Secondary School Student's Attitude Towards Science Course. *Journal of Education and Training Studies*, 6(12), 26-41.
- Yıldırım, H. İ. (2020). The Effect of Using Out-Of-School Learning Environments In Science Teaching on Motivation for Learning Science. *Participatory Educational Research*, 7(1), 143-161.
- Yıldız, M., & Aslan, Z. (2019). Yiyecek-İçecek Alanında Eğitim Alan Öğrencilerin Mesleklerine Bakış Açıları. *Journal of Tourism and Gastronomy Studies*, 7(2), 1124-1141.
- Yılmaz, G. (2018). Türkiye’de Ortaöğretim ve Yükseköğretim Düzeyindeki Gastronomi Eğitiminin Değerlendirilmesi. *Turizm Akademik Dergisi*, 6(1), 229-248.
- Yörük, S., Dikici, A. & Uysal, A. (2002). Bilgi Toplumu ve Türkiye’de Mesleki Eğitim, *Fırat Üniversitesi Sosyal Bilimler Dergisi*, 12(2), 299-312.
- Yurdugül, H. (2005). Ölçek Geliştirme Çalışmalarında Kapsam Geçerliği İçin Kapsam Geçerlik İndekslerinin Kullanılması, XIV. Ulusal Eğitim Bilimleri Kongresi.
- Yusupbayeva, A. T. (2023). Development of Learning Skills of Primary School Students Through Activities Outside the Classroom. *EPRA International Journal of Multidisciplinary Research (IJMR)*, 9(10), 209-211. doi:10.36713/epra2013
- Zaman, F., & Mozammel, S. (2017). Impact Of Experiential Learning Theory on Vocational Education and Training. *TIJ's Research Journal of Social Science & Management (RJSSM)*, 7.
- Zopiatis, A., Theodosiou, P., & Constanti, P. (2014). Quality And Satisfaction with Culinary Education: Evidence from Cyprus. *Journal of Hospitality & Tourism Education*, 26(2) 87-98.

Transformation of Textile Materials: Artistic, Functional Applications in Interior Space

Fatma Yelda Gezicioğlu* / Assoc. Prof. Dr. 

Tarsus University, Vocational School, Textile Technology Program
yeldagezicioglu@tarsus.edu.tr

Fehime Yeşim Gürani / Assoc. Prof. Dr. 

Çukurova University, Faculty of Architecture, Interior Architecture Department
ygurani@cu.edu.tr

Sema Yalçın / Asst. Prof. Dr. 

İstanbul Okan University, Faculty of Art, Design and Architecture, Textile and Fashion Design Department
sema.yalcin@okan.edu.tr

*Corresponding Author

Abstract

Sustainability refers to reducing the aspects of the negative impacts of changing climate and environmental conditions on economic and social life leaving behind a world that is livable for future generations. In textiles, sustainability is maintaining production through certain methods -including utilizing natural raw materials, recycling and upcycling-, producing durable products, and reducing waste materials. Within this context, the sustainability of textile products used in various areas of interior architecture for artistic and structural functions is significant. The purpose of this study is to analyze the conditions under which textile waste can re-enter the life cycle, as well as the effects of using the recycled and upcycled materials in interior spaces. The study focused on the artistic and functional use of new products in interior spaces. Qualitative research methods including on-site observation, photographic documentation, interviews, and document analysis are used in the study. The research

evaluates the use of recycled and upcycled textiles in interior spaces, presenting examples of reintroducing waste into life through sustainable approaches. In the examples examined under the categories of artistic and functional works, similarities were observed in the materials and methods and also notable differences were found in the production techniques of the designs created from textile waste. These examples raise awareness about fast consumption, fast fashion, and the throwaway society, while also demonstrating that textiles can serve both artistic, structural functions in interiors through recycling and upcycling. This study is expected to serve as a reference for contemporary architects/interior designers and textile designers/artists.

Keywords: Sustainability, Waste Textiles, Recycling, Upcycling, Art, Interior Space.

JEL Codes: Q01, Q53

Citation: Gezicioğlu, F. Y., Gürani, F. Y., & Yalçın, S. (2026). Transformation of textile materials: Artistic, functional applications in interior space. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction to Sustainable Textiles in the Design of Interior Spaces

Several factors, including global warming, changes in nature and climate, fast fashion, and fast consumption, are among the numerous factors that negatively affect the environment and the lives of living beings. Adopting the principle of leaving a livable environment for future generations and striving to combat these problems, sensitive individuals aim at protecting nature with social and humanitarian concerns, avoiding to exceed the self-renewal capacity of natural resources, and ensuring the sustainability of nature. It has been reported that approximately 7 to 9 billion tons of waste are generated on a global scale every single year, out of which an amount of 1.3 billion tons consists of municipal solid waste. According to current estimates, it is anticipated that the global annual generation of waste will double by the year 2050 through population growth together with urbanization (as cited in Altın, 2025). The preference for natural materials and the reutilization of industrial product wastes through recycling or upcycling methods also contribute to raising environmental awareness. By preserving the world's resources, our future can be secured. For fulfilling the needs and demands of future generations in a proper manner, it is important to protect resources, to use technology appropriately, and to make qualified investments.

The concept of sustainability is construed as the capacity to maintain, for the future generations, the functioning, processes, and productivity of ecological systems, all of which constitute its foundational basis (Chapin et al., 1996). In other words, sustainability refers to continuity. The foundation of sustainability consists of ensuring nature's productivity, people's awareness of the environment, resource preservation, pollution prevention, waste management and reuse, utilization of renewable and natural raw materials, and production of long-lasting products. Sustainability is defined as minimizing current resource consumption and human-induced harm to nature for biodiversity to continue and humanity's future needs to be efficiently fulfilled (Ercoşkun, 2007). A sustainable environment includes using durable furniture requiring minimum maintenance and produced from renewable resources. Sustainable design also involves creating healthy and clean environments for users. Moreover, a sustainable environment incorporates reuse and recycling to prevent waste accumulation in landfills, thus directly contributing to the objective of pollution prevention (Fathy, 2016).

The environmental damage caused by textile industry production affects all living beings through the pollution of air, water, and soil. Globally, the textile sector is considered one of the most ecologically harmful industries (Mensah et al., 2025). Following

plastic waste, textile waste ranks second worldwide. In the textile industry, approximately 92 million tons of textile waste are generated annually. Because of rapidly changing trends and rising purchasing power, the overconsumption of garments increases textile waste at the end of product lifecycles, leading to significant amounts of textile waste accumulating in landfills (Kasavan et al., 2021). This makes a significant adverse contribution to environmental pollution. Researches have revealed that 62 million tons of textile products are consumed annually. This figure is expected to reach 102 million tons by the year 2030. The textile industry constitutes 8.1% of global greenhouse gas emissions. Of the total fiber input that is utilized within the field of textiles worldwide, 87% is discarded into landfills. Less than 1% of these discarded fibers are recycled into new clothing items. While several companies previously prepared collections only twice a year for spring/summer and fall/winter, now at least four different trends are released annually, accelerating production. Therefore, under the influence of fast fashion, consumer frenzy is polluting the world rapidly (Türkmen, 2011). As a result of this, it reveals that textile waste is increasing with each passing day.

Textile waste refers to fabric or garments that become unsuitable for their intended purpose because of defective production. Textile waste is classified into three groups: pre-consumer waste, post-consumer waste, and post-industrial waste. Pre-consumer textile waste is defined as defective products such as fabric and yarn that are generated during the production of textiles. Post-consumer textile waste stems from discarding used textile products (clothing, home textiles, etc.). Post-industrial textile waste includes discarded products from sectors like medical textiles, automotive textiles, or packaging textiles (Tang, 2023). Liquid detergents used in the production stages of fibers, yarns, fabrics, and garments manufactured in the textile industry, solid waste generated during production, and harmful gases released into the environment are among the several factors creating environmental pollution. However, waste recycling significantly reduces carbon footprint (Stanescu, 2021).

According to European Union data, increasing textile waste in landfills and low recycling rates have altered people's habits of discarding unwanted garments. Instead of donating clothing for reuse, more items are being thrown away. Less than half of used garments are collected for recycling, and only 1% are turned into new garments, because technologies capable of transforming garments into pure fibers have only recently emerged (European Parliament, 2024). These textile wastes can be revitalized not only as new garments for users but also transformed into entirely different and new products or artworks.

Sustainable waste management, which occupies an important place at the national and global levels, is influenced by the potential of the waste in terms of its environmental impact and economic benefit. Within this context, waste management processes should be planned and implemented in accordance with life cycle and circular economy approaches. In this way, the environmental impact potential of the waste may be reduced, and therefore, by ensuring the maximum possible benefit is obtained from its economic value, the life cycle may be sustained in a healthy manner (Altın, 2025). In the ISO 14040 and ISO 14044 standards (LCA – Life Cycle Assessment), reference is made to the assessment of the life cycle. This assessment serves as a tool that evaluates the impact a product will generate on the environment throughout the entire process extending from the raw material stage to processing, production, distribution, and after-use recycling and final waste management (ISO 14040 and 14044:2006).

In interior space, the "design process" is a comprehensive term for describing designers' various working methods and stages of progress for each project (Badenduck, 2023). Within this process, the designer aims at ensuring the harmony of the space's elements -such as flooring, walls, ceilings, furniture- while considering user identity. In other words, interior space signifies more than the art of arranging spaces; it is a powerful discipline where cultural identity, social interaction, and historical narratives are expressed and shaped. As a reflection of social values and cultural dynamics, interior space promotes sustainability. Therefore, its evolution is not limited to aesthetics and functionality but also references the cultural and historical contexts of the spaces (Pinos Sarmiento, 2025). Both natural and artificial materials used in interior spaces must be evaluated with respect to their environmental, economic, and social impacts. Although using fewer materials may seem like a definitive solution for sustainability, the designer's simple detailing supports the successful completion of the design process (Gürani, 2024). Designers' environmentally friendly attitudes toward sustainable practices play a crucial role in encouraging the adoption of sustainable materials (McCoy, 2012). Interior designers, through proper material selection, create healthy interiors while simultaneously undertaking a significant role in contributing to environmental and economic sustainability (Szenasy, 2012).

In interior spaces, textile products are preferred for material selection based on lightness as well as design decisions about flexibility, mobility, and adaptability. Additionally, textiles' ease of application in interior spaces makes them a leading element in sustainable design. With technological advancements in recent years, textile materials have been used in various interior functions such as space di-

viders, sun control elements on windows, wall coverings, and furniture components, all providing high added value. Textile applications enhance the designer's creativity and identity, establishing the desired atmosphere in interior spaces (Canbolat & Gürani, 2010). Textile products offer both tactile and visual contributions to interior spaces. The textile surfaces used in interiors are expected to be both functional and aesthetic - small/large, hard/soft, horizontal/vertical uses. The texture and color of these textile surfaces evoke different feelings in users, giving them distinctive characteristics compared to other spaces (Avlanmaz Bilecen, 2020). Designers choosing sustainable textile products and requesting such materials from manufacturers will significantly contribute to sustainability in the textile sector (Yanılmaz, 2024).

In the process of designing interior spaces, sustainability transforms into a strategic planning process by giving preference to designs that are produced from long-lasting and renewable resources, with due consideration for the minimization of environmental pollution, prevention of the formation of waste, and preservation of natural resources (Bolulu & Merdan, 2025). Within this context, waste management, together with recycling and re-use, while being part of the circular economy, also presents an environmentally friendly design approach to the prevention of pollution at its source (Can & Ayvaz, 2017).

This study has focused, in addition to several fields in which waste can be utilized, on design applications that are created from textile waste within interior spaces, which defines the limitation of the study. The objective of this study is to investigate the conditions under which sustainable textile material can be incorporated into the life cycle within interior spaces, and furthermore to explore the possibilities of making use of waste materials within the space through diverse methods such as recycling and upcycling. Within this framework, selected examples possessing artistic or structural functionality that are produced from waste materials will be analyzed with respect to recycling and upcycling processes. This study aims to evaluate sustainable textile materials not only in relation to the role they play in terms of reducing the environmental impacts of sustainable textile materials, but also in connection with their innovative usage forms in interior spaces, material circularity, and resource efficiency. It is considered that with the selected examples, both a contribution will be made to sustainability goals and new aesthetic and functional possibilities will be created in the field of design. The scope of the study is limited to the artistic and functional use of new textile products, which are produced by means of recycling, upcycling, etc., within interior spaces. This research seeks solutions to the increasing problem of textile waste and how to transform it through appropriate processes.

2. Techniques of Recycling and Refunctionalization

Recycling is the process of transforming waste materials into new materials and objects. The recyclability of a material depends on its ability to regain its original properties (Kiron, 2022). “Recovery” refers to processing materials that have completed their useful life to make them reusable, whereas “recycling” refers to processing waste that cannot be reused into secondary raw materials through physical and/or chemical treatments. In recycling, the product’s original properties are lost, resulting in lower-quality raw materials, while in recovery, the product is reused without losing its properties. To an extent, it is the transformation of old or discarded materials into useful and often aesthetically valuable products through design (Koşar et al., 2021). Upcycling refers to transforming a product for a different use without deteriorating the properties of the raw material or applying additional processing. By minimizing energy consumption in the transformation process, the concept of waste is also eliminated (Dal & Gökçe, 2019). Additionally, upcycling can be defined as assigning value to an existing product and transforming it into a creative item with a different use (Hamzah & Shaari, 2024).

Today, researchers and industry professionals emphasize that, beyond focusing on functionality and aesthetic quality, it is essential to implement environmentally friendly designs (Sorrento, 2012). Within this context, efforts to promote sustainable design are increasing everyday (Lee et al., 2013). With technological advancements, changing consumer behaviors, and growing environmental awareness, the reuse of waste materials in art and design will become more widespread in the future, enhancing sustainable design awareness (Koşar, et al., 2021). According to İşmal and Yıldırım (2011), various design models are being developed for producing environmentally sensitive designs (Design for Environment - DfE). They underline that these design models, also known as Eco-design or Green Design, are essential the textile industry characterized by excessive water and chemical consumption. They recommend that designers select materials offering maximum utility with minimal environmental damage and suggest the use of natural fibers or chemically recycled fibers derived from renewable resources. Additionally, studies on how renewable and bio-based products can integrate into different industries have been conducted. For example, bio-design products have become increasingly attractive in human life, influencing consumer behavior (Wang et al., 2017). Everyday various textile products generate waste piles which are collected, processed, reverted into fibers, and reintroduced for use.

According to 2024 data, the world generates 2.01 billion tons of solid waste annually. At least 33% of this is not properly managed, constituting serious environmental risks. As the global population increases, waste volumes are increasing sharply. Projections estimate global waste will reach 3.40 billion tons by 2050, more than double the population increase during the same period (The World Bank, 2025). Conscious waste management and recycling not only reduce waste volumes but also contribute to economic sustainability.

The rapid depletion of resources as well as climatic and environmental changes constitute significant concerns for designers and artists, who raise awareness through their environmentally conscious efforts. Various measures are taken to minimize the waste generated by end-of-life textiles and to carry out works in this area. The study focuses on textile wastes repurposed for interior textiles through recycling and upcycling methods from a sustainability perspective. In line with the research scope, sustainable textiles used in interior spaces will be examined both artistically and functionally, and the importance of the issue will be discussed through examples. Artistically discussed, sustainable textiles will be explained through recycled and upcycled examples in interior spaces, while functionally referenced recycled textiles will be evaluated on interior space and furniture scales.

3. Methodology

The research methodology employed has consisted of qualitative methods that include on-site observations, photographic documentation and recording, interviews, as well as document analysis. These methods have been evaluated within an analytical framework that allows for a systematic examination of the spatial, visual, and social dimensions of the object as an artistic or functional element. On-site observation and photographic documentation have allowed for the analysis of designs through the researcher’s perspective, while interviews have revealed the experiences of artists and social awareness. A total of nine different examples were selected from textile production, utilizing recycling and upcycling methods, and encompassing systematic and functional components. Each of these examples differs in its production methods and areas of use. Data was collected through face-to-face and online interviews with a group of artists representing five examples. The remaining four examples were selected using document analysis methods. Document analysis, on the other hand, has contributed to the evaluation of the case study by supporting the findings obtained through the integration of relevant literature sources and available data.

4. Findings

4.1. Artistic Applications and Case Studies

When analyzed artistically, sustainable textiles appear in interior spaces through diverse areas of use. Frequently created using upcycling methods, these works, large or small in size, are produced from defective fabrics, garments, yarn waste, sample fabrics, tailor/factory wastes, or repurposed worn-out clothes, transformed into creative, original concepts. The five artistic examples discussed employ different techniques. The first example features the works of Deniz Sağdıç, a Fine Arts Faculty, Painting Department graduate. Utilizing advanced recycling techniques in sustainable art, Sağdıç transforms her works into art pieces by reducing them to specific sizes without damaging their structure, thereby changing their function. Her works are produced in her studio, operating entirely on upcycling principles. She renovated an old building following these principles, preserving its original structure while designing it to serve sustainability. She emphasizes that her studio, which she defines as a sustainable art house, is unique worldwide. Describing it as the sole place where art and sustainability meet, she notes that tourists from various countries visit several days a week. She explains that she uses environmentally friendly materials, has solar panels, and utilizes systems collecting rainwater. She sorts waste materials from different brands -such as upholstery fabric waste, label waste, and various textile wastes- to create her works. An overhead mirror system installed on the studio ceiling serves as an aid, allowing her to continuously assess the placement of each piece. Viewing the work's reflection helps her maintain perspective and avoid missing portrait details.

Sağdıç defines sustainable art as both the sustainability of art itself and of objects: Underlining the importance of art, *"Sustainability of art means diversifying its visual and functional applicability across spaces,"* she notes. *"Art is a part of daily life. Over the past 50–100 years, especially after wars, art has become more closed off, intellectualized, trapped in bohemian perceptions, buried under concepts, and confined to galleries and museums, being distanced to daily life. I believe this is not what art is and art has*

always been part of life, carrying its narrative since Göbeklitepe."

For this reason, she strives to diversify spaces, exhibiting her works wherever people spend their daily lives - shopping malls, hospitals, restaurants, airports, subways, and public spaces- arguing that both a 7-year-old child and 70-year-old adult engage their mental faculties through art. When viewers encounter artworks, they see a reflection of themselves, forming emotional connections.

Additionally, she tries to create awareness by presenting separated discarded items back to viewers. She emphasizes that each piece contains only one type of sorted object; she deliberately avoids combining various discarded items to prevent generating new waste from waste. *"Every object people discard is valuable because significant energy resources are consumed from production to consumption,"* she notes. *"I use defective fabrics, sample swatches, aged and decaying carpets and rugs - cutting, sewing, gluing, and assembling them".* Through this process, she aims to subconsciously encourage people to separate and reuse materials accordingly. The artist believes that if her works serve merely decorative purposes, they risk becoming temporary and disposable. Therefore, she strives to create sustainable works by crafting stories that can be preserved for years: *"I am not in favor of art as a decorative element; it must be integrated into life, sustainable, and preserved across at least three to five generations, so I don't contribute to generating new waste. The longevity and usability of my works in interior spaces are essential."* (D. Sağdıç, personal communication, March 15, 2025).

At the Boyner store on Bağdat Avenue in Istanbul, designed as a sustainable space through upcycling, pipes and flooring from waste collection centers were used. Artist Deniz Sağdıç associated her works with the store by using defective and unsold textile products from the store. Her works are displayed on the basement, ground, and upper floors. She prefers locations where people pass through and frequently used by viewers, like stairheads and library entrance door, conveying messages on waste sorting culture, reuse, and sustainability (Figure 1).

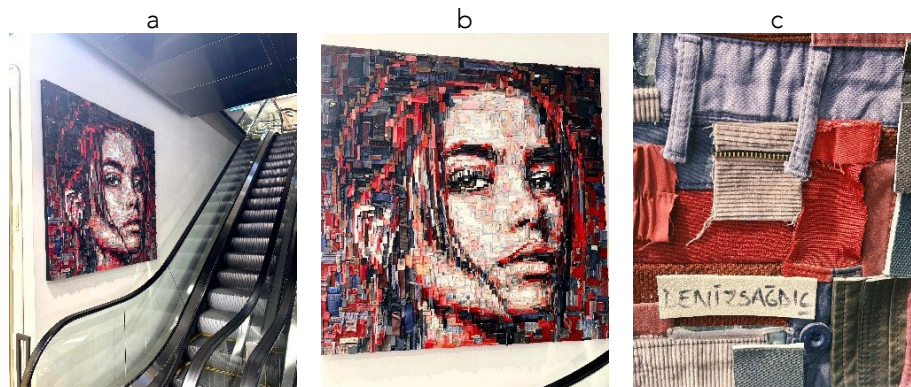


Figure 1. a. An art Work, Next to the Stairs Inside the Store, b.c. Detail

Source: Photographed by author, (February 04, 2025). Note: Deniz Sağdıç, Ready Remade Series, Waste Fabric Pieces, 150x150cm, 2021, Cadde Boyner Store, Bağdat Avenue, İstanbul

Combining weaving with printing and dyeing techniques using waste fabrics and yarns, Artist and academic Fatma Yelda Gezicioğlu studied at the Faculty and Institute of Fine Arts. With training in textile arts and weaving art/design, she produces works based on sustainability in Anatolian textile culture. Known and widely used centuries ago, these methods were developed to enable the reuse clothes and fabrics at the end of their useful life. They are described as converting textiles into yarn or fiber and creating new products through weaving (Gezicioğlu, 2022). Moreover, old fabrics have been combined using sewing techniques to create new uses and transformed into

different products for widespread use. Gezicioğlu merges these earlier conscious or unconscious eco-friendly practices with new techniques to create novel surfaces. She sources materials from factories and tailors, often using defective fabrics, yarns, or weaving waste (excess warp and weft on the loom's edges). She carefully considers surrounding objects when exhibiting art works and pays attention to the impact on the wall's texture, color, and natural/artificial light on the displayed work. All these factors support the work's narrative and enhance its message to viewers (Figure 2) (F.Y.Gezicioğlu, personal communication, January 04, 2025).



Figure 2. a. Interior Art Work, b. Detail

Source: Photographed by author (January 04, 2025)

Note: Fatma Yelda Gezicioğlu, "August 2020, From Orange to Blue / Bolu," 29x102cm, 2023

In addition to her two-dimensional works, Gezicioğlu combines woven fabrics using sewing techniques to create three-dimensional, voluminous artistic works. These works, also called sculptural weavings or woven sculptures, are designed for indoor spaces. The display allows viewers to walk around the sculptures, seeing them from multiple angles and forming different sculptural images from each perspective.

Believing that art spreads goodness and beauty, Laurine Malengreau creates large-scale textile paintings by combining silk and wool. Layering these materials and turning them into stories, she creates effective, bold, and creative works. She describes those as paintings that speak to the viewer. Her life experiences across different countries, early apprenticeships with artists, art history education, and commitment to the materials she uses bring strong energy to her works. Positioned between Eastern and Western cultures, her original creations innovate the tapestry tradition innovatively and contemporarily. As the inheritor of this traditional and contemporary

knowledge, she manually carries out all stages of textile creation, blending natural wool and silk through felting to produce non-woven fabrics with lightness and transparency. She states that this felting process requires no stitching or adhesives, avoiding environmental harm (Malengreau, 2025).

In a written interview on May 09, 2025, Malengreau explained that all her materials consist of natural, biodegradable fibers, mainly silk and wool, and her frames are made of wood or iron. She prefers to source materials locally in France or nearby. Occasionally, for certain colors, she obtains certified merino wool from the UK, ensuring animal welfare compliance. All artisans she collaborates with work within 10 km of her studio, emphasizing the importance of proximity, respect for materials, and respect for people she works with as her approach to sustainability. She buys silk fiber from a French family business selling slightly defective second-grade silk, underlining its usefulness, affordability, and waste prevention. She states that wool is a discarded material with very little added value worldwide. Waste wool is cleaned,

dyed, carded, and turned into merino, ready for being used in her works. She also notes that to support local producers, she works with French merino processed by a cooperative, allowing full control over the wool's transformation process. The resulting durable textiles require no stitching or adhesives, eliminating environmentally harmful chemicals or adhesives. She adjusts her works based on several factors like exhibition space, considering factors like wall color, lighting, and nearby objects. She states

that she works differently for architects and individuals; when working for architects, she proceeds with the mood board they gave her, thus ensuring that her work matches the style, colors, and dimensions that architects envision for their clients. She also says that individual buyers purchase her works from galleries and she does not make any adaptations there, but simply transform the subjects that inspire her into works of art (Figure 3) (L. Malengreau, personal communication, May 09, 2025).

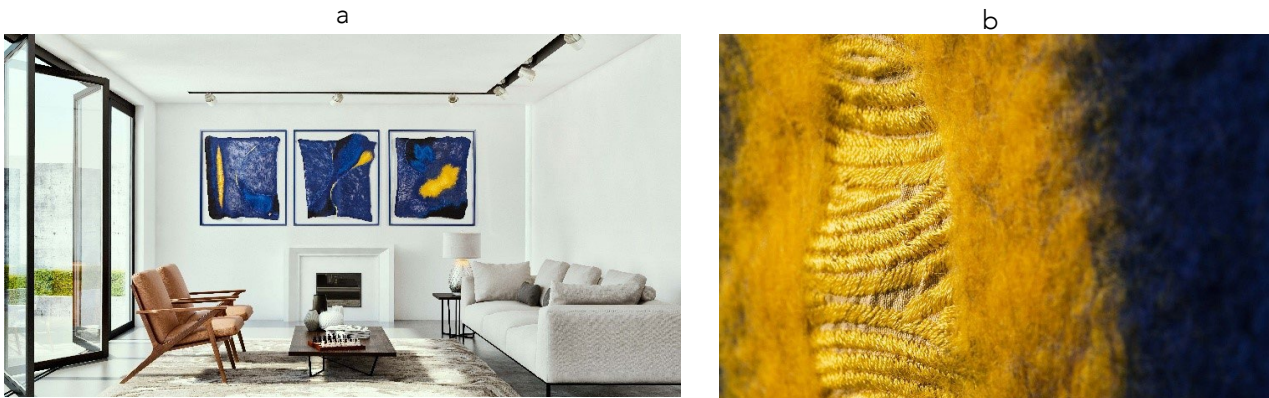


Figure 3. a. Interior Art Work b. Detail

Source: Adapted from Malengreau, (2025). Diapir

Note: "Bubbles of magma, incandescent marks and their path into the hollow of the night"
Triptych in Nuno Silk 157,48 x 49,21. Shenyang hotel, China.

Another artist working with textile waste, Vanessa Barragão, started her journey driven by a passion for reshaping. While studying Fashion Design at university, she researched the large amounts of waste generated by the textile industry and its harmful environmental impacts, deciding to recycle and reuse textile products. She made agreements with local textile factories in Portugal to collect most of their waste. "We have a saying in Portugal: What is trash for some is luxury for others. As creators, we must guide ourselves in that direction," says Barragão. In her works, she uses traditional techniques such as latch hooking, crochet, felting, weaving, embroidery, and macrame, thus preserving and continuing the techniques inherited from her ancestors. She also experiments with unconventional materials using new techniques to create unique surfaces. Each new material, she notes, presents its own challenges and aesthetics. Before use, she washes and sorts the materials by color, preparing a catalog. Although this process is long and requires significant storage space, she finds it rewarding to know that all these materials, otherwise destined for disposal, are reused (Carson, 2025).

In 2014, Vanessa Barragão established her own design studio, where she creates handmade wall tapestries, rugs, and wall decorations using only

recycled or discarded yarns. By combining various techniques, she creates a magical three-dimensional effect in textiles. She mainly works with textile waste, particularly wool leftovers from textile factories, occasionally complementing them with sustainable natural fibers when necessary. Stating to always prioritizing waste materials, she reflects her admiration for the ocean and all living beings through organic textures and layers inspired by marine life (East, 2020). She emphasizes that working with waste requires a flexible, intuitive approach, as colors, textures, and quantities vary, demanding creativity. She adapts her creative process according to available materials and sees this limitation as a strength. She believes that having a story behind each material adds meaning to the artwork and helps convey narratives through every selected piece. The uniqueness of each component of an artwork results from the artist's creativity. Beyond raising environmental awareness, the recycled fibers in Vanessa's works also address damage to coral reefs and the effects of chemicals released into oceans. She always considers the exhibition space, stressing the importance of wall color, lighting, and surrounding objects, ensuring that the detailed and often large artworks feel integrated into the space (Figure 4) (V. Barragão, personal communication, May 05, 2025).



Figure 4. a. Interior Art Work b. Detail

Source: Adapted from Palacete de São Bento (2021)

Note: Vanessa Barragao "Coral Vivo" 400x200cm displayed at Palacete de São Bento - Lisbon

Sandra Junele, an award-winning textile artist based in Dundee, Scotland, has a background in interior and textile design. Her work is known for its minimalist design, textural focus, and application in interior spaces. Junele combines fragmented, recycled industrial or consumer textile waste with handmade plant-based glue to create unique and sustainable wall panel installations and custom-molded artworks. She describes her panels as statement pieces for interiors, blending aesthetics with a sustainable message. She emphasizes that her innovative approach allows the materials to be submerged in water, disassembled, and reused, offering endless possibilities. Since she uses only natural fiber waste, one major challenge is that natural fibers are often blended with synthetic yarns, requiring careful

manual separation - a time-consuming and delicate task. However, she notes that the pre-consumer waste materials predominantly utilized in her work are typically not pre-sorted by color, which requires her to manually separate them individually according to color. She also incorporates unused or surplus materials, such as dead stock or defective colored yarn cones destined for disposal. In preparing her works for exhibition, she considers wall color, lighting conditions, surrounding objects or furniture, and the overall atmosphere of the space. Moreover, she takes into account the client's personal preferences and the intended function of the piece. She ensures that every detail in the design process serves both the visual and functional purpose of the artwork (Figure 5).

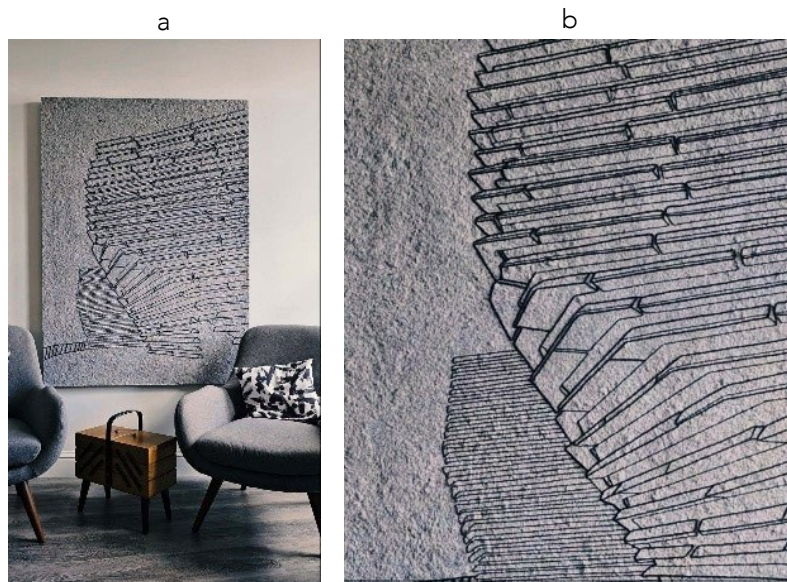


Figure 5. a. Interior Wall Panel b. Detail

Source: Adapted from Junele (n.d.)

Note: Sandra Junele, Work titled 3552, 115x160x4,5cm, 2024

Junele's passion for recycling originates from her childhood in Latvia, where she watched her grandfather make furniture from scrap wood. This ear-

ly experience sparked her interest in repurposing materials otherwise destined for landfills. Specializing in transforming discarded objects into art, she

works primarily with yarn waste. Junele mainly uses pre-consumer recycled natural fiber waste, preferably sourced from local producers in Scotland or the United Kingdom. Collaborating with designers, she encourages people today to think creatively about reducing their environmental impact (S. Junele, personal communication, April 14, 2025).

4.2. Functional Applications in Architectural Elements

Textile materials are used in many areas of interior spaces. The elements with structural properties created from products using textile waste within the scope of the study are those used for dividing/separating interior spaces, defining spaces, and setting boundaries. These textile products possess their own construction, functioning as load-bearing systems composed entirely of textiles. The favorable properties of textiles -lightness, formability, color variability, renewability, and replaceability- encourage designers to frequently utilize them in spaces.

Textile waste consists of:

- a. yarns, fibers, and textile waste produced during manufacturing, and
- b. post-consumer materials such as discarded home textiles (Pichardo et al., 2017).

Fibers obtained from textile waste are effectively integrated into organic and inorganic mixtures containing both natural and synthetic components, and these mixtures undergo extensive testing, particularly for mechanical, acoustic, thermal, and electrical properties (Patti, Cicala & Acierno, 2021). Based on the function to be undertaken by recycled textile products within structures, organic/inorganic additives improve the durability of recycled textiles. Fibers from various textile wastes are highly suitable for concrete reinforcement, offering lower costs compared to virgin fibers while reducing landfill waste. For example, leftover textile fragments from production are mixed with epoxy resin and sand to produce composites for lightweight structures. Although textile fibers do not enhance polymer concrete's bending and compressive strength, their addition

eliminate its brittleness. The use of these textile fibers eliminates a pollutant and provides an alternative material for the construction industry (Pichardo et al., 2017).

The first functional example involving textile material examined within the scope of this study is the innovative brick modules produced by FabBRICK, a France-based company founded by Clarisse Merlet. These innovative bricks are manufactured by recycling textile waste to create elements that provide both thermal and acoustic insulation. Molded into prismatic forms, the bricks constitute load-bearing components that not only define spatial boundaries but are also capable of standing independently. This method of transforming textile waste represents an environmentally sustainable approach and offers more ecological alternatives for the construction industry, which has traditionally lacked a strong environmental focus. The raw material used in these bricks is composed of shredded fabrics sourced from a supplier based in Normandy. Typically comprising cotton, polyester, elastane, and PVC, these fragments are blended with an eco-friendly adhesive developed in-house and poured into rectangular prism molds. Once filled, the mixture undergoes mechanical compression without any human intervention and is subsequently left to dry for approximately 15 days. The resulting modules can be assembled to form spatial dividers, seating elements, tables, coffee tables, and lighting fixtures. The final product is a novel construction material that is flame-retardant, acoustically absorptive, and resistant to moisture. From 12 tons of recycled textile waste, approximately 40,000 bricks are produced annually (Joe, 2021). These bricks serve as both aesthetically valuable architectural components and practical solutions for reducing textile waste in the industry. This product can be applied as cladding material over existing interior walls and enhances the acoustic quality of the space. Furthermore, these bricks are functionally sound enough to support lighting units and other interior elements (Figure 6). Ultimately, a highly durable, impact-resistant, fire-retardant, and moisture-proof material has been developed.



Figure 6. a. FabBrick bricks, in a Denim Store. b. at Galeria Lafayette Store.

Source: Adapted from Massoni (2024)

Note: a. FabBrick bricks were used in a denim store to create a surface surrounding the shelves with textile bricks, thereby defining the shelves. b. FabBrick brick display stand at Galeria Lafayette store.

With this example, it becomes possible to raise awareness among consumers by giving a second life to waste textiles. Also contributing to the creativity of the designer, these bricks create an identity within the interior space in the context of sustainability and enhance the store atmosphere in harmony with the marketed product.

By being recycled and reintroduced into life after the end of their useful life, products made from textile materials can be utilized in buildings. Globally, half of CO₂ emissions originate from the construction sector. The second example examined in this study features the sustainable products of the company Kvadrat Really, which brings textiles back to life after their useful life ends and offers innovative solutions. This brand aims to expand the functional

uses of textiles within interior spaces through the production of tabletops, cabinet doors, and acoustic panels (Figure 7). According to the company's data, the production of a tabletop measuring 800 x 1600 mm requires approximately 70 cotton and wool T-shirts that reached the end of their lifecycle. While possessing the characteristic of being 100% recyclable, it also makes a contribution to the reduction of global waste accumulations and aims at ultimately reducing carbon emissions down to zero. The manufacturing company, which holds the ESRS (European Sustainability Reporting Standards), aims to expand its product range while also adopting innovative technologies that will extend the overall life span of its products by the year 2040 (Kvadrat, n.d.).

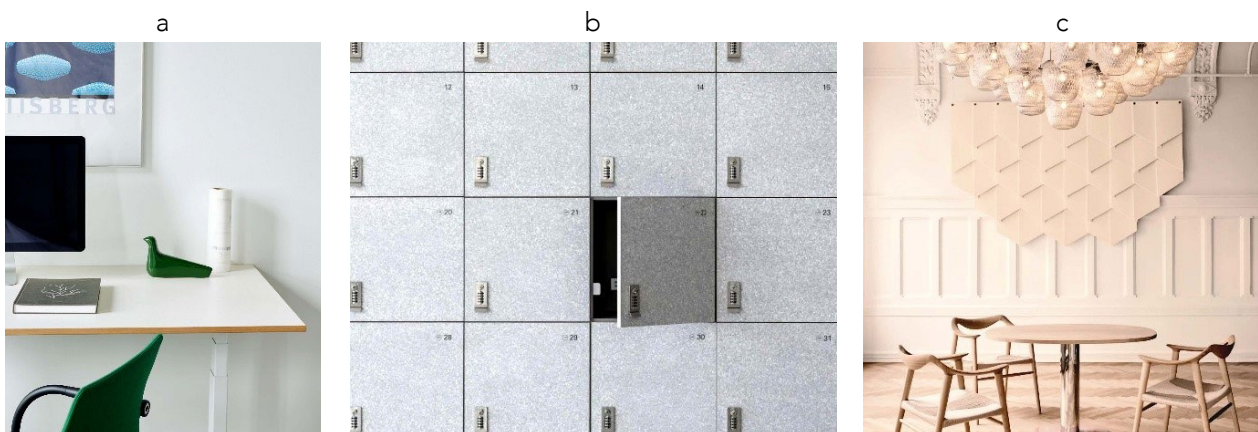


Figure 7. Recycled Textiles Used in Interior Spaces

Source: Adapted from Kvadrat (n.d.)

Note: a. Tabletops b. cabinet doors, c. acoustic panels

The company Swedish Stockings produces tables by mixing used tight stockings, both from its own production and from other brands, with fiberglass and molding them through injection casting. As a result of its collaboration with Frisinger's designer Gustaf Westman, the brand creates surfaces resembling

polished stone, bringing a distinctive atmosphere to the space. After learning that approximately two billion pairs of tights are worn only once and then discarded every year, the brand has established a waste collection system by rewarding customers who return used tights, regardless of their brand (Figure 8)

(Worthington, 2020). While stockings are known as petroleum-based products that never decompose, these innovative ideas can be seen as promising initiatives aimed at reducing the negative impact of the textile industry. The fluid material formed from

the stockings is cast into molds, resulting in mass forms that create furniture with an integrated structure. The texture of the particles forming these pieces of furniture generates a unique surface.

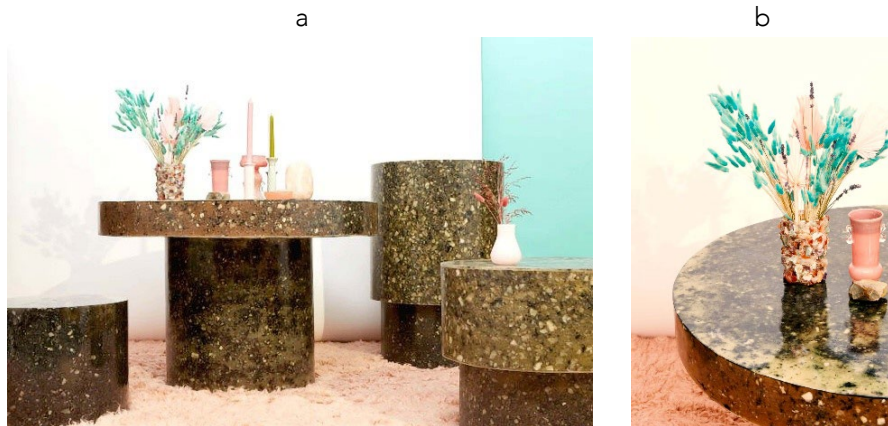


Figure 8. Furniture Made from Recycled Textiles

Source. Adapted from Worthington (2020)

Note. Although used stockings break down into smaller microplastics, they still remain in nature as waste and pose a threat to the environment. By mixing them with fiberglass and casting the mixture into molds, tables and coffee tables with polished, stone-like surfaces are produced.

In recent years, the issue of how to repurpose used textiles has become increasingly pressing. In response to this problem, researchers from the Technical University of Liberec in the Czech Republic, in collaboration with the country's social services organization Diakonie Broumov, have developed an innovative example of recycling. The final example presented in this article is a striking example that makes it possible to recycle textile products without the need to separate components such as buttons and zippers. The textiles, including zippers and buttons, are ground up and mixed with resin to produce solid boards. Initially, clothes hangers were made from these boards, and later, wall coverings for interior spaces were produced. The color of the

boards can enhance the design approach of the interior designer, allowing the intended atmosphere of the space to be fully realized. Research and development efforts on this new product are ongoing, and it appears to have the potential for wider use in the construction industry (Figure 9) (Pfefferová, 2025). Entered the market under the name Clutex, the brand not only contributes to reducing waste by transforming textile waste into a new product, but also fosters a sustainable and environmentally conscious approach that supports the designer's creative potential. Furthermore, it allows new ideas to emerge that can push the boundaries of composite materials, potentially serving as inspiration for the designers of the future.



Figure 9. Panels Made from Recycled Textiles

Source: Adapted from Pfefferová (2025)

Note: The panels produced by the company Clutex from waste textiles are used in wall coverings, kitchen backsplashes, and cabinet doors.

These environmentally friendly practices, of which artistic and functional examples are examined, are not limited to incorporating textile waste into the lifecycle by reducing waste piles, but also enable their dissemination in society by personalizing living spaces through methods such as recycling and upcycling.

5. Conclusion

The textile waste products examined within the scope of this study consist of waste textiles either used by consumers after production or considered as production waste before reaching the consumer. This study is limited to textile materials with artistic and functional characteristics used in interior spaces. The designs created through recycling and upcycling methods in the examined examples generate an impact value in interiors. This impact value can be summarized in terms of its contribution to social, environmental, and economic sustainability (Figure 10).

pe of this study consist of waste textiles either used by consumers after production or considered as production waste before reaching the consumer. This study is limited to textile materials with artistic and functional characteristics used in interior spaces. The designs created through recycling and upcycling methods in the examined examples generate an impact value in interiors. This impact value can be summarized in terms of its contribution to social, environmental, and economic sustainability (Figure 10).

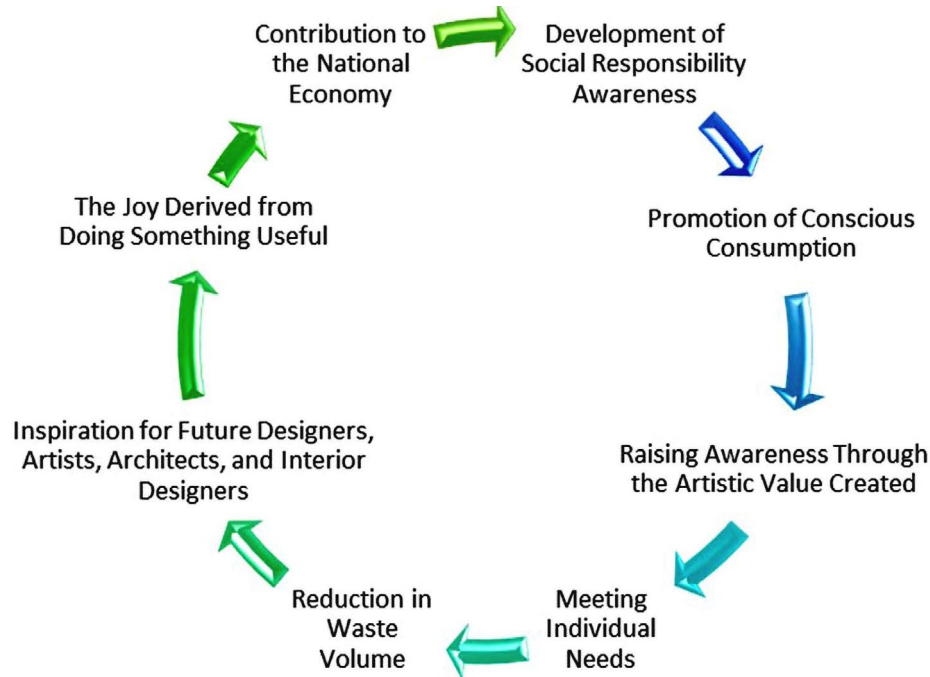


Figure 10. Graph of the Impact Value of Recycling and Upcycling Practices on Social, Environmental, and Economic Sustainability
Source: Created by the authors

In the examples examined under the categories of artistic and functional works, similarities were observed in the materials and methods used for interior textile waste applications. Nevertheless, notable differences were found in the production techniques of the designs created from textile waste. The source of these differences are considered to be whether

the products are of artistic or functional quality. The functions of the artworks or furniture pieces produced from textile waste determine their area of use within the interior space. Table 1 presents the use of textile waste in interior spaces within the context of sustainability.

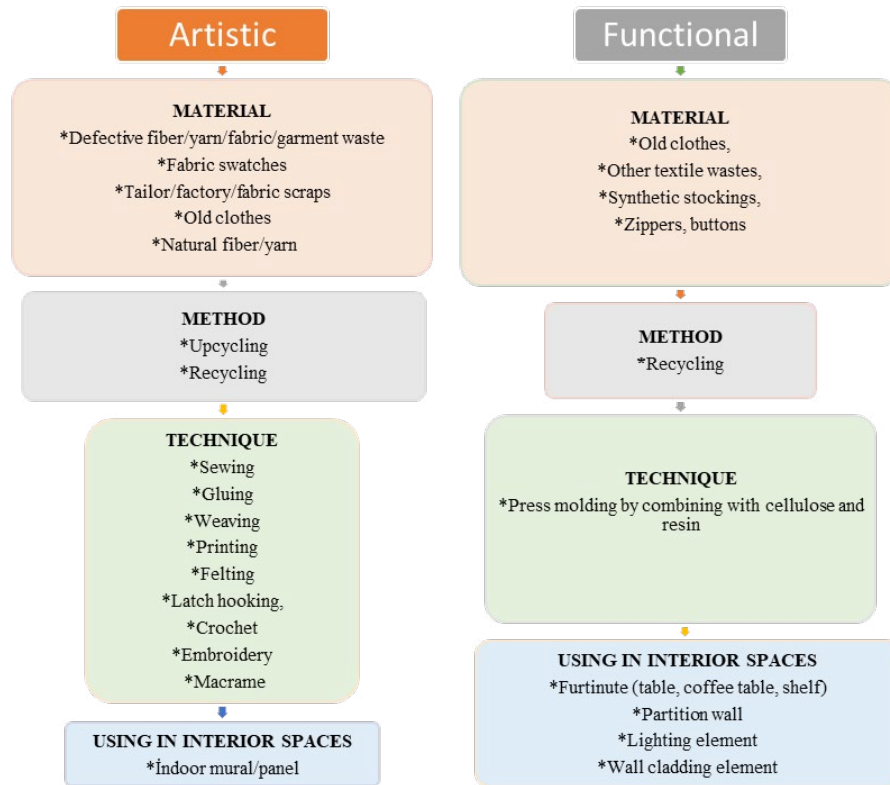


Figure 11. Comparison of Artistic and Functional Example

Source: Created by the authors

In line with today's increasingly important environmentally conscious mentality, studies are being conducted on where and how textile products that are widely used in every field and the waste generated after the end of their structural life can be repurposed. Facing with the rapid depletion of resources, the world has begun to take rapid and attentive steps toward the intelligent use of textile materials. In parallel, several national and international companies across the world are offering solutions to create new products from recycled textile waste. In order to reduce the amount of textile waste, which poses serious environmental problems, individual-level measures such as sorting waste and implementing recycling and upcycling practices are important. Materials that are no longer usable can be processed through various methods into raw materials, thus being transformed into beneficial and functional products based on the dynamics of the waste. Moreover, controlling consumption fosters awareness. These environmentally friendly practices promote environmental consciousness while also ensuring sustainability by personalizing living spaces.

This study emphasizes the importance of evaluating textiles in interior spaces from a sustainability perspective in terms of both artistic and functional qualities. Artistically, interior space textiles stand out as elements reflecting the spirit of a space and enriching users' emotional experiences. Aesthetic approaches combined with sustainable design principles support both environmental and social

sustainability. Functionally, the use of recyclable and environmentally friendly materials in the selection of interior textile materials, their energy efficiency, and long lifespan are important in attaining sustainability goals. These goals both reduce environmental impacts and improve users' quality of life. Although textile materials require high energy consumption during the production stage, achieving sustainability is possible through various practices. These include reusing through recycling and upcycling methods, preferring local producers, using natural materials, and sourcing materials from the nearby environment. This environmentally conscious approach supporting sustainability not only gives a second life to discarded textiles but also inspires us to rethink our consumption habits. By combining sustainability with creativity, textile waste used in both artistic and functional areas make living spaces enjoyable and comfortable while also drawing attention to environmental responsibility. Art is an important tool for the dissemination of this responsibility in society. Although recycled textiles used in interior architecture serve a structural function, they should also be regarded as an inspirational and aesthetic value.

Sustainable textiles used in interior spaces can create a memory that people frequently see, touch, and are affected by with each contact. The awareness that emerges from this experience can spread from one person to another, fostering environmental consciousness and supporting waste management. Presence of objects produced from waste materials

in densely populated areas will further raise awareness.

6. Discussion and Recommendations

The most important awareness required for the continuity of sustainability originates with education of people. The individual should consume with the knowledge and awareness of the life cycle of the products they are using, and societal consciousness should be raised with regard to re-use possibilities ranging from matters such as washing/care methods to how recycling/upcycling methods could be applied. In addition to these, in the education provided to textile and interior architecture design students, it is of importance that significant issues such as the selection of sustainable materials, environmentally friendly design principles, and circular economy are included. Furthermore, projects that will bring artists working with waste materials together with students in academia not only will raise consciousness among the designers of the future but also will serve to provide role models for those students. On the other hand, in companies that are engaged in industrial-scale mass production, it is of notable significance that training is offered on subjects related to sustainable production practices, including as water/energy consumption and waste management. Additionally, in order to raise the public consciousness, various projects may be carried out within the framework of University-Industry-Local Government-CSO cooperation with a focus on sustainability. In addition to all these, it is important that the central government establishes the necessary legal regulations that will encourage individuals to use such sustainable products and also develops policies that will support the producer. The regulation of waste collection through such legal instruments can provide the foundation for the formation of behavior patterns within society that are based on sustainability. Local production with sustainable textile materials will be another contributor to the reduction of the carbon footprint.

Technological innovations constitute an important factor for future directions as well. These innovations will provide the necessary ground for the development of new materials, thereby supporting that the resulting products are environmentally friendly. In addition to this, they will be able to make a contribution to sustainable textiles not only at the level of recyclable materials but also in aspects such as waste reduction and resource conservation in the processes of production and consumption.

In addition to the fact that products produced from waste materials provide benefits in numerous fields, the widespread use of these products may be insufficient in the face of cultural and consumption habits. The limited diversity of products made from waste materials currently in use may impose restrictions on

the originality of design. The generally high cost of sustainable products may create a negative impact when it comes to reaching a wide consumer base.

In conclusion, evaluating interior textiles from artistic and functional perspectives within the framework of sustainability not only helps reduce environmental impacts but also has the power to create aesthetic and functional spaces. In the future, innovative approaches and technologies in this field will contribute to the further development of sustainable interior architecture. Such practices will help reduce the rapidly growing waste that threatens the future, give form to the visions of interior designers, and inspire the designers of tomorrow.

Acknowledgment

Thanks to artists Deniz Sağdıç, Fatma Yelda Gezicioğlu, Laurine Malengreau, Vanessa Barragão and Sandra Junele for the interview.

Ethical Statement

This study received ethical approval from the Ethics Committee of Tarsus University.

Conflict of Interest Statement

The authors declare no conflict of interest.

References

- Altın, S. (2025). Yaşam döngüsü analizi ve döngüsel ekonomi yaklaşımları ile sürdürülebilir biyoatık yönetimi. *Ulusal Çevre Bilimleri Araştırma Dergisi*, 7(2), 55-68. <https://izlik.org/JA28ED25YD>
- Avlanmaz Bilecen, E. (2020). İç mekân tasarımı tekstil seçiminde performans ölçütlerinin değerlendirilmesi. *Artium*, 8(1), 61-67. <https://izlik.org/JA63YZ82SW>
- Badenduck, N. (2023). Nebulous, abstract, elusive: Examining design concepts within interiors practice and pedagogy. *Journal of Interior Design*, 49(2), 75-81. <https://doi.org/10.1177/10717641231202472>
- Bolulu, G., & Merdan, N. (2025). İç mekan tekstillerinde sürdürülebilir yaklaşımlar, 7th International Symposium on Innovation in Architecture, Planning and Design June 27-28, 2025, ss.53-60| Gaziantep – Türkiye
- Can, Ö., & Ayvaz, K. (2017). Tekstil ve modada sürdürülebilirlik. *Akademia Doğa ve İnsan Bilimleri Dergisi*, vol.3, no.1, pp.110-119. <https://izlik.org/JA92YA72ER>
- Canbolat, T., & Gürani, F. Y. (2010, April 29-30). Sürdürülebilir tasarım yaklaşımı olarak iç mimaride tekstil kullanımı. VI. Uluslararası Sinan Sempozyumu (pp. 308-314). Edirne, Türkiye.
- Carson, M. (2025). Recycling in textile art: Five artists. *TextileArtist.org*. <https://www.textileartist.org/recycling-in-textile-art/>
- Chapin, F. S. III, Torn, M. S., & Tatenio, M. (1996). Principles of ecosystem sustainability. *American Naturalist*, 148(6), 1016-1037. <https://doi.org/10.1086/285969>
- Dal, İ., & Cengiz Gökçe, G. (2019). Sürdürülebilirlik yolunda "ileri dönüşüm": Bir atölye çalışması. *İnönü Üniversitesi Sanat ve Tasarım Dergisi*, 9(20), 30-38. <https://doi.org/10.16950/iujad.654300>
- East. (Jan 23, 2020). Textile Artist Vanessa Barragão, https://www.east.co.uk/blogs/journal/textile-artist-vanessa-barragao?srsltid=AfmBOoo3_cFfuLJjzayc9BmTj6D8gsfeH_Tn2TX3Vda_nSd-

1Y8o42wiM

Eroçşkun, Ö. Y. (2007). Sürdürülebilir kent için ekolojik-teknolojik (EKO-TEK) tasarım: Ankara-Güdürlü örneği [Doctoral dissertation, Gazi University]. Gazi University Graduate School of Science.

European Parliament. (2024). The impact of textile production and waste on the environment (infographics). <https://www.europa.eu/topics/en/article/20201208STO93327/the-impact-of-textile-production-and-waste-on-the-environment-infographics>

Fathy, A. (2016). Sustainable textile materials in interiors. In 11th International Conference on Urban Regeneration and Sustainability (SC 2016) (pp. 636–637). WIT Conferences. www.witconferences.com

Gezicioglu, F. Y. (2022). Geleneksel çaput/cacala/pala dokumalarına sürdürülebilirlik bağlamında çağdaş bir yorum: Hacim etkili sanatsal dokuma önerileri. *Jass Studies - The Journal of Academic Social Science Studies*, 15(89), 215–232. <http://dx.doi.org/10.29228/JASSS.57465>

Gürani, F. Y. (2024). Sürdürülebilir yapı malzemelerinin seçim kriterleri. Z. Ö. Parlak Biçer (Ed.), *Mimarlıkta yapı bilgisi* (Bölüm 10, pp. 253–262). Akademisyen Kitapevi.

Hamzah, A., & Shaari, N. (2024). Upcycle textile towards value-added product as creative community practices in Malaysia. *International Journal of Research and Innovation in Social Science (IJRISS)*, 8(6). <https://doi.org/10.47772/IJRISS>

ISO 14040: 2006 Environmental Management – Life Cycle Assessment –Principles and Framework (<https://www.iso.org/standard/37456.html>).

ISO 14044: 2006 Environmental Management – Life Cycle Assessment –Principles and Framework (<https://www.iso.org/standard/37456.html>).

İşmal, E., & Yıldırım, L. Ö. (2011). Tekstil tasarımında çevre dostu yaklaşımlar. *Akdeniz Sanat Dergisi*, 4(8), 9–13. <https://dergipark.org.tr/en/pub/akdenizsanat/issue/27655/291482>

Joe, T. (2021). Green Queen. FabBRICK: Meet French architect Clarisse Merlet who converts your old clothes into bricks. <https://www.greenqueen.com.hk/fabbrick-meet-french-architect-clarisse-merlet-who-converts-your-old-clothes-into-bricks/>

Junele. (n.d.). <https://www.junele.co.uk/>

Kasavan, S., Yusoff, S., Guan, N. C., Zaman, N. S. K., & Fakri, M. F. R. (2021). Global trends of textile waste research from 2005 to 2020 using bibliometric analysis. *Environmental Science and Pollution Research*, 28, 44780–44794. <https://doi.org/10.1007/s11356-021-15303-5>

Kiron, M. I. (2022, December 6). Recycling and sustainability in textile: Present situation, challenges and future. <https://textilelearner.net/recycling-and-sustainability-in-textile/>

Koşar, S. T. A., Gezicioglu, F. Y., & Yalçın, M. B. (2021). Üniversitelerin tekstil ve moda tasarımı öğretim programında artan/atık/atık malzemenin geri kazanımı ve sürdürülebilirliği üzerine bir araştırma. *Turkish Studies*, 16(2), 719–741. <https://dx.doi.org/10.7827/TurkishStudies.49880>

Kvadrat. (n.d.). Kvadrat Really. <https://www.kvadrat.dk/en/kvadrat-really>

Lee, E., Allen, A., & Kim, B. (2013). Interior design practitioner motivations for specifying sustainable materials: Applying the theory of planned behavior to residential design. *Journal of Interior Design*, 38(4), 1–16. <https://doi.org/10.1111/joid.12017>

Malengreau, L. (2025). Diapir. <https://www.laurinemalengreau.com/reference/diapir/?lang=en>

Malengreau, L. (2025). <https://www.laurinemalengreau.com/?lang=en>

Massoni, E. (2024).Textile upcycling: Da morbido a solido. *Interni Magazine* <https://www.internimagazine.com/design/materials/textile-upcycling-da-morbido-a-solido/>

McCoy, J. (2012). Sustainability: Environmentally responsible interior design. *Journal of Interior Design*, 37(1), 5–6. <https://doi.org/10.1111/j.1939-1668.2011.01070.x>

Mensah, R. O., Frimpong, A., Bruce-Amartey Jnr, E., Acquaye, R., Lamptey, L., & Opoku, D. (2025). The nexus between crime and textiles: Exploring the sustainability strategies of Ghana's textile industry through the lens of routine activity theory. *Textile*, 1–25. <https://doi.org/10.1080/14759756.2024.2447106>

Palacete de São Bento [@vanessabarragao_work]. (2021, December 6). "Coral Vivo 400x200cm displayed at Palacete de São Bento - Lisbon [Photograph]. <https://www.instagram.com/p/CXJ-SOvQIYUi/>

Patti, A., Cicala, G., & Acierno, D. (2021). Eco-sustainability of the textile production: Waste recovery and current recycling in the composites world. *Polymers*, 13(1), 134. <https://doi.org/10.3390/polym13010134>

Pfefferová, R. (April 02, 2025). Recycled textile boards are turning waste into useful products. European Cluster Collaboration Platform. <https://www.clustercollaboration.eu/content/recycled-textile-boards-are-turning-waste-useful-products>

Pichardo, P. P., Martínez-Barrera, G., Martínez-López, M., Ureña-Núñez, F., & Ávila-Córdoba, L. I. (2017). Waste and recycled textiles as reinforcements of building materials. In E. Günay (Ed.), *Natural and artificial fiber-reinforced composites as renewable sources*. <https://doi.org/10.5772/intechopen.70620>

Pinos Sarmiento, E. V. (2025). Building identities: A path to diversity and decolonization of interiors in Latin America. *Journal of Interior Design*, 50(1), 49–61. <https://doi.org/10.1177/10717641251316803>

Sorrento, L. (2012). A natural balance: Interior design, human, and sustainability. *Journal of Interior Design*, 37(2), ix–xxiv. <https://doi.org/10.1111/j.1939-1668.2012.01075.x>

Stanescu, M. D. (2021). State of the art of post-consumer textile waste upcycling to reach the zero waste milestone. *Environmental Science and Pollution Research*, 28, 14253–14270. <https://doi.org/10.1007/s11356-021-12416-9>

Szenasy, S. S. (2012). Reflections on sustainable design. *Journal of Interior Design*, 37(1), 7–8. <https://doi.org/10.1111/j.1939-1668.2011.01071.x>

Tang, K. H. D. (2023). State of the art in textile waste management: A review. *Textiles*, 3(4), 454–467. <https://doi.org/10.3390/textiles3040027>

The World Bank. (2025). Trends in solid waste management. https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html

Türkmen, N. (2011). Sürdürülebilir bir tekstil endüstrisi için "ya-vaşlık" ve alternatif üretim modelleri. *Akdeniz Sanat*, 4(8), 14–18. <https://izlik.org/JA44ES79YC>

Wang, Y., Luo, S., Liu, S., Lu, Y., & Hansen, P. (2017). Crafting concrete as a material for enhancing meaningful interaction. In *International Conference on Human-Computer Interaction (HCI)* (pp. 634–644). Springer. https://doi.org/10.1007/978-3-319-58071-5_48

Worthington, K. (August 12, 2020). Recycled tights and textile waste: The new materials making an impact in design. *Elle Decoration*. <https://www.elledecoration.co.uk/design/a33583178/recycled-tights-and-textile-waste-in-design/>

Yanılmaz, Z. (2024). İç mekânda sürdürülebilir tekstil ürünleri. In M. Dal (Ed.), *Mimarlıkta yenilik (İlleyen uygulama ve araştırma için tasarım, yöntemler ve teknoloji)*. Livre de Lyon.

How Migration Fuels Informal Employment and the Transformative Role of Education Policy in Türkiye

Aslı Güler* / Assoc. Prof. Dr. 

Ordu University, Ünye Faculty of Economics and Administrative Sciences, Department of Economics
asliguler24@hotmail.com

İbrahim Al / Assoc. Prof. Dr. 

Karadeniz Technical University, Faculty of Economics and Administrative Sciences, Department of Economics
ibrahimal@ktu.edu.tr

*Corresponding Author

Abstract

Given its strategic geographical position, Türkiye serves both as a transit corridor and a destination for migrants, particularly from the Middle East, North Africa, and Asia, making it a key hub in global migration flows. This study examines the dynamic relationship between international migrant labour and informal employment from the perspective of the potential transformative power of education, using data for Türkiye for the period 2000–2023. To account for nonlinear dynamics and structural breaks that are uncertain in time and location, the fractional-frequency Fourier ARDL bounds testing method is employed. Findings indicate that informal employment is particularly highly sensitive and strongly responsive to changes in the migrant labour

force. Education expenditures significantly weaken the strong relationship between migrant labour and informal employment, whereas health expenditures have no significant effect on this relationship. These findings suggest that international migration may increase labour market vulnerabilities through informal employment, but strategic education policies can act as a structural lever to mitigate this negative effect.

Keywords: Informal Employment, International Migration, Education Policies, FA-ARDL Test.

JEL Codes: J46, J61, J68, C32

Citation: Güler, A., & Al, İ. (2026). How migration fuels informal employment and the transformative role of education policy in Türkiye. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Informal employment refers to work that is not officially registered or is concealed from governmental authorities to circumvent compliance with environmental, health, social security, labour, or tax regulations, while remaining lawful in all other aspects (Williams & Windebank, 1998). Economic, financial, administrative, legal, social, psychological, and political reasons are thought to affect informal employment. In this context, economic and financial reasons are tax burden, social security premiums, high inflation, economic instability and crisis, inequality of income distribution, poverty, the weight of the agricultural sector, and firm size. Administrative and legal reasons are tax amnesties, corruption and bribery, inadequacy of tax audits, and bureaucracy. Social and psychological reasons are low education and skill level, lack of awareness, benefiting from aid programmes, rural-urban migration, refugees and migrants (Schneider & Enste, 2000; Güloğlu et al., 2003; Candan, 2007; Dereli, 2007; Pfau-Finger, 2009; Loayza & Rigolini, 2011; World Bank, 2010; Hazans, 2011; Yanici Erdal, 2019; Şenel & Öçal, 2021). Informal employment has negative effects on tax revenues, tax justice, wage level, unfair competition, social security system deficits and social security rights, and positive effects on employment, growth, inflation and competitiveness, although this is not certain (Mahiroğulları, 2017; Aslantürk & Erdem, 2018).

The flexible and cheap labour force required by economies is generally provided through informal employment. Consequently, migrants represent a significant labour force within informal economic activities, as well as vulnerable groups such as women, youth, and the elderly, especially those with low levels of education and skills, who are involved in such activities depending on the region and time. Migrants have limited or no rights as non-citizens in the host country, making them an important source of informal employment (Maroukis et al., 2011). It is quite common for migrants to turn to informal work in environments where legal regulations are inadequate or incomplete. Lack of work permits, invalidity of documents and certificates regarding their education, low skill level and language-based communication problems, etc., force migrants to work informally.

The International Labour Organisation (ILO) estimates that as of 2022, there are approximately 284.5 million migrants worldwide, of which 255.7 million constitute the migrant active population, consisting of individuals over the age of 15 and 167.7 million of them constitute the migrant labour force. About

155.6 million of this labour force is employed, while 12.1 million migrants are unemployed. The share of migrant employment in total employment worldwide is about 4.6%. Approximately 66.7% of the active migrant population is located in high, 17.4% in upper-middle, 12.3% in lower-middle and 3.6% in low-income countries (International Labour Organization, 2024).

Owing to its strategic geographical position, Türkiye functions as both a transit route and a destination for migrants, especially from the Middle East, North Africa, and Asia, establishing itself as a key centre in global migration flows. Also, due to the Syrian civil war that began in 2011, millions of refugees have sought asylum in Türkiye. According to the World Migration Report 2024, Türkiye was the largest host country in the world in 2022 (International Organization for Migration, 2024). As of 2025, Türkiye hosts approximately 4 million foreigners, including around 2.8 million Syrians (Presidency of Migration Management, 2025).

The educational composition of migrants is a critical variable in terms of which sectors labour is directed towards, labour force quality, and human capital effects. Figure 1 shows the distribution of the migrant labour force in Türkiye according to educational levels. This graph is significant in that it illustrates the quantitative and qualitative changes in the migrant labour force over time. The migrant labour force, which was approximately 104 thousand in 2000, increased to 981 thousand in 2023. This indicates that Türkiye's status as a country of immigration has strengthened since the 2000s and that the migrant population has become increasingly visible in the labour force. On the other hand, the rise in the number of migrants with advanced and intermediate levels of education over the years points to an upward shift in the qualitative composition of the migrant labour force. In particular, the sharp increase in the higher education category after 2015 indicates that the migrant labour force is becoming increasingly educated. However, the number of migrant workers with basic and less than basic education levels is higher than that of highly educated migrant workers. Considering the inverse relationship between education level and the tendency towards informality, it would not be wrong to say that this situation poses a serious risk in the context of the growth of the informal sector in Türkiye. It is almost a universal reality of the labor market that lower education levels result in weaker bargaining power, less qualified employment, and less security.

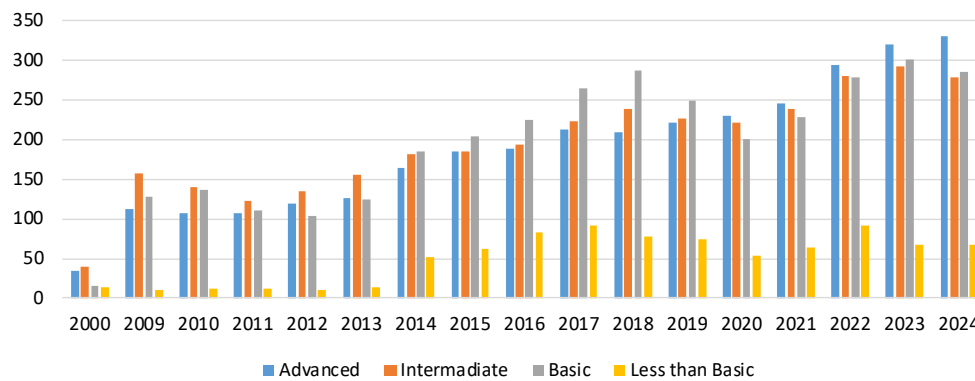


Figure 1. Migrant Labour Force by Education in Türkiye
Source: ILO-International Labour Migration Statistics

Figure 2 shows the trend in informal employment rates over time for different levels of education in Türkiye between 2000 and 2024. The figure is particularly noteworthy in that it clearly reveals the inverse relationship between educational attainment and the tendency towards informal work. Indeed, as educational attainment declines, informality rises markedly. In particular, while informal employment rates in the “Less than Basic” group remained at around 90% throughout the period, informality remained at the lowest levels among individuals with “Advanced” education levels.

The heterogeneous structure among education groups presents a particularly noteworthy picture in terms of informal employment rates. Informal emp-

loyment, which was high across all education levels in the early 2000s, has shown a marked decline over time; however, despite this improvement, the large gap between highly educated and low-educated groups has persisted. Indeed, the 2024 data clearly reveal this gap. While the informal employment rate in the “Basic” category is 42.1%, this rate is quite high at 76.5% in the “Less than Basic” category. On the other hand, these rates have fallen to 7.7% and 19.6% in the “Advanced” and “Intermediate” categories, respectively. These findings imply that the education factor provides a powerful mechanism for reducing informal employment and that education policies can therefore be transformed into a directly effective tool in the fight against informality.

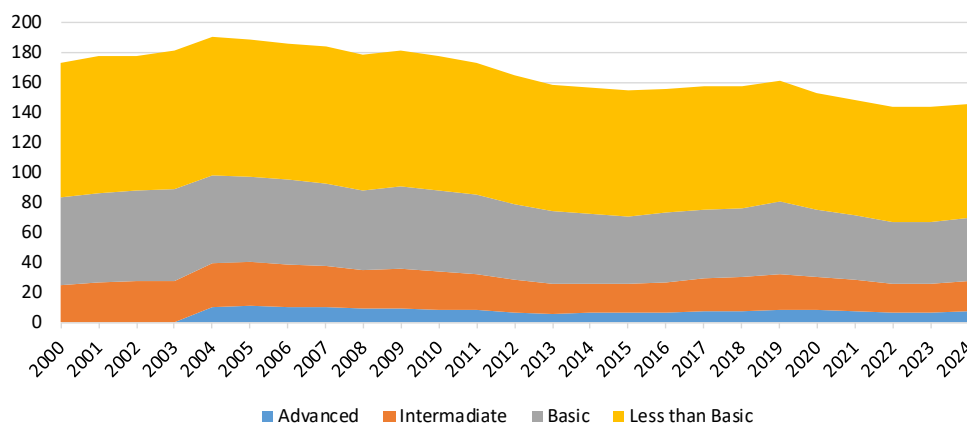


Figure 2. Informality Rates Across Educational Attainment Levels in Türkiye
Source: ILO-Labour Force Statistics

This result is of critical importance in the context of migrant labour. As clearly shown in Figure 1, the share of low-skilled migrant labour in the total migrant labour force is significant. Accordingly, it is inevitable that migration flows will exert upward pressure on informal employment in Türkiye. Conversely, education has the potential to mitigate this pressure by acting as a social lever for the migrant labour force. Therefore, the claim that education policies will function as a regulatory mechanism for the impact of migration on informality constitutes the fundamen-

tal research proposition to be empirically tested in this study.

To this end, the study examines the long-run relationship between the migrant workforce and informal employment in Türkiye and the moderating role of education policy in this relationship for the period 2000–2023. The selected time series data were analysed using the Fractional Frequency Fourier ARDL (FA-ARDL) method, an advanced econometric technique capable of accounting for sharp and smooth changes. The FA-ARDL methodology as-

sumes that the relationship between variables may not remain constant over time and may be subject to structural changes, aiming to obtain more robust and realistic results. Within this framework, the study seeks answers to three main research questions: i) What is the direction and strength of the effect of international migration on informal employment in Türkiye? ii) How effective are the education policies in reducing the tendency of the migrant labour force to move towards the informal sectors? iii) How is informal employment associated with economic instability and labour market dynamics? The findings of the study aim to provide valuable contributions to the literature by forming the basis for comparative analyses and policy recommendations for other developing economies facing high migration pressure and widespread informal labour market problems, such as Türkiye.

2. Theoretical Background and Literature Review

The relationship between education and the economy can be explained within the framework of human capital theory. Schultz (1961), who argued that human capital is the most distinctive feature of the economic system and that investments in human beings can shorten the development process. Becker (1964) demonstrated that the skills and knowledge individuals acquire through education and work experience positively affect their performance, enabling them to earn higher wages in the labour market. Mincer (1993) further noted that more educated workers enjoy advantages such as higher incomes and a lower probability of unemployment (i.e., more stable employment) compared to less educated workers. In this context, higher levels of education are associated with lower unemployment risk and shorter durations of unemployment (Maden Yenius-ta & Yanık İlhan, 2015: 115).

The relationship between migration and employment can be explained through modern migration theories. In this context, according to Neoclassical Macroeconomic Theory, international labour migration is primarily driven by wage differentials between countries. This theory views labour markets as the main mechanism underlying international migration, with skilled labour playing a decisive role, particularly in human capital flows. According to Neoclassical Microeconomic Theory, individual characteristics such as language and vocational training that contribute to social capital, housing conditions in the destination country, age, gender, educational attainment, and work experience significantly influence international migration decisions (Massey et al., 1993: 433–435).

Stark & Bloom (1985) argue that migration decisions are not made by isolated individuals but are generally taken collectively by families in the New Eco-

nomics of Migration theory. These decisions focus not only on maximizing expected income but also on minimizing risks. Consequently, governments can influence migration rates not only through labour market policies but also through health, education, and social policies (Massey et al., 1993: 440). Empirical studies indicate that education level has a negative and statistically significant effect on migration. As educational attainment increases, individuals tend to improve their employment opportunities within their local regions, thereby reducing the need to migrate (Özşahin et al., 2025: 642).

Within the framework of Dual Labour Market Theory, Piore (1979) explains international migration through the labour demand of industrial societies. According to this theory, the labour market in industrial societies is divided into two segments: a primary, capital-intensive sector and a secondary, labour-intensive sector. The capital-intensive sector employs skilled labour with high levels of knowledge and expertise. Jobs in the primary sector are capital- and technology-intensive and require specialization, division of labour, and technical competence; therefore, firms cannot easily dismiss native workers employed in these positions. Owing to their high productivity and quality, employers are generally reluctant to lay off this segment of the workforce. In contrast, the labour-intensive sector lacks social prestige among native workers and fails to motivate in terms of both status and wage structures. As a result, secondary-sector jobs are largely filled by migrant workers recruited from abroad. Industrialized countries have a continuous demand for cheap and flexible labour; consequently, wages are kept low to ensure a steady supply of workers (Massey et al., 1993: 440–444; Demir, 2023: 1416). Migrants with lower levels of education are more likely to be employed in secondary labour markets and to participate in informal employment. Moreover, even highly educated migrants may be temporarily pushed into the informal sector due to factors such as non-recognition of diplomas and language barriers. In this context, alongside legal regulations, education policies can be considered a protective factor facilitating migrants' transition out of informal employment.

The migration phenomenon faced by the world and Türkiye requires an examination of the issue from sociological, economic, legal, etc., aspects. Examining the link between migration and informal employment is essential for developing coherent labour and migration policies, ensuring effective workforce governance, and promoting structural institutional reforms. However, the related literature on migration highlights a relatively limited focus on the informal employment dimension, largely due to the irregularity and insufficiency of migration-related data. As a result, some empirical studies rely on microdata to explore this relationship. For example, Marcelli (2007) investigated the informal employ-

ment of Mexican immigrants in casual and low-wage jobs in California for the period 1990–1999. Based on logistic regression analysis, the study finds that men, young individuals, those with low educational attainment, non-white ethnic and racial backgrounds, or foreigners, and those working in agriculture or mining are more likely to be informally employed.

Several macro-level studies have expanded the analysis across regions and countries. For instance, Hazans (2011) investigated the macro-level determinants of informal labour patterns across 30 European nations between 2004–2009. The study finds that migration increases informal employment in Eastern and Southern Europe and 27 EU member states. Additional findings reveal that higher public expenditures decrease informal employment in Western and Northern Europe, whereas the minimum wage increases informal employment in almost all countries. Similarly, studies in the US and Spain quantify how increases in immigrant shares contribute to rises in informal employment at the state and regional levels. According to Bohn & Owens' (2012) study of US states covering the period 2001–2006, every 1% increase in immigration in states with high immigrant density increased informal employment by 0.194%. Bohn & Farré (2013), in their study of Spain, found that a 1% increase in the share of immigrants in the region between 2000 and 2009 led to an increase in informal employment between 0.3% and 0.8%. Extending the scope to a global context, Goel et al. (2019) investigated the impact of foreign direct investment (FDI) inflows, incoming development assistance, and immigration on the informal sector using a cross-sectional analysis for over 100 countries and for the years 2006, 2007, 2012, and 2013. The findings suggest that both FDI and migration increase the informal economy, while incoming aid reduces it. While the statistical impact of migration is more robust, the impact of incoming aid is relatively weak. Inflation, on the other hand, reduces informality in some periods. More recently, Delgado-Prieto (2024) investigated the impact of Venezuelan immigrants on informality in Colombia between 2015 and 2019, finding that a 1% increase in immigration reduced local employment by between 0.9% and 1.3%. Furthermore, immigration reduces wages by 1.9% due to flexible wages in informal employment.

Turning to Türkiye-specific studies, Ceritoglu et al. (2017) performed a microdata analysis during the 2010–2013 period, covering a total of 29 provinces, including the reference group, to investigate the effect of Syrian refugees on Türkiye's labour market. Their findings indicate that the influx of refugees reduces the ratio of informal employment to the population by approximately 2.2%. This ratio is 3.3% among those with lower education levels. However, it has no significant impact on those with higher education. Complementary macroeconomic analyses by Çelik et al. (2021) and Aksu et al. (2022) further

elaborate on how economic growth, inflation, and migrant inflows affect informal labour markets in Türkiye, with particular emphasis on vulnerable worker groups. Çelik et al. (2021) used quarterly data for the period 2004–2020 in Türkiye, employing the ARDL to examine the relationship among growth, inflation, unemployment, and informal employment. According to the findings, a one-unit increase in economic growth and inflation rates results in a 0.23% and 0.03% decrease in informal employment, respectively, while a one-unit increase in unemployment rates results in a 0.99% increase in informal employment. Aksu et al. (2022) investigated the impact of the massive influx of Syrian migrants on the labour market using microdata for the period 2004–2015 and found that migrants negatively impacted domestic employment, particularly among temporary wage workers in the informal sector, young workers with low education, women working part-time or self-employed, and those working in agriculture and construction.

Recent cointegration studies, such as those by Erkişi & Çetin (2023) and Eralp (2024), contribute to understanding the dynamic relationship between migration flows, unemployment, and informal employment, highlighting both short-term and long-term effects. Erkişi & Çetin (2023) investigated the impact of regular and irregular migration on employment by the Johansen cointegration test for the period 2000–2022 in Türkiye. The findings indicate that regular and irregular total migration in Türkiye initially reduces unemployment, but the registered unemployment rate subsequently increases. Eralp (2024), in a study covering the period 2004–2020 for 26 regions in Türkiye, finds that the large size of the informal employment sector pushes the unemployed into informal jobs. Additionally, inflation is found to increase informal employment. Additionally, Gülek (2024), in his study covering the period 2004–2016, concluded that growth in the refugee/native ratio diminishes the formal and informal employment opportunities of low-skilled domestic workers. The researcher found that a 1% rise in the said ratio leads to a decline in formal wage employment by 0.13% and informal wage employment by 0.17% among low-skilled domestic workers.

3. Methodology

3.1. Data and Model

Migrants tend to work in the informal sector due to legal, bureaucratic, and socio-economic barriers that restrict their access to the formal labour market. This situation leads to an organic link between migration and informal employment. The structure, strength, and impact of this relationship constitute the main research topic of this study. In this context, the study investigates the relationship between in-

ternational migration and informal employment and the potential role of education for Türkiye, covering the years 2000–2023. The abbreviations, explanatory

information, and sources of data for the variables are outlined in Table 1.

Table 1. Explanations on Variables

Variables	Definitions	Data Sources
IE	Informal Employment Rate (%)	ILO-Labour Force Statistics
MWF	Migrant Labour Force Participation Rate (%)	ILO-International Labour Migration Statistics
MW	Minimum Wage (\$)	ILO-Wages and Working Time Statistics
UN	Unemployment (15)+	ILO-Sustainable Development Goals Labour Market Indicators
INF	Inflation (Annual % CPI)	World Bank
EDU	Education Expenditure (% GNP)	World Bank
HLT	General Government Domestic Health Expenditure (% GDP)	World Bank

In the study, the rate of informal employment (IE) is determined as the dependent variable. The primary independent variable representing international migration is the migrant labour force participation rate (MWF). In line with the findings of the literature review, it is accepted that the rate of informal employment is also influenced by macroeconomic factors such as economic instability and labour market dynamics. In this context, to enhance the robustness of our model, minimum wage (MW), unemployment rate (UN), and inflation rate (INF) are included as control variables. The inclusion of these control variables in the model supports the robustness of the established relationship, enabling a more accurate explanation of changes in informal employment,

particularly during periods of economic instability.

In this study, two separate models have been established to analyse the fundamental impact of migrant labour on informal employment and how education moderates this relationship. The first model examines only the direct impact of migrant labour, while the second model includes the interaction between education expenditure and migrant labour in the model, capturing the potential regulatory role of education on the propensity towards informality. Furthermore, considering that access to health insurance may also directly affect the propensity for informality, health expenditures were added to the analysis scope of the second model as an interaction variable.

$$IE_t = \beta_0 + \beta_1 MWF_t + \beta_2 MW_t + \beta_3 UN_t + \beta_4 INF_t + e_t \quad (1)$$

$$IE_t = \beta_0 + \beta_1 (EDU * MWF_t) + \beta_2 (HLT * MWF_t) + \beta_3 MW_t + \beta_4 UN_t + \beta_5 INF_t + e_t \quad (2)$$

In addition, a dummy variable representing the Syrian civil war has been added to both of the models. All variables are used in logarithmic form.

3.2. Method

The stationarity properties of the series are analysed employing the fractional frequency Fourier ADF (FADF) test. When required, conventional unit root tests are also applied for verification. Sharp break dates are determined using the Lee-Strazicich (2003) unit root test, which enables the endogenous detection of structural break periods. Subsequently, the relationships between informal employment and key explanatory variables—migrant labour force participation, minimum wage, unemployment rate, and inflation rate—are analysed under Model 1. This framework is extended by incorporating education and health expenditures through interaction terms

in Model 2. Both models are estimated using the FA-ARDL method.

Macroeconomic series are subject to many important structural changes over time, and these structural changes can sometimes be sharp and sometimes gradual. This situation causes traditional tests to be inadequate when the number, type, and location of structural breaks are unknown (Aydın, 2019). In order to overcome this weakness, Becker et al. (2004, 2006) proposed the integration of Fourier functions into unit root tests. This method produces more robust and reliable results thanks to its flexible structure, even if the break points cannot be estimated exactly (Gallant, 1981; Enders & Lee, 2012).

The FADF test emerged from modifications to the standard Dickey-Fuller procedure, as proposed by Enders & Lee (2012), Omay (2015), and Bozoklu et al. (2020), whereby Fourier approximations are used

to capture smooth structural shifts. In the FADF test, structural breaks are determined endogenously by sinusoidal functions thanks to Fourier components. Thus, it offers the advantage of modelling an infinite number of structural breaks by capturing gradual transitions, no matter whether they are large or small-scale changes (Bozoklu et al., 2020).

This method models the breaks in the series not as sudden changes but as gradual and smooth transitions, thus capturing the nonlinear properties of

the series better. In Fourier Functions, Enders & Lee (2012) use integer frequencies from 1 to 5 ($k=1,2,\dots,5$), while Omay (2015) tests frequencies starting from 1 up to 2 in 0.1 unit increments. Bozoklu et al. (2020) test all frequencies up to 5 with 0.1 unit increments starting from 1. In this study, the stationarity and nonlinearity properties of the variables are analysed with the method proposed by Bozoklu et al. (2020). Accordingly, the fractional frequency FADF test is expressed by Equation (3).

$$\Delta Y_t = \delta_0 + \delta_1 t + \delta_2 \sin\left(\frac{2\pi kt}{T}\right) + \delta_3 \cos\left(\frac{2\pi kt}{T}\right) + \delta_4 Y_{t-1} + \sum_{i=1}^p \alpha_i \Delta Y_{t-i} + v_t \quad (3)$$

where t denotes the trend term, T the number of observations, π the number Pi (3.1416), k the frequency value and p the optimal lag length, $\sin\left(\frac{2\pi kt}{T}\right)$ and $\cos\left(\frac{2\pi kt}{T}\right)$ the trigonometric terms. To overcome the autocorrelation problem, the optimal lag length is specified by the Akaike Information Criterion (AIC). Bozoklu et al. (2020) define the optimal frequency as the specific value that minimizes the Sum of Squared Residuals (SSR). In the first step of the analysis, the model in Equation (3) is estimated for each k value in increments of 0.1 within the range $0 < k \leq 5$, and the optimal frequency value (k^*) that minimizes the Sum of Squared Residuals is determined. A fractional optimal k value means that the effect of structural breaks on the series is permanent, while an integer value means that the breaks have a temporary effect on the series. In the next step, the joint significance of the trigonometric terms is tested with the standard Wald F test under the hypothesis $H_0 = \delta_2 = \delta_3 = 0$. If the Wald F-statistic obtained from the restriction test falls below the corresponding critical values, the null hypothesis cannot be rejected, suggesting that the trigonometric terms are not statistically significant. In such cases, it is advisable to proceed with the conventional linear Dickey-Fuller unit root test. Conversely, if the computed Wald F-statistic exceeds the critical threshold, the trigonometric components are deemed statistically significant. This significance provides empirical support for the presence of nonlinearity in the series (Yaya et al., 2020). In this case, the hypothesis $H_0 = \delta_4 = 0$ is tested for the unit root test by proceeding to the last step of the test. If the test statistic corresponding to the coefficient δ_4 falls below the critical values derived by Bozoklu et al. (2020) through Monte Carlo simulations, indicating that the series remains non-stationary.

It is noteworthy that there are cointegration tests involving Fourier functions developed by Tsong et

al. (2016), Solarin (2019), Yilanci (2019), and Yilanci et al. (2020) in the literature. This study is based on the procedure of Yilanci et al. (2020), which is called the Fractional Frequency Fourier ARDL (FA-ARDL) bounds test because it is the first method to consider both temporary and permanent breaks. FA-ARDL was developed by McNown et al. (2018) by adding Fourier functions to the augmented version (Augmented ARDL) with an additional F test of the ARDL bounds test proposed by Pesaran et al. (2001). In this regard, the FA-ARDL method makes it possible to analyse the cointegration relationship among variables integrated at different orders, namely, $I(0)$ and $I(1)$. Furthermore, the supplementary F-test introduced by McNown et al. (2018) offers more robust insights into the cointegration properties of the system. Because in the FA-ARDL method, with the addition of Fourier functions, sharp and soft breaks as well as multiple breaks of unknown number and location can be modelled (Becker et al. 2006). Moreover, the critical values obtained with the bootstrap method provide reliable coefficient and relationship estimates by minimizing the errors due to the normal distribution assumption for small samples. In this method, both fractional and integer values are taken into account when determining the optimal frequency value. Fractional frequencies are typically associated with structural breaks of a permanent nature, whereas integer frequencies correspond to transitory breaks (Christopoulos and Leon-Ledesma, 2011; Omay, 2015; Ersin & Kirca, 2024: 894). In conclusion, the FA-ARDL method provides a flexible and reliable framework to examine the relationships under the influence of structural breaks in this study. Equations (4) and (5) show the adjusted versions of Model 1 and Model 2 according to Yilanci et al. (2020):

$$\begin{aligned} \Delta IE_t &= \beta_0 + \gamma_1 \sin\left(\frac{2\pi kt}{T}\right) + \gamma_2 \cos\left(\frac{2\pi kt}{T}\right) + \delta_i \text{dum}_t + \beta_1 IE_{t-1} + \beta_2 MWF_{t-1} + \beta_3 MW_{t-1} + \beta_4 UN_{t-1} \\ &+ \beta_5 INF_{t-1} + \sum_{i=1}^{p-1} \partial'_i \Delta IE_{t-i} + \sum_{i=1}^{p-1} \phi'_i \Delta MWF_{t-i} + \sum_{i=1}^{p-1} \varpi'_i \Delta MW_{t-i} + \sum_{i=1}^{p-1} \varphi'_i \Delta UN_{t-i} + \sum_{i=1}^{p-1} \delta'_i \Delta INF_{t-i} + e_t \end{aligned} \quad (4)$$

$$\begin{aligned}
& \Delta IE_t \\
& = \beta_0 + \gamma_1 \sin\left(\frac{2\pi kt}{T}\right) + \gamma_2 \cos\left(\frac{2\pi kt}{T}\right) + \delta_i \text{dum}_t + \beta_1 IE_{t-1} + \beta_2 \text{EDU} * \text{MWF}_{t-1} + \beta_3 \text{HLT} \\
& * \text{MWF}_{t-1} + \beta_4 \text{MW}_{t-1} + \beta_5 \text{UN}_{t-1} + \beta_6 \text{INF}_{t-1} + \sum_{i=1}^{p-1} \partial'_i \Delta IE_{t-i} + \sum_{i=1}^{p-1} \phi'_i \Delta (\text{EDU} * \text{MWF})_{t-i} \\
& + \sum_{i=1}^{p-1} \alpha'_i \Delta (\text{HLT} * \text{MWF})_{t-i} + \sum_{i=1}^{p-1} \omega'_i \Delta \text{MW}_{t-i} + \sum_{i=1}^{p-1} \varphi'_i \Delta \text{UN}_{t-i} + \sum_{i=1}^{p-1} \delta'_i \Delta \text{INF}_{t-i} + e_t
\end{aligned} \tag{5}$$

where, β_1 – β_7 refer to the parameters associated with the lagged values of the variables, $\partial, \phi, \alpha, \omega, \varphi, \delta, \sigma, \theta$ are lagged differenced regressor parameters, $t = 1 \dots T$ is the time series, Δ denotes the differencing operator, p denotes the lag length, and dum is a dummy variable, and e_t is assumed to be independently and identically distributed with a mean of zero and finite variance. The optimal lag length is determined using the AIC. The terms $\gamma_1 \sin(\frac{2\pi kt}{T}) + \gamma_2 \cos(\frac{2\pi kt}{T})$ in the model constitute a single-frequency Fourier approximation, designed to capture cyclical patterns or structural breaks within the time series. Here, k denotes a certain frequency, t denotes the period, T denotes the sample size, and π denotes the number π .

According to Yilanci et al. (2020), Equations (4) and (5) are estimated using all frequency values in the range $k=[0,1,\dots,5]$ in increments of 0,1 and the most appropriate frequency value (k) that minimises the AIC criterion is selected. Thereafter, the cointegration relationship is analysed at the appropriate frequency by testing three hypotheses proposed by Pesaran et al. (2001), McNown et al. (2018), and Sam et al. (2019) against their respective alternatives using the F_{Overall} , t_{IDV} , and F_{IDV} test statistics. The hypotheses are as follows;

$H_{0A}: \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$, General F test based on lagged levels of dependent and independent variables (F_{Overall})

$H_{0B}: \beta_1 = 0$, t-test based on the lagged level of the dependent variable (t_{IDV})

$H_{0C}: \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$ F test based on lagged levels of independent variables (F_{IDV})

In order to test these hypotheses, F_{Overall} , t_{IDV} and F_{IDV}

test statistics are calculated respectively, and these are compared with the critical values obtained by bootstrap. If all three test statistics exceed their respective critical values, the null hypotheses are rejected, leading to the conclusion that a cointegration exists among the variables. Furthermore, the frequency parameter k selected within the model is crucial for accurately capturing the series' responsiveness to structural breaks. If k is an integer, structural breaks are interpreted as having a temporary effect; whereas if k is fractional, they are understood to have a permanent effect.

4. Results and Discussion

4.1. Unit Root Test Results

The results of the fractional frequency FADF unit root test are presented in Table 2. The Wald F test statistics indicate that trigonometric terms are statistically significant for IE, MWF, and INF in the model with a constant, and for HLT in the model with a constant and trend. These results indicate that the relevant variables exhibit non-linear characteristics. FADF test statistics are evaluated against their corresponding critical values. It is observed that only the INF variable is stationary at the level, whereas IE and MWF become stationary after first differencing. In the model with constant and trend, the trigonometric terms lose their significance when the HLT variable is differenced. On the other hand, the fact that the optimal frequency values (k) calculated for the relevant variables are fractional indicates that the impact of structural breaks on the series is persistent.

Table 2. Fractional Frequency Fourier ADF Unit Root Test Results

Constant Model						
Variables	k	Min. SSR	Wald F Stat. ^a	p	Fractional FADF Test Stat.	FADF Critical Value ^b
IE	3.10	0.01	10.50***	1.00	1.02	-3.05
MWF	0.90	0.01	8.22**	2.00	-3.52	-3.86
MW	0.50	0.30	5.89	1.00	-2.75	-3.93
UN	4.30	0.12	2.62	1.00	-2.52	-2.95
INF	0.10	2.05	14.64***	2.00	-4.17**	-3.88
EDU	0.50	0.05	4.32	1.00	-2.96	-3.93
HLT	1.70	0.07	6.09	1.00	-3.09	-3.37

ΔIE	3.20	0.01	9.01**	1.00	-3.01*	-3.03
ΔMWF	1.70	0.01	2.61	1.00	-3.92**	-3.37
ΔMW	1.10	0.39	2.85	1.00	-3.24	-3.74
ΔUN	4.30	0.16	4.02	1.00	-3.99	-2.95
ΔINF	0.10	3.09	8.64**	2.00	-5.36***	-3.88
ΔEDU	4.70	0.05	0.89	1.00	-4.93	-2.93
ΔHLT	0.10	0.07	3.24	1.00	-3.49	-3.88
Model with Constant and Trend						
Variables	k	Min. SSR	Wald F Stat. ^a	p	Fractional FADF Test Stat.	FADF Critical Value ^b
IE	3.10	0.01	3.95	2.00	-2.12	-3.75
MWF	1.80	0.01	3.10	2.00	-3.35	-4.14
MW	0.80	0.27	5.64	1.00	-3.10	-4.33
UN	4.30	0.12	2.34	1.00	-2.38	-3.59
INF	0.10	2.01	6.09	2.00	-3.48	-4.26
EDU	1.40	0.03	5.49	2.00	-2.98	-4.31
HLT	0.10	0.06	7.94*	2.00	-2.61	-4.26
ΔIE	3.30	0.01	9.96**	1.00	-3.38*	-3.71
ΔMWF	1.50	0.01	4.34	1.00	-4.68	-4.28
ΔMW	0.10	0.36	1.96	1.00	-2.50	-4.26
ΔUN	4.30	0.15	3.67	1.00	-3.93	-3.59
ΔINF	4.60	1.82	3.98	1.00	-4.05	-3.57
ΔEDU	4.70	0.05	0.53	1.00	-5.19	-3.56
ΔHLT	0.10	0.07	3.72	1.00	-3.78	-4.26

***, **, * denote 1%, 5%, and 10% statistical significance level respectively. Critical values for the F test are taken from Enders and Lee (2012:197). The critical values at 1%, 5%, and 10% levels in Table 1b and 1a are calculated as 10.35; 7.58, and 6.35 for the model with constant and 12.21; 9.14, and 7.78 for the model with constant and trend, respectively. Bozoklu et al. (2020:10-11) refers to the critical values at the 5% level of the Fourier ADF test calculated for the constant, with constant and trend models in Tables A and B.

Source: Authors' calculation.

Table 3 presents the findings of the ADF and PP tests for variables with insignificant trigonometric terms. According to the findings, all these variables become stationary after first differencing.

Table 3. ADF and PP Unit Root Test Results

Variables	ADF		PP		ADF		PP	
	Level				First Difference			
	Cons.	Cons.& Trend	Cons.	Cons.& Trend	Cons.	Cons.& Trend	Cons.	Cons.& Trend
MW	-0.42	-1.16	-0.51	-1.21	-3.89***	-4.35**	-3.92***	-4.31**
UN	-3.48**	-3.35*	-3.93	-3.11	-3.52**	-3.56*	-3.52**	-3.51*
EDU	-1.83	-3.02	-2.83	-3.02	-5.36***	-5.83***	-7.86***	-11.51***
HLT	-1.53	-1.57	-1.80	-1.84	-3.50**	-3.39*	-3.49**	-3.31*

***, **, * denote 1%, 5%, and 10% statistical significance level respectively. Lag length is determined by AIC.

Source: Authors' calculation.

Table 4 shows the results of Lee-Strazicich's (2003) unit root test with structural breaks. According to the test results, the common breakpoint for the IE and MWF variables is identified as a meaningful year, 2011. As a matter of fact, the protests that started

against the government in Syria in March 2011, with the effect of the Arab Spring, turned into a civil war in a short time with the harsh intervention of the regime and started a great wave of migration to Türkiye.

Table 4. Lee-Strazicich Unit Root Test Results

Level					First Difference				
Variables	k	TB1	TB2	Min. Test Stat.	Variables	k	TB1	TB2	Min Test Stat.
IE	3	2011	2020	-4.87***					
MWF	8	2011	2021	-6.80***					
MW	8	2013	2017	-6.57***					
UN	1	2010	2019	-3.07	Δ UN	8	2010	2018	-4.21***
INF	1	2010	2017	-2.32	Δ INF	7	2015	2018	-6.33***
EDU	3	2015	2021	-3.03	Δ EDU	0	2010	2012	-5.41***
HLT	7	2015	2020	-4.68***					

*** denotes 1% statistical significance level

Source: Authors' calculation.

4.2. FA-ARDL Bounds Test Results

The relationships between IE and a number of macroeconomic and labour market variables, in particular the MWF, are analysed using the FA-ARDL method within the framework of Model 1 and Model 2 in Equations (4) and (5). In the first step of the FA-ARDL procedure, the long-run relationship between the variables for both models is investigated, and the findings are presented in Table 5. Firstly, the optimal frequency values (k) used in the Fourier functions were calculated for both models. These values, determined as 0.7 for Model 1 and 3.4 for Model 2,

provide important information about the nature of structural changes. Accordingly, fractional k values for both models indicate that structural changes have a permanent effect on the cointegration relationship.

Table 5 shows that the $F_{Overall}$, t_{IDV} and F_{IDV} test statistics calculated for both models exceed the critical values obtained by the bootstrap method. The rejection of all three null hypotheses in both models clearly confirms the existence of a cointegration relationship between the series.

Table 5. FA-ARDL Bounds Test Results

Model 1 (2 2 2 2 2) k=0.7					Model 2 (3 1 0 1 0 0) k=3.4			
Bootstrap Critical Values					Bootstrap Critical Values			
Tests	Test Statistics	%1	%5	%10	Test Statistics	%1	%5	%10
$F_{Overall}$	16.73**	26.6	13.2	9.9	15.8*	25.5	17.4	12.5
t_{IDV}	-5.46***	-3.9	-2.4	-1.6	-4.61***	-4.5	-3.2	-2.4
F_{IDV}	19.13**	19.6	8.8	6.3	19.03**	20.1	11.3	8.5

***, **, * denote statistical significance levels of 1%, 5% and 10%, respectively. Bootstrap critical values are generated by 1000 simulations.

Source: Authors' calculation.

Table 6 presents the estimated coefficients for both the long-run and short-run dynamics derived from the error correction model, as well as the diagnostic test results. Firstly, for Model 1, it is noteworthy that the effects of all variables, except for (INF), on informal employment are positive and statistically significant in relation to informal employment. The long-run coefficient of (MWF), which is considered the main explanatory variable, is estimated at 3.04.

This finding indicates that a 1% increase in MWF participation is associated with a 3.04% increase in IE in the long run. The magnitude of the coefficient suggests that the long-run association between the variables is highly elastic, meaning that IE exhibits a strong sensitivity to variations in MWF within the estimated framework. Regarding the short-run coefficients, a 1% increase in the MWF in the current period is associated with a 0.6% increase in IE, while

a 1% increase in the previous period corresponds to a 1.01% increase. These results are consistent with Hazans (2011), Bohn & Owens (2012), Bosh & Faré (2013), Goel et al. (2019) and Çelik et al. (2021). Overall, the findings point to a strong and persistent long-run association between migrant labour force participation and informal employment, with short-run dynamics that appear gradual and cumulative within the model specification.

According to the theoretical literature, the minimum wage level is frequently discussed as an important determinant of informal employment. Increases in the minimum wage are theoretically associated with higher labour costs for employers, which may coincide with a stronger tendency toward informal employment. In the empirical results, the long-run coefficient of (MW_t) is estimated to be positive and statistically significant, in line with theoretical expectations. Specifically, a 1% increase in MW is associated with a 0.27% increase in IE in the long run. In the short run, a 1% increase in the current value of MW increases IE by 0.12% and decreases it by 0.07% with a one-period lag. These results are broadly con-

sistent with Hazans (2011). Similarly, the coefficient of (UN_t) is positive and significant. The theoretical literature suggests that higher unemployment rates tend to coincide with increased informal labour market participation, as greater difficulty in finding formal employment may encourage individuals to seek opportunities in the informal sector. Empirically, a 1% increase in UE is associated with a 0.48% increase in IE in the long run, while the corresponding short-run associations are 0.28% and 0.16% for the current and lagged periods, respectively. These findings are in line with Eralp (2024) and Çelik et al. (2021). When the inflation variable is examined within the framework of Model 1, the long-run coefficient of (INF_t) is not statistically significant. In the short run, it is observed that a 1% increase in the current and lagged values of INF increases IE by 0.06% and 0.02%, respectively. Overall, the results indicate that inflation is weakly associated with informal employment in the short run, while no statistically significant long-run relationship is identified within the estimated model. This finding is consistent with the evidence reported by Çelik et al. (2021).

Table 6. FA-ARDL Estimation Results

Model 1				Model 2			
Variable	Coefficient	t-Stat.	Prob.	Variable	Coefficient	t-Stat.	Prob.
Long Run Coefficients							
MWF_t	3.04***	6.87	0.00	$EDU*MWF_t$	-0.15***	-6.16	0.00
MW_t	0.27**	7.32	0.02	$HLT*MWF_t$	-0.02	-0.45	0.67
UN^t	0.48***	3.83	0.00	MW_t	0.27***	5.37	0.00
INF_t	-0.04	-1.61	0.18	UN_t	0.31**	2.70	0.03
C	-10.79***	-6.88	0.00	INF_t	0.05	1.71	0.13
				C	1.94**	3.27	0.01
Short Run Coefficients							
ΔIE_{t-1}	-0.38**	-5.51	0.01	ΔIE_{t-1}	-0.68***	-7.78	0.00
ΔMWF_t	0.36**	3.56	0.02	ΔIE_{t-2}	-0.21**	-2.88	0.02
ΔMWF_{t-1}	1.01***	-7.68	0.00	$\Delta EDU*MWF_t$	-0.04***	-5.17	0.00
ΔMW_t	0.12***	9.32	0.00	ΔMW_t	0.08***	6.30	0.00
ΔMW_{t-1}	-0.07**	-5.18	0.01	D2011	0.04***	-9.05	0.00
ΔUN_t	0.28***	17.88	0.00	ect_{t-1}	-0.50***	-15.15	0.00
ΔUN_{t-1}	0.16***	-9.26	0.00				
ΔINF_t	0.06***	7.39	0.00				
ΔINF_{t-1}	0.02**	3.58	0.02				
D2011	0.04***	-8.61	0.00				
ect_{t-1}	-0.95***	-13.97	0.00				
Fourier Coefficients							
COS (k=0.7)	0.29***	13.23	0.00	COS (k=3.4)	-0.01***	-5.15	0.00
SIN (k=0.7)	0.19***	11.38	0.00	SIN (k=3.4)	-0.05***	-9.64	0.00

Diagnostic Tests Results				
Breusch-Godfrey LM	5.84	0.14	6.08	0.09
ARCH Test	0.03	0.84	0.04	0.98
Jarque-Bera Test	0.11	0.94	0.30	0.86
Ramsey RESET Test	0.26	0.63	1.15	0.30
Csum	Stable		Stable	
Csum ^Q	Stable		Stable	
Adj. R2	0.97		0.94	

***, **, * denote statistical significance levels of 1%, 5% and 10%, respectively.

Source: Authors' calculation.

The findings for Model 2 show that the short- and long-run coefficients of the education interaction variable ($EDU * MWF$) are negative and statistically significant. This suggests that the previously identified positive long-run association between migrant labour force participation and informal employment becomes weaker as education expenditures increase. Quantitatively, a 1% increase in the interaction term is associated with a 0.15% decrease in IE in the long run and a 0.04% decrease in the short run. In line with theoretical expectations, these results suggest that education expenditures may mitigate the positive association between migrant labour force participation and informal employment within the estimated framework. Accordingly, improvements in the qualitative and quantitative dimensions of education investment may be considered as a potential policy channel in addressing informal employment. By contrast, the interaction coefficient between health expenditures and migrant labour ($HLT * MWF$) is negative but statistically insignificant, indicating that health expenditures do not exhibit a statistically significant moderating role in the relationship between migrant labour and informal employment. The statistical insignificance of the interaction term between migrant labour and health expenditures can be interpreted within the institutional structure of the Turkish labour and social security system. In Türkiye, access to comprehensive public healthcare services is largely tied to formal employment through social security registration. Since a significant portion of migrant labour is employed informally, increases in aggregate public health expenditures may not directly translate into improved effective access to healthcare for informal migrant workers. Therefore, unlike education spending, which directly contributes to human capital accumulation and formal labour market integration, higher health spending may not substantially alter the structural incentives linking migrant labour to informal employment. While the coefficient estimates for UE and INF remain broadly consistent with Model 1, the positive association between MW and IE appears relatively weaker in this specification. These findings reinforce the stability of the estimated relationships within the model framework.

Considering that the Syrian civil war triggered a large wave of migration to Türkiye, the statistical significance of the 2011 dummy variable points to a structural shift in informal employment around this period. This finding suggests that civil unrest and geopolitical tensions in neighbouring countries are closely associated with changes in informality in Türkiye. Overall, the results indicate that informal employment dynamics in Türkiye appear to move in conjunction with major geopolitical developments within the estimated framework.

In this study, the inclusion of Fourier terms in the models allows capturing the effects of nonlinear dynamics, cyclical patterns and smooth transition breaks. The statistically significant Fourier terms in both models confirm the existence of periodic oscillations in informal employment that can be attributed to cyclical or policy-induced fluctuations. Therefore, by including Fourier functions in the models, even sensitive breaks are not neglected and stronger findings are obtained. Finally, the negative and statistically significant error correction coefficient in both models indicates that short-run deviations are corrected over the long run. The diagnostic test results indicate that there are no autocorrelation or heteroskedasticity problems, the error terms are normally distributed, and the model specifications are correctly specified. The dynamic stability of the estimated Fourier ARDL models was examined using the inverse roots of the AR characteristic polynomial. For both Model 1 and Model 2, the analysis confirms that the modulus of all characteristic roots, which represent the lagged dynamics of the dependent variable, lie within the unit circle. These findings verify that both the short-run and long-run estimates of the models are structurally stable and reliable. Consequently, the robustness of the model specifications is statistically confirmed.

5. Conclusion

In recent years, Türkiye has placed growing emphasis on combating informal economic activity, with informal employment representing a significant challenge in the labour market and constituting a key

component of this policy agenda. Informal employment can be influenced by a wide range of factors, ranging from economic indicators to social, political, and geopolitical developments. Among these determinants, international migration holds particular importance. Wars, famine, natural disasters, and economic crises in neighbouring countries have exposed Türkiye to large-scale migration waves. Covering the period 2000–2023, this study examines the impact of migrant labour on informal employment in Türkiye in a comprehensive, multidimensional, and flexible framework using the FA-ARDL method. In doing so, it accounts for the transformative role of public policy variables, namely education and health expenditures, alongside macroeconomic and labour market dynamics.

According to the findings, migrant labour is positively and strongly associated with informal employment. However, the positive association between migrant labour and informal employment is reversed with education expenditures. This suggests that education spending plays a moderating role in the migrant labour–informal employment nexus and may serve as an important policy instrument for the transformation of employment patterns. On the other hand, it is found that health expenditures do not bring about a significant transformation in relation between migrant labour and informal employment. This divergence provides important implications regarding the relative effectiveness and prioritisation of public expenditure policies. In addition, the minimum wage and the unemployment rate are positively and significantly associated with informal employment, whereas the inflation rate does not display a statistically significant effect in the long run.

In light of these findings, the following policy recommendations can be made. Firstly, strategic investments in education should be increased to encourage the transition from informal to formal employment. In this context, vocational, social, and cultural training programs and language courses that will facilitate technical and social adaptation to the formal labour market should be made more widespread and easily accessible, especially in regions where migrants live in large numbers. The mechanism through which education expenditures reduce informality operates primarily by enhancing human capital and reducing information asymmetry in the labor market. Vocational training, language courses, and certification recognition programs directly increase the marginal productivity of migrants, making them more attractive candidates for formal employment. Given that vocational education generally begins at earlier stages of working life and often covers occupations in which informal employment is concentrated, it may function as an earlier institutional bridge toward registered employment compared

to higher education. By providing measurable skills and recognized qualifications, these educational investments serve as a 'signaling' mechanism that lowers the perceived risks and adaptation costs for formal employers. Consequently, higher education spending does not merely increase general outlays; it facilitates a transition by bridging the technical and social gap between the migrant workforce and the formal sector's requirements, thereby internalizing the costs of integration that would otherwise deter formal hiring. Secondly, the incentive effect of minimum wage increases on informal employment should be mitigated by balancing the cost pressure on employers through tax exemptions, exceptions, and various incentive policies. Thirdly, a migrant mentoring mechanism should be established, especially in regions with high migration, to provide free guidance and counselling services to migrants with easy access. Legal and bureaucratic arrangements should be introduced to facilitate the transition to formal employment by simplifying legal work permit processes. Lastly, migrant integration centres, which provide proactive solutions against sudden waves of migration, should be made widespread, and the processes of migrants learning language, social and cultural adaptation, finding a job, receiving legal and psychological support, should be monitored, and integration processes should be accelerated. Informal employment should be prevented through the comprehensive support and supervision network provided by these integration centres for migrants.

This study examines the impact of migrant labour on informal employment in Türkiye through a unique empirical approach by taking into account the regulatory role of public policies. In doing so, it aims to fill an important gap in the existing literature. The study is expected to make a modest yet meaningful contribution to public policy processes concerning international migration and informal employment in this aspect.

Author Contribution Statement

Aslı Güler: Conceptualization, project administration, data collection, methodology, empirical analysis, interpretation of results, validation, visualization, writing – original draft, writing – review and editing

İbrahim Al: Conceptualization, theoretical background and literature review, visualization, writing – review and editing.

Limitations and Future Research

In this study, education and health policies are represented by macro-level aggregate expenditure data. Future research focusing on sectoral heterogeneity, particularly in migrant-intensive sectors such as

agriculture, construction, and services, will provide deeper insights into how migration affects informal employment and how education transforms this relationship. Such extensions will enable more targeted and policy-relevant findings.

Financial Support

This study received no funding.

References

- Aksu, E., Erzan, R., & Kırdar, M. G. (2022). The Impact of Mass Migration of Syrians on the Turkish Labor Market. *Labour Economics*, 76, Article 102183: 1-21. <https://doi.org/10.1016/j.labeco.2022.102183>
- Aslantürk, O., & Tunç, Y. E. (2018). Yabancıların Türkiye’de Kayıt Dışı İstihdamı. *Aksaray Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 10(4): 13-20.
- Aydın, M. (2019). Üssel Geçişli Otoregresif Modellere Dayalı Dalgacık Tabanlı Birim Kök Testi Önerileri. Unpublished Doctoral Dissertation, İstanbul University, İstanbul.
- Becker, G. (1964). *Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education*. New York: Columbia University Press.
- Becker, R., Enders, W., & Hurn, S. (2004). A General Test for Time Dependence in Parameters. *Journal of Applied Econometrics*, 19(7): 899-906. <https://doi.org/10.1002/jae.751>
- Becker, R., Enders, W., & Lee, J. (2006). A Stationarity Test in the Presence of an Unknown Number of Smooth Breaks. *Journal of Time Series Analysis*, 27(3): 381-409. <https://doi.org/10.1111/j.1467-9892.2006.00478.x>
- Binay, M. (2015). Optimal Informal Employment Ratio for Turkish Economy. *Procedia Economics and Finance*, 26: 598-602. [https://doi.org/10.1016/S2212-5671\(15\)00960-0](https://doi.org/10.1016/S2212-5671(15)00960-0)
- Bohn, S., & Owens, E. G. (2012). Immigration and Informal Labor. *Industrial Relations: A Journal of Economy and Society*, 51(4): 845-873. <https://doi.org/10.1111/j.1468-232X.2012.00707.x>
- Bosch, M., & Farré, L. (2013). Immigration and the Informal Labor Market. *IZA Discussion Papers*, 7843: 1-26. <http://dx.doi.org/10.2139/ssrn.2374624>
- Bozoklu, S., Yilanci, V., & Gorus, M. S. (2020). Persistence in per capita energy consumption: A fractional integration approach with a Fourier function. *Energy Economics*, 91, Article 104926. <https://doi.org/10.1016/j.eneco.2020.104926>
- Candan, M. (2007). Kayıt Dışı İstihdam, Yabancı Kaçak İşçi İstihdamı Ve Toplumumuz Üzerindeki Sosyo-Ekonomik Etkileri. Unpublished Specialy Thesis. T.C. Çalışma ve Sosyal Güvenlik Bakanlığı Türkiye İş Kurumu Genel Müdürlüğü, Ankara.
- Ceritoglu, E., Yunculer, H. B. G., Torun, H., & Tumen, S. (2017). The Impact of Syrian Refugees on Natives’ Labor Market Outcomes in Türkiye: Evidence from a Quasi-Experimental Design. *IZA Journal of Labor Policy*, 6: 1-28. DOI 10.1186/s40173-017-0082-4
- Christopoulos, D. K., & Leon-Ledesma, M. A. (2011). International Output Convergence, Breaks, and Asymmetric Adjustment. *Studies in Nonlinear Dynamics & Econometrics*, 15(3). <https://doi.org/10.2202/1558-3708.1823>
- Çelik, R., Keskin, A., & Keskin, A. (2021). Türkiye’de Ekonomik Büyüme, İşsizlik ve Enflasyonun Kayıt Dışı İstihdam Üzerindeki Etkisi: ARDL Sınır Testi Yaklaşımı. *Sosyal Siyaset Konferansları Dergisi*, 80: 451-474. <https://doi.org/10.26650/jspc.2021.80.0053>
- Delgado-Prieto, L. (2024). Immigration, Wages, and Employment under Informal Labor Markets. *Journal of Population Economics*, 37(2), Article 55. <https://doi.org/10.1007/s00148-024-01028-5>
- Demir, E. (2023). Uluslararası Göç Teorileri Üzerine Sosyoekonomik Bir Değerlendirme. *Turkish Academic Research Review*, 8(4): 1407-1428. <https://doi.org/10.30622/tarr.1348918>
- Dereli, T. (2007). Informal Employment in Türkiye. *Sosyal Siyaset Konferansları Dergisi*, 53: 65-82.
- Enders, W., & Lee, J. (2012). The Flexible Fourier Form and Dickey-Fuller Type Unit Root Tests. *Economics Letters*, 117(1): 196-199. <https://doi.org/10.1016/j.econlet.2012.04.081>
- Eralp, A. (2024). Türkiye’de Kayıt Dışı İstihdam Üzerinde Ekonomik Büyüme, İşsizlik Ve Enflasyonun Etkisi: Panel Kantil Regresyon Yaklaşımı. *Ankara Hacı Bayram Veli Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 26(1): 79-102. <https://doi.org/10.26745/ahbvuibfd.1399901>
- Erkişi, K., & Çetin M. (2023). Immigration, Growth and Unemployment Nexus: A Long-Run Analysis for Türkiye. *Journal of Community Positive Practices*, 4: 21-41. <https://doi.org/10.35782/JCPP.2023.4.02>
- Ersin, İ., & Kırca, M. (2024). Türkiye’de Cari Transfer Harcamalarının Enflasyon Üzerindeki Etkisi: Kesirli Frekanslı Fourier ARDL Sınır Testi İle Analizi. *Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 19(3): 887-905. <https://doi.org/10.17153/oguiibf.1372668>
- Gallant, A. R. (1981). On the Bias in Flexible Functional Forms and an Essentially Unbiased Form: The Fourier Flexible Form. *Journal of Econometrics*, 15(2): 211-245. [https://doi.org/10.1016/0304-4076\(81\)90115-9](https://doi.org/10.1016/0304-4076(81)90115-9)
- Goel, R. K., Ram, R., Schneider, F., & Potempa A. (2019). International Movements of Money and Men: Impact on the Informal Economy. *Journal of Economics and Finance*, 44(1): 179-197. <https://doi.org/10.1007/s12197-019-09480-w>
- Gulek, A. (2024). Formal Effects of Informal Labor: Evidence from the Syrian Refugees in Türkiye. <https://ssrn.com/abstract=4264865>
- Güloğlu, T., Korkmaz, A., & Kip M. (2003). Türkiye’de Kayıtdışı İstihdam Gerçeğine Bir Bakış. *Sosyal Siyaset Konferansları Dergisi*, 45: 51-96.
- Hazans, M. (2011). What Explains Prevalence of Informal Employment in European Countries: The Role of Labor Institutions, Governance, Immigrants, and Growth. *IZA Discussion Papers*, 5872: 1-52.
- International Organization for Migration. (2024). *World Migration Report 2024*. <https://publications.iom.int/books/world-migration-report-2024>
- International Labour Organization. (2024). *ILO global estimates on the international migrant workers: International migrants on the labour force*. <https://www.ilo.org/publications/major-publications/ilo-global-estimates-international-migrants-labour-force>
- Lee, J., & Strazich, M. C. (2003). Minimum Lagrange Multiplier Unit Root Test with Two Structural Breaks. *Review of Economics and Statistics*, 85(4): 1082-1089.
- Loayza, N. V., & Rigolini, J. (2011). Informal Employment: Safety Net or Growth Engine?. *World Development*, 39(9): 1503-1515. <https://doi.org/10.1016/j.worlddev.2011.02.003>
- Maden Eyiusta, C., & Yanık İlhan, B. (2015). Lisansüstü Eğitim Çalışanların İş Performansları Üzerindeki Etkisi: Beşeri Sermaye Teorisi Yaklaşımı. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 15(3): 113-126. <https://doi.org/10.18037/ausbd.11181>
- Mahiroğulları, A. (2017). Türkiye’de Kayıtdışı İstihdam ve Önlemeye Yönelik Stratejiler. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 22(2): 547-565.
- Marcelli, E. A. (2007). Unauthorized Mexican Immigration, Day Labour and Other Lower-Wage Informal Employment in California. *Regional Studies*, 38(1): 1-13. <https://doi.org/10.1080/00343400310001632299>
- Maroukis, T., Iglicka, K., & Gmaj, K. (2011). Irregular Migration and Informal Economy in Southern and Central-Eastern Europe: Breaking the Vicious Cycle?. *International Migration*, 49(5): 129-156. <https://doi.org/10.1111/j.1468-2435.2011.00709.x>
- Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., & Taylor, J. E. (1993). Theories of International Migration: A Review and Appraisal. *Population and Development Review*, 19(3): 431-466.

- McNown, R., Sam, C. Y., & Goh, S. K. (2018). Bootstrapping the Autoregressive Distributed Lag Test for Cointegration. *Applied Economics*, 50(13): 1509-1521. <https://doi.org/10.1080/00036846.2017.1366643>
- Mincer, J. (1993). *Studies in Human Capital*. Cambridge: Edward Elgar.
- Omay, T. (2015). Fractional Frequency Flexible Fourier Form to Approximate Smooth Breaks in Unit Root Testing. *Economics Letters*, 134: 123-126. <https://doi.org/10.1016/j.econlet.2015.07.010>
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationship. *Journal of Applied Econometrics*, 16(3): 289-326. <https://doi.org/10.1002/jae.616>
- Pfau-Effinger, B. (2009). Varieties of undeclared Work in European Societies. *British Journal of Industrial Relations*, London School of Economics, 47(1): 79-99. <https://doi.org/10.1111/j.1467-8543.2008.00711.x>
- Özşahin, L., Tatlı H., & Özyakışır D. (2025). Regional Migration Dynamics in Türkiye: An Econometric Analysis of Level 1 Regions. *Kafkas Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 16(32): 638-657. <https://doi.org/10.36543/kauibfd.2025.024>
- Piore, M. J. (1979). Qualitative Research Techniques in Economics. *Administrative Science Quarterly*, 24(4): 560- 569.
- Sam, C. Y., McNown, R., & Goh, S. K. (2019). An Augmented Autoregressive Distributed Lag Bounds Test for Cointegration. *Economic Modelling*, 80: 130-141. <https://doi.org/10.1016/j.econmod.2018.11.001>
- Schultz, T. W. (1961). Investment in Human Capital. *The American Economic Review*, 51(1): 1-17.
- Schneider, F., & Enste D. H. (2000). Shadow Economies: Size, Causes, and Consequences. *Journal of Economic Literature*, 38(1): 77-114. <http://dx.doi.org/10.1257/jel.38.1.77>
- Solarin, S. A. (2019). Modelling the Relationship between Financing by Islamic Banking System and Environmental Quality: Evidence from Bootstrap Autoregressive Distributive Lag with Fourier Terms. *Quality & Quantity*, 53: 2867-2884.
- Stark, O., & Bloom. D. E. (1985). The New Economics of Labor Migration. *The American Economic Review*, 75: 173-178.
- Şenel, D., & Öçal, M. (2021). Türkiye’de Kayıt Dışı İstihdamın Bölgesel Analizi. *Çalışma ve Toplum*, 2(69): 1201-1232. <https://doi.org/10.54752/ct.1155175>
- Presidency of Migration Management (2025). Statistics. Republic of Türkiye Ministry of Interior. <https://en.goc.gov.tr/> (Access Date: 07.04.2025).
- Tsong, C. C., Lee, C. F., Tsai, L. J., & Hu, T. C. (2016). The Fourier Approximation and Testing for the Null of Cointegration. *Empir Econ*, 51: 1085-1113. <https://doi.org/10.1007/s00181-015-1028-6>
- Williams C. C., & Windebank, J. (1998). *Informal Employment in the Advanced Economies: Implications for Work and Welfare*. Routledge.
- World Bank. (2010). Türkiye Country Economic Memorandum Informality: Cause, Consequences, Policies. World Bank Europe and Central Asia Region Poverty Reduction and Economic Management Unit, 48523-TR.
- Yanıcı Erdal, İ. Ö. (2019). Türkiye’de Kayıt Dışı İstihdam ve Kayıt Dışı İstihdamla Mücadele Politikaları. *Ufuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 8(16): 225-246
- Yaya, O. S., Ogbonna, A. E., Mudida, R., & Abu, N. (2020). Market Efficiency and Volatility Persistence of Cryptocurrency During Pre- and Post-Crash Periods of Bitcoin: Evidence Based on Fractional Integration. *International Journal of Finance & Economics*, 26(1): 1318-1335. <https://doi.org/10.1002/ijfe.1851>
- Yilanci, V. (2019). A Residual-Based Cointegration Test with a Fourier Approximation. *MPRA Papers*. <https://doi.org/10.13140/RG.2.2.29456.15365>
- Yilanci, V., Bozoklu, S., & Gorus, M. S. (2020). Are BRICS Countries Pollution Havens? Evidence from A Bootstrap ARDL Bounds Testing Approach with a Fourier Function. *Sustainable Cities and Society*, 55, Article 102035. <https://doi.org/10.1016/j.scs.2020.102035>

Network-Based Alternative Media in Türkiye: A Phenomenological Study from the Perspective of Media Managers¹

Tüba Karahisar / Assoc. Prof. Dr. 

Uşak University, Faculty of Communication, Department of New Media and Communication
tuba.karahisar@usak.edu.tr

Abstract

This study examines how digital-born media managers in Türkiye interpret the demand for alternative media and how they justify their claims to “alternativeness” within a politically and economically constrained media environment. The study does not directly measure audience behavior; rather, it analyzes how the concepts of demand and “alternativeness” are constructed within managerial discourse under conditions of media capture and platform dependency.

Semi-structured online interviews were conducted between January 14 and January 24, 2025, with media managers from Gazete Duvar, Gazete Pencere, Medyascope, T24, and Journo. The data were analyzed through a phenomenological reduction process that included verbatim transcription, identification of significant statements, line-by-line coding, and clustering of meaning units into themes using Maxqda 2024. The analysis resulted in four main themes: the definition and perception of alternativeness, social impact and public sphere formation, managerial interpretations of audience demand, and structural

constraints.

Findings indicate that managers frame alternative media as addressing audiences from diverse political positions who seek reliable, non-mainstream journalism. However, alternativeness does not emerge as a fixed identity but as a negotiated positioning. While some outlets strategically adopt the label, others reject it and emphasize professional journalism instead. In the Turkish context, alternativeness appears less as a structural category and more as a positioning practice shaped by political polarization, economic precarity, and regimes of algorithmic visibility. The study contributes to the literature by shifting the discussion of alternative media from normative definitions to managerial meaning-making within a constrained media ecosystem.

Keywords: Alternative media, Networked media, Media capture, Editorial autonomy, Digital journalism.

JEL Codes: L82, O33, Z13

¹This study was conducted in accordance with the Usak University Scientific Research and Publication Ethics Directive. This study was approved by the Usak University Social Sciences and Humanities Research and Publication Ethics Committee. Approval Code: 2024-156 Approval Date: July 4, 2024.

Citation: Karahisar, T. (2026). Network-based alternative media in Türkiye: A phenomenological study from the perspective of media managers. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

The fact that the media has become an industry has led to a binary distinction between those who set the agenda and those who follow it, with the exception of public broadcasting. The agenda has been intervened directly or implicitly, depending on the form of government (democracy, autocracy, etc.). Critical political economy perspectives have long argued that mainstream media may reproduce dominant ideological frameworks (Özçetin, 2019).

With the impact of the internet and social media, changes have begun to occur in this binary distinction. For example, readers have both taken the user name and gained the ability to produce content (Çetin, 2019). Thanks to the Internet, which promised a relatively free environment compared to today, individuals were able to escape from the pressure of the governments in their small media and had the opportunity to express themselves (Durdu, 2024).

In this study, it is questioned whether alternative media, which is outside mainstream media and expands its field with the impulse given by social media, really carries the qualification of alternative media as it is perceived.

It is a widely expressed opinion/argument that the network-based media, which has developed as an extension of a technological formation, is often described as challenging the dominance of traditional media structures (Şahin & Şahin, 2016). However, is there a community that demands an alternative media? The answer to this question was also sought.

Traditional media's integration with power centers has fueled the search for a medium that can genuinely serve as a fourth estate. Network-based media, perceived as outside political and economic influence because of its fragmented structure, has emerged as a key focus of this search and is frequently perceived as a potential alternative (Erimli & Özçağlayan, 2023).

Recent scholarship on media capture has demonstrated how political parallelism and ownership concentration have reshaped the Turkish media system and constrained pluralistic journalism (Akser & Baybars, 2024). These structural transformations form the broader context within which digitally native initiatives operate. At the same time, the increasing distribution of news through aggregators, search engines, and social media platforms has intensified institutional dependency on digital platforms. Comparative research shows that the degree and implications of this dependency vary across media systems (Nicoli et al., 2025).

A review of the literature reveals that theorists primarily discuss the definition and framing of alternative media, favoring disadvantaged groups in

content, the establishment of new production and distribution channels, participation and the use/non-use of capitalist financing tools (Santana & Carpentier, 2010; Sandoval & Fuchs, 2010). Academic studies, on the other hand, have mostly focused on the observation of selected alternative media through participant observation and how close it comes to the definition of alternative media (Tuğla, 2014; Taylan, 2008). The literature on alternative media largely revolves around definitions and normative criteria. Selected cases are often measured against theoretical expectations. Yet this leaves a basic tension unresolved: in a context like Türkiye, how is the demand for alternative media actually understood? Instead of treating demand as a measurable audience category, this study focuses on how digital-born media managers interpret and articulate this demand. It asks how alternativeness is justified, negotiated, or even strategically framed within a media environment shaped by polarization, media capture, and economic pressure. The issue, then, is not simply whether alternative media exists, but how alternativeness is constructed and sustained under constraint.

2. Literature Review

2.1. Core Definitions of Alternative Media

The term 'alternative' derives from the Latin *alter*, meaning "the other of the two," positioning mainstream and alternative media as relational poles rather than isolated categories (Arıkan, 2023). Despite extensive scholarly engagement, a universal definition remains elusive, and alternative media has historically been described as "insurgent journalism," applied to diverse practices shaped by sociopolitical contexts (Harcup, 2005).

Systematic theorization emerged with Downing's *Radical Media* (1984), which framed alternative media as a vehicle for social and political transformation (Ceyhan, 2009; Downing et al., 2001). Subsequent debates questioned whether alternativeness should be defined normatively or structurally. Sandoval and Fuchs (2010) ask whether alternative media must be exclusively oppositional and progressive, while Downing (2003) demonstrates that even normatively problematic cases may meet structural criteria of "alternative," underscoring the conceptual ambiguity surrounding the term.

In response, Sandoval (2009) argues that "critical content" must constitute the minimum common denominator of alternative media. Yet defining alternativeness solely through content risks overlooking structural dependencies. Even outlets such as *Le Monde Diplomatique*, despite their critical stance, may not structurally qualify as alternative due to the-

ir financing models. Atton (2002) moves the debate forward by identifying criteria related not only to radical content but also to production, distribution, participation, and horizontal organization. These dimensions become particularly complicated in the context of digital-born and entrepreneurial journalism initiatives in Türkiye (Keten, 2023), where economic precarity and platform dependency blur the boundary between critique and incorporation.

Alankuş challenges Western-centric definitions for marginalizing local media dynamics, a problem especially visible in non-Western contexts (Alankuş, 2008). Adaklı similarly argues that merely reversing dominant paradigms does not suffice; alternative media requires creative and political imagination (Adaklı, 2010). For this reason, reducing alternative media to a simple binary opposite of the mainstream (Erimli & Özçağlayan, 2023) is theoretically insufficient. The concept demands a multidimensional evaluation that accounts for both structural positioning and discursive practice.

Building on definitional debates, theoretical discussions have sought to explain both the emergence and the normative grounding of alternative media. Historically, alternative media has been closely associated with social opposition movements and marginalized groups (Alankuş, 2008). As media systems became increasingly industrialized, mainstream institutions aligned with political and economic elites, reinforcing monopolization and standardized content under neoliberal restructuring (Ülkü, 2017). In this context, the inability of traditional media to effectively scrutinize power intensified the demand for alternative forms whose defining feature became criticality (Akveran, 2018).

"Critical media, in contrast, are characterized by critical form and content. There is oppositional content that provides alternatives to dominant repressive heteronomous perspectives that reflect the rule of capital, patriarchy, racism, sexism, nationalism, etc" (Fuchs, 2010: 179). Fuchs distinguishes alternative media not merely through oppositional discourse but through structural differences in production, organization, financing, and distribution. Whereas mainstream media rely on advertising, hierarchical control, and high-cost technological infrastructures, alternative media are conceptualized as grassroots, participatory, and less dependent on commercial imperatives. This structural emphasis complicates attempts to reduce alternativeness to content alone. Within this broader debate, Bailey et al. (2007) identify four models of alternative media community service, alternative to the mainstream, civil-society-integrated, and rhizomatic thereby questioning the tendency to equate "alternative" with inherent oppositionality. Yet this typology does not entirely settle the issue; it shifts the analytical focus rather than dissolving the conceptual ambiguity. Similarly,

debates structured around objective and subjective approaches move beyond institutional positioning and instead differentiate between content-centered and process-oriented definitions (Sandoval, 2009; Sandoval & Fuchs, 2010). In the Turkish context, these discussions intersect with analyses of digital labor and "üretüketim," where participatory media practices may appear empowering, although they simultaneously conceal forms of hidden labor (Çetin, 2019).

Yet participation-based models are not without critique. Access to media remains structured by existing hierarchies (Ünal, 2015; Mora, 2008), and fragmented publics may struggle to constitute durable counter-public spheres (Sandoval & Fuchs, 2010). Habermas's analysis of the structural transformation of the public sphere (Habermas, 2013; Özçetin et al., 2012) further underscores how capitalist pressures constrain communicative rationality. Participation, therefore, cannot automatically be equated with emancipation (Sandoval, 2009).

From a critical standpoint, alternative media must be evaluated through their capacity to challenge hegemonic structures rather than solely through participatory form. Even outlets that employ capitalist financing mechanisms may qualify as alternative if they sustain critical content and consciousness (Sandoval, 2009; Sandoval & Fuchs, 2010). These tensions reveal that alternativeness is neither purely structural nor purely discursive; it is negotiated within broader political-economic transformations a tension that becomes particularly salient in Türkiye's contemporary media environment.

Türkiye's media landscape can be understood through three major phases: Neoliberal restructuring in the 1980s, the expansion of digital journalism in the early 2000s, and the political rupture following the 2013 Gezi protests.

2.1.1. 1980s–1990s: Neoliberal transformation and concentration

The 1980 military coup and the 24 January economic decisions initiated neoliberal restructuring, enabling cross-sector capital groups to enter the media field (Adaklı, 2010). Public broadcasting weakened as commercialization expanded, narrowing the space for pluralistic voices (Ceyhan, 2009). The relocation from Babiali to İkitelli symbolized a shift toward technologically driven journalism, while columnists emerged as "new aristocrats" (Bali, 2011). By the 1990s, five major media groups controlled nearly 80% of the market (Baytar, 2013; Adaklı, 2010), limiting opportunities for alternative journalism. These transformations laid the structural groundwork for later debates on media capture and self-censorship (Akser & Baybars, 2023).

2.1.2. Early 2000s: Digital openings and entrepreneurial journalism

The rise of online journalism in the 1990s introduced new possibilities. Bianet, pioneered rights-based digital news (Çoban & Ataman, 2015), while newspapers gradually established online editions (Çevikel, 2023). The 2001 economic crisis, which left over two thousand journalists unemployed (Gürel, 2001), accelerated entrepreneurial journalism initiatives (Kaya, 2010). Over time, entrepreneurial models became central to Türkiye's alternative media ecosystem (Keten, 2023). As mainstream outlets moved toward digital platforms (Tuğla, 2014), live broadcasting and new media practices began to compete directly with traditional media (Şahin & Şahin, 2016). Online outlets increasingly diversified into commercial and socially driven formats (Çevikel, 2023).

2.1.3. 2013 Gezi protests: A break in visibility and trust

The Gezi protests marked a significant rupture in public trust. Citizens collectively produced and circulated information (Çoban & Ataman, 2015), while the "penguin documentary" became emblematic of mainstream media failure (Yüksek, 2015). *"Following the Gezi resistance, the political significance and practical modalities of video activism underwent further transformation in response to shifting media and political conditions. The concentration of media ownership and the widespread use of legal and administrative sanctions against journalists led to the convergence of activist and journalistic practices. Activist footage began to circulate through independent digital platforms, contributing to the reshaping of news production and distribution processes"* (Doğanay & Kara, 2025: 18). This rupture accelerated the visibility and legitimacy of network-based alternative media.

2.1.4. Post-2011 media capture and digital authoritarianism

From 2011 onward, intensified media capture produced a hybrid control environment (Akser & Baybars, 2023; Coşkun, 2020). Research shows how capture became embedded in newsroom practices and institutional structures (Akser & Baybars, 2024). More than 90% of media outlets came under direct or indirect government influence (Özgür, 2025), and post-2016 purges further constrained journalistic autonomy (Zihnioğlu, 2023).

Regulatory interventions, including the 2020 social media law and the 2022 disinformation law (Andı et al., 2025), expanded digital oversight. Algorithmic visibility mechanisms and platform dependencies introduced additional structural constraints (Adal,

2025). These developments correspond with a shift toward competitive authoritarianism (Esen & Gümüşçü, 2016), increasingly described as "hybrid digital authoritarianism" characterized by troll networks, bans, throttling, and shutdowns (Yücel, 2025).

"Turkish public has experienced intense disinformation and the circulation of fake news. The widespread use of fake news has evolved into an informally accepted political strategy of the government, as no substantial measures have been taken to counter it. Thus, the government-friendly media have utilized fake news for propaganda to manipulate and deceive the public" (Kaptan, 2025: 33).

Together, these dynamics define the structural and political conditions within which network-based alternative media operate. Alternative media in Türkiye therefore emerge not in a neutral digital space but within an environment shaped by concentration, regulatory intervention, and platform dependency.

The literature on alternative media largely revolves around definitions, normative criteria, and structural characteristics. Most studies either assess whether specific outlets fit predefined models or empirically measure audience demand. However, particularly in Türkiye, where media capture, political polarization, and platform dependency shape journalistic practice, insufficient attention has been paid to how the demand for alternative media is interpreted and discursively constructed by media actors themselves. This absence is not only methodological but conceptual.

Rather than assuming alternativeness as a fixed category, this study addresses this gap by examining how digital-born media managers in Türkiye interpret demand and justify their claims to "alternativeness." In doing so, it shifts the focus from normative classification and audience measurement to managerial meaning-making within a constrained media environment.

3. Materials and Methods

3.1. Purpose of Study

The main purpose of this study is to explore how digital-born media managers in Türkiye interpret the demand for alternative media and how they evaluate their own claims to alternativeness within the current political and media environment. Rather than directly measuring audience demand, the study examines how this demand is perceived, framed, and articulated by media managers themselves.

Current literature does not address, in an integrated way, how alternative media demand is constructed within managerial discourse in Türkiye and how digitally native outlets justify their position as "alternative." This gap defines the research problem: analyzing managerial interpretations of audience

demand and assessing how these outlets substantiate their claim to alternativeness under conditions of media capture and political pressure.

In line with this purpose, the study is guided by the following research questions:

1. How do digital media managers in Türkiye interpret and frame the demand for alternative media?
2. How do digitally native, network-based media outlets justify, negotiate, or reject their claim to 'alternativeness'?

In this context, the significance of the study lies in examining both the perceived audience demand and the construction of alternativeness through the lived experiences and interpretations of media managers. In a context marked by intensified media capture, these insights contribute to communication scholarship by revealing how alternative media position themselves within a constrained political-economic structure.

3.2. Methodology of the Study

The study employed phenomenology, a qualitative method that explores lived experiences to reveal the essence of phenomena as perceived by individuals. Following Husserl, phenomenology neither seeks objective facts nor external reality but requires bracketing the natural attitude to reach a phenomenon's core (Yalçın, 2022). Thus, the researcher is expected to set aside personal feelings, thoughts, and prejudices about the phenomenon under investigation (Creswell, 2015). As Baltacı points out, qualitative research prioritizes depth and detail over generalization, focusing on the internal and conceptual structures of events and phenomena (Baltacı, 2019). Similarly, Uslu and Demir emphasize that the phenomenological approach is especially valuable for revealing unknown experiences, perceptions, and meanings through in-depth interviews (Uslu & Demir, 2022).

Phenomenology was chosen both for its epistemological stance and its suitability for exploring alternative media managers' perceptions, experiences, and meaning-making regarding the demand for alternative media in Türkiye and whether network-based outlets qualify as alternative.

3.3. Population of the Study

All network-based alternative media in Türkiye Broadcasting in Turkish constitute the population of the research. The study population was formed based on the Türkiye Digital Media Report prepared by the International Press Institute (IPI) (Kızılkaya & Ütücü, 2021). Only digital web journalism media, digital social media and video-based news commentary platforms were included in the study population.

3.4. Sample of the Research

"Polkinghorne emphasizes that the number of participants in phenomenological research can range between 5 and 25" (Creswell, 2015: 81). In this study, a list of network-based alternative media organizations in Türkiye was first compiled based on previous academic studies and the International Press Institute's (IPI) Digital Media Report. The sample was determined from the universe of digital-born alternative media in Türkiye using a quota sampling method. The quotas were defined along three axes: financing model (donation/grant-hybrid, advertising, subscription/PDF), publication format (text-oriented, video-focused, hybrid), and editorial self-positioning ("alternative mainstream," rejecting the "alternative" label, emphasizing "independence").

Ten cases were initially selected to represent these quotas. Five of the invited organizations declined to participate. Consequently, the research proceeded with interviews involving representatives of Gazete Duvar, Gazete Pencere, Journo, T24, and Medyascope. Following Polkinghorne's recommendations, it was concluded that five cases would be sufficient, and the study continued with the existing participants.

In addition to Polkinghorne's recommendation for phenomenological research (5–25 participants), the sample size was further guided by the concept of information power. *"Qualitative interview studies may benefit from sampling strategies by shifting attention from numerical input of participants to the contribution of new knowledge from the analysis. Information power indicates that the more information the sample holds, relevant for the actual study, the lower number of participants is needed"* (Malterud et al., 2016: 1759). Given the study's focused aim, the high specificity of the participants, the established theoretical framework, and the depth and quality of the interviews, the information power of the present sample was deemed sufficient despite the modest number of cases.

The selection of these five outlets is methodologically and analytically significant, reflecting variation in financing models, publication formats, and editorial self-positioning. Editorial self-positioning differs: Gazete Duvar calls itself an "alternative mainstream," T24 and Medyascope reject the "alternative" label in favor of journalism itself, and Journo emphasizes independence as a criterion. Their varied audience profiles, as described by the managers, provide insight into how demand for alternative media is interpreted across different segments in Türkiye and how network-based outlets position themselves in response to this perceived demand.

To enhance transparency, the demographic and professional characteristics of the participants are outlined below. The five participants held senior editorial and managerial positions within their res-

pective organizations. The interviewees consisted of three editors-in-chief/general coordinators and two senior editorial coordinators. Their ages ranged from 44 to 60, and their professional experience in journalism ranged between 22 and 37 years. All participants were male senior media professionals, reflecting the gendered composition of top editorial leadership within the selected outlets. This level of seniority and professional background is analytically significant, as the study focuses on managerial meaning-making processes.

3.5. Scope and Limitations

The study focuses on digital-based alternative media in Türkiye web, social media, and video outlets to directly examine the networked media ecosystem. Print newspapers and television channels were excluded due to their distinct institutional structures and limited use of interactive, participatory digital networks. This scope enables analysis of alternative media dynamics through the multi-channel distribution and participatory practices unique to digital environments.

Interviews were conducted between January 14 and 24, 2025, on prearranged dates, each lasting about one hour and audio-recorded for verbatim transcription. This duration allowed participants to share detailed experiences and perceptions, ensuring data depth and timeliness.

Participants may have spoken cautiously on some issues due to political and economic pressures. Another limitation is that data reflect only the perspectives of media managers, excluding journalists, reporters, and readers.

3.6. Data Collection

Interviews were one of the first data collection tools that came to mind in phenomenological studies. The interview has various advantages, such as interaction, flexibility, probing and probing to reveal the experiences of the phenomena (Yıldırım & Şimşek, 2011). Interviews with alternative media managers were conducted through the Zoom platform and the managers were asked questions in accordance with a semi-structured interview technique. The questions determined before the interviews were tested in a control group and necessary corrections were made. Interviews were conducted with the editors-in-chief and news coordinators of Gazete Duvar, Gazete Pencere, Medyascope, T24 and Journo. In order to prevent the identity of the participants from being disclosed, participants were named as Participant 1 and Participant 2. Accordingly, Gazete Duvar participant will be referred to as "Participant 1", Gazete Pencere participant as "Participant 2", Medyascope participant as "Participant 3", T24 par-

ticipant as "Participant 4" and Journo participant as "Participant 5".

3.7. Analysing the Data

According to the reductionist method in phenomenological research, *"a list of important statements is developed. The researcher then finds statements about how individuals experience the subject matter and lists these important statements. They are then grouped into larger units of information called meaning units or themes"* (Creswell, 2015: 84).

Data analysis followed a phenomenological reduction process. First, all interviews were transcribed verbatim, and significant statements were noted during the initial reading. Second, statements reflecting participants' experiences were identified and coded line by line. Third, similar codes were grouped into meaning units and organized into preliminary categories. These categories were then compared, refined, and merged to form higher-order themes. Throughout the process, codes and themes were iteratively checked against the raw data to ensure consistency and to minimize researcher bias. The final thematic structure was established only after repeated comparison and confirmation across all interviews. The study was analyzed using the Maxqda 2024 Qualitative Data Analysis Program.

3.8. Validity and Reliability

While various methods to ensure validity and reliability in quantitative research, it is more difficult to measure and ensure these concepts in qualitative research (Baltacı, 2019). In qualitative studies, it is important to establish long-term interactions with participants to increase the credibility of data. For this reason, the interviews were conducted twice on two different dates: Pre-interview and post-interview. In addition, at the end of the interview, participants were asked if there was anything they wanted to add to ensure participant approval. To support the methodological soundness of the research, the opinions of academic members working on the research methods were obtained.

Institutional Review Board Statement: This study was conducted in accordance with the Usak University Scientific Research and Publication Ethics Directive. This study was approved by the Usak University Social Sciences and Humanities Research and Publication Ethics Committee. Approval Code: 2024-156 Approval Date: July 4, 2024.

4. Findings

The code cloud, created before thematic analysis, clarifies interviewees' perceptions of network-based alternative media and highlights key trends shaping the study. By visualizing conceptualizations and po-

ints of emphasis, it reveals through frequency analysis the prominent codes that illuminate the study's main research questions.

Interviewees frequently highlighted **"Differentiation from Traditional Media,"** noting that alternative outlets diverge from the mainstream not only technically but also in content production, journalistic approach, and public responsibility. This distinction is both discursive and formal. **"Diversity of Media"** and **"Diversity of Agenda"** capture their ability to cover wide-ranging topics across multiple platforms, while **"Network-Based Alternative Mainstream"** signals that some have developed their own mainstream structures. **"Alternative Discourse Production"** and **"Original News Approach"** reflect meaning at the level of content and representation, whereas **"Journalism in the Shadow of Corporate Interests"** criticizes traditional media's independence problems. Finally, **"Interaction with Social Movements"** and **"Intertwined with Activism"** indicate that these outlets both report on and participate in social opposition (Figure 1). Codes

such as **"Digital Publishing,"** **"Fast and Flexible Journalism"** and **"Fast Access to Information"** which stand out in line with the requirements of the digital age, reflect the importance given to speed and accessibility in content production, while the codes **"Versatile Perspective"** and **"Public Opinion Forming Effect"** reveal the pluralistic structure and effectiveness of these channels. The **"Hybrid Structure"** describes the hybrid forms developed between traditional and alternative structures, while **"Institutional Credibility"** and **"Reliable Journalism"** emphasize the sustainability and reputation concerns of these structures. The codes **"Independence"** and **"Impartiality"** reveal internal debates about the ideological and economic positioning of alternative media; **"New Media Ecosystem"** shows the interaction of these structures with current media technologies. Finally, the codes **"Resistance to Change and Pressure"** and **"Reader Contribution"** reveal both the process of confronting external pressures and the interactive and participatory relationship forms established with the audience (Figure 1).



Figure 1. Code Cloud Obtained as a Result of the Analysis - Most Repeated Codes

Based on the findings obtained from the interviews within the scope of this study, the data were analyzed using a phenomenological analysis design. In this context, according to the hierarchical code sub code model, the following four basic themes were revealed (Figure 2).

1. Definition and Perception of Alternative Media: Participants offered varied definitions of alternative media, emphasizing freedom, independence, and the effort to create a counter-hegemonic discourse distinguishing it from traditional outlets.
2. Social Impact and Public Space Creation: This theme explores alternative media's capacity to expose social problems, raise public awareness, and support social movements by generating counter-discourses that challenge dominant media and foster democratization.
3. Reader Profile for Alternative Media: This theme reflects how managers interpret and describe their readership rather than offering a direct measurement of audiences. The analysis addresses both audience profiles and the motives attributed to them by the participants. Managers consistently portray readers as individuals seeking independent and reliable information, often turning to alternative media due to distrust of traditional outlets.
4. Challenges and Limitations: Publishers face financial constraints, low advertising revenues, and difficulty developing sustainable models, while censorship, state intervention, and social pressures further restrict content production and distribution.

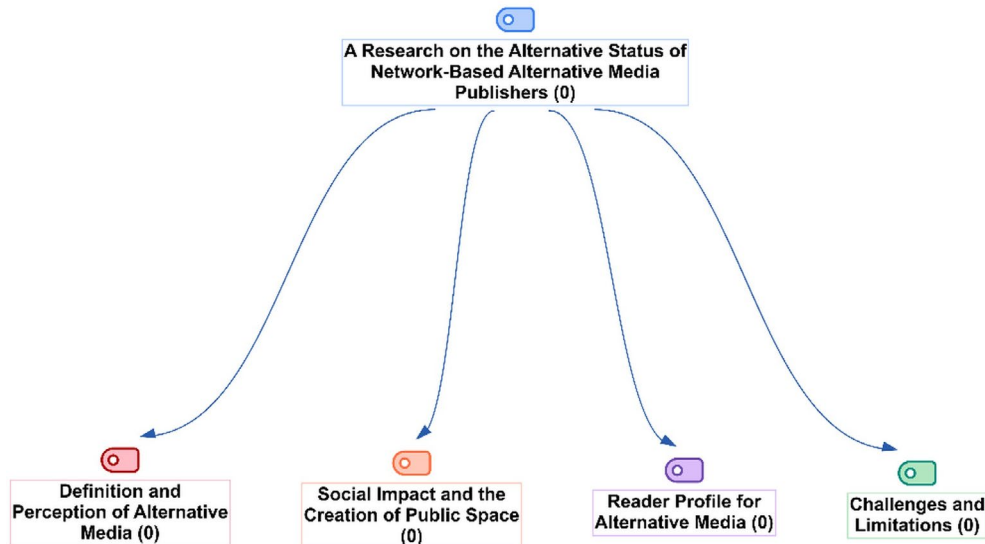


Figure 2. Hierarchical Code-Subcode Model-Themes

The results showed that the interviewees had a significant density around certain themes. We determined which themes, categories and sub codes were emphasized more. Thus, the prominent issues and perspectives of alternative media broadcasters were identified and how these themes were made sense by the broadcasters was revealed.

1) The first theme analyzed according to the model was **"Definition and Perception of Alternative Media"**. Within the framework of this theme, certain sub codes that the interviewees concentrated on emerged. In this context, the most emphasized element was **"Differentiation from Traditional Media"** (f=13). The participants stated that alternative media is organized in a form that differs from traditional media structures and discourses and that this differentiation is a fundamental determinant. As Participant 4 noted, *"In Türkiye, journalism has weakened so much that anyone doing proper journalism is labeled as alternative."* Similarly, Participant 3 emphasized the structural nature of this distinction: *"There can be no alternative to journalism itself, yet within the current media environment we are automatically perceived as alternative"*. Following this, the sub codes **"Digital Publishing"** (f=10) and **"Alternative Discourse Production"** (f=10) reveal that alternative media are active through digital media and construct new, critical discourses against dominant discourses. **"Versatile Perspective"** (f=9) shows that the interviewees evaluate alternative media as a structure that does not reduce alternative media to a single perspective and includes the voices of different social segments. As Participant 3 highlighted, *"This organization initially emerged as a YouTube channel. The website was established later, followed by the launch of other digital platforms"*. Similarly, Participant 2 emphasized the centrality of digital-native production processes: *"Internet teams focus on producing original news because it is the only way to survive in digital media"*.

Sub-codes such as **"Network Based Alternati-**

ve Mainstream" (f=8) and **"News Orientation"** (f=8) indicate that alternative media creates its own ecosystem on digital platforms and is structured on the basis of news production. The codes **"Impartiality"** (f=7) and **"Hybrid Structure"** (f=7) reveal that these publications both maintain their claim of independence and have a mixed structure that brings together different media practices. Other prominent sub-codes include **"Original Journalism"** (f=6), **"Interconnectedness with Activism"** (f=5), **"Libertarian Stance of Alternative Media"** (f=5), **"Fast and Flexible Journalism"** (f=5), **"Reader Contribution"** (f=5), **"Independence"** (f=4) and **"Reliable Journalism"** (f=4). As Participant 1 explained, *"As Gazete Duvar, we had to build our own ecosystem in the digital sphere; finding space in the mainstream was simply not possible"*. Similarly, Participant 3 highlighted the hybrid nature of contemporary newsrooms: *"We operate with a hybrid structure; we follow traditional newsroom routines while also adapting to the pace of digital platforms"*. These sub codes reveal a tendency for alternative media to offer innovative, participatory and dynamic structures. Lastly; **"Rights Orientation"** (f=3), **"Emphasis on Participatory and Pluralistic Broadcasting"** (f=3), **"Local Reflections of Current Issues"** (f=3), **"Stance Against Dominant Discourse"** (f=3), Codes such as **"Critical Perspective"** (f=2) and **"Pursuit of Truth"** (f=2), which are expressed with lower frequencies but are considered qualitatively important, show that alternative media exhibits a stance against the mainstream not only in terms of form but also in terms of content. As Participant 5 emphasized, *"Alternative media should prioritize rights-based journalism; otherwise it becomes indistinguishable from the mainstream"*. Similarly, Participant 1 noted, *"Local stories matter because they reveal what the mainstream either overlooks or intentionally avoids"*. Through these sub codes, the interviewees drew a multidimensional framework for the definition and perception of alternative media (Figure 3).

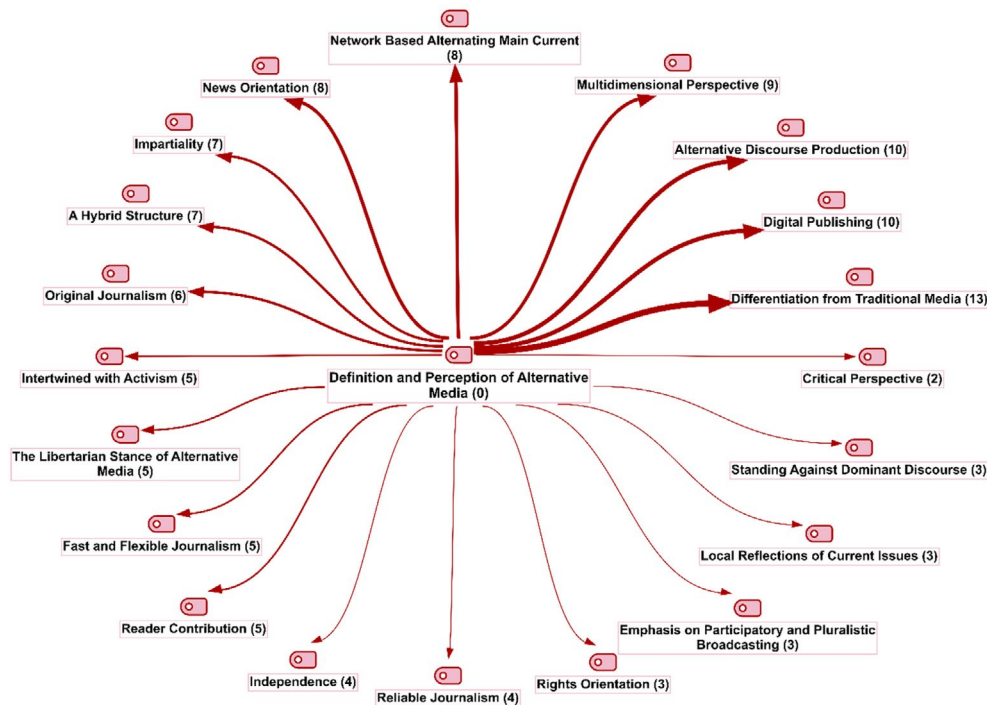


Figure 3. Code Sub-Code Sections Model - Alternative Media Definition and Perception Theme and Sub-Codes

The absence of a unified definition of alternative media is reflected in the interviewees' own positioning. Participants articulated divergent understandings shaped by Türkiye's political and media environment.

Participant 1 from *Gazete Duvar* describes the outlet as an "alternative mainstream," arguing that political developments have blurred the boundaries between mainstream and alternative journalism. Participant 2 from *Gazete Pencere* stated: "Actually, when we say alternative, we can include all elements outside the mainstream. This can include both the left wing and the extreme right wing. I also include digital media as a third option."

Participant 3 from *Medyascope* rejected the label: "We are not alternative media. There is no alternative to journalism." Similarly, Participant 4 from *T24* stated, "Since journalism is weak in Türkiye, the work of doing proper journalism is called an alternative. It has become very confusing; those in opposition are called alternatives. We do not aim to view ourselves as an alternative."

Participant 5 from *Journo* emphasized objectivity: "Instead of such subjective concepts that everyone may perceive differently, objective criteria should be used, such as independence."

These statements indicate that alternativeness is perceived less as a fixed identity and more as a contextual designation shaped by political polarization and the weakened condition of mainstream journalism.

Divergent views also emerged regarding citizen journalism. Participant 3 stated, "Ordinary citizens are only a source of news for us. Anything that co-

mes from there must pass through the verification mechanisms. Citizens cannot be journalists." Participant 2 expressed caution: "All of them need to be questioned. Thus, there is a serious need for editorial knowledge and verification. However, the speed of the Internet and the lust for clicks cause mistakes to be made." In contrast, Participant 1 stated, "We have become the address of an effort to combine citizen journalism with conventional media and adapt it to the Internet."

All interviewees also emphasized their commitment to covering marginalized groups and producing original reporting despite structural constraints. Participant 1 noted, "We subscribe to almost all of the agencies. Each agency had its own language baggage. We have changed the title, spots, and introduction of the news." Participant 4 emphasized, "We do a lot of news that requires deep work. The readership rates of LGBTI news and news about disadvantaged groups cannot be compared to magazine content... We cannot avoid these news items because they do not create traffic."

2) The second theme, "**Social Impact and Creation of Public Space**," highlights network-based alternative media's influence on social processes and the public sphere. Interviewees most often cited "**Public Opinion Forming Effect**" ($f=7$) and "**Interaction with Social Movements**" ($f=7$), noting that alternative media can shape opinion and amplify social movements. "**Transformative Media Role**" ($f=6$) reflects its potential to transform social structures, while "**New Media Ecosystem**" ($f=5$) underscores its integration with emerging digital communication dynamics. Unlike traditional outlets, alternative media foster a more horizontal, interac-

tive, and participatory environment. **"Contribution to Awareness Campaigns" (f=4)** shows its role in raising social sensitivity, and **"Formation of Alternative Publics" (f=3)** indicates new spaces where marginalized groups can voice their agendas. As Participant 5 noted, *"When we publish stories on social issues, we immediately see responses from civil society networks; this shows how influential alter-*

native media can be in raising awareness". Similarly, Participant 3 emphasized, *"Alternative platforms give space to groups who have no channel to speak elsewhere; this alone creates a new kind of public sphere"*. Overall, alternative media act not only as news producers but as agents of social transformation and creators of new digital publics (Figure 4).

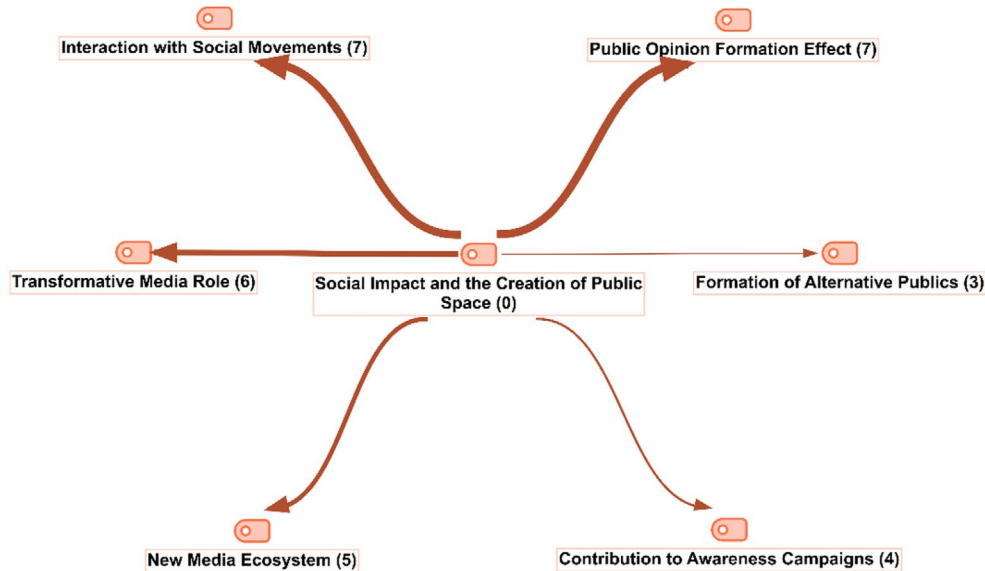


Figure 4. Code Sub-Code Divisions Model - Social Impact and Public Space Creation Theme - Sub-Codes

Under this theme, interviewees were also asked whether alternative media fragment the public sphere or influence mainstream outlets. Participants generally rejected the idea that alternative media cause fragmentation. Participant 5 argued that rather than fragmenting the public sphere, alternative media counteract monopolization and monotony. He also noted that his research was cited not only in Türkiye but also by outlets such as Reuters, BBC, and the Wall Street Journal.

Participant 1 stated, *"It would be too ambitious to say that alternative media set the agenda, but we have seen that many of the news we report are adapted to their own language and published in the mainstream media 1-2 days later,"* suggesting a reciprocal relationship between mainstream and alternative outlets. Participant 2 similarly observed, *"We use both the news of Duvar and the news of ABC with reference. Therefore, visibility does not decrease. But on the other hand, we come to the point where all fifty media outlets use the same news. The quality of content is decreasing. This is also due to the lack of staff."* While emphasizing increased visibility, he also pointed to concerns about declining content quality.

Participant 3 stressed that visibility must be accompanied by credibility: *"It is important for these organisations to increase their visibility. There is an organic way and a fraudulent way. The dishonest way is to get a bot account, write news with seo content, put ridiculous photos, etc. Or you can do it organically like us. Of course, this takes years."* These state-

ments indicate that social impact is understood not merely in terms of reach, but in relation to journalistic standards and institutional reputation.

3) The third important theme was **"Reader Profile for Alternative Media"**. This theme examines how managers describe the audiences of network-based alternative media and the reasons attributed to these preferences. Analyses related to the theme were structured into two main categories: **"Audience"** and **"Reason for Preference"**.

According to the findings obtained in the category of **Readership**, the interviewees defined various groups regarding the reader profile of alternative media. The most emphasized sub-code was **"Intersection Cluster-All Segments" (f=4)**, which indicates that alternative media can appeal to different segments of society and is followed by a wide range of audiences. Additionally, more specific audience groups were identified. These groups include **"Youth" (f=1)**, **"Academics" (f=1)**, **"Dissidents" (f=1)**, **"Activists" (f=1)**, **"Conservatives" (f=1)**, **"Foreign Readers" (f=1)** and **"Journalists" (f=1)**. These sub-codes suggest that managers perceive alternative media as being followed not only by a certain ideological group but also by individuals from different views and social positions. Thus, managers evaluate alternative media as appealing to different audience profiles in terms of both pluralism and diversity. (Figure 5). As Participant 3 explained, *"Our audience is diverse by nature; we reach people who would never follow the same outlet in the mainstream sphere"*.

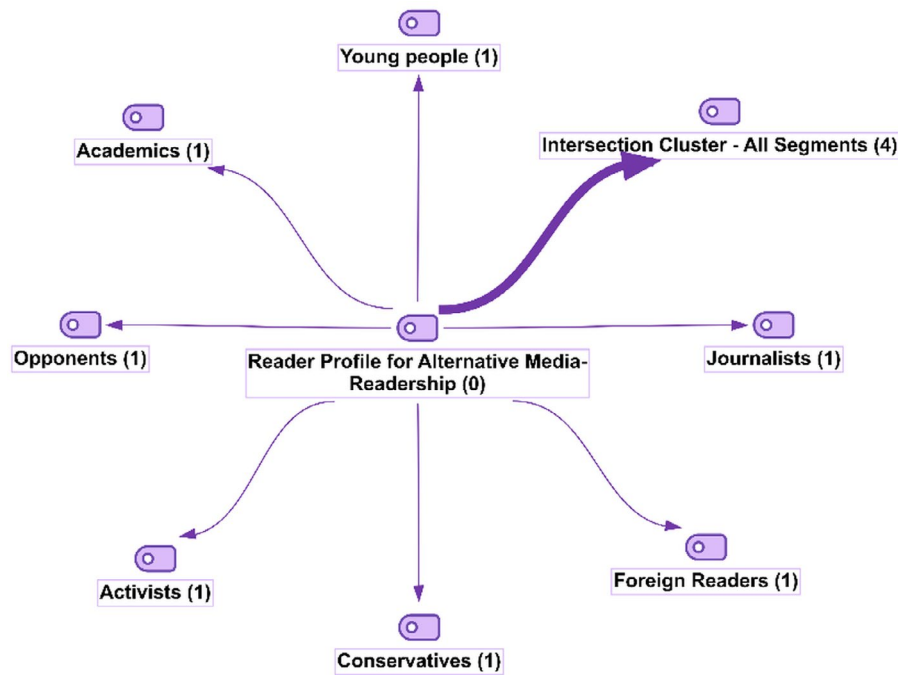


Figure 5. Code Sub-Code Sections Model-Reader Profile Theme for Alternative Media-Reader Audience Category

The “Reasons for Preference” category reflects how managers interpret the functional, contextual, and structural factors driving the choice of network-based alternative media. The most frequent sub-code, **“Diversity of Media”** (f=12), shows their flexibility to deliver content across multiple platforms and formats. Next, **“Agenda Diversity”** (f=6) highlights their ability to surface issues overlooked by the mainstream. **“Access to Fast Information”** (f=4), **“Institutional Reliability”** (f=4), and **“Original News Approach”** (f=4) further reflect perceptions of timeliness, credibility, and originality (Figure 6). Participant 1 noted, “We cover issues that never make it into mainstream agendas, and readers come to us precisely for that”.

Less frequent but noteworthy sub-codes include **“Interest Changing with Political Developments”** (f=1) and **“Increased Access in Times of Crisis”** (f=1), indicating that managers observe an increase in interest in alternative media, especially during periods of political uncertainty or crises. Participant 2 stated, “Whenever political tension rises, we see a clear spike in readership because people seek non-manipulated information”. Participant 4 emphasized, “During crises, readers turn to us because our updates are immediate and not filtered through political interests”. Overall, this category suggests that managers attribute readership demand to the flexible, pluralistic, and dynamic structure of alternative media, which they believe offers an alternative to the limitations of traditional outlets.(Figure 6).

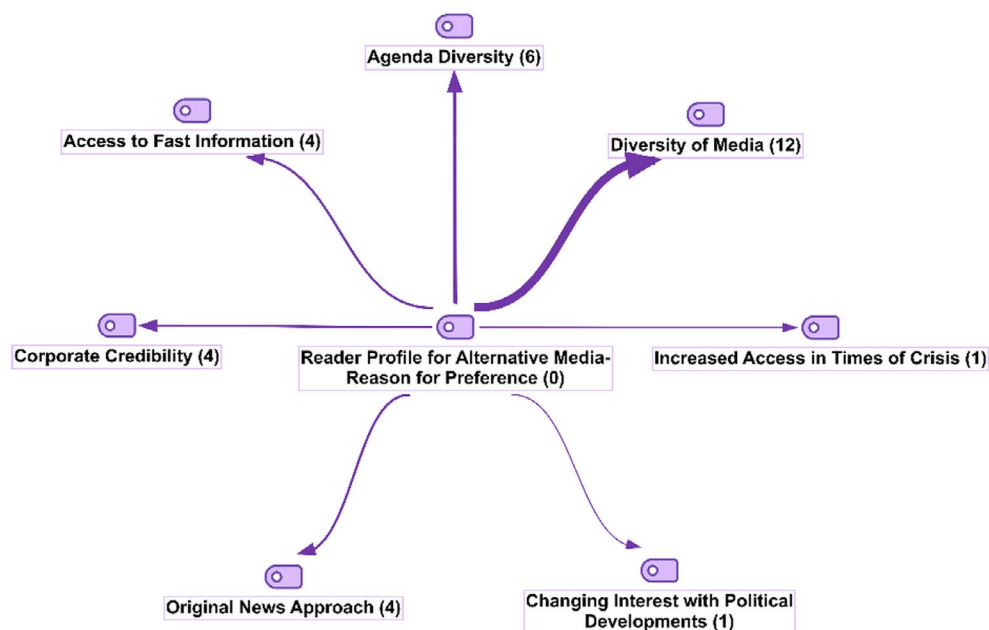


Figure 6. Code Sub-Code Sections Model - Reader Profile Theme for Alternative Media - Reason for Preference Category

In this section, the interviewees were first asked to provide information about the channels they bro-

adcast. Accordingly, the presence of media in the sample in the channels is as follows:

Table 1. Alternative Media and the Channels They Broadcast on

Alternative Media	Gazete Duvar	Gazete Pencere	Medyascope	T24	Journo
Social Media Platforms	Bluesky	Facebook	Blusky	Dailymotion	Facebook
	Dailymotion	Instagram	Facebook	Facebook	Instagram
	Facebook	PDF Baskı	Instagram	Flipboard	Linkedin
	Instagram	X	Linkedin	Instagram	X
	Soundcloud				
	Spotify	YouTube	Spotify	Linkedin	
	Tiktok		X	X	
	X		YouTube	YouTube	
	YouTube				

According to Table 1, all outlets in the sample actively use multiple digital platforms in order to maximize accessibility and distribution. Gazete Duvar broadcasts on nine channels, Gazete Pencere on five, Medyascope on seven, T24 on seven, and Journo on four. Facebook, Instagram, and X are used by all outlets, while YouTube functions as a central platform for most of them. This distribution pattern indicates that network-based alternative media operate within an expanded and interconnected digital environment rather than through a single primary channel.

However, interviewees describe this multi-platform presence less as a strategic preference and more as a structural necessity. As Participant 1 stated, *"Using many platforms is not a choice anymore; it is a matter of survival for alternative outlets."* Participant 4 similarly noted, *"We try every way to deliver our news to our readers. But our strength is in written content. For example, Medyascope is based on videos."* Participant 3 explained the gradual expansion process: *"This place first emerged as a YouTube channel. Then the website was established. Other social media channels were opened as time passed. But we cannot access all of them because we do not have enough manpower."* These statements suggest that platform diversification increases visibility but simultaneously intensifies organizational pressure.

Algorithmic dependency further complicates this structure. Participant 1 explained, *"Our whole endeavor is to create a democratic environment and get out of echo chambers. The problems of people that need to be discussed are not even on the agenda of the media. For journalists, this is a daily test. You may find yourself endeavouring to report what is readable and popular. The way out of the echo chamber is to report reliable, accurate news."* Despite efforts to expand across platforms, visibility and sustainability remain shaped by technological infrastructures beyond editorial control.

Interaction with readers is similarly constrained. Participant 4 remarked, *"We want to engage more, but limited staff means we cannot respond as sys-*

tematically as we would like." Participant 2 stated, *"We mostly receive feedback from the newspaper's e-mail account. We do not open comments on YouTube because it requires serious energy. It can also have legal consequences."* Participant 3 emphasized membership-based engagement: *"It is important because there are thousands of people who support us through memberships. Both on YouTube and Patreon. Therefore, we want to grow this audience. The goal for us is to build the audience there, to have this conversation and to have people introduce our presence to others. We get back to everyone."*

Overall, while network-based alternative media expand across multiple platforms to increase reach, their visibility, sustainability, and participatory capacity remain structurally mediated by technological and organizational constraints.

4) The final theme, **"Challenges and Restrictions,"** highlights the structural, economic, and sectoral problems facing network-based alternative media from production to distribution. Interviewees most frequently cited **"Journalism in the Shadow of Corporate Interests"** (f=8), indicating that capital ties and conflicts of interest suppress independent journalism and weaken resistance to hegemonic structures. **"Future of the Media Sector"** (f=6) and **"Resistance to Change and Pressure"** (f=6) further reveal that sectoral uncertainty and institutional resistance to innovation pose major obstacles for alternative outlets (Figure 7).

Economically based problems were captured by the codes **"Economic Sustainability Problems"** (f=5), **"Advertising Difficulties"** (f=5), and **"Income Diversification"** (f=4), reflecting the absence of sustainable financial models, limited advertising access, and challenges in generating alternative revenues—all serious threats to long-term viability. **"Censorship and Self-Censorship"** (f=4) and **"Resistance to Change and Pressure"** (f=6) underscore political constraints that can curb independent news production. Finally, **"Human Resources/Team Limitations"** (f=4) and **"Lack of Institutionalization"** (f=3) show how small staffs and weak institutional structu-

res hinder consistent content production (Figure 7). Digital publishing brings its own challenges. Sub-codes such as **"Copyright Struggle"** (f=3), **"Platform-Based Blocking"** (f=2), and **"Digital Security Risks"** (f=2) highlight technical and legal issues including content protection, limited visibility, and cybersecurity threats. Participant 3 noted, *"When platforms limit our visibility, it directly affects our income and our ability to sustain journalism"*. **"Prejudices against Alternative Media"** (f=3), **"Public Visibility"** (f=2), **"Inevitability of Transformation"**

(f=1), and **"Change in the Reader-Media Relationship"** (f=1) reflect difficulties in social acceptance, adapting to shifting consumption habits, and redefining audience relations. As Participant 1 stated, *"Some people dismiss us outright just because we are not part of the mainstream structure"*. Overall, the theme **"Challenges and Restrictions"** shows that alternative media confront multidimensional structural and practical obstacles that directly shape production processes (Figure 7).

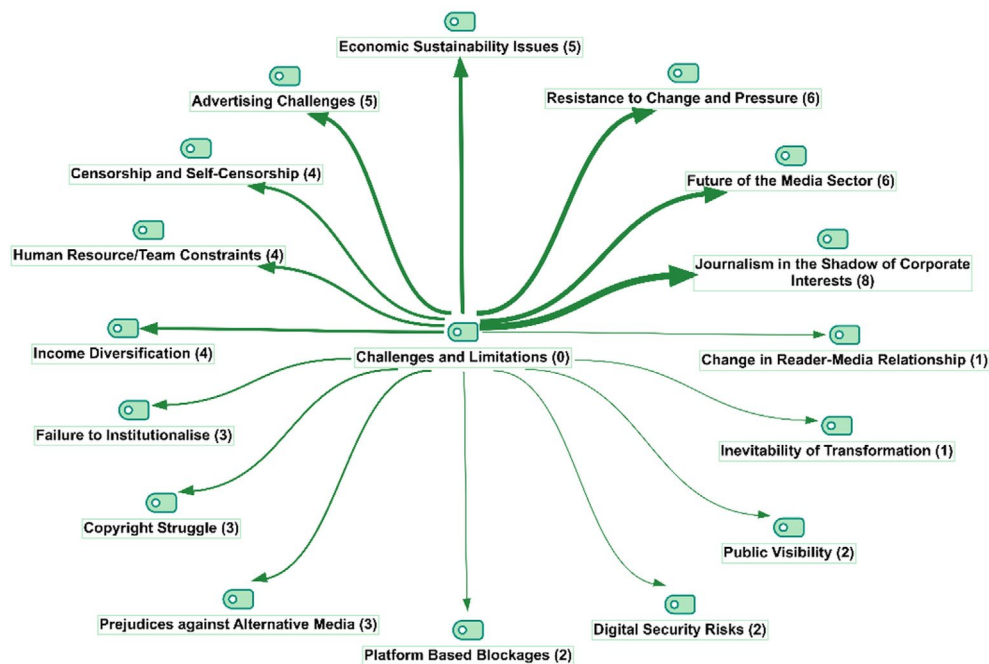


Figure 7. Code Sub-Code Segments Model - Challenges and Constraints Theme - Sub-Codes

The following table was constructed based on the data obtained from the interviewees regarding working conditions and organizational structure.

Table 2. Alternative Media and Working Conditions - Organisational Structure

	Place of Work	Office Layout	Number of Employees in the Team	Volunteer Work	Decision Making Processes	Hierarchy
Gazete Duvar	Apartment	Open	40	Non	Participation Available	Horizontal
Gazete Pencere	Apartment	Room	18	Authors	Limited Participation	Horizontal
Medyascope	Plaza	Open	27	Non	Limited Participation	Horizontal
T24	Business Centre	Open	50	Non	No Participation	Vertical
Journo	Business Centre	Open	11 permanent 200 copyrighted	Non	Participation Available	Horizontal

According to Table 2, Gazete Duvar and Gazete Pencere operate from apartments, T24 and Journo from business centers, and Medyascope from a plaza. All outlets use open-office layouts, except Gazete Pencere, which converted apartment rooms into offices. Team sizes vary considerably: T24 employs the largest staff, followed by Gazete Duvar (40), Medyascope (27), Gazete Pencere (18), and Journo (11 permanent staff and 200 copyright-based contributors). Voluntary participation is generally absent, except for periodic volunteer writers at Gazete Pencere. Decision-making processes are described as participatory at Gazete Duvar and Journo, limited at Gazete Pencere and Medyascope, and non-participatory at T24. Hierarchical structures are horizontal in all outlets except T24, which maintains a vertical hierarchy.

Regarding participation in managerial decision-making processes, Participant 1 stated: *"In cases required by the daily hierarchy of journalism, we definitely act according to the classical newspaper organisation. We hold meetings on what the orientation of the newspaper should be at critical times and on the financial situation,"* emphasizing that horizontal organization coexists with professional newsroom routines.

Participant 2 noted, *"Of course, we share strategic or editorial policy decisions. But in this business, there needs to be someone who has the final say"* pointing to a model of limited participation within a structured leadership framework.

The most explicit defense of hierarchy came from Participant 4: *"Journalism is a hierarchical profession. Of course there is a hierarchy in decision-making processes. Let's not think of it like a fanzine made by young people coming together. Therefore, there is a serious hierarchy."*

These statements indicate that although alternative media frequently emphasize independence, their organizational structures vary between participatory and vertically organized models.

Regarding revenue structures, interviewees described diverse and evolving financing strategies. Participant 1 stated that they use digital subscriptions, crowdfunding, digital advertising, grants, and Patreon. Participant 2 explained: *"We cannot find grants and crowdfunding. We buy digital adverts, Google adverts are very critical for us. Apart from that, we have small advertisements from private companies. Our PDF newspaper has subscribers, is it enough to turn the wheel? For 5 years we have been struggling to survive."*

Participant 3 described a shifting revenue mix: *"When I arrived in 2019, funding was 95 % grants; now grants are down to 40 %, with 60 % from our own income. Sources include subscriptions (Patreon, YouTube, and soon the website), advertising (direct sales, sponsorships), and programmatic reve-*

nues from Google and YouTube. We are also eligible for Press Advertisement Agency support. Currently, grants provide 40 %, memberships 30 %, and advertising 30 % of income."

Participant 4 stated: *"We once used crowdfunding for video production, which was successful but not repeated. We have an inactive Patreon account, and our main income is advertising. In the early years, lacking ad revenue, we produced video content for various organizations' websites, which initially sustained us. As advertising declined, we returned to video production and added a third income source organizing events."*

Only Participant 5 diverged from these mixed models: *"We do not accept advertising, sponsorship, subscriptions or donations. The copyright support project is entirely financed by the Journalists' Union of Türkiye and the European Union."*

Interviewees also emphasized sectoral and legal pressures. Participant 1 stated, *"We have difficulties from transport to technical facilities. Not to mention the financial dimension."* Participant 2 added, *"When you have a budget, you can find staff. You can employ experienced editors instead of trainee editors. Otherwise, you have to run after the work yourself... Another difficulty is that, for example, our responsible manager was detained."*

Participant 3 highlighted legal and financial strain: *"Our most important problem is financial and human resources. For a while, we used to receive 10-15 content removal notices a week. This was a tiring situation. There are times when we think twice whether we should report this news."*

Participant 5 noted, *"We do not face problems that are very different from the problems encountered in journalism in the world in general. In the case of Türkiye, access restrictions and violations of freedom of the press are added to these problems."*

Overall, these findings show that network-based alternative media operate under intertwined economic, organizational, and legal constraints that directly shape editorial practice and institutional sustainability.

5. Discussion

The findings show that, from the perspective of digital media managers, "alternative media" in Türkiye is not a fixed identity but a strategically negotiated position. While Gazete Duvar defines itself as an "alternative mainstream," T24 and Medyascope deliberately distance themselves from the label, emphasizing professional journalistic standards. This divergence suggests that alternativeness operates less as a stable category and more as a contextual stance shaped by political polarization and credibility concerns. In this respect, the Turkish case does not merely confirm Atton's (2002) claim that alterna-

tive media resists singular definition; it shows that rejecting the “alternative” label may itself function as a tactical positioning within a polarized media environment.

Participants’ emphasis on independence from corporate conglomerates and political patronage aligns with Sandoval and Fuchs’ (2010) argument that autonomy and critical function constitute core dimensions of alternative media. However, under conditions of entrenched media capture, autonomy appears not only as an ethical commitment but also as an operational necessity. Alternative outlets in Türkiye do not simply expand discursive diversity; they partially compensate for structural deficiencies in mainstream journalism. This quasi-public role complicates classical understandings of alternative media as marginal or purely counter-hegemonic, suggesting instead a hybrid positioning between opposition and institutional substitution.

Audience patterns, as described by the interviewees, further complicate conventional assumptions. Managers emphasize that engagement through Instagram, YouTube, and messaging applications reflects the platform-dependent infrastructures within which alternative media in Türkiye operate. While digital participation is often associated with youth engagement, participants indicate that sustainability relies equally on subscription-based and diasporic support networks. According to the managers, the presence of transnational subscribers situates Turkish alternative media within a dispersed communicative sphere that extends beyond national boundaries. At the same time, they acknowledge that this expansion increases reliance on corporate digital platforms and reinforces structural dependency.

Similarly, the findings on readership reflect managerial interpretations rather than direct audience measurement. Although outlets describe heterogeneous and cross-sectional publics, participants note that political positioning and platform ecology shape patterns of concentration. Managers report that demand appears to intensify during moments of political crisis, when audiences seek non-manipulated and reliable information. In this sense, alternativeness emerges in their accounts not only as a structural distinction from the mainstream but also as an epistemic resource grounded in trust and verification within a polarized media environment.

The findings on organizational structure show that alternative media do not necessarily operate through fully horizontal models. While some outlets describe participatory decision-making, others openly defend hierarchical newsroom structures as professionally necessary. This suggests that alternativeness does not automatically mean the absence of hierarchy.

The findings also complicate the assumption that alternative media necessarily fragment the public

sphere. Interviewees describe a reciprocal relationship in which alternative and mainstream outlets circulate, adapt, and reference one another’s content. Social impact, therefore, appears to depend not only on visibility but also on credibility and professional standards. This suggests that network-based alternative media operate within a shared media ecology rather than as isolated counter-publics.

Financial fragility and regulatory exposure constitute intertwined constraints. Consistent with Fuchs (2010), outlets rely on mixed revenue models combining advertising, subscriptions, grants, and donations. Yet unlike many Western contexts, economic precarity in Türkiye intersects directly with legal interventions, algorithmic visibility regimes, and broader authoritarian tendencies. Alternative media thus operates within a dual pressure structure market dependency and political constraint that transforms sustainability into both an economic and democratic challenge. Under such conditions, alternativeness cannot be reduced to content or participation alone; it must be understood as a precarious negotiation within asymmetrical power relations.

These findings suggest that alternative media cannot be reduced to participation alone. In the Turkish context, alternativeness is grounded less in organizational form and more in the persistence of critical journalistic practice under constraint. Yet this practice does not unfold in an open communicative space. It operates within a platformized news ecosystem where algorithmic infrastructures shape production, circulation, and reception processes, conditioning visibility and indirectly delimiting editorial autonomy (Schneiders & Stark, 2025). Alternativeness, therefore, emerges not as a structural given but as a continuously negotiated position within layered asymmetries of political, economic, and technological power.

6. Conclusion

This study examined how managers of five digital-based media outlets in Türkiye interpret and negotiate the meaning of “alternative media” under conditions of political and economic constraint. Rather than treating alternativeness as a predefined category, the phenomenological approach revealed it as a lived and strategically constructed position. The findings suggest that “alternative media” does not operate as a stable identity but as a relational claim sometimes embraced, sometimes rejected depending on institutional credibility, audience expectations, and the broader political climate.

Empirically, the outlets studied expand the public agenda by amplifying marginalized voices and cultivating heterogeneous audiences, including digital-native users and diasporic subscribers. Yet this expansion does not occur in a structurally open

field. Financial fragility, algorithmic visibility regimes, regulatory interventions, and authoritarian governance trends shape everyday editorial practices. Alternative media in Türkiye thus operates within a dual pressure structure where market dependency and political constraint intersect. Under such conditions, sustainability becomes not merely an organizational concern but a democratic question.

Conceptually, the findings complicate binary formulations that position alternative media as external to mainstream or capitalist structures. The cases examined here do not stand outside the system; they navigate within it. Revenue diversification, platform reliance, and editorial autonomy coexist in tension. Alternativeness, therefore, appears less as structural separation and more as a negotiated practice enacted within asymmetrical power relations. In contexts marked by media capture and weakened public-service journalism, alternative media may function not solely as counter-hegemonic actors but as compensatory formations that partially fill institutional gaps. This shift in emphasis reframes alternative media as context-bound, relational, and structurally embedded rather than normatively pure or oppositional by definition.

The study is limited by its focus on five cases and by its reliance on managerial perspectives. However, in line with Malterud's "information power" framework (Malterud et al., 2016), the depth and specificity of the interviews provided sufficient analytical grounding. No substantially new themes emerged after the fifth interview, suggesting adequate information power within the defined scope. Future research could incorporate journalists and audiences to explore how alternativeness is experienced beyond managerial discourse, or undertake comparative analyses to examine how different configurations of political economy reshape alternative media practices across contexts.

Institutional Review Board Statement

This study was conducted in accordance with the Usak University Scientific Research and Publication Ethics Directive. This study was approved by the Usak University Social Sciences and Humanities Research and Publication Ethics Committee. Approval Code: 2024-156 Approval Date: July 4, 2024.

References

Adaklı, Gülseren. 2010. "Neoliberalizm ve Medya: Dünyada ve Türkiye'de Medya Endüstrisinin Dönüşümü." *Mülkiye Dergisi* 34: 68–84. <https://dergipark.org.tr/tr/pub/mulkiye/issue/270/629>.

Adal, Hikmet. 2025. "Türkiye'de Medyanın Geleceği: Demokratik Gerileme, Baskılar ve Reform İhtiyacı." https://bianet.org/haber/turkiyede-medyanin-gelecegi-demokratik-gerileme-baskilar-ve-reform-ihtiyaci-304952#google_vignette [accessed on 2 May 2025].

Akser, Murat. & Baybars, Banu. 2023. "Repressed Media and Illi-

beral Politics in Turkey: The Persistence of Fear." *Southeast European and Black Sea Studies* 23 (1): 159–177. <https://doi.org/10.1080/14683857.2022.2088647>.

Akser, Murat. & Baybars, Banu. 2024. "Media Systems and Media Capture in Turkey: A Case Study" *Media and Communication* 12: 1–17. <https://doi.org/10.17645/mac.7733>.

Akveran, Samet. 2018. "Ana Akım Medya Karşısında Alternatif Medya İhtiyacı ve Etik." *Adnan Menderes Üniversitesi Dördüncü Kuvvet Uluslararası Hakemli Dergisi* 1 (1): 10–31. <https://dergipark.org.tr/tr/pub/dorduncukuvvet/issue/37152/412790>.

Alankuş, Sevda. 2008. "Türkiye'de Başka Bir Demokrasi İçin Başka Bir Medya ve Habercilik." *İçinde Uygun Adım Medya*, editör İncilay Cangöz, 177–227. Ankara: Ayraç.

Andi, Simge., Çarkoğlu, Ali., Baruh, Lemi., & Bocskay, Zsófia. 2025. "Authoritarians Do It Better? Belief in Misinformation in Turkey." *The International Journal of Press/Politics* 1–30. <https://doi.org/10.1177/19401612241307812>

Arıkan, Gökhan. 2023. "Radyoda İnternete Telsiz İletişiminde Alternatif Olan Ne" *İçinde Alternatif Medyanın Eleştirisi*, editör Mesut Ayan & Tansu Ketten, 17–34. Ankara: Uğur Mumcu Vakfı.

Atton, Chris. 2002. *Alternative Media*. London: Sage Publications.

Bailey, Olga Guedes., Cammaerts, Bart. & Carpentier, Nico. 2007. *Understanding Alternative Media*. London: Open University Press.

Bali, Rifat. 2011. *Tarz-ı Hayattan Life Style'a*. İstanbul: İletişim.

Baltacı, Ali. 2019. "Nitel Araştırma Süreci: Nitel Bir Araştırma Nasıl Yapılır" *Ahi Evran Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 5 (2): 368–88. <https://doi.org/10.31592/aeusbed.598299>.

Baytar, Orhan. 2013. *Medya Ekonomisine Bakış*. Konya: Çizgi.

Ceyhan, Çağdaş. 2009. "Medyada Alternatif Bir Hal: 'Ahalî' ve Karşıt Kamusalılık." *Kurgu: Online International Journal of Communication Studies* 22 (1): 176–209. <https://dergipark.org.tr/tr/pub/kurgu/issue/59550/856650>.

Creswell, John. 2015. *Nitel Araştırma Yöntemleri*. Ankara: Siyasal.

Coşkun, Gülçin. 2020. "Media Capture Strategies in New Authoritarian States: The Case of Turkey." *Publizistik* 65: 637–654. <https://doi.org/10.1007/s11616-020-00600-9>.

Çetin, Beyzade Nadir. 2019. "Üretüketim Olgusu Bağlamında Örtülü Emek Olarak Dijital Üretüketici Emeği." *Sosyal Siyaset Konferansları Dergisi* 77: 349–82. <https://doi.org/10.26650/jspc.2019.77.0099>.

Çevikel, Tolga. 2023. "Türkiye'de Dijital Doğumlu Haber Sitemleri: Sınırlılıklar ve Olanaklar." *İçinde Anaakım Çökerken Alternatif Medyanın Eleştirisi*, 91–110. Ankara: Uğur Mumcu Araştırmacı Gazetecilik Vakfı.

Çoban, Barış. & Ataman, Bora. 2015. "Türkiye'de Alternatif Medya." *İçinde Direniş Çağında Türkiye'de Alternatif Medya*, 9–52. İstanbul: Epsilon.

Doğanay, Ülkü. & Kara, İlkay. 2025. "Mediating Protest: Gezi Resistance and the Evolving Ecology of Video Activism in Turkey." *Journalism and Media* 6 (3): 1–23. <https://doi.org/10.3390/journal-media6030095>.

Downing, John., Ford, Tamara. Gil, Genève. & Stein, Laura. 2001. *Radical Media: Rebellious Communication and Social Movements*. London: Sage Publications.

Downing, John. 2003. "Audiences and Readers of Alternative Media: The Absent Lure of The Virtually Unknown." *Media, Culture & Society* 25 (5): 625–45. <https://doi.org/10.1177/01634437030255004>.

Durdu, Zafer. 2024. "Dijital Demokrasi: Olanaklar ve Riskler." *Sosyolojik Bağlam Dergisi* 5 (3): 504–30. <https://sosyolojikbaglam.org/wp-content/uploads/2024/12/durdu-2024.pdf>.

Erimli, Alparslan. & Özçağlayan, Mehmet. 2023. "Alternatif Medya Kavramı Tartışmaları Ekseninde Türkiye'deki Ağ Tabanlı Alternatif Medya Üzerine Bir İnceleme." *Düşünce ve Toplum Sosyal Bilimler Dergisi* 5 (2): 99–118. <https://doi.org/10.55796/dusuncevetoplum.1284758>.

Esen, Berk. & Gümüşcü, Şebnem. (2016). "Rising Competitive

- Authoritarianism in Turkey." *Third World Quarterly* 37 (9): 1581-1606. <https://doi.org/10.1080/01436597.2015.1135732>.
- Fuchs, Christian. 2010. "Alternative Media as Critical Media." *European Journal of Social Theory* 13 (2): 173-92. <https://doi.org/10.1177/1368431010362294>.
- Gazete Duvar. 2025. <https://www.gazeteduvar.com.tr/> [accessed on 22 March 2025].
- Gazete Duvar. 2025. <https://www.gazeteduvar.com.tr/google-basina-sansur-gorunurlugu-engelliyor-haber-1735452> [accessed on 10 January 2025].
- Gazete Pencere. 2025. <https://www.gazetepencere.com/> [accessed on 27 March 2025].
- Gürel, Nail. 2001. <https://bianet.org/haber/nail-gureli-2-bin-gazeteci-issiz-853> [accessed on 15 February 2025].
- Habermas, Jürgen. 2013. *Kamusal alanın Yapısal Dönüşümü*. İstanbul: İletişim.
- Harcup, Tony. 2005. "I'm Doing This to Change The World: Journalism in Alternative and Mainstream Media." *Journalism Studies* 6 (3): 361-74. <https://doi.org/10.1080/14616700500132016>.
- Journo. 2025. <https://journos.com.tr/> [accessed on 3 March 2025].
- Kaptan, Yeşim. 2025. "Continuity and Change in the State-sponsored Information Warfare: Disinformation, Propaganda and Fake News." *Interdisciplinary Media and Communications Studies* 2 (3): 20-41. <https://dergipark.org.tr/en/pub/imcs/issue/92120/1567437>.
- Kaya, Murat. (2010). "İnternet Gazetelerinde Okuyucu Yorumları ve İnteraktif İletişim." Yayınlanmamış Yüksek Lisans Tezi, İstanbul Üniversitesi.
- Keten, Emre. Tansu. 2023. "Krizi Fırsata Çevirmek: Türkiye'de Girişimci Gazetecilik." İçinde *Anaakım Çökerken Alternatif Medyanın Eleştirisi*, 61-89. Ankara: Uğur Mumcu Araştırmacı Gazetecilik Vakfı.
- Kızılkaya, Emre. & Ütücü Burak. 2021. *Türkiye Digital Media Report*. <https://freeturkeyjournalists.ipi.media/tr/ipi-turkiye-dijital-medya-raporu/> [accessed on 12 March 2025].
- Malterud, Kirsti, Siersma, Volkert Dirk. & Guassora, Ann Dorrit. 2016. "Sample Size in Qualitative Interview Studies: Guided by Information Power." *Qualitative Health Research* 26(13): 1753-1760. <https://doi.org/10.1177/1049732315617444>.
- Mora, Necla. 2008. "Medya, Toplum ve Haber Kaynağı Olarak Sembolik Seçkinler." *Uluslararası İnsan Bilimleri Dergisi* 5 (1): 1-25. <https://files.core.ac.uk/download/pdf/268072159.pdf>.
- Nicoli, Nicholas., Maniou, Theodora., & Giomelakis, Dimitrios. (2025). "Platform dependency of news media across different media systems: An institutional comparative study of the United Kingdom and Greece." *Journal of Digital Media & Policy*. https://doi.org/10.1386/jdmp_00183_1
- Özçetin, Burak., Arslan, Tümay. & Binark, Mutlu. 2012. "Türkiye'de İnternet, Kamusal alan ve Demokratik Kanaat Oluşumu." *Folklor ve Edebiyat Dergisi* 18 (72): 51-76. <https://dergipark.org.tr/tr/pub/fe/issue/26037/274234>.
- Özçetin, Burak. 2019. *Kitle İletişim Kuramları*. İstanbul: İletişim.
- Özgür, Ahmet. 2025. "Medya Sahipliği: 100 Haber Kuruluşu ve Gazetecilik Dışı Sektörlerdeki Yatırımlar." <https://journos.com.tr/medya-sahipligi-2025> [accessed on 12 May 2025].
- Sandoval, Marisol. & Fuchs Christian. 2010. "Towards a Critical Theory of Alternative Media." *Telematics and Informatics* 27: 141-50. <https://doi.org/10.1016/j.tele.2009.06.011>.
- Sandoval, Marisol. 2009. "A Critical Contribution to the Foundations of Alternative Media Studies." *Kurgu: Online International Journal of Communication Studies* 22 (1): 1-18. <https://dergipark.org.tr/tr/pub/kurgu/issue/59550/856639>.
- Santana, Maaika. & Carpentier Nico. 2010. "Mapping the Rhizome: Organizational and Informational Networks of Two Brussels Alternative Radio Stations." *Telematics and Informatics*. 27: 162-76. <https://doi.org/10.1016/j.tele.2009.07.003>.
- Schneiders, Pascal., & Stark, Birgit. 2025. "Ensuring News Quality in Platformized News Ecosystems: Shortcomings and Recommendations for an Epistemic Governance." *Media and Communication* 13, Article 10042. <https://doi.org/10.17645/mac.10042>
- Şahin, Muzaffer. & Şahin, Gökçe. 2016. "Geleneksel Medyanın Yeni Rakibi: Yeni Medya ve Canlı Yayınlar." *Yeni Medya Dergisi* 1: 50-63. <https://dergipark.org.tr/tr/pub/yenimedya/issue/55557/760554>.
- T24. 2025. <https://t24.com.tr/> [accessed on 29 March 2025].
- Taylan, Ahmet. 2008. "Ana Akıma Tabandan Bir Yanıt: Alternatif Gazetecilik." *İletişim Araştırmaları Dergisi* 6 (2): 107-44. <https://www.idealonline.com.tr/IdealOnline/lookAtPublications/paper-Detail.xhtml?uld=15798>.
- Tuğla, Kader. 2014. "Türkiye'de İnternet Geleneksel Medyadan Daha Demokratik ve Alternatif Bir Haber Ağı Sunuyor mu: T24 Örneği." *Global Media Journal* 4 (8): 305-24. <https://globalmediajournaltr.yeditepe.edu.tr/tr/bahar-2014-sayisi>.
- Uslu, Fatih. & Demir, Erdi. 2022. "Nitel Bir Veri Toplama Tekniği: Derinlemesine Görüşme." *Hacettepe Üniversitesi Edebiyat Fakültesi Dergisi* 40 (1): 289-99. <https://doi.org/10.32600/huefd.1184085>.
- Ülkü, Onur. 2017. "Muhallif Bir Medya Pratiği Olarak Halk TV Örneği." Yayınlanmamış Yüksek Lisans Tezi, Doğu Üniversitesi, İstanbul.
- Ünal, Recep. 2015. "Haber Üretimine Yurttaş Katılımı." Yayınlanmamış Doktora Tezi, Marmara Üniversitesi, İstanbul.
- Yalçın, Hacer. 2022. "Bir Araştırma Deseni Olarak Fenomenoloji." *Anadolu Üniversitesi Sosyal Bilimler Dergisi* 22 (2): 213-32. <https://doi.org/10.18037/ausbd.1227345>.
- Yıldırım, Ali. & Şimşek, Hasan. 2011. *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*. Ankara: Seçkin.
- Yücel, Alev. 2025. "Hybrid Digital Authoritarianism in Turkey: The 'Censorship Law' and AI-Generated Disinformation Strategy." *Turkish Studies* 26 (1): 1-27. <https://doi.org/10.1080/14683849.2024.2392816>.
- Yüksek, Derya. 2015. "Alternatif Medya ve Direniş Kültürü Sosyal Hareketlerde Birleştirici Güç Olarak Alternatif Medya." İçinde *Direnış Çağında Türkiye'de Alternatif Medya*, 53-78. İstanbul: Epilson.
- Zihnioğlu, Özge. 2023. "Strategizing Post-Protest Activism in Abeyance: Retaining Activist Capital under Political Constraint." *Social Movement Studies* 22 (1): 122-137, <https://doi.org/10.1080/14742837.2021.2003193>.

Internal Marketing and Organizational Identification in Services: An Empirical Study

Sibel Aybar* / Asst. Prof. Dr. 

İstanbul Gelişim University, İstanbul Gelişim Vocational School, Department of Administration and Organization
siboaybar@gmail.com

Murat Başal / Asst. Prof. Dr. 

İstanbul Gelişim University, İstanbul Gelişim Vocational School, Department of Administration and Organization
mbasal@gelisim.edu.tr

*Corresponding Author

Abstract

The service sector, known as the third industrial sector, focuses on providing intangible services rather than physical products. However, internal marketing has emerged as a critical strategy, defined as a company's approach to treating its employees as internal customers and delivering its core services to them as well. This approach significantly bolsters employee identification with the organization, fostering alignment between personal expectations and corporate goals. Consequently, internal marketing underpins fundamental business successes, enhances employee retention, and elevates service quality through heightened motivation. Employees who internalize the company's customer value proposition generate positive outputs that enrich organizational culture. This research aims to evaluate employee organizational identification levels based on internal marketing activities in Istanbul-based service sector firms. Data were collected from 420 participants, primarily service sector employees, using validated organizational identification and internal marketing scales—covering sub-dimensions such as healthy work

environment, employee development, selection, recruitment, rewards, and motivation—alongside demographic questions.

Employing cross sectional, regression analysis, and t-tests, the study uncovered a positive and significant relationship between internal marketing and organizational identification. Positive significant associations were found with sub-dimensions including healthy work environment, employee development, selection, rewards, and motivation. In contrast, personnel recruitment exhibited a negative significant relationship. Key conclusions highlight the healthy work environment's substantial impact on identification. Overall, regression and t-test results affirm that internal marketing positively influences organizational identification among service sector employees, offering implications for HR practices.

Keywords: Service Sector, Internal Marketing, Organizational Identification, Employees.

JEL Codes: M12, M31, M54, D23

Citation: Aybar, S. & Başal, M. (2026). Internal marketing and organizational identification in services: An empirical study. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Industrialization and manufacturing-oriented productivity growth have historically been treated as the primary drivers of economic expansion. However, as global economic structures evolved, the limitations of manufacturing-centered development models became increasingly apparent, paving the way for the service sector to emerge as an alternative engine of growth. Particularly in industrialized economies following World War II, the service economy transformed from merely a supplementary sector into a domain offering unique opportunities for sustainable income growth and long-term development.

The service sector is distinguished by features such as intangibility, simultaneity of production and consumption, variability, and perishability. These characteristics intensify the role of human labor and interaction in value creation, placing employees at the very center of service delivery. Consequently, organizations have increasingly adopted internal marketing as a strategic approach to enhance employee motivation, commitment, and alignment with organizational objectives. Berry (1981) defines internal marketing as viewing employees as internal customers, arguing that organizations should design internal offerings to satisfy their needs and expectations. By doing so, internal marketing complements traditional human resource practices, focusing heavily on internal communication and value alignment to foster higher service quality, customer satisfaction, and employee retention.

An important psychological outcome associated with effective internal marketing is organizational identification. Rooted in social identification theory, this concept refers to the psychological bond individuals develop with their organization. Employees who strongly identify with their workplace internalize its goals and values, perceiving organizational success as part of their own self-concept. This alignment fosters a strong sense of belonging, positively shapes work attitudes such as job satisfaction, and encourages behaviors that support overall organizational effectiveness.

Empirical studies provide substantial evidence regarding the vital role of internal marketing in shaping employee attitudes across various service contexts. Research consistently demonstrates that internal marketing practices significantly enhance job satisfaction, organizational commitment, and person–organization fit (Joung et al., 2015; Thai et al., 2023). Furthermore, effective internal marketing has been linked to improved financial and non-financial performance, including enhanced service quality and customer satisfaction (Pool & Amirbakzadeh, 2017; De Bruin et al., 2021). While management often highlights these practices, their true effectiveness relies on genuinely addressing employee needs rather

than functioning merely as symbolic showcases (Papasolomou-Doukakis & Kitchen, 2004). Additionally, studies have highlighted the mediating roles of job satisfaction and organizational commitment in the relationship between internal marketing and outcomes like organizational identification and job performance (Bailey et al., 2016; Chiu et al., 2020).

Despite this extensive literature, direct examinations of the relationship between internal marketing practices and organizational identification remain limited, particularly from the perspective of frontline employees in consumer-oriented service sectors. Most existing studies address this relationship indirectly or as part of broader conceptual models. Based on this gap, the present study aims to investigate the direct impact of internal marketing practices on employees' organizational identification within the specific context of consumer-oriented service sectors in Türkiye. By focusing on this dynamic emerging market, the research seeks to contribute to a more integrated and culturally contextualized understanding of employee-centered management strategies in modern service organizations.

2. Conceptual Framework

2.1. Service Sector

As often mentioned in the literature, the economy is divided into two main sectors. These are defined as “goods-producing sector” and “service-producing sector”. The importance of the service sector is constantly repeated for reasons such as providing basic services, bringing positive experiences, providing employment opportunities, and acting as an indicator of economic growth (Capello and Fratessi, 2013, p.43-64). This provides many additional benefits to sector employees. One of these benefits is that risks such as job loss, dismissal or closure of the workplace during periods of economic downturn due to factors such as various economic crises, natural disasters, epidemics, migration or war are lower in the service sector compared to other sectors, and this situation offers job security to service sector employees. The service sector enterprises, aiming to develop and grow, are focused on completing the tasks in full and providing quality service. This situation has led researchers and business owners to take a series of measures to increase the qualification rate of service sector employees and to ensure their sustainability.

The service sector, which has a more developed presence in national economies compared to the agricultural and industrial sectors, offers intangible products or services and carries out tasks that are beneficial to customers, buyers, businesses, or the general public (Belgin, 2010, p.112-114). Unlike the manufacturing sector, the service sector, which does

not rely on the sale of tangible products to make a profit, but rather focuses on two-way communication with the consumer, is fundamentally consumer-oriented, either directly or in combination.

The service sector is globally divided into segments, each consisting of several industries. The service sector is highly diverse, with traditional and modern sub-sectors exhibiting different structures. Traditional services (retail trade, hairdressing, repair services) are labor-intensive, local, and low-tech; direct customer interaction is paramount. Modern services (banking, telecommunications, IT consulting), on the other hand, are focused on technology, data analytics, and scalability; digitalization and global competition are dominant. The general category of the service sector is difficult to define narrowly as a wide variety of industries make up the sector. Examples of activities that fall within the service sector, also known as the third tier of the economy, encompass services such as advice, experience, and discussion instead of the production of physical goods, and include sales, banking, education, consultancy, insurance, catering, health, home care, after-sales support and storage, data processing, capitalization and investment, scientific, technical, social assistance, art, and entertainment services, among others.

2.2. Internal Marketing

Ensuring sustainable competitive advantage in an environment where competitors are intense is one of the most important objectives of businesses. As this situation is becoming more and more difficult every day, businesses are shifting from a sales-oriented marketing approach where the understanding of "the more I produce, the more I sell" has come to an end, to a modern marketing approach where qualified products produced in a customer-oriented manner should take place. Access to information is currently very easy for both businesses and customers. In this context, businesses have realized that focusing solely on cost reduction and price competitiveness is not sufficient in the long run; they have embraced the necessity of establishing a more holistic and continuous interaction with external environmental factors such as customer expectations, competitive dynamics, and technological developments in order to achieve sustainable success (Vel, et al., 2019, p.5-27).

Internal marketing is a concept with multiple dimensions and contributes to the efficiency of both manufacturing and service-providing businesses. The personnel handled in internal marketing in terms of functional segmentation in marketing are divided into two groups as front-line and support. While front-line staff refers to the group in direct contact with the customer, sales staff is in the position of selling products to the customer. It can be stated

that internal marketing activities for salespeople, in terms of marketing unit personnel, are aimed at achieving personnel efficiency by guiding them to that effect (Frost and Kumar, 2001, p.371-386).

The increase in the satisfaction rates of employees, who are expressed as internal customers, with their organizations, positively increases the quality of the service provided by the business and the performance of the business. Employee satisfaction, which reveals many positive effects such as quality and business performance of service-oriented organizations, can change as a result of psychological and environmental factors (Chi and Gursoy, 2009, p. 245-253). Studies on employee satisfaction in the literature indicate that employees should have a higher priority than customers (Rosenbluth, 1994, p. 227). There seems to be a dominant idea that if employees are happy, satisfied, and dedicated to their work, it will lead to the satisfaction of the stakeholders of the business and the customers receiving service-oriented organizations (Bansal et al., 2001, p. 61-76). Skilled personnel are considered an important asset for gaining a competitive advantage. The primary point to be considered for customer satisfaction and loyalty is that the employees within the enterprise should be happy and their needs should be met (Ahmed and Rafiq, 2003, p. 1177-1186). Another important point to be mentioned here is that more customers can be obtained as a result of internal marketing activities. Therefore, it can be considered an important output that the investments made in employees through internal marketing activities will result in higher employee loyalty.

During the production process, testing the product by internal customers and then sending it to the market for sales will offer the company privileges in many areas, such as time, quality, and price. Having control over the problems that may occur before the product is tried by the consumer during the production phase will also eliminate the dissatisfaction that will occur as a result of the problems experienced by the customers. In addition, offering the product to the employees below the market price will make the employees feel that they are being privileged, and this will increase their motivation and satisfaction level (Arslanoğlu et al. 2020, p.22-34).

To briefly mention the variables that should be considered as a whole during the implementation of internal marketing (Urk, 2015);

- **Reward and motivation:** It is defined as the process of developing policies and systems to increase employees' tendency to stay in the organization in order to achieve organizational goals (Wasiu and Adebajo, 2014, p. 16)
- **Effective communication:** Creating an awareness of mutual responsibility through the development of a two-way communication system

among employees ensures both efficiency and the improvement of the quality of service-oriented organizations provided to consumers, i.e., external customers (Maglajlic et al., 2018, p. 292)

- Selection and recruitment of candidates: In this process, although choosing the most suitable candidates and placing them in the right areas is considered as a factor affecting the success of the business, it can be stated that the human resources department significantly affects the success of the business by developing various candidate evaluation tests in order for the process to proceed in a proper way.
- Training and development: It refers to supporting the career development of personnel who are placed in positions appropriate to their job content and competencies through various training and development programs.
- Support systems: It refers to the necessity of managing all resources with a proactive approach by means of business facilities that enable employees to fulfill their responsibilities and to master technological records, such as all the information and documents, databases and digital archives they need (Urk, 2015, p. 44-45).
- Healthy working environment: It refers to the provision of health and safety facilities to the employee by the enterprise through providing occupational health and safety facilities that enable employees to have ergonomic working conditions.

In internal marketing, treating employees as customers and implementing a number of training and developmental activities increases employee satisfaction and reduces employee turnover (Wu et al., 2013, p. 436-449). In the literature, it is argued that internal marketing contributes to organizational change and as a result, practices such as support, cooperation, employee engagement, and social and environmental responsibilities become prioritized in the business (Cassundé et al., 2015, p. 49-71). The internal marketing approach allows employees to view their coworkers as internal customers rather than colleagues in order to spread marketing responsibility throughout the organization.

Service-oriented organizations have experienced enduring transformation as a result of the pressure of the competitive environment and the ability to act flexibly, and this change is actually an important opportunity for the sector. The opportunities created by this challenging process, which will continue in the future, will also manifest themselves as utilization for the interest of employees, customers, shareholders, society, and management (Greene et al., 1994, p. 5-13).

The bond of success between the business and its customers will be possible through the effective

guidance of the exchange between the personnel group and itself (Kelemen & Papasolomou, 2007, p. 746-768). The main point to be comprehended in the section stated so far is that the basic situation in internal marketing is to ensure the effective continuity of the internal change element to be experienced between the organization and the employee. Therefore, it will be possible to achieve the desired target in the market (Bak et al., 1994, p. 37-47).

Kotler (1994) categorizes marketing in service-oriented organizations under three headings as follows (Çoban, 2004, p. 85-98):

- External marketing is the relationship between the consumer and the business.
- Internal marketing is the relationship between the employee and the business.
- Interactive marketing is the relationship between the employee and the consumer.

In their joint study "Expanding the concept of marketing", Kotler and Levy (1969, p.10-15) argued that the concept of marketing should be defined as a comprehensive concept that includes physical products, services, employees, organizations, and ideas beyond the basic activities of businesses expecting profit. The target is no longer only the external customer. The employees of the business are also included in the field of activity of the marketing department and the scope has been expanded (Jean & Colette, 2020, p. 27-36).

2.3. Organizational Identification

The concept of organizational identity is frequently discussed in management literature because it is an effective factor in establishing a psychological bond between a company and its employees. (Edwards, 2005, p.207-230). Freud, one of the pioneers of the term identification, defines this concept as the emotional closeness of the parties to each other. Although the similarity network here is expressed as managing the emotional bond with other members of the organization, it is stated that people tend to identify within the group and try to classify the life around them in order to regulate their own actions (Edwards, 2005, p. 209-230). Organizational identification occurs when employees perceive themselves as a part of the organization, regardless of whether the organization is experiencing positive or negative circumstances. If the employee is behaviorally supported within the organization, he/she establishes a bond with the organization (Turunç and Çelik, 2010, p. 183-206). Where there is identification, employees are able to work together and have a team spirit. But it may not be entirely accurate to call it merely cooperative activity. At its core is a sense of reciprocity of expectation and giving behavior (Gossett, 2002, p. 385-404). Organizational identification has a ver-

satire importance in modern business life. The concept of organizational identification is an important subject in organizational behavior studies. Due to the perceived precious value of citizenship in businesses, it is associated with positive outcomes like performance, motivation, and satisfaction. Besides, it has been suggested that when employees exhibit cynical attitudes, their sense of organizational identification decreases (Kerse and Karabey, 2017, p. 383) and there is a negative relationship with turnover (Aslan and İnce, 2019, p. 479-502). If a person identifies with his/her organization during career planning, and also identifies with the organization itself, he or she will not prefer to leave the current organization, even if he or she is offered better opportunities than his/her current situation. The important point in this case is that the goals of the employee and the goals of the organization, personal values and organizational values are in harmony. While the perception of having a fair environment and effective leadership understanding within the enterprise will facilitate this process, attitudes and perceptions are also considered as important values for identification within the organization (Carmeli et al., 2007, p. 972-992).

3. Purpose, Method and Findings of the Research

3.1. Purpose and Method

This study primarily aims to determine the extent and direction of how internal marketing activities implemented in service sector businesses affect employees' levels of organizational identification. The research focuses on examining how employees' self-perception as part of the organization is shaped by internal marketing practices, using quantitative data. In this context, internal marketing is considered the independent variable, and organizational identification is considered the dependent variable; the relationship between the two variables is tested using linear regression analysis. The findings are evaluated in light of theoretical and empirical studies in the literature and interpreted within the context of the service sector.

In line with the objective of this research, hypotheses were formulated and are presented below to empirically test the relationship between internal marketing practices and employees' levels of organizational identification. The main hypothesis of this study is based on the assumption that internal marketing practices, taken as a whole, have a significant impact on employees' levels of identification with the organization. The sub-hypotheses were developed to determine through which dimensions of

internal marketing this effect occurs.

H0: Internal marketing practices have no effect on organizational identification.

H1: Internal marketing practices have an effect on organizational identification.

H0: Independent variables have no effect on organizational identification.

H1: Independent variables have an effect on organizational identification.

H0: Healthy working environment has no effect on organizational identification.

H1: Healthy working environment has an effect on organizational identification.

H0: Employee development has no effect on organizational identification.

H1: Employee development has an effect on organizational identification.

H0: Reward and motivation have no effect on organizational identification.

H1: Reward and motivation have an effect on organizational identification.

H0: Personnel recruitment has no effect on organizational identification.

H1: Personnel recruitment has an effect on organizational identification.

H0: Employee selection has no effect on organizational identification.

H1: Employee selection has an effect on organizational identification.

Parameter estimates in linear regression analysis were made by the Least Squares Method. According to the Least Squares Method, the dependent variable values obtained from the sample regression model should be as close as possible to the observed dependent variable values (Gujarati and Porter, 2018, p. 56). This can be achieved by finding the parameter values that minimize the sum of residual squares. If the residual squares are minimum, the estimated parameters are the best, linear, and bias-free estimates. The explanatory power of the estimated regression model is also important (Stock and Watson, 2012, p. 161). The salience coefficient calculated in this context expresses the proportion of the change that can be explained by regression within the total change in the dependent variable. In addition, the determinants of gender, marital status, age, education and income were also analyzed to identify the effect of demographic variables on the model. The SPSS package program is used for the analysis of the collected data. Within this framework, and consistent with the study's hypothesis, the model developed for this study is as follows (Figure 1).

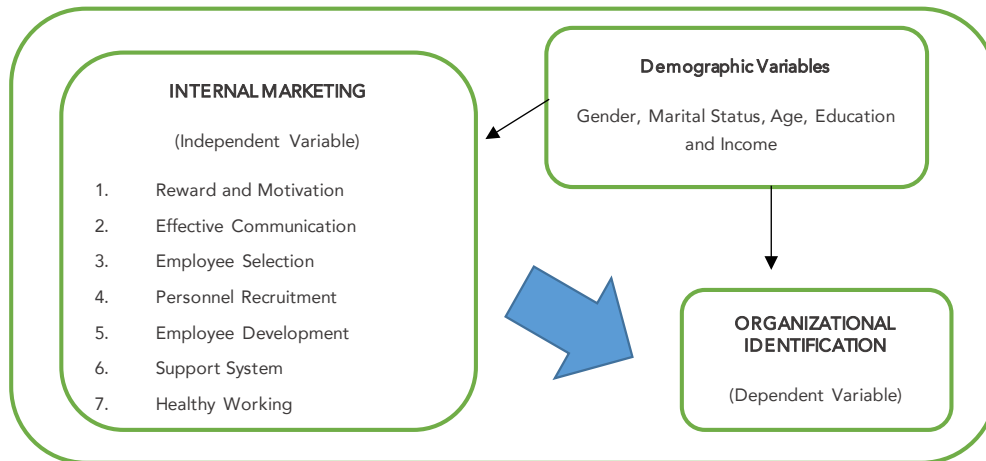


Figure 1. The Model of the Research

While preparing this model, first of all, literature research was conducted to identify the gaps in the relevant literature, and then the hypothesis was formed through the accessed studies. The relationships in the variables in this model are considered as a whole.

3.2. Population and Sample of the Study

The service sector encompasses economic activities that provide various services to individuals or businesses rather than producing tangible goods. This sector generally includes areas not directly involved in goods production and emphasizes customer satisfaction, experience, and interaction. The traditional service sector consists of industries reliant on physical locations and characterized by intensive face-to-face interactions with customers, as well as labor-intensive processes (e.g., restaurants, hotels, banks). In contrast, the modern service sector includes services driven by digitalization and technology, often delivered through automation and online platforms (e.g., e-commerce, cloud-based software). These two subcategories differ in their methods of service delivery and the nature of employee-customer interactions, offering a framework for the contextual interpretation of research findings. The sample of this study consists of individuals working in hotel, restaurant, and banking enterprises of the traditional service sector in Istanbul. In December 2024, a total of 15,596,000 paid employees were employed across Turkey's traditional service sector (hotels, restaurants, banking, etc.) (TÜİK, 2025). The service sector accounts for 55.5% to 59.0% of total employment. Istanbul's share in this sector is around 25%, estimated at approximately 3.5 million people. A convenience sampling method was preferred in determining the sample, taking into account the scope, time, and accessibility limitations of the study. This method allows the inclusion of individuals who are directly involved in the data generation process until a sufficient sample size is reached (Rangaswamy, 1995, p. 220). Within this a total of 425 qu-

estionnaires were administered, and after excluding five questionnaires due to incomplete or inconsistent responses, the analyses were conducted based on data obtained from 420 participants. The sample size was considered sufficient in terms of sensitivity and reliability levels, as well as the size of the population and the number of observation units. Given the population size ($N \approx 3.5$ million), with a 95% confidence level and 5% margin of error, the required minimum sample size ($n \approx 384$) has been exceeded (Yamane, 1967). Additionally, sample sizes between 300-500 are considered "good to very good" for descriptive and correlation analyses, making the 420 participants statistically adequate (Comrey & Lee, 1992).

Considering the characteristics of the sample, it should be noted that the service sector is a labor-intensive field where employees are in continuous interaction with customers and organizational processes. Therefore, the perceptions of employees included in the sample regarding internal marketing practices and organizational identification are shaped not only by organizational policies but also by their daily work experiences, emotional labor, and interpersonal relationships. This contextual feature of the sample provides a meaningful basis for interpreting the research findings, particularly those related to psychological attachment and identification.

3.3. Data Collection Instruments and Scales

This study adopted a quantitative research method and used a structured questionnaire as a data collection tool. The questionnaire used in the research was not taken directly from a ready-made questionnaire; rather, it was created by combining scales whose validity and reliability have been proven in the literature, in line with the purpose of the study. In other words, a separate and independent questionnaire was not developed in this study; the data collection tool was prepared by integrating existing scales.

The questionnaire consists of three sections. The first section contains questions aimed at determining the demographic characteristics of the parti-

cipants. This section includes a total of five questions covering gender, marital status, age, education level, and occupation information. These questions were prepared to define the structure of the sample and to be used as control variables in the analyses.

In the second section, the Internal Marketing Scale was used to measure internal marketing practices in service businesses. The scale was developed by ElSamen and Alshurideh (2012) and adapted into Turkish by Urk (2015). The Internal Marketing Scale consists of seven sub-dimensions: reward and motivation, effective communication, employee selection, personnel recruitment, employee development, support system, and healthy work environment. The scale form used in the study consists of a total of 32 items. The validity and reliability analyses of the scale were reported in detail in the thesis study conducted by Urk (2015). In this study, it was also observed that the Cronbach's Alpha internal consistency coefficients for the sub-dimensions were above acceptable levels.

In the third section of the survey form, the Organizational Identity Scale was used to measure the level of organizational identification. This scale was developed by Mael and Ashforth (1992) and adapted into Turkish by Tak and Aydemir (2004). The scale form is unidimensional and consists of six items. In the present study, the Cronbach's Alpha internal consistency coefficient of the scale was calculated as 0.87, and it was concluded that the scale is reliable.

All statements in the survey form were arranged using a five-point Likert scale to measure the perceptions and attitudes of the participants. The scaling was rated between "Strongly Disagree" (1) and "Strongly Agree" (5). Prior to the implementation

of the survey, a pilot study was conducted with 40 participants to test the comprehensibility of the statements and the functionality of the measurement tool. The pilot study showed that the statements were clear and understandable, and no changes were needed to the survey form.

Data collection was conducted online; the survey form was prepared using the Google Forms platform. Participants were contacted via online link, and data was collected in February 2023 over a period of approximately one month. Ethical committee approval was obtained before the start of the research, and the necessary permissions for the scales used were also obtained from the authors.

Despite time and cost constraints, it is considered that conducting the study within the context of the service sector will contribute to the literature by providing empirical evidence on the relationship between internal marketing practices and organizational identification.

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) 25.0 software. Explanatory and confirmatory factor analyses, structural equation modeling, and validity and reliability tests were applied. These analyses enabled the evaluation of relationships between variables while taking into account the structural characteristics of the sample.

3.4. Findings

This part of the study analyzes the demographic data as well as the evaluation status of the scales and presents the results of the findings obtained from the study.

Table 1. Descriptive Statistics Related to Internal Marketing Variable.

Series	IC
Sample	1 402
Observations	402
Mean	3.587065
Median	3.718750
Maximum	5.000000
Minimum	1.000000
Std. Dev.	0.811110
Skewness	-0.490510
Kurtosis	3.015859
Jarque-Bera	16.12441
Probability	0.000315

As a result of the method used to evaluate the conformity of the data obtained with this statistical hypothesis testing technique according to the normal

distribution, the Jarque-Bera statistic probability value is less than 0.05 and does not fit the normal distribution. $0.000315 < 0.05$.

Table 2. Descriptive Statistics for Organizational Identification Variable

Series	OZ
Sample	1 402
Observations	402
Mean	3.753317
Median	4.000000
Maximum	5.000000
Minimum	1.000000
Std. Dev.	0.8288805
Skewness	-0. 915557
Kurtosis	3.690403
Jarque-Bera	64.146441
Probability	0.000000

The probability value of the Jarque-Bera test statistic is less than 0.05 and does not fit a normal distribution. $0.000000 < 0.05$.

If it does not correspond to a normal distribution,

the estimates will still be bias-free and have the smallest variance because the assumption of normality is not required to apply the GAUSS-MARKOV theorem (DESTE) (Gujarati and Porter, 2018, s. 509).

Table 3. Reliability Coefficient Findings for Internal Marketing Scale Items

Dimensions	F1	F2	F3	F4	F5	F6	F7	Scale
Eigen value	16.847	2.538	1.754	1.357	1.245	1.053	.753	
Explained Variance	20.456	14.397	12.449	10.430	8.837	7.695	5.569	79.833
Cronbach's Alpha	.910	.872	.914	.861	.804	.763	.837	.970

(KMO: 0.912; Bartlett test: Chi-square: 14418.692; p: 0.000)

Table 3 provides the reliability coefficients for the Internal Marketing Scale. Overall, Bartlett's test confirms the suitability of factor analysis for these items, while the KMO value verifies adequate sample size.

Eigenvalues and explained variance ratios further support structuring into seven dimensions statistically. Moreover, all sub-dimensions exhibit high reliability.

Table 4. Reliability Coefficient Findings for Organizational Identification Scale Items

Statistics and test information about the dimension	
Eigen value	3.734
Explained variance (%)	62.233
KMO	.869
Cronbach's Alpha	.877
Bartlett's Test	1149.313 (p=0.000)

Reliability coefficient findings for the Organizational Identification Scale are given in Table 4. In summary, Bartlett's test indicates that applying factor analysis to the items would be the right decision and should be done, and the KMO coefficient indicates that the sample size is sufficient for factor analysis. Eigenvalue

and explained variance ratio values support that expressing the items as a single dimension is a statistically appropriate decision. In addition, the reliability of the Organizational Identification scale was found to be high.

3.5. Demographic Information

Table 5. Frequency Distribution of the Respondents According to Their Demographic Information

		Number	Percent
Gender	Female	217	54.0
	Male	185	46.0
Marital Status	Married	160	39.8
	Single	242	60.2
Age Group	18-22 years old	231	57.5
	23-32 years old	72	17.9
	33-42 years old	75	18.7
	43-49 years old	24	6.0
Education	Primary	35	8.7
	High School	143	35.6
	Associate deg.	159	39.6
	Bachelor's degree	65	16.2
Income	0-5,500 TL	97	24.1
	5,501-8,500 TL	26	6.5
	8,501-11,500 TL	96	23.9
	11,501- 14,500 TL	48	11.9
	14,501 TL and above	135	33.6
Total		402	100.0

Table 5 presents the frequency distribution of participants' demographic characteristics. The results indicate that 54% were female and 46% male; 39.8% married and 60.2% single. Age group distribution shows 57.5% in 18-22, 17.9% in 23-32, 18.7% in 33-42, and 6% in 43-49. For education, 8.7% have primary

schooling, 35.6% high school, 39.6% associate's degree, and 16.2% bachelor's degree. Monthly income levels: 24.1% at 0-5,500 TL, 6.5% at 5,501-8,500 TL, 23.9% at 8,501-11,500 TL, 11.9% at 11,501-14,500 TL, and 33.6% at 14,501 TL and above.

3.6. Scale Statistics

Table 6. Descriptive Statistics for Organizational Identification Scale, and Internal Marketing Scale and Its Sub-Dimensions

Dimension/Scale	Mean	Std. Deviation
Reward and Motivation,	3.49	0.888
Effective Communication,	3.55	0.951
Employee Selection,	3.44	1.085
Personnel Recruitment,	3.39	0.982
Employee Development,	3.75	0.862
Support System,	3.81	0.855
Healthy Working Environment	3.84	0.818
Internal Marketing Scale	3.59	0.811
Organizational Identification Scale	3.75	0.829

Descriptive statistics for the Organizational Identification Scale, and the Internal Marketing Scale and its sub-dimensions are given in Table 6. When we examine the averages, we realize that the highest average is in the Healthy Working Environment su-

b-dimension of the Internal Marketing Scale with 3.84, and the lowest average is in the Personnel Recruitment sub-dimension of the Internal Marketing Scale with 3.39.

3.7. Analysis of the Relationship Between Organizational Identification and Internal Marketing Variables

Table 7. Correlation Analysis Findings for the Relationship Between Organizational Identification and Internal Marketing Scale and Its Sub-Dimensions

		(X1)	(X2)	(X3)	(X4)	(X5)	(X6)	(X7)
Reward and Motivation (X1)	Pearson Correlation	1	.769**	.708**	.732**	.723**	.717**	.667**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000
Effective Communic. (X2)	Pearson Correlation	.769**	1	.773**	.713**	.762**	.711**	.628**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000
Employee Selection (X3)	Pearson Correlation	.708**	.773**	1	.890**	.842**	.721**	.687**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000
Personnel Recruitment (X4)	Pearson Correlation	.732**	.713**	.890**	1	.827**	.722**	.725**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000
Employee Developm. (X5)	Pearson Correlation	.723**	.762**	.842**	.827**	1	.770**	.672**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000
Support System (X6)	Pearson Correlation	.717**	.711**	.721**	.722**	.770**	1	.743**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000
Healthy Working Environ. (X7)	Pearson Correlation	.667**	.628**	.687**	.725**	.672**	.743**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	

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

Table 7 presents the results of the correlation analysis conducted to examine the relationships among the internal marketing sub-dimensions. The findings indicate that all sub-dimensions are positively and statistically significantly correlated with each other at the 0.01 level. This result suggests that internal marketing practices in service organizations operate in a complementary and interconnected manner rather than as isolated managerial activities. In particular, strong correlations between employee selection,

personnel recruitment, and employee development point to the structural coherence of human resource practices. In service-sector settings, where service quality is largely shaped by employee behavior, such interrelated practices may reinforce employees' perceptions of organizational consistency and fairness. Overall, the correlation results confirm that the internal marketing scale has a coherent structure and that its sub-dimensions move in the same direction.

Table 8. Linear Regression Model Findings of Organizational Identification Variable and Internal Marketing Variable

	Regression coefficients	Standard regression coefficients	t	p
Fixed	1.269		9.188	0.000
Internal Marketing	0.692	0.678	18.431	0.000
R	R square		F	p
0.678	0.459		339.689	0.000

Table 8 shows the linear regression model created by taking the explanatory variable (independent variable) the opinion about the Internal Marketing variable and the explained variable (dependent

variable) Organizational Identification. Table 8 presents the findings of the simple linear regression analysis examining the effect of internal marketing on organizational identification. The results show

that the regression model is statistically significant, indicating that internal marketing is a meaningful predictor of organizational identification. The adjusted R^2 value demonstrates that internal marketing explains a substantial proportion of the variance in organizational identification. This finding suggests that employees' perceptions of internal marketing practices play an important role in shaping their sense of belonging and identification with the organization. Moreover, the positive regression coefficient indicates that as internal marketing practices increase, organizational identification also increases. This result supports the view that internal marketing functions as a strategic mechanism that strengthens employee–organization relationships in service enterprises. According to the ANOVA test, the model was found statistically significant. In addition, the model's salience coefficient (adjusted) was calculated

as 0.459. Accordingly, 45.9% of the variability in the Organizational Identification variable is explained by the Internal Marketing variable through the linear regression model. In addition, as shown in the correlation coefficient between the two variables (0.678) and the scatter plot in Figure 2, the relationship between the variables is a positively linear. Based on the t-test results evaluating the significance of the regression coefficients, both coefficients are statistically significant. According to these findings, the regression line is estimated as follows:

$$(\text{Organizational Identification}) = 1.269 + 0.692 * (\text{Internal Marketing})$$

According to the standard regression coefficient, it is estimated that a one-unit increase in the Internal Marketing variable leads to an increase of 0.692 in the Organizational Identification variable.

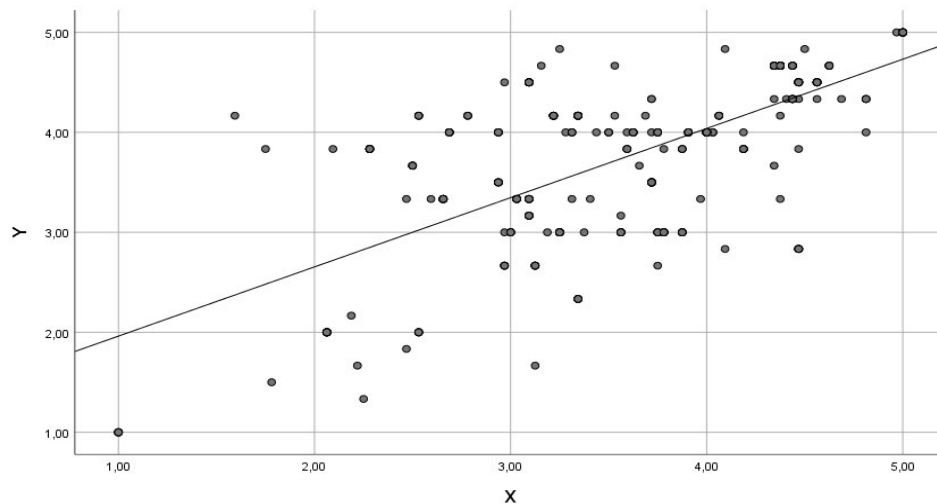


Figure 2. Scatter Plot and Estimation of Regression Line for the Relationship between Internal Marketing (=X) and Organizational Identification (=Y)

Table 9. Linear Regression Model Findings on The Effect of Internal Marketing Sub-Dimensions on Organizational Identification

	Regression coefficients	Standard regression coefficients	T	p
Fixed	0.786		5.160	0.000
Reward and Motivation,	0.137	0.147	2.443	0.015
Effective Communication,	-0.007	-0.008	-0.126	0.900
Employee Selection,	0.210	0.275	3.213	0.001
Personnel Recruitment,	-0.277	-0.329	-3.947	0.000
Employee Development,	0.269	0.280	3.836	0.000
Support System,	-0.104	-0.107	-1.726	0.085
Healthy Working Environment	0.551	0.544	9.791	0.000
R	R square	Adjusted R square	F	P
0.745	0.555	0.547	70.137	0.000

The linear regression model findings of the effect of Internal Marketing sub-dimensions on Organizational Identification are given in Table 9. According to the findings, the overall regression model is statistically significant, and more than half of the variance in organizational identification is explained by the combined effect of internal marketing dimensions. Among the sub-dimensions, healthy working environment emerges as the strongest predictor of organizational identification. This finding highlights the importance of physical and psychological working conditions, particularly in service sectors where emotional labor and interpersonal interaction are intense. Employee development, employee selection, and reward and motivation also have statistically significant positive effects, indicating that practices related to fairness, growth opportunities, and recognition contribute meaningfully to employees' organizational identification. On the other hand, effective communication and support system dimensions do not show statistically significant effects in the model. This result may suggest that these practices are perceived as basic or expected elements of organizational functioning and therefore do not create additional differentiation in employees' identification levels. Overall, the findings indicate that internal marketing influences organizational identification in a differentiated manner, with environmental and developmental factors playing a more decisive role. The significance of the linear regression model between Organizational Identification and Internal Marketing dimensions was examined by ANOVA test. According to the ANOVA test, the model was found statistically significant. In addition, the adjusted R-square value for the model was calculated as 0.547. This value shows that 54.7% of the Organizational Identification variability is explained by the Internal Marketing dimensions through the linear regression model. The coefficients are statistically insignificant in the Effective Communication and Support System sub-dimensions of the Internal Marketing Scale, and the coefficients are statistically significant in the other dimensions. The F statistic is 0.339 and the probability value is less than 0.05, which means that the model as a whole is significant. In addition, as presented in Table 8, according to the results of the linear regression analysis explaining the relationship between internal marketing and organizational identification, the t statistic probability value is less than 0.05 and it is determined that a one-unit increase in internal marketing increases organizational identification by approximately 0.69 units. This means that there is a statistically significant relationship between the two variables and that each investment in internal marketing increases organizational identification. Similarly, it was also found that each unit increase in the sub-dimensions of internal marketing practices increases organizational

identification. In this context, each one-unit increase in healthy working conditions increased organizational identification by 0.551, one unit increase in employee development increased organizational identification by 0.269, one unit increase in reward and motivation increased organizational identification by 0.137, and one unit increase in employee selection increased organizational identification by 0.210.

4. Conclusions and Recommendations

4.1. Evaluation of the Findings

This study investigates the relationship between internal marketing practices and organizational identification within service sector enterprises. The findings indicate that internal marketing practices offered to employees significantly and positively influence their tendency to identify with the organization, leading to the rejection of the main null hypothesis (H_0). Consistent with existing literature, these practices are associated with critical organizational outcomes such as job satisfaction, emotional attachment, person–organization fit, and enhanced overall performance (Alp, 2022; Elibol, 2023; Kocaman et al., 2013; Yüce & Kavak, 2017).

The positive impact of internal marketing can be strongly explained through the lens of social identity theory (Ashforth & Mael, 1989; Tajfel & Turner, 1986). When organizations value their employees and provide supportive environments, individuals are more likely to integrate emotionally and cognitively, internalizing the organization's successes and values as their own. The findings of this study delineate this process through specific internal marketing dimensions:

Healthy Work Environment: The centrality of a healthy work environment emerges as a strong determinant of organizational commitment. Service employees face high physical and psychological stress due to the human-intensive nature of their work (Schaufeli & Bakker, 2004). Practices that ensure occupational health and safety extend beyond preventing physical injuries; they make employees feel valued as holistic social entities rather than mere productive units (Kahn, 1990; Saks, 2006). This sense of security and value accelerates the internalization of organizational identity.

Employee Development: Training programs, career advancement opportunities, and empowerment initiatives enhance employees' competencies while aligning their personal goals with organizational objectives (London, 2014; Noe, 2017). When employees feel competent and see a clear path for personal growth, their sense of belonging strengthens, facilitating cultural assimilation and long-term commitment.

Reward and Motivation: Fair and transparent reward systems function as critical psychological mechanisms. Grounded in social exchange theory (Blau, 1964), performance-based rewards are perceived not merely as economic incentives but as indicators of organizational appreciation (Deci & Ryan, 2017). Evaluated through principles of justice and equity (Colquitt et al., 2001), these systems build trust, foster collaboration, and consolidate employees' emotional bonds with the organization.

Interestingly, the study revealed nuanced findings regarding other dimensions. The personnel recruitment dimension exhibited a negative relationship with organizational identification. From a social identity perspective, rapid workforce expansion may temporarily dilute existing employees' sense of uniqueness and emotional integration, leading to "expectancy disconfirmation" if post-recruitment socialization is inadequate (Ashforth & Mael, 1992; Bailey et al., 2016). Recruitment merely serves as an "entry gate," and its success heavily depends on subsequent integration practices. Furthermore, the lack of a significant relationship regarding communication and support systems may be attributed to the demographic profile of the participants. Younger employees may perceive these practices as routine corporate requirements rather than unique value-adding initiatives (Ersöz & Çiftçi, 2020; Lings, 2004).

4.2. Conclusion and Implications

This study advances the literature by clarifying the mechanisms through which internal marketing influences organizational identification in the service sector. It demonstrates that when internal marketing practices—particularly the provision of a healthy work environment, developmental opportunities, and equitable rewards—are strategically aligned with employees' expectations, they foster a profound emotional closeness to the organization. Given the fiercely competitive nature of service industries such as health, education, tourism, and banking, treating employees as internal customers is not merely an HR function but a strategic necessity for sustaining service quality and creating competitive advantages.

Managers must approach occupational health, safety, and employee development not as legal or routine obligations, but as strategic tools that foster cultural integration. Furthermore, practices such as recruitment must be carefully managed. To mitigate the potential negative impacts of bringing in new personnel, organizations should implement recognition programs and mentoring systems that continuously validate the contributions of existing staff.

A notable limitation of this study is its demographic composition, as the majority of participants were

young employees aged 18–22 (Generation Z). As younger generations often exhibit different, sometimes more critical, perspectives on organizational practices, the findings predominantly reflect early-career attitudes. Future research should aim for cross-generational samples to enhance generalizability. Additionally, subsequent studies could broaden the explanatory framework by examining moderating variables, such as Person-Organization Fit (POF), across diverse sectors and cultural contexts to better understand the boundary conditions of internal marketing's effectiveness.

Ethical Considerations

Ethics committee approval (04.11.2022 / 2022-16) was obtained from Istanbul Gelisim University Ethics Committee for the purpose of carrying out this study approval.

Conflict of Interest

There is no conflict of interest with any institution or person related to the study.

Financial Support

No support was received from any institution or individual for this study.

References

- Ahmed, P. K., & Rafiq, M. (2003). Internal Marketing Issues and Challenges. *European Journal of Marketing*, 37(9), 1177–1186. <https://doi.org/10.1108/03090560310498813>
- Alp, M. (2022). İçsel pazarlamanın çalışan performansı üzerindeki etkisinde iş tatmini ve algılanan örgütsel desteğin aracı rolü üzerine bir araştırma [Doctoral dissertation, Çanakkale Onsekiz Mart University].
- Arslanoğlu, A., Bektemur, G., & Gemlik, N. (2020). İçsel Pazarlamanın Çalışanların İş Tatmini Üzerine Etkisi. *Sağlık ve Sosyal Refah Araştırmaları Dergisi*, 2(2), 22–34.
- Ashforth, B. E., & Mael, F. (1989). Social identity theory and the organization. *Academy of Management Review*, 14(1), 20–39.
- Ashforth, B., & Mael, F. (1992). Alumni and Their Alma Mater: A Partial Test of The Reformulated Model of Organizational Identification. *Journal of Organizational Behavior*, 13, 104–105.
- Aslan, H., & İnce, E. (2019). Algılanan Örgütsel Desteğin İşten Ayrılma Üzerindeki Etkisinde İş Stresinin Aracı Rolü. *İğdır Üniversitesi Sosyal Bilimler Dergisi*, (20), 479–502.
- Back, K.-J., Lee, C.-K., & Abbott, J. (2010). Internal Relationship Marketing: Korean Casino Employees Job Satisfaction and Organizational Commitment. *Cornell Hospitality Quarterly*, 52(2), 111–124.
- Bak, C. A., Vogt, L. H., George, W. R., & Greentree, I. R. (1994). Management by Team: An Innovative Tool for Running a Service Organization through Internal Marketing. *Journal of Services Marketing*, 8(1), 37–47.
- Bansal, H. S., Mendelson, M. B., & Sharma, B. (2001). The Impact of Internal Marketing Activities on External Marketing Outcomes. *Journal of Quality Management*, 6(1), 61–76. [https://doi.org/10.1016/s1084-8568\(01\)00029-3](https://doi.org/10.1016/s1084-8568(01)00029-3)
- Becker, B. E., & Huselid, M. A. (2006). Strategic human resources

- management: Where do we go from here? *Journal of Management*, 32(6), 898-925.
- Belgin, Ö. (2010). Hizmet Sektöründe Verimlilik. *Bilişim Dergisi*, 112-114.
- Blau, P. M. (1964). *Exchange and power in social life*. New York: Wiley.
- Boxall, P., & Purcell, J. (2016). *Strategy and human resource management*. London: Palgrave.
- Candan, B., & Çekmecelioğlu, H. G. (2009). İçsel Pazarlama Faaliyetlerinin Örgütsel Bağlılık Unsurları Açısından Değerlendirilmesi: Bir Araştırma. *Yönetim-İstanbul Üniversitesi İşletme Fakültesi İşletme İktisadi Enstitüsü Dergisi*, 20(63), 41-58.
- Capello, R., & Fratessi, U. (2013). The service Sector in the New Globalization Phase: Evidence from European Regions in Cuadrado-Roura, J. R. (ed.). *Service Industries and Regions*. Heidelberg and New York, Springer, 3, 43-64.
- Carmeli, A., Gilat, G., & Waldman, D. A. (2007). The role of perceived organizational performance in organizational identification, adjustment and job performance. *Journal of Management Studies*, 44(6), 972-992.
- Cassundé, F. R. de S. A., Junior, N. F. C., Farias, S. A. de, & Mendonça, J. R. C. de. (2015). What is Being Said About Internal Marketing? A Study of the Brazilian Business Administration Academic Production. *Brazilian Business Review*, 12(3), 49-71. <https://doi.org/10.15728/bbr.2015.12.3.3>
- Chi, C. G., & Gursoy, D. (2009). Employee Satisfaction, Customer Satisfaction, And Financial Performance: An Empirical Examination. *International Journal of Hospitality Management*, 28(2), 245-253. <https://doi.org/10.1016/j.ijhm.2008.08.003>
- Chiu, W., Won, D., & Bae, J. S. (2020). Internal marketing, organizational commitment, and job performance in sport and leisure services. *Sport, Business and Management: An International Journal*, 10(2), 105-123. <https://doi.org/10.1108/SBM-09-2018-0066>
- Çoban, S. (2004). Toplam Kalite Yönetimi Perspektifinde İçsel Pazarlama Anlayışı. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 22, 85-98. <https://doi.org/10.18070/euiibfd.88504>
- Colquitt, J. A., Conlon, D. E., Wesson, M. J., Porter, C. O., & Ng, K. Y. (2001). Justice at the millennium: A meta-analytic review of 25 years of organizational justice research. *Journal of Applied Psychology*, 86(3), 425-445.
- Comrey, A.L., & Lee, H.B. (1992). *A First Course in Factor Analysis*. New York: Academic Press. 217
- Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, 31(6), 874-900.
- Deci, E. L. & Ryan, R. M. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford Press.
- Demir, H., Usta, R., & Okan, T. (2008). İçsel pazarlamanın örgütsel bağlılık ve iş tatminine etkisi. *Hacettepe Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 26(2), 135-161.
- Edwards, M. R. (2005). Organizational identification: A conceptual and operational review. *International Journal of Management Reviews*, 7(4), 207-230.
- Ekşi, O. & Çevik, N. (2022). Turizm Sektöründe İçsel Pazarlama Uygulamalarının Örgütsel Bağlılık Boyutları Üzerinde Etkisi: Otel İşletmesi Örneği. *Selçuk Üniversitesi Akşehir Meslek Yüksekokulu Sosyal Bilimler Dergisi*, 13, 137-147.
- Elibol, F. (2023). Bakımevlerinde İçsel Pazarlamanın Örgütsel Bağlılık Düzeyine Etkisi: Özel Engelli Bakım Merkezleri Örneği. *İşletme Araştırmaları Dergisi*, 15(1), 231-242.
- ELSamen, A. A. & Alshurideh, M. (2012). The Impact of Internal Marketing on Internal Service Quality: A Case Study in a Jordanian Pharmaceutical Company. *International Journal of Business and Management*, 7(19), 89. ISSN:1833-3850, E-ISSN:1833-8119 Published by Canadian Center of Science and Education.
- Erhan, T. (2022). Örgütsel özdeşleşmenin iş performansına etkisinde işe adanmışlığın aracılık rolü. *İşletme Araştırmaları Dergisi*, 14(2), 1278-1292.
- Ersöz, S., & Çiftçi, G. E. (2022). Çalışanlarda farklılıkların yönetimi ve örgütsel özdeşleşme ilişkisi. *Hitit Sosyal Bilimler Dergisi*, 15(2), 297-317.
- Frost, F. A. & Kumar, M. (2001). Service Quality Between Internal Customers and Internal Suppliers in an International Airline. *International Journal of Quality & Reliability Management*, 18(4), 371-386.
- Gossett, L. (2002). Kept At Arm's Length: Questioning The Organizational Desirability of Member Identification. *Communication Monographs*, 69(4), 385-404.
- Greene, W. E., Walls, G. D., & Schrest, L. J. (1994). Internal Marketing: The Key to External Marketing Success. *Journal of Services Marketing*, 8(4), 5-13. <https://doi.org/10.1108/08876049410070682>
- Gujarati & Porter (2018). *Temel Ekonometri* (5. Basım). Literatür Yayınevi. İstanbul, s.509.
- Hackman, J. R., & Oldham, G. R. (1980). Work redesign. Reading, MA: Addison-Wesley. in Taiwan. *Human Factors and Ergonomics in Manufacturing*, 23(5), 436-449. <https://doi.org/10.1002/hfm.20329>
- İşler, D. B., & Özdemir, Ş. (2010). Hastane İşletmelerinde İçsel Pazarlama Yaklaşımının İş Tatmini Ve Örgütsel Bağlılık Üzerine Etkisi: Isparta İli Örneği. *Hacettepe Sağlık İdaresi Dergisi*, 13(2), 115-142.
- Jean, D., & Colette, M. (2020). The Impact of Internal Marketing on Customer Loyalty (Case Study: African Community Credit Bank-Cameroon). *International Journal of Business Marketing and Management (IJBMM)*, 5(3), 27-36. <https://www.ijbmm.com>
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692-724.
- Kammeyer-Mueller, J. D., Wanberg, C. R., Glomb, T. M., & Ahlburg, D. (2013). The role of temporal shifts in newcomer socialization: A longitudinal field study. *Journal of Applied Psychology*, 98(5), 892-910.
- Kelemen, M., & Papasolomou, I. (2007). Internal Marketing: A Qualitative Study of Culture Change in The UK Banking Sector. *Journal of Marketing Management*, 23(7-8), 746-768. <https://doi.org/10.1362/026725707x230027>
- Kerse, G., & Karabey, C. N. (2017). Algılanan örgütsel desteğin örgütsel özdeşleşmeye etkisi: Örgütsel sinizmin aracı rolü. *MANAS Sosyal Araştırmalar Dergisi*, 6(4), 375-398.
- Kim, H. J., Song, J. H., & Lee, J. (2019). The role of reward systems in promoting organizational commitment and employee engagement: Evidence from service organizations. *Human Resource Management Review*, 29(3), 100-115.
- Kocaman, S., Durna, U., & İnal, M. E. (2013). Konaklama İşletmelerinde İçsel Pazarlama Uygulamalarının Örgütsel Bağlılığa Etkisi: Alanya Örneği. *Uluslararası Alanya İşletme Fakültesi Dergisi*, 5(1), 21-29.
- Koo, J., & Park, J. (2022). Employee health and organizational commitment in high-stress service environments. *Journal of Service Management*, 33(5), 123-145.
- Kotler, P. (1994). *Marketing Management*. Englewood Cliffs, Prentice Hall Inc.
- Kotler, P., & Levy, S. J. (1969). Broadening the Concept of Marketing. *Journal of Marketing*, 33(1), 10-15. <https://doi.org/10.2307/1248740>
- Larkin, I., Pierce, L., & Gino, F. (2012). The psychological costs of pay-for-performance: Implications for the strategic compensation of employees. *Administrative Science Quarterly*, 57(3), 446-478.
- Lings, I. N. (2004). Internal market orientation: Construct and consequences. *Journal of Business Research*, 57(4), 405-413.
- London, M. (2014). *The power of feedback: Giving, seeking, and using feedback for performance improvement*. New York: Routledge.
- Maglajlic, S. K., Boso, N., & Micevski, M. (2018). How internal marketing drive customer satisfaction in matured and maturing Euro-

- pean markets? *Journal of Business Research*, 86, 292.
- Noe, R. A. (2017). *Employee training and development*. New York: McGraw-Hill Education.
- Rangaswamy, R. (1995). *A Text Book of Agricultural Statistics*. New Age International, 220.
- Rosenbluth, H. F. (1994). *The Customer Comes Second*. William Morrow, 227.
- Saks, A. M. (2006). Antecedents and consequences of employee engagement. *Journal of Managerial Psychology*, 21(7), 600–619.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315.
- Songur, A., & Karataş, N. (2020). İçsel pazarlama uygulamalarının örgütsel bağlılığa etkisi: Bankacılık sektöründe bir uygulama. *Bolu Abant İzzet Baysal Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 20(2), 439-467.
- Sönmez, N. K., & Hacıoğlu, N. (2019). Otel işletmelerinde İçsel Pazarlama Uygulamalarının Örgütsel Bağlılık Üzerindeki Etkisi: Antalya Örneği. *Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi*, 21(2), 609-624.
- Stock, J. H., & Watson, M. W. (2012). *Introduction to Econometrics*. Pearson.
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations* (pp. 7–24). Chicago: Nelson-Hall.
- Tak, B., & Aydemir, B. A. (2004). Örgütsel Özdeşleşme Üzerine İki Görgül Çalışma, 12. Ulusal Yönetim ve Organizasyon Kongresi, Uludağ Üniversitesi, Bursa.
- Taşkın, E., & Yeni, Z. (2016). İçsel Pazarlama Faaliyetlerinin Örgütsel Bağlılık Üzerindeki Etkisini Belirlemeye Yönelik Bir Araştırma. *Kastamonu Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 11(1), 62-86.
- Tuncay, A. (2018). İçsel Pazarlamanın Örgütsel Bağlılığa Etkisi. *Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 23(4), 1287-1303.
- Turner, J. C., Brown, R. J., & Tajfel, H. (1979). Social comparison and group interest in ingroup favouritism. *European Journal of Social Psychology*, 9(2), 187-204.
- Turunç, Ö., & Çelik, M. (2010). Çalışanların algıladıkları örgütsel destek ve iş stresinin örgütsel özdeşleşme ve iş performansına etkisi. *Yönetim ve Ekonomi: Celal Bayar Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 17(2), 183-206.
- TÜİK, İşgücü İstatistikleri 2024, (<https://data.tuik.gov.tr>)
- Urk, M. (2015). İçsel Pazarlama Uygulamalarının Çalışan Bağlılığı ile Müşteri ve Şirket Performansına Etkisinin Analizinde Kişilik Özelliklerinin Düzenleyici Rolü.
- Vel, P., Shah, A., Mathur, S., & Pereira, V. (2019). Internal marketing in a higher education context—towards an enriched framework. *International Journal of Educational Management*, 33(1), 5-27.
- Wasiu, B. O., & Adebajo, A. A. (2014). Reward System and Employees Performance in Lagos State (A Study Of Selected Public Secondary Schools, Kuwait Chapter Of Arabian. *Journal of Business and Management Review*, 3(8), 16.
- Wu, W. Y., Tsai, C. C., & Fu, C. S. (2013). The Relationships Among Internal Marketing, Job Satisfaction, Relationship Marketing, Customer Orientation, and Organizational Performance: An Empirical Study of TFT-LCD Companies.
- Yamane, T. (1967). *Statistics: An Introductory Analysis*, 2nd Edition, New York: Harper and Row.
- Yüce, A., & Kavak, O. (2017). İçsel pazarlama faaliyetlerinin örgütsel bağlılık ve işten ayrılma niyeti üzerindeki etkisi: Bir araştırma. *Cataloging-In-Publication Data*, 3(3), 79-96.

Effects of CBRT Policy Rate Decisions on Money Supply Dynamics: Evidence from a VAR Analysis

Özkan İmamoğlu / Asst. Prof. Dr. 

Amasya University, Merzifon Faculty Of Economics And Administrative Sciences, Department Of Economics
ozkan.imamoglu@amasya.edu.tr

Abstract

This study examines the effects of policy rate decisions of the Central Bank of the Republic of Türkiye (CBRT) on money supply dynamics within a VAR framework. Using monthly macro-financial data, the study analyzes the dynamic relationships between money supply and selected variables, including interbank interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. To evaluate these relationships, time series techniques, variance decomposition, and Granger causality analyses are employed. The findings show that money supply is initially explained largely by its own internal dynamics; however, over time, the effects of financial and real variables such as deposit and interbank interest rates, credit volume, industrial production, and inflation become more pronounced. The results indicate that CBRT

policy rate decisions are transmitted to money supply through multiple macro-financial channels. In this respect, the study provides evidence that money supply dynamics in Türkiye are shaped not only by their own structure but also by the gradual influence of policy-related financial and macroeconomic variables. These findings highlight the importance of evaluating monetary policy transmission through a multidimensional framework and contribute to the literature on monetary policy and money supply dynamics in Türkiye.

Keywords: CBRT, Policy Rate, Money Supply, Monetary Transmission, VAR Analysis, Türkiye.

JEL Codes: E51, E52, C32, E44

Citation: İmamoğlu, Ö. (2026). Effects of CBRT policy rate decisions on money supply dynamics: Evidence from a VAR analysis. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Monetary policy decisions implemented by central banks play a central role in shaping macroeconomic stability, financial market conditions, and liquidity dynamics. Among these policy instruments, policy interest rates are particularly important, as they influence borrowing costs, savings decisions, credit expansion, and overall monetary conditions in the economy. In this context, the policy rate decisions of the Central Bank of the Republic of Türkiye (CBRT) constitute a key mechanism affecting money supply and the broader monetary transmission process.

Changes in policy rates are transmitted to the economy through various macro-financial channels. These channels include interbank market conditions, deposit interest rates, credit volume, inflation dynamics, and real economic activity. The interaction of these variables determines the extent to which monetary policy affects liquidity conditions and money supply over time. Therefore, analyzing the relationship between CBRT policy rate decisions and money supply dynamics is essential for understanding the effectiveness of monetary policy in Türkiye.

Money supply is not shaped solely by its own internal structure; it is also influenced by the responses of financial and real-sector variables to policy changes. Interest rate adjustments may alter banks' funding costs, deposit and lending behavior, portfolio preferences, and the overall availability of liquidity in the financial system. At the same time, inflation and industrial production may reinforce or weaken the transmission of policy signals. For this reason, the analysis of money supply requires a multidimensional framework that considers the dynamic interactions among policy-related macro-financial variables.

The main objective of this study is to examine the effects of CBRT policy rate decisions on money supply dynamics in Türkiye. To this end, the study investigates the dynamic relationships between money supply and selected macro-financial variables, including interbank interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. By employing time-series techniques and a Vector Autoregression (VAR) model, the study aims to reveal how these variables interact over time and how policy-rate-related developments are transmitted to money supply.

This study contributes to the literature in two main respects. First, it provides an empirical evaluation of money supply dynamics in Türkiye within the context of monetary policy transmission. Second, it offers a multidimensional perspective by jointly considering financial and real variables that may influence the response of money supply to policy rate decisions. In this way, the study seeks to provide a clearer understanding of the channels through which CBRT

policy decisions affect monetary conditions and to contribute to policy discussions on the effectiveness of monetary transmission in Türkiye.

2. Literature Review

2.1. Monetary Policy and Policy Rate Transmission

Monetary policy transmission refers to the process through which central bank decisions affect financial conditions, aggregate demand, output, and inflation. In modern monetary frameworks, the policy rate is one of the main instruments used by central banks to influence economic activity. Changes in the policy rate alter short-term market rates first and then spread to other financial variables such as deposit rates, lending rates, credit conditions, and liquidity. Through this process, monetary policy affects spending, saving, borrowing, and ultimately the broader macroeconomic environment (Mishkin, 1995; Choi et al., 2022).

The traditional interest rate channel emphasizes that monetary tightening raises the cost of borrowing, reduces interest-sensitive expenditures, and weakens aggregate demand, while a monetary easing works in the opposite direction. In this framework, policy-induced changes in short-term rates are transmitted to investment, consumption, and production decisions through their effects on financing costs and expected returns. For this reason, the policy rate is not only a monetary policy instrument but also a central signal shaping the overall stance of monetary conditions in the economy (Mishkin, 1995; Choi et al., 2022).

However, the transmission of monetary policy cannot be explained solely by the conventional interest rate channel. The literature has long emphasized that financial frictions, bank balance sheets, and credit market imperfections may amplify or weaken the effects of policy actions. In particular, the credit channel highlights that monetary policy affects the economy not only through market interest rates but also through the availability and terms of external finance. Bernanke and Gertler (1995) argue that tighter monetary policy can increase external finance premia by worsening credit market conditions, thereby magnifying the real effects of policy shocks. Similarly, Kashyap and Stein (1994) show that the lending channel becomes especially relevant when bank loans and market-based finance are not perfect substitutes and when changes in policy affect the supply of bank credit.

Within this broader transmission framework, banks occupy a pivotal role because they intermediate the pass-through from policy decisions to deposits, lo-

ans, and liquidity conditions. Changes in the policy rate may affect banks' funding costs, pricing behavior, maturity structures, and credit supply decisions. Therefore, the transmission mechanism is inherently multidimensional and extends beyond a simple adjustment in market rates. This point is particularly important for emerging economies, where banking sector conditions and institutional features may significantly shape the strength and speed of monetary policy pass-through (Kashyap and Stein, 1994; Baziki and Capacioglu, 2020).

The Turkish case provides especially relevant evidence for this discussion. Empirical findings suggest that under Türkiye's inflation-targeting regime, monetary policy is transmitted through interest rates and related financial variables, with meaningful effects on output and inflation dynamics. Can (2020) shows that interest rates remain a core policy instrument in Türkiye and that monetary transmission operates through multiple channels rather than through a single mechanical path. In addition, bank-level evidence from Türkiye indicates that policy rate changes affect not only loan volumes but also maturities and the intensity of bank responses, pointing to a richer and more layered transmission process within the financial system (Can, 2020; Baziki and Capacioglu, 2020). Considering this literature, policy rate decisions should be understood as central drivers of macro-financial adjustment. Their effects are transmitted through interest rates, banking behavior, credit conditions, and broader monetary aggregates, making the analysis of money supply dynamics particularly important. Accordingly, examining how CBRT policy rate decisions interact with money supply and related macro-financial variables provides a suitable framework for evaluating monetary transmission in Türkiye. This perspective also justifies the focus of the present study on policy-rate-related variables as determinants of money supply dynamics within a VAR setting (Mishkin, 1995; Bernanke and Gertler, 1995; Can, 2020).

2.2. Money Supply and the Banking Channel

The relationship between money supply and the banking system occupies a central place in the monetary transmission mechanism. In bank-based financial systems, monetary policy decisions are transmitted not only through market interest rates but also through the behavior of financial intermediaries that collect deposits, extend credit, and manage liquidity. For this reason, changes in policy rates can influence money supply indirectly by affecting banks' balance sheets, funding structures, and lending decisions. The banking sector therefore acts as a key transmission layer between central bank policy actions and broader monetary conditions in the

economy (Bernanke and Blinder, 1988; Kashyap and Stein, 1994; Mishkin, 1996).

A core component of this process is the deposit channel. Policy-rate changes affect the return on savings instruments and the cost of funds in the banking system, which in turn shape deposit accumulation and the composition of bank liabilities. As deposit conditions change, banks adjust their liquidity positions and their ability to support credit creation. Since deposits are a major funding source for commercial banks, movements in deposit volumes and deposit rates are closely linked to the evolution of money supply, especially in systems where bank intermediation remains dominant (Kashyap and Stein, 1994; Disyatat, 2011).

The credit channel reinforces this mechanism by linking monetary policy to loan supply and financing conditions. Bernanke and Gertler (1995) argue that monetary tightening may weaken borrowers' balance sheets and raise external finance premium, thereby amplifying the real effects of policy shocks. In parallel, the bank lending view emphasizes that when policy actions affect the volume or terms of bank lending, the resulting changes in credit supply may influence both aggregate demand and monetary aggregates. In this sense, credit is not merely an outcome of monetary conditions; it is also one of the channels through which policy actions reshape liquidity and money creation over time (Bernanke and Gertler, 1995; Kashyap and Stein, 1994; Gambacorta and Marques-Ibanez, 2011).

Interest rate pass-through plays a critical role in connecting policy decisions to deposit and credit behavior. When policy rates change, the degree and speed with which these changes are transmitted to retail banking rates determine how strongly banks and customers respond. If pass-through is strong, policy actions are more likely to alter deposit incentives, lending costs, and portfolio choices, thereby influencing the pace of money creation. If pass-through is weak or delayed, the effect of monetary policy on money supply may become less direct and more dependent on institutional or structural conditions in the banking sector (Aydın, 2007; Şahin et al., 2018).

These issues are particularly important in Türkiye, where the monetary transmission mechanism has historically operated through multiple interrelated channels. Evidence for Türkiye suggests that interest-rate movements affect banking variables such as deposits, loans, and retail lending conditions, while the overall strength of transmission depends on the institutional structure of the banking system and the prevailing monetary policy framework. Başçı et al. (2007) emphasize that the Turkish transmission mechanism includes not only the interest rate channel but also the credit and expectations channels, while Özşuca and Akbostancı (2012) provide empiri-

cal evidence that the banking sector plays a meaningful role in transmitting policy changes. In addition, studies on Turkish interest rate pass-through show that policy-related rates influence loan and deposit pricing, although the degree of pass-through may vary across instruments and periods (Başçı et al., 2007; Özşuca and Akbostancı, 2012; Yüksel et al., 2013).

Considering this literature, the inclusion of variables such as deposit interest rates, interbank interest rates, total deposits, and total credit is theoretically well grounded in studies of money supply dynamics. These variables represent the main banking-sector channels through which policy-rate decisions can affect liquidity conditions and the expansion or contraction of monetary aggregates. Therefore, examining their dynamic interaction with money supply provides a suitable framework for evaluating how CBRT policy rate decisions are transmitted through the banking system in Türkiye (Bernanke and Blinder, 1988; Bernanke and Gertler, 1995; Başçı et al., 2007).

2.3. Inflation, Industrial Production and Macro-Financial Dynamics

Inflation and industrial production are two fundamental macroeconomic variables in the analysis of money supply dynamics because they reflect both the nominal and real dimensions of monetary transmission. Monetary policy does not operate in isolation; its effects spread through a network of financial and real-sector variables that jointly shape liquidity conditions, aggregate demand, and price developments. For this reason, examining money supply together with inflation and industrial production provides a broader framework for understanding how policy-rate decisions are transmitted throughout the economy (Boivin et al., 2010; Choi et al., 2022).

Inflation is closely linked to money supply through several channels. From a monetary transmission perspective, policy-rate changes influence inflation by affecting borrowing costs, domestic demand, expectations, and broader financial conditions. At the same time, inflation itself may alter money-holding behavior, liquidity preferences, and the real value of financial balances, thereby feeding back into monetary aggregates. This two-way interaction makes inflation an essential variable in empirical studies that seek to understand the transmission of policy decisions to money supply and broader macro-financial conditions (Eickmeier et al., 2022; Miranda-Pinto and Young, 2023).

Industrial production represents the real activity side of this transmission process. Changes in monetary conditions can affect production by altering financing costs, investment incentives, working capital needs, and aggregate demand. Conversely, movements in industrial production may influence money

demand and the use of bank credit by firms, thereby affecting liquidity and monetary expansion. In this sense, industrial production is not merely an output indicator; it is also a variable that helps capture how monetary policy is transmitted to the real economy and how real-sector responses interact with financial variables over time (Boivin et al., 2010; Barth and Ramey, 2002).

The joint consideration of inflation and industrial production is especially important because monetary policy often generates interconnected effects on prices and output rather than isolated movements in a single indicator. Recent evidence shows that the strength and composition of monetary transmission depend on whether financial and policy shocks operate primarily through demand channels, supply channels, or cost channels. This implies that inflation and industrial production should be analyzed together when evaluating the macro-financial consequences of policy-rate changes and their implications for money supply dynamics (Eickmeier et al., 2022; Ha et al., 2024).

This multidimensional perspective is also relevant for Türkiye. Evidence from the CBRT and related studies indicates that inflation dynamics and industrial production are closely monitored in the conduct and evaluation of monetary policy, since both variables reflect the interaction between financial conditions and real economic activity. Studies focusing on Türkiye further show that inflation and industrial production can be forecast and interpreted through a broad information set, which supports their inclusion in empirical models of monetary transmission and money supply behavior (Günay, 2018; Saygılı, 2021).

Accordingly, the inclusion of inflation and industrial production in the present study is theoretically and empirically justified. These variables capture the real and nominal dimensions of monetary transmission and help explain how policy-rate-related developments are reflected in money supply dynamics. Their interaction with interest rates, deposits, and credit also strengthens the macro-financial interpretation of the model and supports a more comprehensive evaluation of monetary policy transmission in Türkiye (Choi et al., 2022; Günay, 2018).

2.4. Empirical Evidence on Monetary Transmission in Türkiye

Empirical studies on Türkiye generally show that monetary policy transmission operates through multiple and interacting channels rather than through a single linear mechanism. In particular, the Turkish literature emphasizes the joint role of policy rates, exchange rates, credit conditions, and banking-sector behavior in shaping macroeconomic outcomes. One of the earlier studies in this area, Us (2004), analyzes the monetary transmission mechanism in Türkiye

using a structural macroeconomic model and shows that policy design matters for how inflation, output, and financial conditions respond to monetary interventions. This line of research established that Turkish monetary transmission should be assessed within a broader macro-financial framework rather than through a narrow one-channel approach (Us, 2004).

Subsequent empirical research has provided stronger evidence on the interest rate channel in Türkiye. Sarac and Ucan (2013) examine the validity of the interest rate channel during the inflation-targeting period and report that the effectiveness of this channel increased after 2002. More recent studies on interest rate pass-through also show that the degree and speed with which policy-rate changes are transmitted to bank lending rates are crucial for the effectiveness of monetary policy. For example, Akşehirli (2024) finds evidence of interest rate pass-through in Türkiye, while also showing that the magnitude and adjustment speed of pass-through may differ across sub-periods. These results suggest that policy rate decisions influence monetary conditions not only directly, but also through their transmission to retail banking rates (Sarac and Ucan, 2013; Akşehirli, 2024).

Another important strand of the Turkish literature focuses on the banking and credit channels. Can (2020) shows, using VAR models for the post-2006 inflation-targeting period, that interest rates remain a central policy tool in Türkiye and that monetary transmission works through more than one macroeconomic pathway. At the micro level, Baziki and Çapacıoğlu (2020) provide bank-firm-loan level evidence showing that policy-rate increases reduce both commercial loan volumes and maturities, with stronger effects for smaller or more fragile banks. Similarly, Binici et al. (2013) show that the CBRT's interest rate corridor and liquidity management framework affect credit and deposit rates through different channels, indicating that monetary policy transmission in Türkiye is closely linked to banking-sector pricing and risk appetite. Together, these studies support the view that credit supply, deposit conditions, and bank behavior are central to the Turkish transmission mechanism (Can, 2020; Baziki and Çapacıoğlu, 2020; Binici et al., 2013).

The Turkish evidence also indicates that financial markets respond meaningfully to policy actions. Duran et al. (2012) show that the transmission of monetary policy to asset prices constitutes an important stage of the monetary transmission mechanism in Türkiye. This finding is important because it reinforces the idea that policy-rate decisions affect broader monetary conditions through a web of financial variables rather than through a single observable market price. Taken together, the empirical literature on Türkiye suggests that policy-rate changes are

transmitted through interest rates, credit conditions, deposit behavior, asset prices, and banking-sector responses. This multidimensional structure provides a strong empirical basis for examining money supply dynamics together with policy-related macro-financial variables in the Turkish case (Duran et al., 2012; Can, 2020).

2.5. Research Gap and Hypotheses Development

Although the literature on Türkiye provides important evidence on monetary transmission, several limitations remain. First, many studies focus on a specific transmission channel, such as the interest rate channel, the exchange rate channel, or the credit channel, rather than examining the joint dynamics of money supply with multiple policy-related macro-financial variables. Second, a considerable part of the Turkish literature concentrates on inflation, output, lending behavior, or asset-price responses, while the direct dynamic relationship between policy-rate-related variables and money supply has received comparatively less attention. Third, the coexistence of banking variables, real-sector indicators, and monetary aggregates in a unified time-series framework remains relatively underexplored in the Türkiye context (Us, 2004; Sarac and Ucan, 2013; Can, 2020; Akşehirli, 2024).

The present study addresses this gap by focusing directly on money supply dynamics and by examining how they are affected by policy-related financial and macroeconomic variables within a VAR framework. Unlike studies that isolate one transmission channel, this study jointly evaluates interbank interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. In doing so, it offers a more integrated perspective on how CBRT policy rate decisions are transmitted through financial intermediation, macroeconomic activity, and liquidity conditions. This integrated design is the main contribution of the study to the literature on monetary transmission in Türkiye (Baziki and Çapacıoğlu, 2020; Binici et al., 2013; Duran et al., 2012).

Based on the theoretical and empirical literature reviewed above, the following hypotheses are developed:

H1: Policy-rate-related financial variables have a statistically significant effect on money supply dynamics in Türkiye.

H2: Deposit and credit variables provide significant explanatory power for changes in money supply.

H3: Inflation and industrial production contribute significantly to the dynamic behavior of money supply.

H4: There are Granger-causal relationships between money supply and selected macro-financial variables associated with monetary policy transmission.

These hypotheses are consistent with the literature showing that monetary policy in Türkiye operates through interconnected financial and real-sector channels. They also provide a clear analytical bridge between the theoretical framework and the econometric model employed in this study (Can, 2020; Baziki and Çapacıoğlu, 2020; Akşehirli, 2024).

3. Methodology / Data and Model

3.1. Data

This study examines the effects of CBRT policy rate decisions on money supply dynamics in Türkiye by using monthly time-series data. The empirical analysis is based on macro-financial variables that represent the main channels of monetary transmission, including interest rates, deposits, credit volume,

inflation, industrial production, and securities portfolios.

The dataset covers the 2020–2025 period and is constructed from official statistical sources. Monetary and banking variables such as M2 money supply, total deposits, total credit, and total securities portfolios are obtained from the Central Bank of the Republic of Türkiye (CBRT) through the Monthly Money and Banking Statistics and the Electronic Data Delivery System (EVDS). The deposit interest rate series is obtained from the CBRT's official interest rate statistics for Turkish lira deposits. The Consumer Price Index (CPI) and the Industrial Production Index (IPI) are officially produced by the Turkish Statistical Institute (TURKSTAT) and accessed through official releases and the EVDS platform (Central Bank of the Republic of Türkiye [CBRT], n.d.-a, n.d.-b; Turkish Statistical Institute [TURKSTAT], 2025).

The variables included in the study are presented in Table 1.

Table 1. Description of Variables

Variable	Definition	Source Institution	Access Platform
M2	M2 Money Supply	CBRT	EVDS / Monthly Money and Banking Statistics
INT	Interbank Overnight Weighted Average Interest Rate	CBRT	EVDS
DEPINT	Deposit Interest Rate (TRY deposits)	CBRT	EVDS / Interest Rate Statistics
DEP	Total Deposits	CBRT	EVDS / Monthly Money and Banking Statistics
CREDIT	Total Credit	CBRT	EVDS / Monthly Money and Banking Statistics
IPI	Industrial Production Index	TURKSTAT	EVDS / Official Releases
CPI	Consumer Price Index	TURKSTAT	EVDS / Official Releases
SEC	Total Securities Portfolio	CBRT	EVDS / Banking Statistics

Source: Compiled by the author from official statistical sources.

The inclusion of these variables is consistent with the monetary transmission literature. While M2 is the focal monetary aggregate of the study, the remaining variables capture the main financial and macroeconomic channels through which policy rate decisions may affect liquidity conditions and money supply over time.

3.2. Model

Unlike a single-equation regression framework, the present study adopts a Vector Autoregression (VAR) model in order to analyze the dynamic interrelationships among money supply and the selected macro-financial variables. This choice is appropriate because the variables considered in the study influence each other simultaneously over time, and im-

posing a strict exogenous-endogenous distinction would be overly restrictive.

Accordingly, the baseline empirical system can be expressed as follows:

$$= c + A_1 Y_t Y_{t-1} + A_2 Y_t Y_{t-2} + \dots + A_p Y_t Y_{t-p} + u_t$$

where

$$Y_t = \begin{bmatrix} M2_t \\ INT_t \\ DEPINT_t \\ DEP_t \\ CREDIT_t \\ IPI_t \\ CPI_t \\ SEC_t \end{bmatrix}$$

In this system, c denotes the vector of constant terms, A_i represents the coefficient matrices for lagged values, p is the lag length, and u_t is the vector of innovations. This framework allows each variable to be explained by its own lagged values as well as by the lagged values of all other variables in the system. In this way, the model captures the dynamic structure of monetary transmission more effectively than a conventional static regression model.

The model is designed to evaluate how policy-rate-related variables are transmitted to money supply through interest rate, deposit, credit, and macroeconomic channels. Therefore, money supply is not treated merely as the dependent variable in a simple regression equation; rather, it is analyzed as the central variable within a system of jointly determined macro-financial variables.

3.3. Econometric Procedure

The econometric procedure of the study follows the standard stages of multivariate time-series analysis.

First, the stationarity properties of all variables are examined by using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests. These tests are used to determine whether the series contain a unit root and whether they are stationary in levels or in first differences. The test equations used in the study are given below.

Constant Model

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + u_t$$

Constant and Trend Model

$$\Delta Y_t = \alpha_0 + \alpha_1 t + \gamma Y_{t-1} + u_t$$

If the variables are found to be stationary at first difference, this indicates that they are integrated of order one, $I(1)$. In standard time-series analysis, the next step after identifying $I(1)$ variables is to test for the existence of a long-run equilibrium relationship among them by using a Johansen cointegration test. If cointegration is detected, a Vector Error Correction Model (VECM) becomes more appropriate; if no cointegration exists, the analysis can proceed with a VAR model estimated in first differences. However, the current study does not report Johansen cointegration test results. Therefore, the empirical findings are interpreted within the limits of the estimated VAR framework, and the absence of an explicit cointegration analysis should be considered a methodological limitation. Future research may strengthen the empirical design by incorporating Johansen cointegration results and, where appropriate, comparing the findings with a VECM specification.

Second, the appropriate lag length is determined by using standard information criteria such as the Akaike Information Criterion (AIC), Schwarz Information

Criterion (SC), Hannan–Quinn Criterion (HQ), and Final Prediction Error (FPE). Since the study includes multiple variables and a relatively limited sample period, lag selection should be handled carefully in order to avoid overparameterization.

Third, after estimating the VAR model, several diagnostic tests are applied to evaluate the adequacy of the specification. These include serial correlation tests, heteroskedasticity tests, and stability tests. These diagnostic procedures are necessary to determine whether the estimated model is statistically reliable and dynamically stable.

Fourth, the dynamic relationships among the variables are examined through Granger causality tests, impulse response functions, and forecast error variance decomposition. The Granger causality test is used to determine whether the past values of one variable help predict another variable. The impulse response functions show how a shock to one variable affects the others over time. The variance decomposition analysis quantifies the proportion of the forecast error variance of money supply that is explained by shocks to the other variables in the system.

Taken together, this methodological framework allows the study to examine not only whether policy-related macro-financial variables are associated with money supply, but also how these relationships evolve dynamically over time.

4. Findings

Before presenting the empirical results, it should be noted that although the variables were found to be predominantly integrated of order one, $I(1)$, the current study does not report Johansen cointegration test results. For this reason, the findings presented below are evaluated within the estimated VAR framework and should be interpreted as evidence of dynamic short- to medium-run relationships rather than as confirmation of a long-run equilibrium structure.

This section presents the empirical findings of the study on the effects of CBRT policy-rate-related macro-financial variables on money supply dynamics in Türkiye. In line with the econometric framework of the study, the analysis begins with descriptive statistics for all variables included in the VAR system. These statistics provide an initial overview of the central tendency, dispersion, and range of the series used in the empirical model.

4.1. Descriptive Statistics

Table 2 reports the descriptive statistics of the variables included in the analysis, namely money supply, interbank overnight weighted average interest rate, deposit interest rate, total deposits, total credit, industrial production index, consumer price index, and total securities portfolio.

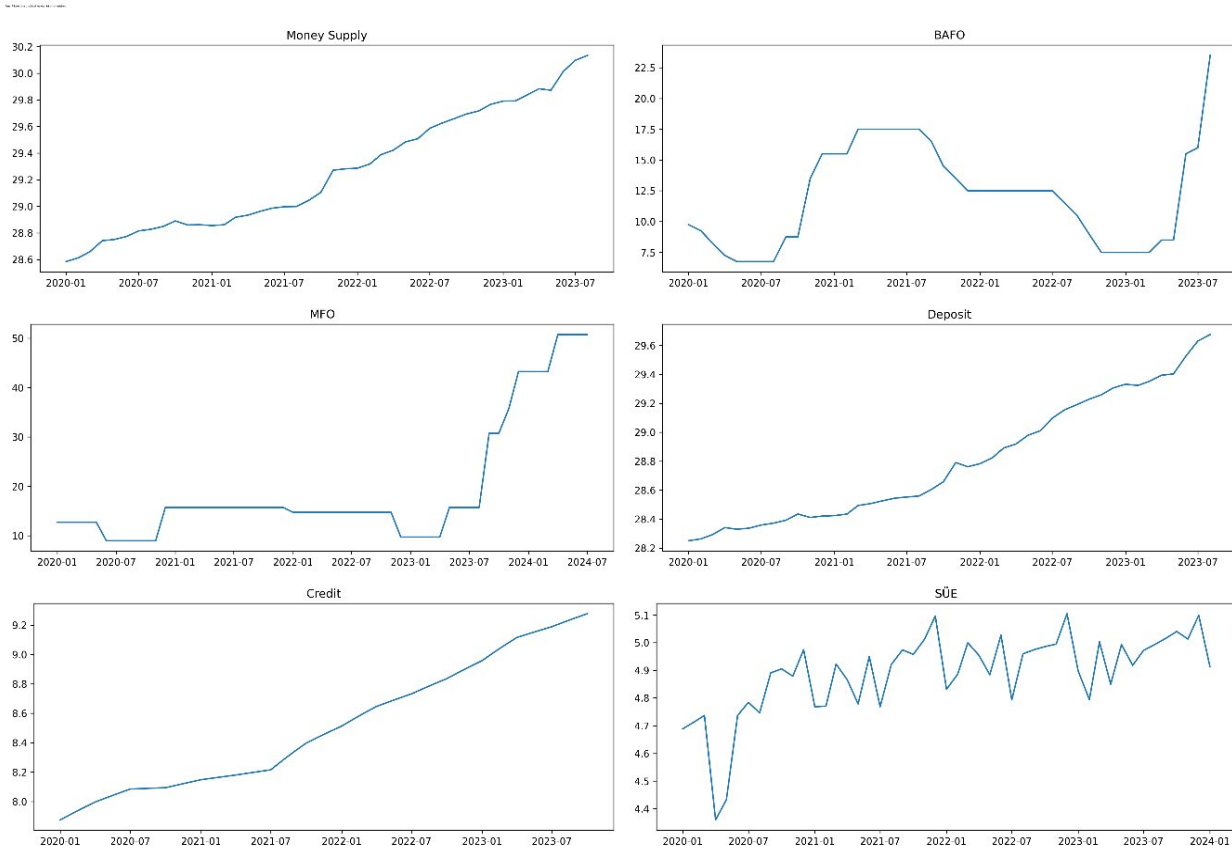
Table 2. Descriptive Statistics of the Variables

Variable	Mean	Standard Deviation	Minimum	Maximum
Money Supply	22.703	0.641	21.709	23.714
BAFO	25.907	16.140	7.760	56.920
MFO	25.724	16.817	7.344	59.543
Deposit	22.687	0.658	21.684	23.696
Credit	20.513	0.615	19.681	21.672
SÜE	4.611	0.097	4.241	4.697
CPI	6.898	0.622	6.101	7.944
MKP	21.295	0.621	20.258	22.264

The descriptive statistics presented in Table 2 provide useful preliminary information about the overall structure of the variables. In particular, the mean, standard deviation, minimum, and maximum values help assess the scale and variability of each series over the sample period. The results indicate that the interest-rate variables, namely BAFO and MFO, exhibit relatively higher volatility compared to the other variables, while monetary and balance-sheet variables such as money supply, deposits, credit, and securities portfolio display comparatively smoother variation over time. The industrial production index also appears more stable in relative terms, whereas

CPI reflects an upward price-level structure consistent with the inflation dynamics observed during the sample period.

Before estimating the VAR model, it is necessary to determine whether the variables satisfy the stationarity condition required in time-series analysis. For this purpose, the behavior of the series is first examined graphically in their level form, and then their stationarity properties are tested statistically by using the Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests. The graphical representations of the level values of the variables are presented below



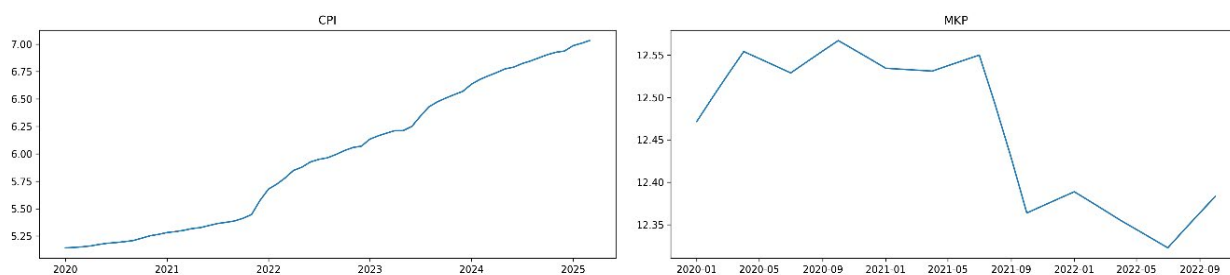


Figure 1. Level-Form Graphical Representations of the Variables Used in the VAR Model

Note: The figure presents the level values of money supply, interbank overnight weighted average interest rate, deposit interest rate, total deposits, total credit, industrial production, consumer prices, and securities portfolio over the sample period.

Before proceeding to the formal unit root tests, the variables were also examined graphically in their level form in order to observe their general trend, volatility, and possible non-stationary behavior over the sample period. This visual inspection provides a preliminary indication of whether the series exhibit persistent trends or structural fluctuations that may affect the reliability of VAR estimation in levels.

As shown in Figure 1, several variables display clear trending behavior over time, particularly money supply, deposits, credit, CPI, and the securities portfolio. By contrast, the interest-rate variables exhibit sharper fluctuations and more pronounced short-term movements. These graphical patterns provide

de preliminary visual support for the possibility that most variables may not satisfy the stationarity condition in levels, which justifies the subsequent application of ADF and PP unit root tests.

4.2. Unit Root Test Results

In order to determine the stationarity properties of the variables included in the model, Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) unit root tests were applied to both the level values and the first differences of the series. The results for the level values are reported in Table 3.

Table 3. ADF and PP Unit Root Test Results for Level Values

Variables	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)	Maximum
Money Supply	0.0049 [0.9550]	-2.5638 [0.2979]	-0.0522 [0.9494]	-1.6522 [0.7599]	23.714
BAFO	-1.3797 [0.5860]	-2.9930 [0.1435]	0.0678 [0.9606]	-1.5193 [0.8120]	56.920
MFO	-0.6498 [0.8506]	-3.5609** [0.0431]	0.1139 [0.9643]	-1.5036 [0.8176]	59.543
Deposit	-0.2744 [0.9219]	-2.2392 [0.4596]	-0.1551 [0.9379]	-1.5844 [0.7876]	23.696
Credit	1.4985 [0.9991]	-2.7646 [0.2159]	1.4759 [0.9991]	-2.0049 [0.5867]	21.672
SÜE	-2.4149 [0.1423]	-2.9872 [0.1449]	-1.5174 [0.5181]	-1.7843 [0.7001]	4.697
CPI	0.6604 [0.9902]	-2.7285 [0.2295]	1.1179 [0.9973]	-2.6765 [0.2498]	7.944
MKP	-0.1875 [0.9338]	-2.6865 [0.2459]	-0.6711 [0.8458]	-1.6311 [0.7688]	22.264

Critical Values

Significance Level	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)
1%	-3.550396	-4.140858	-3.544063	-4.118444
5%	-2.913549	-3.496960	-2.910860	-3.486509
10%	-2.594521	-3.177579	-2.593090	-3.171541

Note: Critical values for the ADF and PP tests are based on MacKinnon (1996). Values in square brackets indicate *p*-values. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

The results reported in Table 3 indicate that most variables are non-stationary in levels according to both ADF and PP tests under the constant and constant-and-trend specifications. Although the MFO variable appears significant in the ADF test under the constant-and-trend specification, the overall evidence from the unit root tests suggests that the level

values of the variables do not consistently satisfy the stationarity condition required for reliable VAR estimation. Therefore, the stationarity of the first differences of the series was further examined.

The test results for the first-difference values are presented in Table 4.

Table 4. ADF and PP Unit Root Test Results for First Differences

Variables	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)	Maximum
D(Money Supply)	-3.0898** [0.0328]	-4.0695** [0.0146]	-3.0713** [0.0343]	-4.0494** [0.0257]	23.714
D(BAFO)	-3.6307*** [0.0079]	-3.5045** [0.0481]	-3.5014** [0.0113]	-3.3655* [0.0660]	56.920
D(MFO)	-2.9072* [0.0507]	-3.7962** [0.0136]	-5.6311*** [0.0000]	-5.6168*** [0.0001]	59.543
D(Deposit)	-2.9715** [0.0435]	-3.9452** [0.0252]	-2.8987* [0.0515]	-3.8713** [0.0105]	23.696
D(Credit)	-5.2303*** [0.0001]	-5.6373*** [0.0001]	-3.3614** [0.0164]	-3.3484* [0.0686]	21.672
D(SÜE)	-4.0834*** [0.0022]	-3.3819* [0.0642]	-4.5806*** [0.0004]	-6.3424*** [0.0000]	4.697
D(CPI)	-4.0065*** [0.0026]	-4.1523*** [0.0092]	-4.0656*** [0.0022]	-4.2328*** [0.0073]	7.944
D(MKP)	-3.1353** [0.0293]	-4.0767** [0.0146]	-3.1138** [0.0309]	-4.0494** [0.0105]	22.264

Critical Values

Significance Level	ADF (constant)	ADF (constant and trend)	PP (constant)	PP (constant and trend)
1%	-3.546099	-4.121303	-3.546099	-4.121303
5%	-2.911730	-3.487845	-2.911730	-3.487845
10%	-2.593551	-3.172314	-2.593551	-3.172314

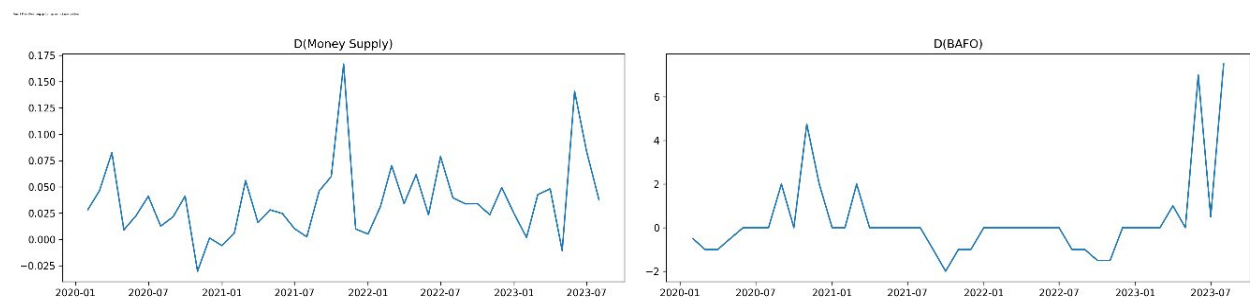
Note: Critical values for the ADF and PP tests are based on MacKinnon (1996). Values in square brackets indicate p-values. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

According to the findings in Table 4., all variables become stationary after first differencing under the relevant test specifications. In other words, the first differences do not exhibit a unit root problem. These results indicate that the variables can be treated as integrated of order one, I(1).

Since the variables are predominantly I(1), the next step in the empirical analysis is to examine whether a long-run equilibrium relationship exists among them. For this reason, following the unit root analysis, the appropriate lag length and the cointegration

structure of the system should be evaluated before proceeding with the estimation of the VAR or VECM framework.

To complement the statistical evidence obtained from the ADF and PP tests, the first-differenced forms of the variables are also presented graphically below. Examining the transformed series visually helps assess whether differencing reduces trend behavior and produces more stable fluctuations around a constant mean.



Effects of CBRT Policy Rate Decisions on Money Supply Dynamics: Evidence from a VAR Analysis

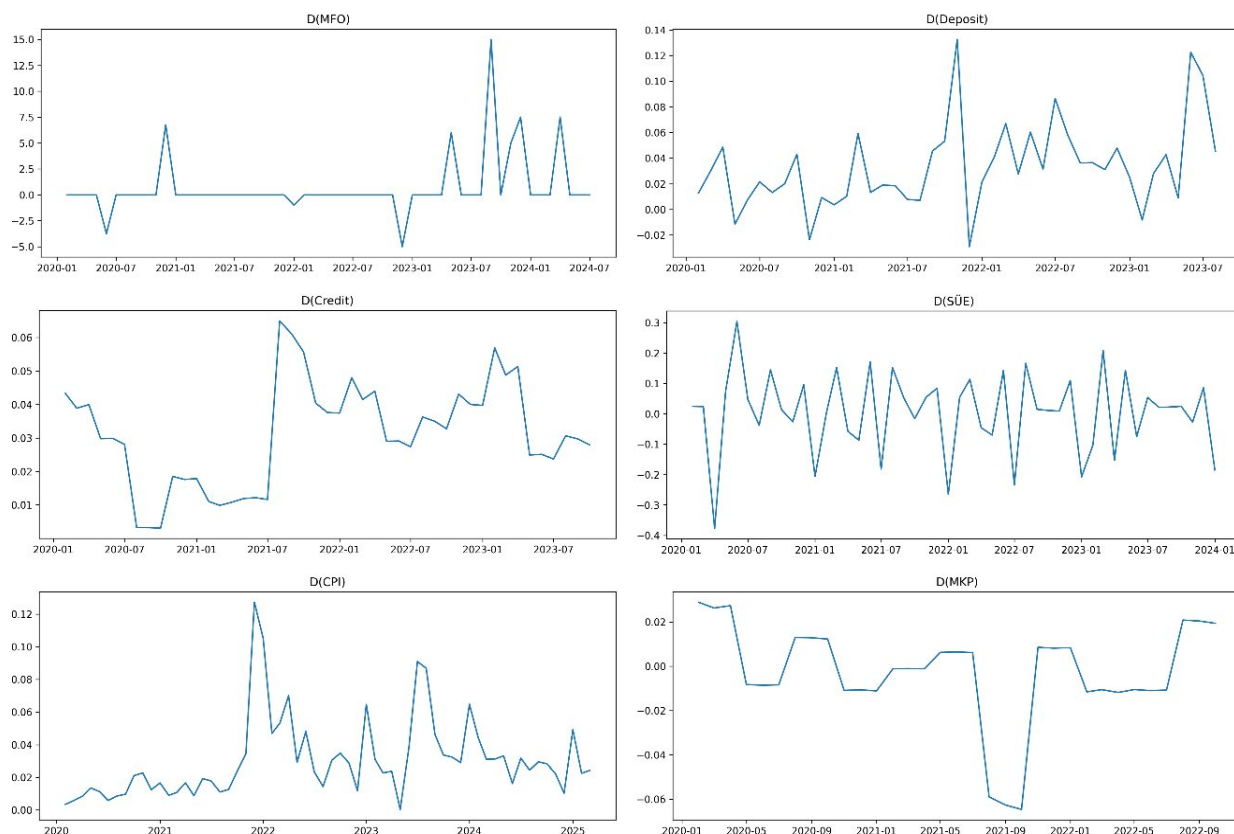


Figure 2. First-Difference Graphical Representations of the Variables Used in the VAR Model

Note: The figure presents the first-differenced forms of money supply, interbank overnight weighted average interest rate, deposit interest rate, total deposits, total credit, industrial production, consumer prices, and securities portfolio.

Figure 2 shows that the first-differenced series fluctuate around a relatively more stable mean and no longer exhibit the pronounced trend patterns observed in the level series. In general, the transformed variables appear more suitable for time-series modeling, which is consistent with the ADF and PP findings reported in Table 4. Therefore, the graphical evidence supports the conclusion that the variables can be treated predominantly as integrated of order one, $I(1)$.

4.3. Lag Length Selection and Diagnostic Tests

Following the unit root analysis, the next step is to determine the appropriate lag length for the VAR model. In multivariate time-series analysis, lag selection is critical because an insufficient lag structure may omit important dynamic relationships, while an excessive lag order may lead to overparameterization. Therefore, the optimal lag length was evaluated by using standard information criteria, namely the Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan–Quinn Criterion (HQ).

Table 5. VAR Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	813.5089	NA	2.63e-23	-29.29123	-28.99926	-29.17833
1	973.3925	267.4416	8.23e-25	-32.77791	-30.15013*	-31.76173
2	1021.9590	67.10997	1.66e-24	-32.21669	-27.25310	-30.29723
3	1112.1620	98.40344	9.64e-25	-33.16953	-25.87014	-30.34680
4	1225.2290	90.45371*	4.05e-25	-34.95379	-25.31859	-31.22778
5	1365.2710	71.29408	1.85e-25*	-37.71895*	-25.74795	-33.08967*

Table 5 reports the lag length selection criteria for the VAR model. The asterisks indicate the preferred lag order under each criterion. The results show that the AIC, FPE, and HQ criteria select lag 5, while the SC criterion suggests a more parsimonious lag order of 1. In addition, the LR statistic favors lag 4. Considering that several criteria support lag 5, the VAR(5) specification was selected for the baseline analysis.

However, given the relatively limited sample size and the number of variables included in the system, this choice should be interpreted with caution in terms of model parsimony.

After determining the lag structure, the adequacy of the estimated VAR(5) model was evaluated through diagnostic tests for serial correlation, heteroskedasticity, and stability.

Table 6. LM Autocorrelation Test Results

Lag	LRE* Stat	df	Probability	Rao F-stat	df	Probability
1	74.05981	64	0.1828	1.171313	(64, 52.6)	0.2783
2	96.03939*	64	0.0059	1.770576**	(64, 52.6)	0.0170
3	65.79812	64	0.4144	0.983781	(64, 52.6)	0.5281
4	61.19264	64	0.5764	0.887009	(64, 52.6)	0.6783
5	51.74967	64	0.8645	0.704499	(64, 52.6)	0.9096
5	1365.2710	71.29408	1.85e-25*	-37.71895*	-25.74795	-33.08967*

Note: *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 6 presents the LM serial correlation test results for the VAR(5) model. The null hypothesis of the test states that there is no serial correlation in the residuals. The results indicate that the null hypothesis cannot be rejected for lags 1, 3, 4, and 5. However, at lag 2, the null hypothesis is rejected, suggesting the presence of residual autocorrelation at that lag level. Accordingly, the diagnostic evidence does not sup-

port the conclusion that the model is entirely free from autocorrelation. Rather, the findings indicate that the VAR(5) specification performs reasonably well at most lag levels, but there is a serial correlation issue specifically at the second lag. This result should be taken into account when interpreting the dynamic structure of the model and may be discussed as a limitation of the specification.

Table 7. White Heteroskedasticity Test Results

Chi-Square	df	Probability
1730.172	1728	0.4807

Note: *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 7 reports the White heteroskedasticity test results for the VAR(5) model. The null hypothesis of the test states that the residuals have constant variance, while the alternative hypothesis indicates the presence of heteroskedasticity. Since the probability value of the chi-square statistic is 0.4807, the null hypothesis cannot be rejected at conventional significance levels. Therefore, the results suggest that the estimated VAR(5) model does not suffer from a heteroskedasticity problem.

Finally, the stability of the VAR(5) model was evaluated by examining the inverse roots of the characteristic polynomial. The results indicate that all characteristic roots lie inside the unit circle, which implies that the model satisfies the stability condition. Taken together, the diagnostic tests suggest that the esti-

mated model is stable and does not exhibit heteroskedasticity; however, the serial correlation detected at the second lag should be acknowledged in the interpretation of the findings.

4.4. Variance Decomposition Results

The hypotheses developed in the study are evaluated not only through the overall VAR framework but also through the forecast error variance decomposition results. In particular, H1, H2, and H3 are directly related to the extent to which policy-rate-related financial variables, banking variables, and macroeconomic indicators explain fluctuations in money supply over time.

Table 8. Forecast Error Variance Decomposition Results for Money Supply

Pe- riod	S.E.	Money Supply	BAFO	MFO	DEPOSIT	CREDIT	SÜE	CPI	MKP
1	0.013645	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.017931	92.47744	0.039984	1.086368	0.000401	0.352694	0.512694	5.310605	0.219811
3	0.020163	89.52711	0.387095	1.783973	0.001025	0.768211	0.663015	6.485455	0.384117
4	0.021073	82.71934	2.081521	3.838919	0.209636	2.440566	0.982308	7.174146	0.553559
5	0.021570	79.13877	3.595603	5.119024	0.319491	3.217335	0.937651	7.030113	0.642014
6	0.021835	77.23985	4.591911	5.459644	0.389248	3.799928	0.924466	6.954138	0.640816
7	0.022129	75.56372	6.142264	5.690640	0.389254	3.700152	0.906019	6.941018	0.666931
8	0.022453	74.02694	7.444192	5.859718	0.460619	3.606234	0.905145	7.046256	0.650897
9	0.022714	73.28503	8.057762	5.896022	0.615236	3.526163	0.891477	7.087531	0.640775
10	0.022888	72.52317	8.499255	5.986781	0.773984	3.473100	0.928242	7.103661	0.711802

Table 8 reports the forecast error variance decomposition of money supply over a ten-period horizon. The results show that, in the first period, the forecast error variance of money supply is explained entirely by its own shocks. This is an expected finding in VAR-based variance decomposition and indicates that money supply initially reflects its own short-run internal dynamics.

However, as the time horizon expands, the explanatory power of money supply's own shocks gradually declines. By the tenth period, the proportion explained by its own innovations falls to 72.52%, implying that the contribution of other macro-financial variables becomes increasingly important over time. This pattern suggests that money supply dynamics in Türkiye are not purely self-determined in the medium term; rather, they are progressively shaped by policy-related financial variables and broader macroeconomic conditions.

Among the policy-rate-related financial variables, BAFO and MFO display a rising contribution throughout the forecast horizon. The explanatory share of BAFO increases from virtually zero in the first periods to 8.50% in the tenth period, while the contribution of MFO reaches 5.99%. These findings provide support for H1, indicating that policy-rate-related financial variables have a statistically meaningful role in explaining money supply dynamics. More specifically, the results suggest that interbank and deposit rate conditions become increasingly relevant in the transmission of monetary policy to monetary aggregates.

The contribution of banking variables also becomes more visible over time. Although the effect of DEPOSIT remains relatively limited, increasing to 0.77% in the tenth period, the contribution of CREDIT rises more clearly and reaches 3.47% by the end of the forecast horizon. This pattern supports H2, which states that deposit and credit variables provide explanatory power for changes in money supply.

In particular, the stronger medium-term role of credit suggests that bank lending dynamics form an important part of the transmission from financial conditions to money supply.

With respect to macroeconomic indicators, the explanatory share of CPI increases substantially after the first period and reaches 7.10% in the tenth period. This is one of the largest contributions among the non-monetary variables and supports H3, indicating that inflation contributes significantly to the dynamic behavior of money supply. In contrast, the contribution of SÜE remains more modest, fluctuating around 1% throughout the forecast horizon. This suggests that industrial production has a more limited but still non-negligible role in the system. Taken together, these findings indicate that price dynamics are more influential than real activity in explaining variations in money supply within the period examined.

The contribution of MKP remains comparatively low, reaching 0.71% in the tenth period. Although this indicates that the securities portfolio variable has a limited direct contribution to the forecast error variance of money supply, its presence in the system is still relevant for capturing the broader financial environment surrounding monetary transmission.

Overall, the variance decomposition results indicate that money supply is initially driven by its own shocks, but the explanatory role of other macro-financial variables increases over time. In particular, interbank interest rates, deposit interest rates, credit, and inflation emerge as the most important external contributors to money supply dynamics. These findings are consistent with the multidimensional structure of the monetary transmission mechanism and suggest that the management of money supply in Türkiye is closely associated with both financial and macroeconomic developments.

4.5. Granger Causality Results

Finally, the causal relationships among the variables were examined by means of the Granger causality test, and the results are reported in Table 9. In this context, H4 proposes that there are Granger-causal

relationships between money supply and selected macro-financial variables associated with monetary policy transmission. It should be noted that Granger causality refers to predictive causality based on lagged values and should not be interpreted as structural causality in the strict sense.

Table 9. Granger Causality Test Results

Null Hypothesis	Test Statistic	Probability	Decision
DBAFO does not Granger-cause Money Supply	6.860	0.3340	Not rejected
DMFO does not Granger-cause Money Supply	26.636	0.0074	Rejected
DLMDEPOSITS does not Granger-cause Money Supply	21.613	0.0014	Rejected
DLKREDI does not Granger-cause Money Supply	20.935	0.0019	Rejected
DLSUE does not Granger-cause Money Supply	22.540	0.0010	Rejected
DLTUFE does not Granger-cause Money Supply	10.603	0.1014	Not rejected
DLMKP does not Granger-cause Money Supply	25.521	0.0003	Rejected
Money Supply does not Granger-cause DMFO	26.482	0.0036	Rejected
Money Supply does not Granger-cause DBAFO	9.392	0.1046	Not rejected
Money Supply does not Granger-cause DLMDEPOSITS	25.327	0.0184	Rejected
Money Supply does not Granger-cause DLKREDI	27.430	0.0082	Rejected
Money Supply does not Granger-cause DLSUE	8.520	0.1385	Not rejected
Money Supply does not Granger-cause DLTUFE	22.395	0.0167	Rejected
Money Supply does not Granger-cause DLMKP	10.330	0.1081	Not rejected

The results in Table 9 indicate that several macro-financial variables possess statistically significant predictive power for money supply dynamics. In particular, the null hypothesis is rejected for DMFO, DLMDEPOSITS, DLKREDI, DLSUE, and DLMKP, indicating that these variables Granger-cause money supply over the sample period. By contrast, the null hypothesis cannot be rejected for DBAFO and DLTUFE, suggesting that these variables do not exhibit statistically significant predictive causality toward money supply within the estimated framework.

The findings for DMFO provide support for H1, which states that policy-rate-related financial variables have a statistically significant effect on money supply dynamics in Türkiye. More specifically, changes in deposit interest rates appear to contain useful predictive information for subsequent changes in money supply. However, the same result is not observed for DBAFO, since the interbank overnight weighted average interest rate does not Granger-cause money supply at conventional significance levels. Therefore, the evidence for H1 should be interpreted as partial, rather than applying uniformly to all interest-rate-related variables.

The results for DLMDEPOSITS and DLKREDI provide clear support for H2. Both deposit and credit variables are found to Granger-cause money supply,

suggesting that banking-sector balance sheet dynamics have an important explanatory role in the behavior of monetary aggregates. The significance of the credit variable is particularly noteworthy, as it is consistent with the view that lending activity forms an important channel in the expansion of broad money. Similarly, the result for deposits indicates that funding conditions within the banking system are closely connected to money supply movements.

With respect to H3, the evidence is mixed. DLSUE is found to Granger-cause money supply, implying that industrial production contributes significantly to the dynamic behavior of money supply. This result supports the role of real economic activity in the monetary transmission process. In contrast, DLTUFE does not Granger-cause money supply, although money supply is found to Granger-cause DLTUFE in the reverse direction. This finding suggests that inflation appears to respond to changes in money supply rather than acting as a statistically significant predictor of it within the estimated model. Accordingly, H3 is supported more clearly for industrial production than for inflation.

The bidirectional results are also important. Money supply Granger-causes DMFO, DLMDEPOSITS, DLKREDI, and DLTUFE, while DMFO, DLMDEPOSITS, and DLKREDI also Granger-cause money

supply. This pattern indicates that the interaction between money supply and selected banking variables is not one-directional. Instead, it reflects a dynamic feedback structure within the monetary transmission mechanism. In particular, the bidirectional relationships between money supply and deposit interest rates, deposits, and credit point to a close interdependence between monetary aggregates and banking-sector conditions.

Another noteworthy finding concerns DLMKP. Although the contribution of this variable in the variance decomposition analysis remains relatively limited, the Granger causality results show that changes in securities portfolios have predictive power for money supply. This suggests that portfolio-related financial adjustments may still play a role in shaping the broader macro-financial environment associated with monetary developments.

Overall, the Granger causality results provide clear support for H4, indicating that statistically significant predictive relationships exist between money supply and several macro-financial variables associated with monetary policy transmission. More specifically, deposit interest rates, deposits, credit, industrial production, and securities portfolios emerge as relevant predictors of money supply over the period analyzed. These results suggest that money supply dynamics in Türkiye are shaped not only by narrow monetary conditions but also by broader banking, production, and portfolio-related developments.

These results should also be interpreted in light of the absence of a reported cointegration analysis. Accordingly, the Granger causality findings are evaluated as predictive relationships within the VAR framework rather than as evidence of long-run structural causality.

5. Conclusion

This study examined the effects of CBRT policy rate decisions on money supply dynamics in Türkiye within a VAR framework. In line with this objective, the analysis focused on the dynamic relationships between money supply and selected macro-financial variables, namely interbank overnight weighted average interest rates, deposit interest rates, total deposits, total credit, industrial production, inflation, and securities portfolios. The empirical framework was supported by unit root tests, lag length selection criteria, and diagnostic tests for serial correlation, heteroskedasticity, and model stability.

The findings indicate that money supply is initially explained largely by its own internal dynamics. However, as the forecast horizon expands, the explanatory role of other macro-financial variables becomes more visible. In particular, variance decomposition results show that deposit interest rates, interbank interest rates, credit volume, inflation, and,

to a lesser extent, industrial production and securities portfolios contribute to the dynamic behavior of money supply over time. These results suggest that money supply in Türkiye is not shaped solely by its own internal structure, but also by the gradual influence of policy-related financial and macroeconomic variables.

The Granger causality results further strengthen this conclusion. Deposit interest rates, deposits, credit, industrial production, and securities portfolios were found to have predictive power for money supply, while money supply was also found to Granger-cause some of these variables in return. These findings point to the existence of a dynamic feedback structure between money supply and selected banking and macroeconomic variables. In particular, the bidirectional relationships involving deposits, credit, and deposit interest rates indicate that money supply and banking-sector conditions are closely interconnected within the monetary transmission mechanism.

Taken together, the empirical findings support the view that the transmission of CBRT policy decisions operates through multiple channels rather than through a single mechanism. Interest-rate-related variables, banking-sector balance sheet variables, and selected macroeconomic indicators jointly contribute to the behavior of money supply. In this respect, the results underline the importance of evaluating monetary transmission in a multidimensional framework that incorporates both financial and real-side variables. Overall, the empirical findings provide clear support for H2 and H4, while H1 and H3 are supported only partially.

From a policy perspective, the findings imply that the effectiveness of monetary policy cannot be assessed only through short-term policy rate adjustments. The response of deposits, credit conditions, inflation dynamics, and real economic activity should also be taken into account when evaluating the broader effects of policy decisions on monetary conditions. Therefore, the management of money supply in Türkiye requires a coordinated understanding of interest rate transmission, banking-sector behavior, and macroeconomic developments.

Despite these contributions, the study has certain limitations. First, the sample period is relatively limited and includes extraordinary episodes such as the pandemic period and changes in the monetary policy environment. Second, the results are derived from a reduced-form VAR framework, which is useful for identifying dynamic interactions but does not establish structural causality. In addition, although the variables were found to be predominantly $I(1)$, the study does not report Johansen cointegration results; therefore, the findings should be interpreted within the limits of the VAR specification rather than as evidence of a confirmed long-run equilibrium.

um relationship. Third, the findings may be sensitive to lag structure, variable definitions, and possible structural breaks within the sample period. Future studies may extend the sample period, incorporate structural break tests, and compare the findings with alternative specifications such as VECM or structural VAR models.

In conclusion, the study shows that money supply dynamics in Türkiye are influenced not only by their own past values but also by the evolving effects of interest rates, credit conditions, deposits, inflation, and production-related variables. Accordingly, the results contribute to the literature by providing evidence that the monetary transmission mechanism in Türkiye operates through interrelated macro-financial channels and that money supply should be analyzed within a broader systemic framework.

References

- Akşehirli, N. (2024). Interest rate pass-through in Türkiye: Evidence of the monetary policy approach. *Journal of Research in Economics, Politics & Finance*, 9(2), 287–305. <https://doi.org/10.30784/epfad.1407576>
- Aydın, H. İ. (2007). Interest rate pass-through in Turkey (CBRT Working Paper No. 07/05). Central Bank of the Republic of Turkey.
- Barth, M. J., III, & Ramey, V. A. (2002). The cost channel of monetary transmission. In B. S. Bernanke & K. Rogoff (Eds.), *NBER macroeconomics annual 2001* (Vol. 16, pp. 199–256). MIT Press.
- Başçı, E., Özel, Ö., & Sankaya, Ç. (2007). The monetary transmission mechanism in Turkey: New developments (CBRT Working Paper No. 07/04). Central Bank of the Republic of Turkey.
- Baziki, S. B., & Çapacıoğlu, T. (2020). Bank lending and maturity: The anatomy of the transmission of monetary policy (Working Paper No. 20/05). Central Bank of the Republic of Turkey.
- Bernanke, B. S., & Blinder, A. S. (1988). Credit, money, and aggregate demand. *American Economic Review*, 78(2), 435–439.
- Bernanke, B. S., & Gertler, M. (1995). Inside the black box: The credit channel of monetary policy transmission. *Journal of Economic Perspectives*, 9(4), 27–48.
- Binici, M., Erol, H., Kara, H., Özlü, P., & Ünalı, D. (2013). Interest rate corridor: A new macroprudential tool? (CBT Research Notes in Economics No. 2013-20). Central Bank of the Republic of Turkey.
- Boivin, J., Kiley, M. T., & Mishkin, F. S. (2010). How has the monetary transmission mechanism evolved over time? In B. M. Friedman & M. Woodford (Eds.), *Handbook of monetary economics* (Vol. 3A, pp. 369–422). Elsevier.
- Can, U. (2020). How does the monetary transmission mechanism work? Evidence from Turkey. *Journal of Behavioral and Experimental Finance*, 26, 100308.
- Central Bank of the Republic of Türkiye. (n.d.-a). Monthly money and banking statistics. TCMB Statistics website. Retrieved March 16, 2026
- Central Bank of the Republic of Türkiye. (n.d.-b). Interest rates on deposits (monthly stock data, weighted average). TCMB Statistics website. Retrieved March 16, 2026
- Central Bank of the Republic of Türkiye. (n.d.-c). Consumer prices. TCMB Statistics website. Retrieved March 16, 2026
- Choi, S., Furceri, D., Loungani, P., Mishra, S., & Poplawski-Ribeiro, M. (2022). Revisiting the monetary transmission mechanism through an industry-level differential approach (IMF Working Paper No. 22/17). International Monetary Fund.
- Choi, S., Willems, T., & Yoo, S. Y. (2022). Revisiting the monetary transmission mechanism through an industry-level differential approach (IMF Working Paper No. 22/17). International Monetary Fund.
- Disyatat, P. (2011). The bank lending channel revisited. *Journal of Money, Credit and Banking*, 43(4), 711–734.
- Duran, M., Özcan, G., Özlü, P., & Ünalı, D. (2012). Measuring the impact of monetary policy on asset prices in Turkey. *Economics Letters*, 114, 29–31.
- Eickmeier, S., Gong, C., & Ortega, E. (2022). What drives inflation? Disentangling demand and supply factors (BIS Working Paper No. 1047). Bank for International Settlements.
- Gambacorta, L., & Marques-Ibanez, D. (2011). The bank lending channel: Lessons from the crisis (BIS Working Paper No. 345). Bank for International Settlements.
- Günay, M. (2018). Forecasting industrial production and inflation in Turkey with factor models (CBRT Working Paper No. 18/05). Central Bank of the Republic of Türkiye.
- Ha, J., Kose, M. A., Ohnsorge, F., & Yilmazkuday, H. (2024). Resolving puzzles of monetary policy transmission in emerging market and developing economies (NBER Working Paper No. 33133). National Bureau of Economic Research.
- Kashyap, A. K., & Stein, J. C. (1994). Monetary policy and bank lending. In N. G. Mankiw (Ed.), *Monetary policy* (pp. 221–261). University of Chicago Press.
- Miranda-Pinto, J., & Young, E. R. (2023). Monetary policy transmission through commodity prices (IMF Working Paper No. 23/215). International Monetary Fund.
- Mishkin, F. S. (1995). Symposium on the monetary transmission mechanism. *Journal of Economic Perspectives*, 9(4), 3–10.
- Mishkin, F. S. (1996). The channels of monetary transmission: Lessons for monetary policy (NBER Working Paper No. 5464). National Bureau of Economic Research.
- Özsuca, E. A., & Akbostancı, E. (2012). An empirical analysis of the bank lending channel in Turkey (ERC Working Paper No. 12/05). Economic Research Center, Middle East Technical University.
- Sarac, T. B., & Ucan, O. (2013). The interest rate channel in Turkey: An investigation with Kalman filter approach. *International Journal of Economics and Financial Issues*, 3(4), 874–884.
- Saygılı, H. (2021). How do real and monetary integrations affect inflation dynamics in Turkey? (CBRT Working Paper No. 21/21). Central Bank of the Republic of Türkiye.
- Şahin, S., Çiçek, S., & Yıldırım, D. (2018). Interest rate pass-through in Turkey during the period of unconventional interest rate corridor. *Quantitative Finance and Economics*, 2(4), 837–859.
- Sims, C. A. (1980). Macroeconomics and reality. *Econometrica*, 48(1), 1–48.
- Turkish Statistical Institute. (2025). Industrial production index, December 2025. TURKSTAT Data Portal. Retrieved March 16, 2026
- Us, V. (2004). Monetary transmission mechanism in Turkey under the monetary conditions index: An alternative policy rule. *Applied Economics*, 36(9), 967–976. <https://doi.org/10.1080/0003684042000233195>
- Yüksel, E., Metin-Özcan, K., & Hatipoğlu, O. (2013). Interest rate pass-through in Turkey and the impact of global financial crisis: Asymmetric threshold cointegration analysis. *Journal of Policy Modeling*, 35(4), 603–622.

Analysis of Cape Jason and the Church Visitor Experiences Based on TripAdvisor Reviews

Taner Dalgın* / Assoc. Prof. Dr. 

Muğla Sıtkı Koçman University, Muğla Vocational School, Tourism and Travel Services
tanerdalgın@mu.edu.tr

Emrah Kara / Ph.D. Stu. 

Muğla Sıtkı Koçman University, Institute of Social Sciences, Department of Tourism Management
emrahkara4852@gmail.com

Burçak Akıncı Ekiztepe / Ind. Res. Dr. 

Söke District National Education Directorate, Seyda Fırat Primary School
burcakakinciekiztepe@gmail.com

Bilgin Güner / Lect. 

Muğla Sıtkı Koçman University, Milas Vocational School, Hotel, Restaurant and Catering Services
bilginguner@gmail.com

Hüseyin Çeken / Prof. Dr. 

Muğla Sıtkı Koçman University, / Faculty of Tourism, Tourism Management
hceken@mu.edu.tr

*Corresponding Author

Abstract

International travelers extensively use the internet to plan trips and read other travelers' reviews. The aim of this research is to analyze the visitor experiences of Cape Jason and the Church are located in the Perşembe district of Ordu province on the Black Sea coast of Türkiye, as a tourist attraction associated with the recognition of the destination and the development of its destination identity. For this purpose, online reviews from TripAdvisor were examined and analyzed using the netnography method. The findings revealed the main themes of "positive comments", "information", "negative comments", "advice", and "warning", along with 53 subthemes. "Positive comments" emerged as the most frequent main theme, with "landscape" being the most prominent subtheme, indicating the strong role of natural beauty and environmental aesthetics in shaping the visitor experiences. However, themes such as "guidance" and "need for content" suggest that visitors seek not only spatial experiences but also

historical and cultural context. Although negative comments were fewer, they highlighted issues related to infrastructure and maintenance. The study contributes to the tourism experience literature by providing a context-specific and theory-driven interpretation of visitor experiences in a relatively underexplored heritage setting. By linking the findings to the dimensions of memorable tourism experience (MTE), it demonstrates that online reviews reflect interconnected hedonic, cognitive, and behavioral components of tourism experiences. Future research may examine how MTE dimensions vary across visitor segments and cultural contexts to better understand the formation of memorable experiences in heritage destinations.

Keywords: Visitor Experiences, TripAdvisor, Cape Jason and the Church, Perşembe.

JEL Codes: Z30, Z31, D12

Citation: Dalgın, T., Kara, E., Akıncı Ekiztepe, B., Güner, B., & Çeken, H. (2026). Analysis of Cape Jason and the church visitor experiences based on TripAdvisor reviews. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Understanding how tourist experiences are interpreted and translated into satisfaction has become a critical issue in contemporary tourism research (Juliana et al., 2024). As destinations increasingly compete through the experiences they offer, a key challenge lies in ensuring that these experiences are perceived positively and transformed into satisfaction, loyalty, and revisit intentions. In this context, destination success depends not only on attracting new visitors but also on sustaining demand by effectively managing tourists' experiential evaluations. Satisfaction, as an outcome of these evaluations, plays a central role in encouraging repeat visits and positive word-of-mouth, while also contributing to the economic sustainability and competitive advantage of destinations by reducing marketing costs and price sensitivity (Jarvis et al., 2016; Cosvi et al., 2019). Providing positive and satisfying experiences is therefore essential not only for fostering revisit intentions and customer loyalty (Cavlak & Cop, 2019), but also for enhancing destination reputation and perceived image in an environment where experiences are widely shared (Awaloedin et al., 2024). In addition, destinations that take into account tourists' feedback and continuously improve their facilities can both directly strengthen revisit intentions and indirectly attract new visitors through the influence of online reviews (Oğuz & Timur, 2020). Within this framework, tourist satisfaction can be understood as a multidimensional evaluation shaped by factors such as service quality, facility standards, price fairness, and safety, highlighting the responsibility of destinations to design memorable and distinctive experiences that support long-term behavioral outcomes (Öktem & Akdu, 2022). Therefore, tourism should be conceptualized not merely as a service-based sector, but as a system shaped by how tourists interpret and evaluate their experiences.

Nowadays, digital technologies and social media play an extremely important role for tourism businesses to improve their product and service quality. The opportunities and environments created by digital technologies are seen as a new interaction channel that facilitates businesses to communicate with customers and customers to communicate with each other (Nilashi et al., 2018). It is noteworthy that tourists use online reviews to reduce perceived risk and uncertainty towards tourism-based activities and destinations (Su et al., 2022). International travelers extensively use the Internet to plan their trips and read reviews from other travelers (Liu & Park, 2015). According to the Travel Industry Association of America, 64% of travelers plan their trips based on search engines and social media reviews. While until recently, tourists were more likely to share their experiences with their personal reference circles, online travel experience platforms have changed this. Today, people have started to refer to reviews of pe-

ople and organizations that they consider important on online platforms, along with their close circles. The focal point of using a netnography design in this study is the increasing influence of online platforms on perceptions and decision-making processes related to touristic experiences. TripAdvisor, the world's largest tourism and travel-oriented user review platform, is an important reference source that provides an online environment for tourists to share their opinions on various aspects of destinations and hotels (Nilashi et al., 2018). Online reviews on TripAdvisor, as a form of electronic word-of-mouth (eWOM), represent user-generated content through which visitor experiences are articulated and shared. These eWOM contents provide rich insights into visitor experiences, which can be interpreted within the framework of memorable tourism experience (MTE).

A growing body of research has utilized TripAdvisor reviews as a data source to explore different dimensions of tourism experiences and visitor perceptions. For example, Atasoy (2025) examines cultural heritage experiences in the ancient city of Olympos through tourist narratives and reveals that visitor experiences are shaped by the interaction of historical, natural, and emotional elements, reflecting cognitive, sensory, and affective responses. Similarly, Akgül (2025) focuses on sacred heritage sites and analyzes how visitors construct their experiences in religious contexts, highlighting the role of cultural meaning and spiritual perception. In a different context, Can (2025) explores the digital representation of gastronomic identity through TripAdvisor reviews, demonstrating how user-generated content contributes to the formation of destination image and culinary perception. Çifçi and Kızılırmak (2025), on the other hand, examine customer experience components in vegan restaurants using a netnographic approach, emphasizing experiential dimensions related to service, product, and lifestyle preferences.

In the context of heritage and museum studies, Islam (2025) analyzes visitor sentiments in archaeological sites, revealing how emotional expressions in online reviews reflect satisfaction and perceived value, while Ferguson and Walby (2025) investigate military museums and highlight how visitors interpret authenticity and engagement within historical narratives. Similarly, Plichta and Pecela (2025) focus on religious heritage in Vilnius and examine how tourists perceive and evaluate sacred spaces through online narratives. Samida (2025) approaches the topic from a different perspective by analyzing digital memory and dark heritage, showing how visitors interpret controversial historical sites through emotionally and culturally loaded narratives.

Beyond single-destination or thematic studies, some research adopts more advanced analytical approaches. For instance, Candrea et al. (2025) employ sentiment analysis and topic modeling techniques to identify visitor experience patterns and differen-

ces across visitor segments in mountain museums, providing a cross-country comparative perspective. Similarly, Sidor et al. (2025) analyze geoheritage destinations using online data to identify aggregated experience dimensions and their implications for destination management organizations, while Tanrıverdi et al. (2025) examine cave tourism experiences through content analysis and reveal the key experiential dimensions shaping visitor perceptions. Finally, Tuncer (2025) investigates shopping center preferences based on online reviews, demonstrating how consumer decision-making processes are influenced by perceived service quality, environment, and experiential factors.

Overall, these studies demonstrate that TripAdvisor reviews provide rich insights into tourists' emotional responses, experiential evaluations, and perception of destination attributes. However, despite this growing body of literature, existing studies have largely focused on specific contexts or themes and have often remained descriptive, highlighting the need for more context-specific and theory-driven research that integrates experiential dimensions within a comprehensive analytical framework.

Cape Jason and its Church located in the Perşembe district of Ordu province on the Black Sea coast of Türkiye. Cape Jason and its Church represent a distinctive cultural heritage setting that combines archaeological significance with natural landscape features, thereby offering a multifaceted touristic experience. Existing studies in the tourism literature have increasingly utilized online reviews to examine visitor perceptions across various destinations; however, these studies have largely focused on more well-known destinations and have generally remained at a descriptive level.

In this context, there is a need for studies that provide a more in-depth understanding of how tourist experiences are perceived and expressed, particularly in relatively underexplored heritage settings. Accordingly, this study aims to examine how visitor experiences are constructed and interpreted through user-generated content and to reveal the experiential dimensions reflected in online narratives. From this perspective, Cape Jason Church is used as an empirical case to better understand how meaning-making processes, emotional responses, and contextual factors shape tourist experiences. In doing so, the study is expected to contribute to the tourism experience literature by providing context-specific insights and by offering a more comprehensive interpretation of visitor experiences based on naturally occurring data.

Although online reviews have become a widely used data source for understanding tourist experiences, much of the existing research has primarily focused on identifying surface-level themes such as satisfaction, complaints, or destination attributes. While

these descriptive insights are valuable, they often remain limited in explaining how these experiences are cognitively processed, emotionally internalized, and later transformed into memorable outcomes. In particular, there is a lack of studies that reinterpret user-generated content through a theoretically grounded experiential perspective. Memorable tourism experience (MTE) theory suggests that tourism experiences are multidimensional, shaped by interconnected emotional, cognitive, and behavioral components (Kim et al., 2012). However, the integration of this theoretical perspective into netnography-based analyses of online reviews remains limited.

In this context, the present study moves beyond descriptive categorization by reinterpreting online visitor reviews within a multidimensional experiential framework. By linking naturally occurring user-generated content with the theoretical dimensions of MTE, the study provides a deeper understanding of how tourist experiences are constructed, interpreted, and transformed into meaningful and memorable experiences in a relatively underexplored heritage destination. Therefore, the originality of this study lies not only in its empirical context but also in its ability to bridge netnographic data with experience-based tourism theory. Accordingly, in order to operationalize the research aim and provide a structured analytical framework, the study is guided by the following research questions:

RQ1: What are the main themes reflected in visitors' online reviews of Cape Jason and the Church?

RQ2: How can these themes be interpreted in relation to the dimensions of memorable tourism experience (MTE)?

RQ3: What factors contribute to positive and negative visitor evaluations in the context of the destination?

RQ4: How do visitors' online reviews reflect post-visit engagement such as recommendations and advice?

2. Literature Review

2.1. The Importance of Online Visitor Reviews for Destinations

The scope of tourist experiences and the sharing of these experiences are important issues for destinations seeking to remain competitive in the tourism sector (Decrop & Snelders, 2005). In addition, feedback regarding tourist experiences provides destinations with the opportunity to strengthen their tourism product design and improve the overall tourist experience. With the widespread use of digital technologies today, the sharing of tourist experiences has accelerated, and the impact it creates has become significantly stronger (Sultan et al., 2019). With the advancements in technology, it is seen that the social media phenomenon, which includes various

websites and online platforms where people share all kinds of experiences in different ways, has developed (Xiang & Gretzel, 2010). In recent years, online sharing sites where consumers share their past experiences have become valuable sources of information that allow consumers to access important, detailed and reliable information that they research before choosing a product (Liu & Park, 2015). It is noteworthy that online platforms are increasingly preferred by consumers to help them plan their trips and make informed decisions about tourism-related products. This has become especially important during and after the Covid-19 pandemic, when tourists do not want to experience unexpected events and seek information from sites perceived as accurate and unbiased. Online review readers prefer to seek personal recommendations from other tourists to mitigate potential risks associated with a destination and avoid making poor choices (Su et al., 2022). The development of new online information sources created by users by sharing experiences before, during and after the vacation has become an important issue to be emphasized in terms of influencing the purchase decision process of tourists (Kladou & Mavragani, 2015). Because it has been found that social media content is more reliable in terms of tourists' perceptions than advertisements on official tourism websites or mass media (Kladou & Mavragani, 2015).

There are many online travel review platforms serve as important channels through which tourists share their experiences, thereby shaping the perceptions and decisions of potential visitors. In recent years, many online review platforms in the tourism sector, such as TripAdvisor, Lonely Planet, and Google Maps, have become more prevalent in research and practice, expanding the use of new analytical technologies (Taecharungroj & Mathayomchan, 2019). The most popular of these platforms is TripAdvisor, an online social travel review platform created by its users and a website application for searching for travel-related prices. TripAdvisor users review their travel experiences and supplement them with photos, allowing potential tourists to research tourist attractions and accommodations. As of 2024, TripAdvisor is among the world's most preferred online travel platforms, with over 455 million monthly active users and over 290 million reviews across 49 markets, searchable in 28 languages (TripAdvisor, 2024). Depth of perception is achieved by gathering information from as many sources as possible. Individuals tend to gather as much information as possible before making a purchase from places like destinations, hotels, and restaurants (Kladou & Mavragani, 2015). TripAdvisor is a social network based on the idea that tourists rely on the reviews of other tourists to plan their trips and can get satisfactory help from them in their decisions. Most of the information processed is independently created by its users. Reviews and ratings are posted here about a destination,

accommodation establishment, attraction, tourist supply attraction or any other tourism-related element, good or service. This online platform is also designed to save time in terms of finding people who share similar travel tastes (Miguens et al., 2008).

The TripAdvisor platform is one of the sources of information that can be used to analyze tourist satisfaction with a tourist destination. The information obtained from this platform begins to take shape based on the preferences, experiences, and evaluations of tourists visiting the destination, and emerges as a new combination that may also include the opinions of those who live in the destination, visit the destination, have experience in similar destinations, or simply comment based on the comments of users on this platform. This combination of this information does not exhibit any permanent characteristics. It has a structure that can change rapidly with new interpretations of events. This structure keeps the platform's users constantly active in terms of destination-related information. Tourist reviews and recommendations can be a decisive factor in influencing potential tourists' decisions to visit or avoid certain destinations. Thanks to mobile applications, users can plan their vacations, compare the lowest prices for hotels, airlines, and cruise ships, and make reservations (Awaloedin et al., 2024; TripAdvisor, 2024). TripAdvisor is a platform that works to gain a deeper understanding of how tourism businesses and tourists are changing the online tourism market in a particular destination. The changes brought about by TripAdvisor and similar social networks have led to a new form of competition (Miguens et al., 2008). TripAdvisor is visited by approximately 463 million people every month. The platform assists individuals in making vacation decisions and enables them to share their post-vacation experiences with other users. When examining the volume of these shares, it is evident that there are over 859 million reviews on the platform (TripAdvisor, 2024).

Interpreting and analyzing the visitor experience in tourism is an important tool for revealing tourists' purchasing behaviors, perceptions, and preference patterns regarding products and services during their travel process. The relationship between online reviews and tourists' purchasing decisions is important data that should be taken into consideration in destination management and marketing. Optimizing service and product quality by taking visitor reviews into account will directly affect customer satisfaction and loyalty. Therefore, analyzing visitor reviews provides fundamental data that guides the improvement of marketing strategies, increases the tourism appeal of the destination, and ultimately promotes a sustainable and competitive tourism environment. By analyzing visitor reviews (emotions), decision-makers identify critical areas of satisfaction and areas that need improvement, enabling them to develop strategies to more effectively meet visitor

expectations. These initiatives encourage long-term engagement and positive word-of-mouth communication necessary for the growth of sustainable tourism. As a result, adopting a more responsive and adaptable approach to destination management by considering the results of visitor review analyses will lead to more lasting success, customer satisfaction, and customer loyalty (Singgalen, 2024). Based on this, data from social media platforms will provide destination management with significant opportunities to understand visitor trends and expectations. In this context, the current research aims to reveal the details of the experiences of Cape Jason and the Church based on the TripAdvisor comments and develops recommendations for destination management based on research results.

2.2. Theoretical Framework

The theoretical foundation of this study is grounded in the experience-based approach to tourism and consumer behavior theories, which emphasize that tourists' perceptions, emotions, and evaluations formed during and after the travel experience play a decisive role in satisfaction, loyalty, and behavioral intentions. In tourism research, experience has been conceptualized as a critical determinant of post-visit behaviors and decision-making processes, as tourists rely on past experiences to form expectations and recommendations for others (Meenakshy et al., 2024). In this context, online visitor reviews are considered a reflection of tourists' experiential evaluations and emotional responses, consistent with the principles of experiential marketing and electronic word-of-mouth (eWOM) theory. eWOM theory suggests that user-generated content on digital platforms significantly influences tourists' decision-making processes, destination image formation, and future behavioral intentions (Huete-Alcocer, 2017). By analyzing visitor emotions and experiences expressed in online reviews, the study adopts an experience-centered and eWOM-based theoretical perspective to understand how service quality, destination attributes, and perceived value shape visitor satisfaction and loyalty. Accordingly, the analysis of TripAdvisor reviews is theoretically justified as a valid and reliable means of capturing tourists' experiential perceptions and translating them into actionable insights for destination management.

In addition to this perspective, the concept of memorable tourism experience (MTE) further strengthens the theoretical foundation of the study by providing a multidimensional understanding of how tourism experiences are internalized and remembered by visitors. MTE theory conceptualizes tourism experiences as consisting of emotional, cognitive, and experiential components that contribute to long-term memory formation (Kim et al., 2012). These dimensions play a significant role in shaping sa-

tisfaction, behavioral intentions, and post-visit evaluations. In this context, online visitor reviews can be considered as reflections of memorable aspects of the tourism experience, as they capture the elements that visitors find most meaningful and worth sharing.

In line with this theoretical perspective, although no study in the existing literature has examined the same tourist attraction using the same methodological framework as the present research, several empirical studies have employed online visitor reviews and similar analytical approaches, thereby providing a valuable conceptual and methodological background. Altınay Özdemir and Topaloğlu (2023) analyzed 638 user reviews of the ancient city of Knidos and identified key themes such as attraction, place perception, sustainability concerns, attachment, and behavioral intention. Similarly, Öztürk and Akay (2024) examined TripAdvisor reviews of 22 "cittaslow" cities in Turkey and revealed core dimensions of tourist experience, including hedonism, innovation, renewal, participation, local culture, meaningfulness and knowledge acquisition. These studies demonstrate the applicability of experience-based and eWOM perspectives in interpreting tourists' online evaluations.

Studies focusing on the regional context further support the relevance of this approach. Bahtiyar Karadeniz et al. (2018) emphasized the importance of regional cooperation between decision makers, tourism operators and local people in the protection, management and promotion issues in their studies examining the natural tourist supply resources of Ordu province. Yiğit & Aktaş (2025) revealed how visitors perceive the touristic experiences of Deyrulzafaran Monastery through a netnographic approach. Specifically addressing Cape Jason and the Church, Kara et al. (2022) evaluated the area from a sustainable cultural tourism perspective and underlined the need to balance conservation and utilization while enhancing promotional and marketing activities. Korkut et al. (2023), using data from social media platforms, found that the touristic attractiveness of the Cape Jason and the Church recreation area stems from the integration of historical elements with natural landscape features.

Building on this theoretical and empirical background, the primary objective of this study is to investigate online reviews of Cape Jason and the Church, to draw inferences about visitor experiences, and to develop recommendations for destination management based on these inferences. In this context, online reviews from TripAdvisor, a travel review platform that facilitates travel planning, were examined and analyzed. This theoretical framework guides the analysis of online reviews by enabling the identification of prominent experiential themes related to Cape Jason and the Church, which serve

as a basis for developing destination management recommendations. Comments on Cape Jason and the Church were analyzed through netnographic analysis, identifying the focal points of tourist attraction experiences. The findings will provide a clearer understanding of experiences related to Cape Jason and the Church and increase opportunities for improvement.

2.3. Cape Jason and the Church

Cape Jason, the only peninsula with a church on the Black Sea coast (Ordu Provincial Directorate of Culture

re and Tourism, 2024), is located on the coastal road within the Çaytepe neighborhood of the Perşembe district of Ordu province (between Fatsa Bolaman and Perşembe Efirli Beach). A review of relevant literature reveals that the area has been inhabited since ancient times, and that the church was built by the local Greeks in 1868 and restored in 2004 (Okuyucu, 2013; Buyruk, 2019; Meral & Kumargal, 2020). Cape Jason is currently protected as a first-degree archaeological site and a second-degree natural site (Ordu Provincial Directorate of Culture and Tourism, 2024). Photograph 1 presents different views of Cape Jason and the Church.



Photo 1. Photos of Cape Jason and the Church

Source: <https://ordu.ktb.gov.tr/tr-130751/yason-burnu-persembeordu.html>, <https://karadeniz.gov.tr/yason-kilisesi/>, Buyruk, 2019

Cape Jason and the Church are visited as part of cultural tourism, while also being a destination of choice for those who want to watch and photograph the sunrise and sunset. Today, Cape Jason also hosts various concerts and kite festivals.

3. Method

3.1. Purpose and Importance of Research

This study is based on the assumption that visitor reviews play a critical role in the development of destinations and in directing demand for destinations (Erdoğan & Yaşarsoy, 2023; Gedik, 2021). The main purpose of the research is to analyze the visitor

experiences of Cape Jason and the Church, which are important tourist attractions in the Perşembe district of Ordu province. In addition, this study aims to develop specific recommendations based on the research findings to increase awareness of Cape Jason and the Church and to ensure the proper management of the tourist attraction. The primary motivation for selecting this tourist attraction for the study was its status as one of the most visited tourist attractions in the region and the limited scientific research available on the area. Therefore, it is believed that this study on Cape Jason and the Church will contribute to tourism literature in general and destination management decisions regarding tourist attractions in particular.

3.2. Research Design

This study adopts a qualitative research design, as it enables an in-depth understanding of subjective meanings and experience-based interpretations (Creswell & Creswell, 2017; Patton, 2014). Within this framework, the netnography approach was employed to analyze user-generated content in online environments. The discipline of netnography was first used by researcher Kozinets to better understand today's individuals, who are increasingly socializing in online communities, from a consumer perspective (Kozinets, 1998). Kozinets is also the scientist who first approached netnography as a discipline, specifically designed to study online cultures and communities, and who sought to highlight the ethical and procedural aspects of the method (Kozinets, 2010). The primary reason for choosing a netnography design was to capture the cultural implications of the findings that emerge from individuals instantly sharing their true feelings, thoughts, and experiences in a digital environment. Furthermore, the netnography design was chosen by researchers due to its cost-effectiveness, eliminating time and space constraints and enabling easy and rapid access to data through online environments.

The population of the study consists of all comments made about Cape Jason and the Church on online platforms, while the sample consists of 201 user comments about Cape Jason and the Church on the TripAdvisor platform. The selection of TripAdvisor as the primary data source is based on its structured review system, global recognition, and its widespread use in tourism research. TripAdvisor allows users to produce more comprehensive, experience-based narratives that include contextual information, personal reflections, and evaluative judgments. This characteristic makes TripAdvisor particularly suitable for qualitative approaches such as netnography, where the depth and richness of user-generated content are essential. In addition, TripAdvisor reviews are organized around specific attractions and are subject to a standardized rating and commenting structure, which enhances the consistency and comparability of the data. Therefore, TripAdvisor was preferred as a more appropriate platform for capturing detailed experiential expressions of tourists.

The sample includes 201 user reviews, which may seem numerically limited; however, in qualitative research, adequacy is determined by data richness and relevance rather than size. In this context, the concept of "information power" suggests that the more information a sample holds that is relevant to the study, the fewer observations are required (Malterud et al., 2016). Accordingly, sample size in qualitative studies depends on several factors, including the specificity of the research aim, the depth and

quality of the data, the use of established theoretical frameworks, and the analytical strategy employed. In the present study, the dataset covers a broad temporal range (2014–2024) and includes diverse experiential expressions, enabling the identification of recurring patterns and meaningful themes. The generation of a large number of codes and thematic structures further indicates that the data provide sufficient depth for interpretative analysis. Therefore, the adequacy of the sample should be evaluated in terms of its information power and analytical richness rather than its numerical size, in line with established qualitative research principles.

3.3. Data Collection Source and Data Collection Tool

To focus on online representations of tourist experiences, content shared by users on the TripAdvisor platform regarding Cape Jason and the Church was used as research data. The document analysis method was applied to systematically analyze the text-based data in question. Document analysis, like other analytical methods in qualitative research, is the systematic examination of the content of printed and electronic materials. The purpose of analyzing and interpreting data is to develop empirical knowledge on the topic under investigation (Bowen, 2009; Corbin & Strauss, 2008).

3.4. Data Collection Process

The first search conducted on the TripAdvisor platform in June 2024 identified a total of 203 comments related to Cape Jason and the Church. Of these reviews, 186 were in Turkish, 8 in English, 3 in German, 1 in Russian, 1 in Italian, 1 in French, 1 in Spanish, 1 in Japanese, and 1 in Arabic. The first comment was made on February 18, 2014, and the last comment was made on June 2, 2024. The comments were then transferred to Microsoft Office Word and examined in detail by researchers. During this process, spelling and grammar errors were corrected, and 2 comments unrelated to the subject and tourist attraction were filtered out. The reviews included in the dataset were written in multiple languages and were translated into English prior to analysis. The translation process was conducted using a two-step approach to ensure accuracy and consistency. First, all non-English comments were translated into English using a professional online translation tool. In the second step, the translated texts were carefully reviewed and checked by the researchers to ensure semantic accuracy, contextual consistency, and the preservation of meaning. Particular attention was paid to culturally specific expressions and tou-

rism-related terminology to avoid misinterpretation. This process was implemented to enhance the reliability and validity of the translated data used in the analysis. Thus, a 22-page raw data document was

created, and the analysis phase was initiated. The research process diagram in Figure 1 was created to provide a clearer understanding of the research process.

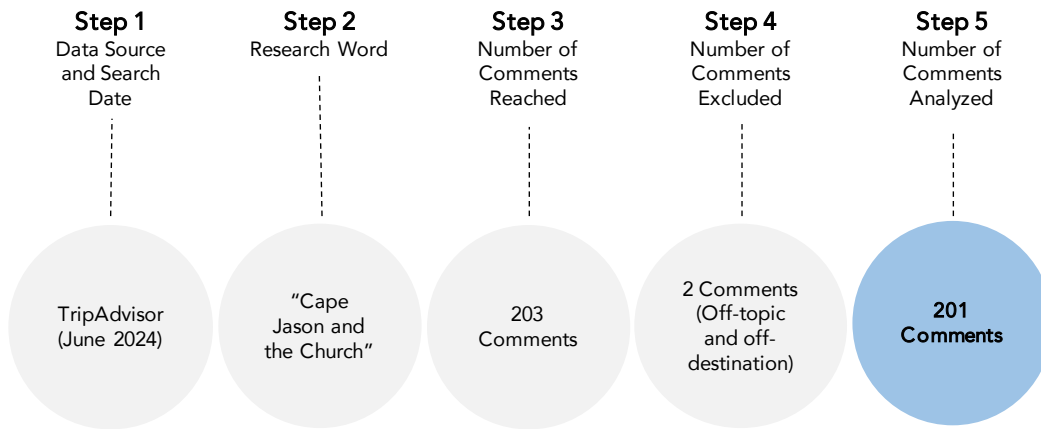


Figure 1. Research Process

As can be seen in Figure 1, first, an online platform was selected where comments related to Cape Jason and the Church could be accessed. In the second stage, keywords expressing tourist attraction were determined from the comments on this platform. In the third step, a search was conducted, and 203 comments were accessed. In the next stage, irrelevant comments were removed from this set. In the final stage, a total of 201 comments were included in the analysis for the study.

3.5. Data Analysis

The data obtained from the TripAdvisor platform was analyzed using content analysis. Content analysis is basically the process of classifying data of similar nature around specific concepts and themes using definitions and theories from the literature and organizing and interpreting them in a way that readers can easily understand. In content analysis, qualitative data are systematically organized through a stepwise process in which meaning units are identified and coded, codes are grouped into themes, and these themes are further developed into categories and interpreted in line with the research objectives. This process is consistent with the principles of systematic text condensation, which involves moving from an overall understanding of the data to coding, condensation, and synthesis of meanings (Malterud, 2012). As a result of the content analysis, 802 codes were created, and these 802 codes were grouped under 6 main themes and 53 subthemes, considering the relationships between them. Some comments contained statements that could be associated with more than one theme. These statements were coded under the theme they

fell under. Therefore, some comments were coded in parts under more than one theme. Direct quotations from visitor comments supporting these themes were included. In the study, which was conducted using manual coding, the "MAXQDA 20" qualitative data analysis program was used to create a word cloud. Later, inferences and evaluations were made about this main theme, sub-theme and word cloud.

3.6. Validity and Reliability

To ensure the trustworthiness of the study, the criteria proposed by Lincoln and Guba (1985) credibility, transferability, dependability, and confirmability were systematically addressed. Credibility was enhanced through prolonged engagement with the data and the use of direct quotations from user reviews to support the identified themes, allowing a clear link between raw data and interpretations. Transferability was ensured by providing a detailed description of the research context, data source, and analytical procedures, enabling readers to assess the applicability of the findings to similar contexts. Dependability was achieved by systematically documenting each stage of the research process, including data collection, coding, and theme development, and by repeatedly reviewing the data to ensure consistency across codes and themes. Confirmability was strengthened by maintaining researcher neutrality, grounding interpretations in the data, and conducting an external audit by an expert researcher who evaluated the consistency between the data, codes, and findings. In addition, the raw data are available for review upon request, further supporting the transparency and reliability of the study.

3.7. Ethical Considerations

This research was conducted in accordance with ethical principles. All data used in the study was obtained from TripAdvisor, an open-access and public platform. Therefore, the study does not constitute any ethical violations.

4. Findings

Before presenting the findings regarding the comments evaluated within the scope of the research, Table 1 presents the distribution of the number of stars participants gave to their comments regarding tourist attractions.

Table 1. Distribution of Reviews by Star Rating

Evaluation Score	Number of Comments	Percentage (%)
5 (Excellent)	111	55,2
4 (Very Good)	59	29,4
3 (Medium)	22	10,9
2 (Bad)	7	3,5
1 (Terrible)	2	1,0
Total	201	100

As seen in Table 1, approximately 85% of the reviews were rated for four or five stars, which could be considered positive. The proportion of 1- and 2-star reviews (4.5%), which could be considered negative, was quite low. Based on this, it can be said that most visitors were pleased with their visit to Cape Jason and the Church and developed positive feelings about

the destination. Figure 2 presents the monthly distribution of comments related to Cape Jason and the Church. This distribution provides insight into the temporal patterns of visitor engagement and highlights the months during which the tourist attraction receives heightened attention.

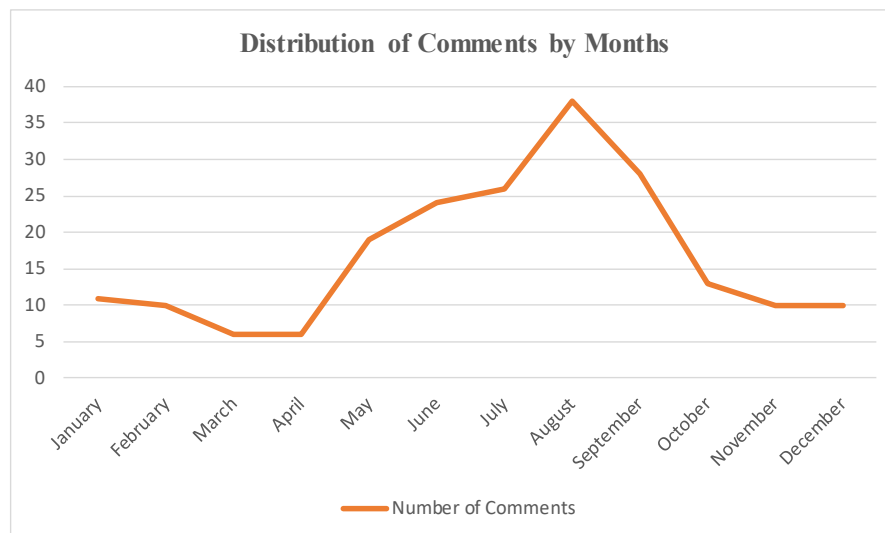


Figure 2. Distribution of Comments by Months

Figure 2 indicates that visitor reviews are most concentrated in August. If it is assumed that visitors typically post reviews on the TripAdvisor platform shortly after their visit, this pattern suggests that August represents the peak period of interest in the tourist attraction. After presenting information on the quantitative characteristics of the comments regarding Cape Jason and the Church, main themes and su-

bthemes were generated to draw descriptive inferences about the content of the comments. Table 2 presents the prominent themes and the number of comments related to these themes. Since more than one theme may appear in a single comment, the total number of themes is not equal to the total number of comments.

Table 2. Subthemes and Sample Comments within the Main Theme of Positive Comments

Main Theme	Subtheme
Positive Comments (466)	Landscape/Nature (116) <i>"...A truly indescribable place with its perfect nature and scenery..."</i> <i>"...The sea view takes you on a completely different emotional journey..."</i>
	Tourist Superstructure (51) <i>"...There are seaside tea gardens very close by..."</i>
	Recreational Activities (50) <i>"...If you brought a kite with you, you can enjoy flying it..."</i>
	Historical and Natural Surroundings (48) <i>"...A beautiful historical monument in a pleasant environment and natural surroundings..."</i>
	Calmness/Peace (32) <i>"...A place to visit for silence, tranquility, and peace..."</i>
	Worth Seeing (31) <i>"...Cape Jason is a place worth seeing..."</i>
	Location (25) <i>"...The location is magnificent, at the intersection of the land and sea..."</i>
	Transportation (25) <i>"...There is transportation here in the morning and evening..."</i>
	Tourist Infrastructure (21) <i>"...Benches and picnic areas available..."</i> <i>"...There were signs with explanations in many languages, including Turkish, English, German, Russian and Arabic..."</i>
	Protected/Maintained (18) <i>"...One of several well-preserved old churches ..."</i>
	Mythological Story/Legend (15) <i>"...Cape Jason has even been the subject of mythologies, the legend of the golden fleece started here..."</i>
	Clean Air/Oxygen (7) <i>"...This place has a very different, very clean air..."</i>
	Pristine Environment (5) <i>"...The surroundings have been left simple and the natural structure has been preserved..."</i>
	Security (4) <i>"...Protected by security guards and cameras ..."</i>
	Construction of Tourist Facilities (3) <i>"...There are currently tourism facility construction works here..."</i>
	Mystical Atmosphere (3) <i>"...The church has a mystical earthy scent ..."</i>
	No Crowding (1) <i>"...Not being crowded is also an advantage..."</i>

Among the themes that emerge in the content of the comments, it is observed that the frequency of comments that can be classified as "positive comments" is much higher. A total of 18 subthemes emerged under the heading "positive comments" and statements related to these themes were repeated 466 times. Within the main theme of "positive comments", the landscape/nature sub-theme

stands out as the most frequently repeated theme (n=116). The subthemes that stood out within the scope of positive comments were touristic infrastructure (n=51), recreational activities (n=50) and historical buildings/areas (n=48). Table 3 presents subthemes and sample comments under the theme of informing, which is another main theme that emerged intensely in the comments.

Table 3. Subthemes and Sample Comments within the Main Theme of Information

Main Theme	Subtheme
Information (116)	Location/Directions (71) <i>"...It is a church located on the seaside at Cape Jason, on the Çaytepe side of Ordu Thursday..."</i>
	History of the Church (15) <i>"...The church, whose history dates back to the 1800s, is known to have been built by the Greeks..."</i>
	The Architecture of the Church (13) <i>"...The interior and exterior of the church reflect classical Orthodox architecture..."</i> <i>"...The building was built with a masonry construction system and cut stone and rubble stone were used as materials. It is rectangular in shape."</i>
	Entrance Fee (8) <i>"...You do not pay any fee to enter the church ..."</i>
	The Name Jason (3) <i>"...You can find the name Jason in ancient Greek texts as "Iason"..."</i>
	Status of the Land (2) <i>"...The region has been declared a first degree protected area..."</i>
	Closed Days (2) <i>"...It was closed on Mondays, and there was no one there when we went..."</i>
	The Original State of the Church (2) <i>"...The main part of the church has been destroyed. A new one was built in its place later..."</i>

Another frequently recurring theme in the comments was the main theme of information (n=116). Within this scope, it was observed that the sub-theme related to location/route information (n=71) was the most frequently recurring. Subthemes such as the history of the church, the architecture of the

church, and the entrance fee are other subthemes that emerged within the main theme of information. Table 4 presents the subthemes and sample comments that emerged within the main theme of negative comments.

Table 4. Subthemes and Sample Comments under the Main Theme of Negative Comments

Main Theme	Subtheme
Negative Comments (97)	The Church is Closed (24) <i>"...We couldn't visit the inside of the church because it was closed..."</i>
	Insufficient Tourist Infrastructure (14) <i>"...It's like there's no lighting inside..."</i> <i>"...Explanations are too few and insufficient ..."</i>
	Wind (11) <i>"...It is a very windy place and you may get a headache from the wind ..."</i>
	Lack of maintenance (11) <i>"...Unfortunately, the church and its surroundings are very neglected..."</i>
	Waste of Time (7) <i>"...Not worth your time..."</i>
	Environmental Pollution (4) <i>"...Those who come to such beautiful places leave a piece of themselves, unfortunately I don't know why..."</i>
	Visual Pollution (3) <i>"...The writings on the church walls create an ugly image..."</i>

Negative Comments (97)

- Indifference of Local Governments (3)
"...The municipality is indifferent..."
- Far from the Center/City (3)
"...A little far from the center..."
- Road Conditions (3)
"...The roads are quite winding..."
- Lack of Service Quality (3)
"...There are cafe-like businesses very close by, but their menus are very inadequate..."
- Sea (2)
"...The sea is not very suitable for swimming..."
- Not Receiving Enough Attention (2)
"...The region is a spot that has not received enough attention for some reason since its participation in tourism..."
- Restoration (2)
"...It is also interesting that they put electrical outlets in the restored historic church..."
- Crowd (2)
"...It gets too crowded..."
- Lack of Promotion (2)
"...Unfortunately, it has not been promoted sufficiently from a touristic perspective..."
- High Price (1)
"...There are cafes but expensive..."

Seventeen different subthemes emerged within the main theme of negative comments. From these comments, it is possible to understand the factors that create negativity regarding tourist attraction. The most frequently occurring subthemes were the church being closed (n=24), inadequate tourist in-

frastructure (n=14), wind (n=11), and lack of maintenance (n=11). Table 5 presents subthemes, which are less frequently repeated main themes within the recommendations, warnings, and other subthemes that do not fit into any category.

Table 4. Subthemes and Sample Comments under the Main Theme of Negative Comments

Main Theme	Subtheme
Recommendations (69)	• Sunrise/Sunset (37) <i>"...The best place to watch the sunset is recommended ..."</i> • Gastronomic Product Experience (15) <i>"...Eat hazelnut dessert at the cafe right next to the church, you won't regret it..."</i> <i>"...Have a drink with Ordu toast..."</i> <i>"...In mid-August, you can buy figs and fresh hazelnuts from locals who gather and sell black figs from trees..."</i> • Appropriate dressing recommendations (6) <i>"...I recommend comfortable clothes and comfortable shoes..."</i> <i>"...It's a bit windy, so you might want to bring a light jacket for the kids..."</i> • Reason for visit (5) <i>"...If you love nature and scenery, I definitely recommend stopping by..."</i> <i>"...I especially recommend it to history buffs..."</i> • Travel Time (4) <i>"...The Cape Jason Church and Lighthouse were all very beautiful with wildflowers in the spring months..."</i> <i>"...If possible, don't go on weekends as it gets very crowded..."</i>

Warnings (4)	Local Governments (2) <i>"...The area surrounding the Church of Jason should be better organized and beautified..."</i>
	Tourism/Environmental Awareness (2) <i>"...Lets not litter the environment. Let's preserve our history..."</i>
Other (50)	Jason/Lighthouse (42) <i>"...When you walk toward the lighthouse at the tip, you experience an indescribable sense of peace in the sound of the powerful waves of the sea..."</i>
	Natural Studio (7) <i>"...Hosting wedding photos..."</i>
	Sea Water (1) <i>"...The sea water was very clean..."</i>

The most frequently recurring subthemes within the main theme of "recommendations" are "sunrise/sunset" and "gastronomic product experience." Comments emphasize that Cape Jason is an excellent spot for watching sunrise or sunset. Visitors have also offered suggestions for their favorite gastronomic experiences. Products such as hazelnut dessert, Ordu Toast, black figs, fresh hazelnuts, gözleme, and ayran are among the recommended items. In addition, although less frequently repeated, subthemes covering different suggestions such as "travel time," "appropriate dress" and "reason for visit" are mentioned in the comments. The subthemes under the main theme of 'warning' are "warnings to local authorities" and "tourism/environmental awareness". These themes are repeated in only a few comments. Among the subthemes in the "Other" category, the subtheme consisting of comments mentioning the

lighthouse on Cape Jason is particularly frequently repeated.

Although the findings are presented under descriptive categories such as positive comments, negative comments, information, and recommendations, a deeper examination of the subthemes reveals underlying conceptual patterns. These categories should not be interpreted merely as surface-level classifications; rather, they reflect deeper experiential dimensions consistent with the memorable tourism experience (MTE) framework. Based on this perspective, the findings can be reinterpreted under three overarching experiential dimensions. To further clarify the relationship between the identified themes and the underlying experiential dimensions, the thematic structure is systematically mapped onto the components of memorable tourism experience (MTE), as presented in Table 6.

Table 6. Mapping of Identified Themes with MTE Dimensions

Main Theme	Subthemes (Examples)	MTE Dimension	Conceptual Interpretation
Positive Comments	Landscape/Nature, Calmness, Scenic view, Clean air, Mystical atmosphere	Hedonic (Emotional)	Visitors experience pleasure, relaxation, and aesthetic appreciation
	Historical surroundings, Mythological stories	Cognitive (Knowledge)	Visitors seek meaning and cultural understanding
	Recreational activities, accessibility	Behavioral (Engagement)	Active participation and interaction with destination
Information	Location, history, architecture, entrance fee	Cognitive (Knowledge)	Information-seeking and interpretation-oriented experience
Negative Comments	Lack of maintenance, infrastructure problems, closed church	Experiential Disruption	Factors that weaken or interrupt memorability of experience
	Accessibility, distance, poor service	Behavioral Constraint	Barriers limiting full experience engagement
Recommendations	Sunrise/sunset, gastronomy	Behavioral (Post-experience engagement)	Visitors extend experience through sharing and suggesting
	Travel advice, clothing suggestions	Behavioral (eWOM)	Knowledge transfer to future visitors

Warnings	Environmental awareness, local authority criticism	Behavioral (Reflective engagement)	Visitors critically engage and co-create meaning
Other	Lighthouse, photography, natural studio	Hedonic + Behavioral	Combination of visual pleasure and experiential activity

As illustrated in Table 6, the identified themes correspond to the core dimensions of memorable tourism experience (MTE), namely emotional (hedonic), cognitive, and behavioral components. Positive comments primarily reflect the hedonic dimension through expressions of enjoyment, relaxation, and aesthetic appreciation, while information-related themes highlight the cognitive dimension, indicating tourists' need for knowledge and contextual understanding. In contrast, negative comments can be interpreted as experiential disruptions that weaken the memorability of the experience by creating a mismatch between expectations and actual conditions. Finally, recommendation and advice-related themes represent the behavioral dimension, reflecting post-experience engagement through sharing, suggesting, and co-creating value with future visitors. Overall, this structure demonstrates that visitor experiences are not merely descriptive but are

shaped by interconnected experiential dimensions, consistent with the multidimensional nature of MTE (Kim et al., 2012).

Visitors' online comments about Cape Jason and the Church on TripAdvisor were subjected to content analysis to identify the most frequently occurring words. In this context, a word cloud analysis was performed using the "MAXQDA 20" qualitative data analysis program. Outliers such as "one, for, but, even, this, that" were not included in the analysis. When creating the word cloud, words that do not carry meaning on their own (such as "very," "however," "every," "things," "again," etc.) were removed, and words expressing the same concept were combined (for example, 'church' + "to the church" + "his church" + "his church's" = "church"). These steps were taken to make the word cloud simpler and easier to understand. In this context, the word cloud includes the 200 most frequently repeated words.



Figure 3. Word Cloud Obtained from Visitors' Comments

When examining the word cloud, words such as "church, Jason, beautiful, place, sea" stand out. Since the comments are about Cape Jason and the Church, it is expected that these related words would be prominent. Furthermore, phrases such as "view, wonderful/magnificent, nature, place worth seeing/visiting, photography, picnic, sunrise, and sunset" provide insight into visitors' motivations and their descriptions of the destination. These frequently occurring expressions can also be associated

with the hedonic dimension of memorable tourism experience (MTE), as they reflect aesthetic appreciation, enjoyment, and emotional engagement. At the same time, activity-oriented expressions such as photography, picnic, and visiting suggest a behavioral dimension, indicating active participation in the destination experience. The word cloud suggests that Cape Jason and the Church primarily attract visitors through their scenic landscape and nature-based experiences.

5. Conclusion

This study analyzed the visitor experiences at Cape Jason and the Church. In this context, 201 reviews posted on TripAdvisor about Cape Jason and the Church was examined. Most of the reviews (approximately 93%) were written in Turkish. Based on this, it can be said that Cape Jason and the Church cater primarily to domestic tourism demand and that visitors to this site are mostly local tourists. Additionally, the comments indicate that a substantial majority of visitors (approximately 85%) expressed satisfaction with their experience at the tourist attraction.

A content analysis was conducted on 201 online reviews obtained from TripAdvisor regarding the Cape Jason and the Church. As a result of the content analysis, 802 codes were created, and the relationships between the 802 codes were carefully examined and grouped under 6 main themes and 53 subthemes. These main themes consist of positive reviews, negative reviews, recommendations, information, warnings, and other themes. Eighteen subthemes were identified for positive comments, 17 subthemes for negative comments, 6 subthemes for the main theme of "Recommendation," 8 subthemes under the main theme of "Information," 2 subthemes under the main theme of "Warning," and 3 subthemes under the "Other" theme.

From the online reviews examined about Cape Jason and the Church, it is clear that its tourist appeal plays an important role in visitors gaining a largely positive impression of the place. In particular, the strong emphasis on natural beauty, scenery, and environmental aesthetics reveals that visitors perceive this area not only as a tourist attraction but also as a place for emotional and visual experiences. These findings highlight that nature-based destinations with strong visual appeal play a central role in shaping visitor preferences. These observations are well aligned with the findings of Breiby (2015), whose research identifies "scenery/viewing", "harmony", and "genuineness" as central aesthetic dimensions in nature-based tourism and demonstrates that these dimensions significantly influence tourist satisfaction, positive emotions, and loyalty. Likewise, studies by Wen et al. (2024) in Zhangjiajie National Forest Park and by Adigüzel and Batman (2024) in recreational landscapes confirm that perceived visual quality and aesthetic experiential qualities critically affect visitor satisfaction and destination choice, supporting the findings of the present study. These findings go beyond a descriptive identification of themes by demonstrating how different dimensions of visitor experience interact and collectively shape overall satisfaction and perception. In this sense, the study provides a more integrated and interpretive understanding of tourist experiences in heritage-based destinations. Therefore, the study contributes to the literature not only by identifying visitor experience themes but also by theoretically reinterpreting

these themes within the multidimensional structure of memorable tourism experiences.

However, the need for guidance and content that stands out under the theme of "information" shows that visitors do not want to settle for just a spatial experience but also want to access historical and cultural contexts. This situation suggests that visitors are not passive consumers, but rather more conscious tourists who value information, narrative, and context. Although negative comments are fewer in number, their concentration on certain themes indicates that while the overall satisfaction level with tourist attractions is high, some fundamental issues are still perceived as significant. In particular, the fact that issues such as the church being closed which could be resolved with simple interventions can negatively impact on the visitor experience highlights how managerial shortcomings can lead to potential missed opportunities.

6. Discussion

This section aims to interpret the findings of the study in relation to the existing literature and to position the results within a broader theoretical context. The emergence of visitors' recommendations as a main theme indicates that a sense of ownership towards the region has developed and that they are highly motivated to share their experiences with others. In particular, the prominence of local food products, especially in these suggestions, indicates that gastronomic identity has a strong potential to become a touristic product. These findings also point to the multidimensional nature of visitor experiences, which can be further interpreted within a theoretical framework.

The findings of this study can also be interpreted within the framework of memorable tourism experience (MTE) (Kim et al., 2012). Although the themes identified in this study are based on the categorization of online reviews, they reflect underlying experiential dimensions discussed in the MTE literature. In particular, the strong emphasis on landscape, nature and visual aesthetics in positive comments corresponds to the hedonic and refreshment dimensions of memorable experiences, as these elements contribute to pleasure, relaxation, and emotional engagement. The frequently expressed need for information regarding the historical and cultural context of the site indicates the presence of a cognitive (knowledge-based) dimension of experience. In addition, visitor recommendations and suggestions reflect post-experience involvement and behavioral intentions, suggesting that the experience extends beyond the visit itself. On the other hand, negative comments related to infrastructure and maintenance can be interpreted as factors that weaken the memorability of the experience by creating dissatisfaction or expectation mismatch. Taken together, these

findings suggest that the visitor experiences in Cape Jason and the Church are not limited to simple evaluations, but are shaped by multiple experiential dimensions consistent with the MTE framework.

When we look at the studies examining visitor experiences in the literature, the study conducted by Kaya & Kaya (2023) examining the opinions of the visitors who experienced Uzungöl, positive findings such as ambiance/view, natural beauty, worth seeing, clean air, recreational opportunities, food and beverage and accommodation opportunities, and negative findings such as pollution, crowding, high prices, poor quality service and distance, which is similar to the findings of this study. Scalabrini et al. (2023) analyzed the opinions of tourists visiting Montesinho Nature Park (Portugal), Douro International Nature Park (Portugal), and Arribes del Duero Nature Park (Spain) based on TripAdvisor reviews. For Montesinho, two dimensions (landscape and nature), for Douro International, two dimensions (activities and nature), and for Arribes del Duero, three dimensions (water-based activities, nature, and activities) were identified, with the common dimension across all three natural parks being nature. The findings regarding landscape/nature and activities for Cape Jason and the Church suggest that similar results were obtained in this study. The study conducted by Erşahin & Şahbaz (2024), which examined visitor comments about Gülhane Park, showed positive results such as transportation and accessibility, quiet and peaceful, recreational opportunities, clean, well-maintained, and orderly, which are in line with the findings of this study. Saoualih et al. (2024) evaluated the experiences of tourists visiting the Majorelle Garden in Marrakech, Morocco, through TripAdvisor platform reviews. In this context, the findings that visitors mostly had positive feelings and positive experiences related to natural beauty, photographic appeal, and souvenir shopping, while negative experiences were related to a garden with nothing extraordinary and excessive crowds, are consistent with the findings of this study. Similarly, Altınay Özdemir & Topaloğlu (2023) determined that the themes of scenery and positive comments stood out in online comments about the ancient city of Knidos. In a study conducted by Kara & Çeken (2025) examining the opinions of tourists visiting Ulugöl Nature Park, it was determined that the vast majority of visitors (89%) were satisfied with the tourist attraction and that the most common positive comments focused on natural wonders/landscapes. The high overall satisfaction levels of tourists who shared reviews about Cape Jason and the Church, and the fact that positive reviews mostly emphasize the scenery/nature, indicate similar results. Güven, Mazlum & Şahin (2025) examined 569 online reviews on the TripAdvisor platform regarding natural areas in the province of Balıkesir and found that negative reviews mentioned overcrowding, environmental

pollution, neglect, and expectations that were not met. The findings of this study are similar to the negative findings regarding Cape Jason and the Church.

7. Theoretical Implications

From a theoretical perspective, this study suggests that destination management strategies should be explicitly designed in accordance with the experience-based tourism framework and electronic word-of-mouth (eWOM) theory. The experience-based approach implies that destinations should move beyond the provision of physical attractions and instead focus on the deliberate design of emotional, cognitive, and sensory experiences. Accordingly, destination managers are encouraged to structure tourism products and services in ways that facilitate meaning-making, emotional engagement, and memorable experiences, as these elements are central determinants of satisfaction and loyalty. In this respect, the study contributes to the literature by demonstrating how online user-generated content can be used not only to identify themes but also to interpret the multidimensional structure of tourist experiences.

In line with eWOM theory, the findings indicate that visitors' online narratives function not only as reflections of individual experiences but also as strategic communication tools that shape destination image and influence potential visitors' decision-making processes. Therefore, destination managers should actively monitor, interpret, and respond to online reviews, integrating visitor feedback into continuous service improvement and communication strategies. From a theoretical perspective, managing online reviews should be regarded as an integral component of experience design and destination governance rather than as a post-visit marketing activity.

8. Practical Implications

Cape Jason offers a multidimensional visitor experience not only with its natural beauty but also with its historical texture and local elements. Managing this experience in a sustainable and effective manner is possible with the cooperation and efforts of local administrations and stakeholders. In this context, it is important for stakeholders with initiatives regarding Cape Jason and the Church to understand visitors' expectations and the elements that stand out in their experiences. The research provides local stakeholders with an important source of information by drawing conclusions from TripAdvisor reviews related to tourist appeal.

In addition to these findings, several practical implications can be derived for destination management. The strong emphasis on landscape and natural be-

auty indicates that Cape Jason should not only be preserved but also designed as an experiential space that enhances visitors' emotional engagement through elements such as observation areas, walking paths, and quiet resting zones. At the same time, the prominent need for information suggests that visitors seek not only to observe but also to understand the historical and cultural context of the destination; therefore, digital guides, interpretive panels, and multilingual storytelling tools should be developed to enrich the visitor experience. Furthermore, although negative comments are relatively limited, they highlight manageable issues such as infrastructure deficiencies, maintenance problems, and accessibility constraints, indicating that relatively small managerial interventions could lead to substantial improvements in visitor satisfaction. In addition, the frequent references to local gastronomic products suggest that these elements should be more strategically integrated into destination branding and experience design. Finally, concerns related to environmental awareness and local governance underline the importance of incorporating sustainability-oriented practices into both management strategies and communication processes. Despite these theoretical and practical contributions, the study is subject to several limitations.

9. Limitations

This study has several limitations. The first and most important is that the study data was obtained from the TripAdvisor platform and is based solely on user reviews. In this context, the research findings could be expanded by analyzing user reviews on platforms such as Google Maps, Lonely Planet, etc. Second, there is the issue of representativeness of the study findings with social media data. Therefore, social media data should be approached with caution and combined with other types of data, such as interviews, observations, and surveys. Third, social media data may inherently be biased toward specific users and locations. Users, motivated by their cultural practices and values, may express overly positive or negative opinions about destinations, which can be reflected in social media content, leading potential tourists to develop biases toward the destination. Fourth, the data collected is from a specific time period. Due to the ever-changing and dynamic nature of digital applications and online environments, it is assumed that the results of future research conducted using comments on the same platform may differ. Furthermore, this study is relatively cross-sectional. The online participation of stakeholders from whom data was obtained takes place in a dynamic environment, and therefore longitudinal studies should be conducted to clarify our understanding of the long-term evolution of opinions (Xiang & Gretzel, 2010).

10. Future Research

In line with the limitations of this study, future research could adopt a comparative approach by examining visitor experiences across different destinations and cultural contexts. In particular, analyzing similar heritage sites or nature-based destinations would contribute to a deeper understanding of how experiential patterns vary depending on contextual factors. We recommend that future research be conducted to comparatively examine the motivations, expectations, and satisfaction levels of tourists visiting tourist attractions, as well as to explore how these factors interact with different dimensions of memorable tourism experience (MTE), such as hedonism, novelty, involvement, and knowledge. Since MTE is conceptualized as a multidimensional construct that shapes how tourism experiences are remembered and evaluated over time, examining these dimensions across different visitor segments and cultural contexts would provide deeper insights into the formation of memorable experiences and their influence on behavioral intentions.

References

- Adıgüzel, E., & Batman, Z. P. (2024). Visual Quality Assessment in Recreational and Touristic Landscape. *Environment, Development and Sustainability*, 1-18. <https://doi.org/10.1007/s10668-024-04842-9>
- Akgül, O. (2025). Kutsal Mekânlarda Ziyaretçi Deneyimi: Kasımiye Medresesi ve Deyrulzafaran Manastırı Örneği. *Güncel Turizm Araştırmaları Dergisi*, 9(2), 579-603. <https://doi.org/10.32572/guntad.1636509>
- Altınay Özdemir, M., & Topaloglu, C. (2023). Visitors' Experiences Towards Sustainability Challenges in Archaeological-Heritage Sites: A Netnographic Study on Ancient City of Knidos, *Enlightening Tourism*, 13(1), 126-166. <https://doi.org/10.33776/et.v13i1.7396>
- Atasoy, B. (2025). Cultural heritage experience from the perspective of tourist narratives on tripadvisor: A qualitative study on "Olympos". *Alanya Akademik Bakış*, 9(1), 146-158. <https://doi.org/10.29023/alanyaakademik.1518045>
- Awaloedin, D. T., Nugraha, R. N., & Cecilia, V. (2024). Analysis of Tourism Attraction Potential in Ciliwung Muara Bersama as Ecotourism Destination in Jakarta, *West Science Interdisciplinary Studies*, 2(02), 308-318.
- Bahtiyar Karadeniz, C., Sarı, S., & Kabacık, M. (2018). Üniversite Öğrencilerinin Ordu İlinin Doğal ve Kültürel Turistik Çekiciliklerine İlişkin Farkındalık ve Deneyimleri. *Karadeniz Sosyal Bilimler Dergisi*, 10(19), 667-684.
- Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal*, 9(2), 27-40. <https://doi.org/10.3316/QRJ0902027>
- Breiby, M. A. (2015). Nature-Based Tourism and The Role Of Aesthetic Dimensions (Doctoral dissertation, Norwegian University of Life Sciences). NMBU Brage. <https://hdl.handle.net/11250/3031887>
- Buyruk, H. (2019). Ordu Yason Burnu ve Kilisesi. *Akdeniz Sanat*, 13, 465-476.
- Can, C. (2025). Yorumlar, Puanlar ve Mutfaklar: TripAdvisor Verileriyle Bursa Gastronomisinin Dijital Temsili. *Uluslararası Güncel Turizm Araştırmaları Dergisi*, 9(1), 109-120. <https://doi.org/10.30625/ijctr.1702453>
- Candrea, A. N., Ciobanu, E., Nechita, F., Brătucu, G., Coman, E.,

- Şchiopu, C., & Alexandrescu, M. B. (2025). How Do Visitors to Mountain Museums Think? A Cross-Country Perspective on the Sentiments Decoded from TripAdvisor Reviews. *Electronics*, 14(8), 1637. <https://doi.org/10.3390/electronics14081637>
- Cavlak, N., & Cop, R. (2019). Yerli ve Yabancı Turist Deneyimi: Gelibolu Yarımadası Tarihi Milli Parkı Milliyet Temelinde Bir Analiz. *Anatolia: Turizm Araştırmaları Dergisi*, 30(3), 163-173. <https://doi.org/10.17123/atad.656006>
- Corbin, J., & Strauss, A. (2008). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory* (3rd ed.). USA: Sage Publications.
- Cosvi, H., Bambang, H., Iwan, S., & Zeis, Z. (2019). Destinations' competitiveness through tourist satisfaction: A systematic mapping study. *Russian Journal of Agricultural and Socio-Economic Sciences*, 91(7), 58-66. Doi: 10.18551/rjoas.2019-07.07
- Creswell, J. W., & Creswell, J. D. (2017). *Research Design: Qualitative, Quantitative, And Mixed Methods Approaches*. Sage publications.
- Çiğçi, H., & Kızıllırmak, İ. (2025). Vegan Restoranlarda Müşteri Deneyimi Bileşenlerinin Netnografi Analiziyle İncelenmesi: Tripadvisor Örneği. *Aydın Gastronomy*, 9(2), 353-373.
- Decrop, A., & Snelders, D. (2005). A Grounded Typology of Vacation Decision-Making. *Tourism Management*, 26 (2), 121-132. <https://doi.org/10.1016/j.tourman.2003.11.011>
- Erdoğan, Y., & Yaşarsoy, E. (2023). Turizm ve Destinasyon Pazarlaması, (Edt. E. Kılçaslan & E. Yıldız). Güncel Turizm Araştırmaları, Ankara: Akademisyen Kitabevi.
- Ergahin, E., & Şahbaz, R. P. (2024). Gülhane Parkı Deneyimi: İstanbul'un Tarihi Kalbinde Ziyaretçilerin Gözünden Bir Değerlendirme. *Seyahat ve Otel İşletmeciliği Dergisi*, 21(3), 697-718. <https://doi.org/10.24010/soid.1469187>
- Ferguson, M., & Walby, K. (2025). Feeling 'like part of the action': Scrutinizing TripAdvisor reviews of Western Canadian military museums. *Critical Military Studies*, 1-18. <https://doi.org/10.1080/2337486.2025.2530798>
- Gedik, Y. (2021). Turizm Sektöründe Destinasyon Pazarlaması: Eğilimler, Destinasyon Pazarlama Stratejileri ve Destinasyon Pazarlamasında Karşılaşılan Zorluklar Üzerine Kavramsal Bir Çerçeve. *Journal of Tourism and Intangible Cultural Heritage (JTIS)*, 3(1), 56-70. <https://doi.org/10.5281/zenodo.5641866>
- Güven, S., Mazlum, B. & Şahin, S. (2025). Doğal Alanlara Yönelik Ziyaretçi Deneyimlerinin İçerik Analizi Yöntemiyle İncelenmesi: Balıkesir Örneği. *Gümüşhane Üniversitesi Sosyal Bilimler Dergisi*, 16(1), 171-185.
- Huete-Alcocer, N. (2017). A Literature Review of Word of Mouth and Electronic Word of Mouth: Implications for Consumer Behavior. *Frontiers in Psychology*. 8:1256. 10.3389/fpsyg.2017.01256
- Islam, M. N. (2025). Visitors' sentiment in archeological heritage sites: A study based on TripAdvisor reviews. *International Journal of Hospitality & Tourism Administration*, 26(1), 90-111. <https://doi.org/10.1080/15256480.2023.2242343>
- Jarvis, D., Stoeckl, N. & Liu, H. (2016). The Impact of Economic, Social and Environmental Factors on Trip Satisfaction and the Likelihood of Visitors Returning. *Tourism Management*, 52(1), 1-18. <https://doi.org/10.1016/j.tourman.2015.06.003>
- Juliana, J., Sihombing, S.O., Antonio, F., Sijabat, R., Bernarto, I. (2024). The role of tourist experience in shaping memorable tourism experiences and behavioral intentions. *International Journal of Sustainable Development and Planning*, 19(4), 1319-1335. <https://doi.org/10.18280/ijstdp.190410>
- Kara, E., & Çeken, H. (2025). Doğa Turizmi Kapsamında Ulugöl Tabiat Parkı'nı Ziyaret Eden Turistlerin Çevrimiçi Yorumlarının İncelenmesi: TripAdvisor Örneği. *Nevşehir Hacı Bektaş Veli Üniversitesi SBE Dergisi*, 15(1), 572-593. <https://doi.org/10.30783/nevsosbilen.1523391>
- Kara, E., Dalgın, T., & Çeken, H. (2022). Sürdürülebilir Kültür Turizmi Kapsamında Yason Burnu ve Kilisesi, (Edt. Ali Yıldız). Sosyal ve İdari Bilimlerde Akademik Araştırmalar, İstanbul: Hiperyayın.
- Karadeniz Kültür Envanteri: <https://karadeniz.gov.tr/yason-kilise-si/> [Erişim Tarihi: 11.07.2025]
- Kaya, M. C., & Kaya, E. (2023). Uzungöl'ün Turistik Çekim Unsurlarına Yönelik Çevrimiçi Ziyaretçi Yorumlarının Analizi. *International Journal of Tourism and Destination Studies-IJOTADS*, 2(II/I), 43-57.
- Kim, J. H., Ritchie, J. R. B., & McCormick, B. (2012). Development of a scale to measure memorable tourism experiences. *Journal of Travel Research*, 51(1), 12-25. <https://doi.org/10.1177/0047287510385467>
- Kladou, S. & Mavragani, E. (2015). Assessing Destination Image: An Online Marketing Approach and the Case of TripAdvisor. *Journal of Destination Marketing and Management*, 4(3), 187-193. <https://doi.org/10.1016/j.jdmm.2015.04.003>
- Korkut, B., Yeşil, P., & Güzel, M. (2023). Sosyal Medya Verileri Kullanılarak Ordu İlindeki Bazı Önemli Turizm Alanlarında Ziyaretçi Tercihlerinin Analizi. *GSI Journals Serie A: Advancements in Tourism Recreation and Sports Sciences*, 6(2), 378-390. <https://doi.org/10.53353/atrss.1262703>
- Kozinets, R. V. (1998). On Netnography: Initial Reflections on Consumer Research Investigations of Cyberculture. *Advances in Consumer Research*, 25, 366-371.
- Kozinets, R. V. (2010). *Netnography: Doing Ethnographic Research Online*, First Edition, London: Sage Publications.
- Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic Inquiry*, Beverly Hills CA: Sage Publications.
- Liu, Z., & Park, S. (2015). What makes a useful online review? Implication for travel product websites. *Tourism Management*, 47, 140-151. <https://doi.org/10.1016/j.tourman.2014.09.020>
- Malterud, K. (2012). Systematic Text Condensation: A Strategy For Qualitative Analysis. *Scandinavian Journal of Public Health*, 40(8), 795-805. <https://doi.org/10.1177/1403494812465030>
- Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample Size In Qualitative Interview Studies: Guided By Information Power. *Qualitative Health Research*, 26(13), 1753-1760. <https://doi.org/10.1177/1049732315617444>
- Meenakshy, M., Prasad, K.D.V., Bolar, K., Shyamsunder, C. (2024). Electronic Word-Of-Mouth Intentions in Personal and Public Networks: A Domestic Tourist Perspective. *Humanities and Social Sciences Communications*, 11, 1226. <https://doi.org/10.1057/s41599-024-03753-4>
- Meral, K., & Kumargal, Ü. (2020). Altın Post ve Argo Gemicilerinin Efsanesi. (Edt. Prof. Dr. Hasan Babacan). *Sosyal Bilimler Alanında Akademik Çalışmalar 3*, Ankara: Gece Kitaplığı.
- Miguens, J., Baggio, R., & Costa, C. (2008). Social Media and Tourism Destinations: TripAdvisor Case Study, *IASK ATR Advances in Tourism Research*, 1-6.
- Nilashi, M., Ibrahim, O., Yadegaridehkordi, E., Samad, S., Akbari, E., & Alizadeh, A. (2018). Travelers Decision Making using Online Review in Social Network Sites: A Case on TripAdvisor. *Journal of Computational Science*, 28, 168-179. <https://doi.org/10.1016/j.jocs.2018.09.006>
- Oğuz, Y. E., & Timur, B. (2020). Temalı Parklarda Müşteri Deneyimi, Memnuniyet ve Tekrar Ziyaret Niyeti: Sazova Bilim, Sanat ve Kültür Parkı Üzerine Bir Çalışma. *International Social Mentality and Researcher Thinkers Journal*, 6(30), 419-430. <http://dx.doi.org/10.31576/smryj.480>
- Okuyucu, D. (2013). Orta ve Doğu Karadeniz Bölgesi Rum Kiliseleri, Doktora Tezi, Atatürk Üniversitesi, Erzurum.
- Ordu İl Kültür ve Turizm Müdürlüğü: <https://ordu.ktb.gov.tr/TR-340381/argonot-efsanesi.html/> [Erişim Tarihi: 27.12.2024]
- Ordu İl Kültür ve Turizm Müdürlüğü: <https://ordu.ktb.gov.tr/tr-130751/yason-burnu-persembeordu.html/> [Erişim Tarihi: 10.07.2025]
- Ordu Taşınmaz Kültür Varlıkları Envanteri, (2010). Ordu Valiliği Kültür ve Turizm İl Müdürlüğü Yayını, Ordu.
- Öktem, E., & Akdu, S. (2022). Unutulmaz Turizm Deneyiminin Müşteri Memnuniyetine ve Tekrar Ziyaret Etme Niyetine Etkisi. *Erciyes Akademi*, 36(2), 968-985. <https://doi.org/10.48070/erciyesakademi.1127494>

Öztürk, F. & Akay, B. (2024). Turistlerin Sakin Şehir Deneyim Bilgilerinin Netnografik Analizi: Aday Destinasyonlara Öneriler. *Turizm Akademik Dergisi*, 11 (2), 219-237.

Patton, M. Q. (2014). *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*. Sage publications.

Plichta, P., & Pecela, K. (2025). The religious heritage of Vilnius in the gaze of tourists on Tripadvisor. *Religions*, 16(7), 905. <https://doi.org/10.3390/rel16070905>

Samida, S. (2025). Tourist Experience, Digital Memory and Nazi Heritage: The Heidelberg Thingstätte on TripAdvisor. *Anthropological Journal of European Cultures*, 34(1), 123-146. <https://doi.org/10.3167/ajec.2025.340110>

Saouali, A., Safaa, L., Bouhatous, A., Bidan, M., Perkumienė, D., Aleinikovas, M., Šilinskas, B., & Perkumas, A. (2024). Exploring the Tourist Experience of the Majorelle Garden Using VADER-Based Sentiment Analysis and the Latent Dirichlet Allocation Algorithm: The Case of TripAdvisor Reviews. *Sustainability*, 16(15), 1-37. <https://doi.org/10.3390/su16156378>

Scalabrini, E., Vaz, M., Teixeira, J. P., Rojo, C. J. R., Alonso, D., Mestre, L., & Fernandes, P. O. (2023). Natural Parks Image: An Analysis of Tripadvisor Reviews. (Edt: C. Montenegro, Á. Rocha, & J. M. C. Lovelle). *Management, Tourism and Smart Technologies*, Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-43733-5_34

Sidor, C., Hamdan, K., Štrba, L., & Kršák, B. (2025). On the Road Towards Identifying and Aggregating Experiences in Destinations via Secondary Online Data: The Case of Slovak Geoheritage at TripAdvisor in Relation to DMOs. *Geoheritage*, 17(3), 91. <https://doi.org/10.1007/s12371-025-01132-2>

Singgale, Y. A. (2024). Sentiment Classification of Robot Hotel Content Using NBC and SVM Algorithm. *Journal of Computer System and Informatics*, 5(2), 442-453. <https://doi.org/10.47065/josyc.v5i2.4908>

Su, L., Yang, Q., Swanson, S. R., & Chen, N. C. (2022). The Impact of Online Reviews on Destination Trust and Travel Intention: The Moderating Role of Online Review Trustworthiness. *Journal of Vacation Marketing*, 28(4), 406-423. <https://doi.org/10.1177/13567667211063207>

Sultan, M., Sharmin, F. & Xue, K. (2019). Sharing Tourism Experience through Social Media: Consumer's Behavioral Intention for Destination Choice. *International Journal of Humanities and Social Sciences*, 13(2), 141 - 145. [10.5281/zenodo.2571846](https://doi.org/10.5281/zenodo.2571846)

Taecharungroj, V., & Mathayomchan, B. (2019). Analysing TripAdvisor Reviews of Tourist Attractions in Phuket, Thailand. *Tourism Management*, 75, 550-568. <https://doi.org/10.1016/j.tourman.2019.06.020>

Tanriverdi, H., Çiki, K. D., Öğretmenoğlu, M., & Uygün, N. (2025). Unveiling the key dimensions shaping visitor experiences in cave tourism through a content analysis approach: the case of Antalya's show caves. *Current Issues in Tourism*, 1-16. <https://doi.org/10.1080/13683500.2025.2492399>

TripAdvisor: <https://tripadvisor.mediaroom.com/IN-about-us> [Erişim Tarihi: 27.12.2024]

Tuncer, M. A. (2025). A Qualitative Analysis of Factors Influencing Shopping Center Preferences Based on Online Customer Reviews: The Case of Novamall. *Fiscaeconomia*, 9(2), 1055-1071. <https://doi.org/10.25295/fsecon.1588962>

Wen, Y., Luo, F., & Li, H. (2024). The Impact of Aesthetic Expectations and Aesthetic Experiential Qualities on Tourist Satisfaction: A Case Study of the Zhangjiajie National Forest Park. *Forests*, 15(2), 378. <https://doi.org/10.3390/f15020378>

Xiang, Z., & Gretzel, U. (2010). Role of Social Media in Online Travel Information Search. *Tourism Management*, 31(2), 179-188. <https://doi.org/10.1016/j.tourman.2009.02.016>

Yiğit, S., & Aktaş, A. C. (2025). Visitors' experiences of Deyrulzafaran Monastery through netnography approach. *Tourism and Recreation*, 7(1), 82-89. <https://doi.org/10.53601/tourismandrecreation.1522129>

A Comparative Law Analysis of Social Security and Insurance Against Occupational Accidents

Yücel Oğurlu* / Prof. Dr. 

Balıkesir University, Faculty of Law
yogurlu@balikesir.edu.tr

Kamshat B. Baiterekova / Ph.D. Stu. 

Gumilev Eurasian National University, Faculty of Law
k.baiterekova@mail.ru

Bauyrzhan Mamytbekovich Smatlayev / Prof. Dr. 

Gumilev Eurasian National University, Faculty of Law
smatlayev_bm@enu.kz

*Corresponding Author

Abstract

This study examines the trends towards updating the legislation on compulsory social insurance against occupational accidents in the Republic of Kazakhstan from a comparative perspective. The analysis is carried out on the axis of the necessity of harmonization of insurance norms within the European Union (EU) and the transposition of International Labour Organization (ILO) standards into national law.

In the study, the current insurance system in Kazakhstan was compared with the occupational accident and occupational disease insurance models applied in the Russian Federation, the European Union and Türkiye. As a result of the examination, it was determined that the systems in Kazakhstan, Russia and Türkiye were mainly compensation-oriented; on the other hand, it has been determined that prevention, risk management and rehabilitation functions have a more institutionalized structure in the European Union.

Within the scope of the research, terminological

inconsistencies and normative contradictions in Kazakhstan legislation were identified; the harmonization of national regulations with ILO standards and the legal infrastructure for the establishment of a common insurance area within the EU were evaluated. The scientific and practical contribution of the study is that it proposes a comprehensive approach that addresses the compensation, rehabilitation and prevention functions of insurance together.

In conclusion, the article provides concrete legislative development recommendations based on comparative law findings, aiming to harmonize Kazakhstan's international obligations with national social protection priorities.

Keywords: Social Insurance, Occupational Accidents, European Union (EU), International Labour Organization, Legislation, Protection Of Employees.

JEL Codes: K22, K31, J28

Citation: Oğurlu, Y., Baiterekova, K. B., & Smatlaev, B. M. (2026). A comparative law analysis of social security and insurance against occupational accidents. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

This study examines the compulsory social insurance systems established against occupational accidents in the European Union, the United States, the Russian Federation, Türkiye and Kazakhstan with a comparative perspective in terms of normative structure, institutional capacity and policy orientations. The results of the analysis reveal that the compensation function stands out in all systems, but there are significant differences in terms of the integration of prevention and rehabilitation functions into legal regulations and institutional structures.

The accumulated experience in the field of occupational health and social security shows that insurance systems for occupational accidents and diseases should be continuously improved, especially considering the normative documents of the International Labour Organization (ILO). However, the problems in this area are not at a level that can be solved only by legislative changes or individual administrative measures; Since it is structural and institutional, it requires long-term, comprehensive and innovative approaches.

In this context, the article analyzes the trends for updating the compulsory social insurance legislation implemented by the Republic of Kazakhstan against occupational accidents with a comparative approach. The study focuses on the necessity of harmonization of financial norms within the framework of the European Union (EU) and the process of integration of ILO conventions into national law and comparison law. The current system in Kazakhstan has been evaluated by comparing it with the models in the Russian Federation, European Union countries and Türkiye.

The authors emphasize the importance of institutionalizing social insurance systems that focus on a preventive approach in the process of establishing a common financial market within the EU. For example, in the Russian Federation, the social insurance system is run by the state and is based on premium rates that differ according to the hazard class of the workplace. However, there are criticisms that the system operates mostly on the axis of compensation and that preventive and rehabilitative functions are not sufficiently included in the institutional framework.

Although the insurance systems of the member states differ, the "prevention principle", "risk assessment", "employer obligation" and "employee protection" constitute the basic building blocks of EU social law. Occupational accident insurance systems, especially in countries such as Germany and France, attract attention with their public and occupation-based structure and are supported by strong preventive mechanisms. This structure is highly aligned with ILO standards and recognizes prevention and rehabilitation as an essential component of the system, not just a complement to compensation.

The insurance system against occupational accidents and occupational diseases in Türkiye is carried out within the scope of the Social Security and General Health Insurance Law No. 5510, and the implementation is carried out by the Social Security Institution (SSI). While the system is effective in linking income and providing compensation, the preventive function is largely left to the criminal and administrative regulations under the Occupational Health and Safety Law No. 6331. This situation causes a structural separation between the insurance system and the occupational health and safety regime; It prevents a comprehensive approach in terms of risk management.

In the study, it was stated that the insurance system implemented in Kazakhstan mainly focused on damage compensation, similar to the examples of Russia and Türkiye; on the other hand, it has been determined that preventive and rehabilitative functions are integrated in a more institutionalized way in European Union countries. In addition, terminological ambiguities and normative contradictions have been observed in legal regulations in Kazakhstan; the relationship of national legislation with ILO norms and norm harmonization processes within the framework of the EAEU was evaluated.

Kazakhstan's policies aimed at strengthening the social and legal state structure and its active integration into the EAEU necessitate a integrated harmonization of not only financial but also social policies. In this context, the basic paradigm of the compulsory insurance system against occupational risks needs to be re-evaluated. The insurance system is not just a commercial activity; It should be designed as a public tool that reflects the common social responsibility of the state and the employer. The system should focus not only on compensating for damages, but also on effectively preventing occupational risks and returning workers to the labor market in a productive manner.

The scientific and practical contribution of this article is to make a multidimensional assessment of Kazakhstan's social insurance legislation and to provide concrete recommendations for structural reforms based on comparative experiences. In the context of Eurasian integration, a system that will balance the rights and obligations of the parties in insurance relations, while at the same time compliant with international norms and sensitive to national needs, is proposed. The study is complemented by normative and institutional recommendations that are in line with Kazakhstan's obligations under the ILO and the EEU, incorporating lessons learned from Turkish and EU practices.

The biggest limitation of the current system is that it is based on the understanding of "post-incident response". However, contemporary insurance models and ILO's recommendations aim to ensure that social insurance functions as an active and coordi-

nated tool in risk management. In this context, it is recommended to integrate prevention strategies, rehabilitation mechanisms and compensation tools in a balanced manner (Qazaqstan Respublikasynyñ Prezidentiniñ Jarlyğy No. 636, 2018).

2. Methodology of the Study

This study adopts a comparative analysis method to evaluate the compulsory social insurance systems carried out against occupational accidents and occupational diseases with their normative, institutional and functional dimensions. The methodological framework is based on both structural-legal analysis and the study of political orientations. More specifically, the study uses the functional method of comparative law. This method compares different legal systems by examining how they respond to a common legal and social problem, rather than merely listing similarities and differences between statutory provisions. In the present study, the common problem is the legal organization of protection against occupational accidents and occupational diseases.

The main method of the study is comparative descriptive analysis, and the functioning of systems in different countries is systematically compared according to certain criteria. In this context, five countries or regional systems have been chosen: the European Union (EU), the United States of America (USA), the Russian Federation (RF), Türkiye and Kazakhstan. The selection criteria are the representation of countries in different social policy traditions, geographical diversity, institutional development levels and participation in normative integration processes. Kazakhstan was selected as the focal jurisdiction because the article aims to evaluate its current legislation and reform needs. The Russian Federation was included due to its post-Soviet legal and institutional background, which makes it a relevant comparator for Kazakhstan. Türkiye was selected because it provides an example of a public social insurance system in which compensation mechanisms under social security law coexist with a separate occupational health and safety regime. The European Union was included as a supranational normative framework in which prevention, risk assessment and worker protection are strongly emphasized. The United States was included as a contrasting model, since its occupational accident compensation regime is more decentralized and shaped largely through workers' compensation schemes and private-law-oriented institutional mechanisms. The analysis was conducted through the following three key dimensions:

- **Normative Structure:** The legal basis of social insurance systems regarding occupational accidents and diseases in the relevant countries has been examined. In this context, national laws

(e.g. Laws No. 5510 and 6331 in Türkiye) and international conventions (such as ILO Convention No. 121) were taken as basis.

- **Institutional Capacity:** Public institutions responsible for the execution of insurance systems (e.g. SSI, Social Insurance Funds, private insurance regulators) and their competencies at the implementation level were evaluated. At the same time, institutional coordination, digitalization level and audit capacities were compared.
- **Policy Orientations:** The weights of "compensation", "prevention" and "rehabilitation" functions in the insurance systems of countries were analyzed. In this context, the extent to which the system is based on passive compensation and to what extent it includes proactive risk prevention policies are examined. In particular, preventive and rehabilitative functions as in the case of Germany and France were compared with the private insurance model in the USA, the state-oriented structure of Russia and the transformation process of Kazakhstan.

Within the scope of the comparative analysis, European Union Framework Directives, ILO standards harmonization processes and national legislation were discussed mutually. In the case of Kazakhstan, the level of compatibility of the current insurance system with both EU and Turkish practices and its future integration potential in the context of the EEU were evaluated.

The study also reveals the terminological and normative inconsistencies observed in national legislation; It emphasizes the need for structural reform to integrate insurance systems with preventive and rehabilitative functions, rather than relying solely on compensation. The comparative findings are therefore used not only for descriptive purposes, but also as a basis for normative evaluation. The analysis shows that systems limited to compensation remain insufficient in preventing occupational risks, whereas models that integrate prevention and rehabilitation provide a more comprehensive form of social protection.

Thanks to this methodological approach, both the functionality of social security systems at the theoretical level and their practical application capacities were evaluated; In the case of Kazakhstan, multi-level policy alignment proposals have been developed. In addition, concrete, normative and institutional reform steps were proposed within the framework of the structural lessons learned from the experience of each country. Thus, the comparative analysis leads to a clear conclusion: Kazakhstan's compulsory insurance system should move from a predominantly post-accident compensation model toward a preventive, rehabilitative and institutionally coordinated model compatible with ILO standards and comparative best practices.

3. Research and Discussion

3.1. Research

3.1.1. Occupational accidents and diseases insurance system in the united states

In the United States, the insurance system for occupational accidents and diseases is complex, which varies on a state basis, and is mostly led by the private sector. The basis of the system in the USA is the liability of employers to the employee and generally operates within the framework of employer-financed workers' compensation insurance. Risk assessment, rehabilitation after occupational accidents and long-term support mechanisms are determined by state-level regulations.

The analysis methods applied in the USA are quite advanced. Systematic risk assessment tools such as HAZOP (Hazard and Operability Analysis), FMEA (Failure Mode and Effect Analysis) and FTA (Fault Tree Analysis) are frequently used in the prevention of industrial accidents (Gendler et al., 2020, s. 82). Thanks to these methods, system failures that may cause accidents are detected and eliminated in advance.

In an important empirical study on this subject, Shin, Ilsoon; Oh, Jun-Byoung and Yi, Kwan Hyung (2011) examined the relationships between occupational accident frequencies and the structure of insurance systems in different OECD countries. According to the findings of the study, it was stated that occupational accidents occur less frequently in countries with private insurance systems than in countries with public insurance systems. In addition, it has been revealed that the application of a flat-rate employer contribution instead of a risk-based premium system yields more stable results because this system provides a more predictable structure to reduce costs (Shin et al., 2011, p. 150).

However, there are also criticized aspects of the system. Due to the state-based structure in the USA, inequalities arise in data collection systematics and service delivery; There may be situations where low-income workers do not receive adequate support. In this context, the performance of the insurance system should be evaluated not only in terms of financial aspects but also in terms of access and effectiveness.

3.1.2. Insurance system for occupational accidents and diseases in the european union

Social security systems developed in the European Union against occupational accidents and diseases include not only providing compensation to injured employees, but also systematic approaches to prevent accidents. Although there are certain differences

between member states, occupational health and safety policies are generally carried out under the coordination of the European Agency for Safety and Health at Work (EU-OSHA) and Eurostat. Policies and practices for the prevention of accidents in these systems; data monitoring has become seriously institutionalized in terms of employer obligations and financing model.

Risk-based premiumization method is used especially in the systems applied in Germany, France, the Netherlands and Scandinavian countries. In other words, employers' investments in occupational health and safety can directly affect the amount of insurance premiums they will pay. This system not only directs employers to fulfill their legal responsibilities but also to gain financial advantages in insurance premiums by creating safe working environments (Takala et al., 2017, p. 8).

The rate of fatal occupational accidents in these countries is on a downward trend thanks to structural reforms, increased automation in industry, transition to the service sector and strengthening public policies on occupational health. For example, according to 2011 data, there are 0.74 fatal accidents per 100,000 employees in the United Kingdom, while this rate is 0.9 in Germany. These rates are much higher in countries with transition economies, such as Türkiye and Kazakhstan (Takala et al., 2017, p. 9).

In addition, in European countries, not only physical risks, but also "emerging risks" such as psychosocial risks, workplace stress and musculoskeletal diseases have been of interest to insurance systems. This development points to a comprehensive understanding that health in the world of work is threatened not only by visible accidents but also by long-term exposures.

However, there are also significant differences between countries within the EU. For example, Scandinavian countries invest more in proactive preventive approaches such as "Vision Zero", while in Southern European countries, systems are more compensation-based. This situation varies according to the economic capacities, political priorities and historical development processes of countries.

In general, the European Union insurance systems for occupational accidents and occupational diseases; It is structured as a multi-layered protection system that aims to reduce social risks at the national level as well as individual compensation. The development of systems at this level creates significant advantages not only for employers and employees but also for economic sustainability.

In the European Union, protection against occupational injuries is not through a uniform Union insurance system; It is provided through binding directives in the field of occupational health and safety and the national insurance regimes of the member states. EU legislation, especially the Framework Directive

on Occupational Health and Safety No. 89/391/EEC, places the principle of prevention in a central position; It regulates risk assessment, employer liability and employee protection as basic obligations. In countries such as Germany, France and Austria, occupational accident insurance is carried out by public or semi-public occupational insurance organizations; In addition to compensation payments, these organizations provide active prevention programs, rehabilitation services, and technical support for workplaces. The EU approach aims to make insurance an active tool of occupational health and safety policies rather than a passive payment mechanism.

3.1.3. Insurance system for occupational accidents and occupational diseases in türkiye

An occupational accident can be said to exist where a harmful event occurs, the injured person has the status of an insured worker, and the accident falls within one of the circumstances or situations prescribed by law. In this respect, an occupational accident is not merely any harmful event; rather, it is a concept of social security law that must be assessed together with the worker's insured status and the statutory connection criteria (Eker, 2021, p. 35).

However, under Law No. 5510, the concept of occupational accident has not a certain limit, in a narrow sense, to accidents occurring only during the performance of work. Unlike Law No. 6331, Law No. 5510 treats certain accidents occurring outside the workplace or not directly connected with the performance of work as occupational accidents, too. Thus, the term occupational accident should not be interpreted so narrow as referring only to accidents occurring during the actual performance of production or service activities (Ekmekçi, Köme Akpulat, & Akdeniz, 2022, pp. 181–182). In fact, in a analysis of Turkish social security law, accidents suffered due to work carried out by the employer are also examined as one of the main manifestations of the concept of occupational accident (Zehiroğlu, 2024, p. 4).

The insurance system for occupational accidents and occupational diseases in Türkiye operates with the compulsory insurance model carried out within the Social Security Institution (SSI). In this system, which is financed by premiums paid by employers, the insurance coverage is quite wide: various services are offered, such as temporary incapacity allowance, permanent incapacity income, salary to beneficiaries in case of death, and coverage of treatment expenses.

However, the criticism that the system in Türkiye is largely compensation-oriented and that preventive activities and control mechanisms are not at the desired level comes to the fore. Occupational accidents are more frequent in sectors such as const-

ruktion and agriculture, where unregistered work is high, and this situation both reduces the inclusiveness of the insurance system and affects the reliability of the data.

In international comparisons, it is seen that Türkiye's fatal occupational accident rate is higher than many developed countries. Takala et al. (2017), in their study including Türkiye, pointed out that occupational accidents do not decrease if the economic transformation is not supported by sufficient occupational health and safety investments (Takala et al., 2017, p. 7).

In order to prevent occupational accidents in Türkiye, not only the insurance system, but also preventive policy tools and employers' audit obligations need to be strengthened.

In Türkiye, the compulsory insurance system against occupational accidents and occupational diseases is carried out by the Social Security Institution within the framework of the Social Security and General Health Insurance Law No. 5510. Although the system strongly fulfills the functions of compensation and income linking, the prevention function is largely left to the administrative and penal mechanisms regulated under the Occupational Health and Safety Law No. 6331. This situation leads to a structural separation between the insurance system and occupational health and safety legislation; Reform discussions also focus on strengthening coordination between these two areas.

The main cause of occupational accidents and occupational diseases in Türkiye is not merely the inadequacy of legal regulations. In many cases, the problem arises from the ineffectiveness of inspection mechanisms, the insufficient development of an occupational safety culture, and the fact that occupational health and safety professionals are not adequately supported in terms of both training and job security. Therefore, in order to reduce occupational accidents, it is essential to strengthen internal workplace supervision as well as external inspection. For this reason, occupational health and safety professionals should receive better and more qualified training and should be protected against employers through stronger and specific job-security guarantees. According to Kutal, well-trained occupational health and safety professionals who have job security will not only make internal supervision more effective, but will also help develop an occupational health and safety culture among employees (Kutal, 2019, pp. 474–475).

3.1.4. Insurance system and preventive approaches in kazakhstan

The insurance system for occupational accidents and diseases in Kazakhstan has been made legally mandatory and is carried out with both the regulatory

role of the state and the enforcement role of private insurance companies. The compulsory insurance law, which came into effect in 2005, required employers to insure their employees against accidents and occupational diseases. However, in recent years, it has been understood that only compensation-oriented systems are insufficient and the preventive insurance approach has started to gain importance. In this context, Abikenova et al. (2023) have evaluated the insurance system implemented in Kazakhstan as not only a means of financial protection but also as a means of risk mitigation. The authors suggest that a portion of insurance funds should be allocated for preventive measures, such as occupational safety training, modernizing work environments, and integrating workplace inspections with digital databases. In the same study, it was stated that a two-component insurance premium system was proposed according to occupational risk levels. In this system, the first component includes the overall premium rate, and the second component includes an additional difference based on the current level of risk in the workplace. Thus, employers are encouraged to provide safe working conditions, and higher insurance premium payments are possible in risky conditions (Abikenova et al., 2023, p. 290-292).

The recent support of occupational health and safety policies with information technologies in Kazakhstan has increased the traceability and auditability of the system. With digital insurance contracts, online audit systems and central risk databases, a more transparent structure has been created for both employers and government institutions.

In this context, Kazakhstan stands out as one of the countries with the most institutional approach to occupational accidents and diseases in the Central Asian region. Although the system has not yet fully reached EU standards, adopting a preventive approach will have cost-reducing and health-protective effects in the long run.

The data provided by the Ministry of Population, Labour and Social Protection of the Republic of Kazakhstan and the institutions affiliated to this Ministry constitute the main primary sources of the research. These data directly contribute to the evaluation of the functioning and effectiveness of the compulsory insurance system implemented in Kazakhstan against occupational accidents related to workers' activities.

The indicators reveal the general trends of the current practice in Kazakhstan and show that the system has a predominantly compensatory structure. The findings were evaluated by comparing the public insurance model in the Russian Federation with the compulsory insurance system carried out by the Social Security Institution in Türkiye.

In the research, a comparative analysis was also made at the institutional level. In this context, the

data of JSC "Life Insurance Company" operating in the insurance market of Kazakhstan were examined. The company's operating results, premium structure and payment practices reveal how the insurance system operates at the micro level; It makes visible the tension between the commercial nature of insurance and the purpose of social protection. Compared to the fact that insurance activities are carried out under more centralized and public supervision in Russia and Türkiye, this situation reveals the unique problems of the institutional structure in Kazakhstan.

Thanks to this comparative approach, the structural and institutional limitations of the compulsory insurance system in Kazakhstan have been more clearly identified. In particular, the weakness of preventive mechanisms, institutional fragmentation and the fact that insurance activities are predominantly shaped by commercial objectives become evident when compared to the prevention and rehabilitation-oriented models common in the European Union. This methodological framework allows national practices to be evaluated in the light of international standards and different country experiences (Qazaqstan Respublikasynyñ Prezidentiniñ Qaulysy No. 1569, 1994).

The project proposals are based on the approaches to the development and reform of the compulsory social insurance system in Kazakhstan, which were put forward by the JSC "State Pension Company" and the JSC "State Social Insurance Fund". These proposals aim to transform the structure of the current system, which focuses mainly on post-loss compensation; It aims to transition to a more coordinated model that strengthens prevention, rehabilitation and risk management functions.

3.1.5. Insurance for Occupational Accidents and Diseases in the Russian Federation

The insurance system against occupational accidents and diseases in the Russian Federation was given a legal framework with the "Federal Law No. 125-FZ" adopted in 1998. Under this law, employers are required to compulsorily insure their employees against production-related accidents and illnesses. Although the system is regulated by the public, insurance applications are largely carried out through centralized structures.

Puinko, Lusien E. (2020) draws attention to the digitalization process of the social insurance system in Russia and states that insurance contracts and audit mechanisms have been moved to digital platforms, thus making the system more effective, traceable and reliable (Puinko, 2020, p. 714).

The risk of occupational accidents in the mining sectors operating in Russia, especially in the Northern regions (e.g. Murmansk and the Komi Republic), is

quite high due to the harsh climatic conditions. The risk structure in these regions depends not only on the workplace environment but also on external environmental factors. Gendler et al. (2020) call this situation "background risk" and emphasize that these external factors should be taken into account in risk analyses (Gendler et al., 2020, p. 81–82).

The authors state that the effect of environmental conditions on occupational accidents can be analyzed with a linear correlation and that technical factors and environmental factors can be separated using the "background risk" model (p. 82). These analyses reveal that occupational health policies should be differentiated regionally in countries with large geographical areas such as Russia.

In addition, Russian academics such as Karnachev and Grishina state that the safety culture in Russia is still in its development stage, with most occupational accidents being linked to operational error and inadequate training. This shows that the insurance system should not only provide financial compensation but also include practices aimed at increasing organizational security.

From a comparative perspective, the insurance system for occupational accidents and diseases in the Russian Federation is carried out by the Social Insurance Fund in a structure with a predominant public nature. In the Russian system, workplaces are divided into risk classes according to the degree of danger of their activities and insurance premiums are determined according to this classification. Although this mechanism ensures that preventive elements are partially integrated into the system, in practice the system mainly focuses on compensation and income linking functions; There are academic criticisms that preventive programs are limited.

3.2. Discussion

3.2.1. International common perspective

It is clear that the system, which is called occupational injury insurance *in the international literature* and compulsory social insurance for activities related to the performance of work or official duties *in national legislation*, needs a further modernization in the face of today's economic and social conditions.

Although important steps have been taken towards harmonizing national legislation with international standards, there are still some contradictory regulations in the current system. It is seen that the compulsory insurance system, especially related to workers' activities, is not effective enough in terms of preventing occupational accidents and occupational diseases and compensating for the damages arising as a result of these risks. This limits the preventive function of insurance and leads to various problems in practice.

In addition, the "mixed system" used to determine the degree of loss of professional working capacity creates problems in terms of social justice in insurance payments. The lack of unified and reliable insurance statistics and separate and comprehensive reports on occupational injury victims, and mismatches between government and agency statistics on occupational accidents further undermine the system's effectiveness. (Qazaqstan Respublikasynyñ Zańy No. 285-VI, 2019).

Finally, the effectiveness of the current corporate structure, in which life insurance companies are involved as operators of the compulsory insurance system, is especially important. In this context, ensuring the balance between the financial sustainability of these institutions and their obligations to fulfill their social missions plays a decisive role. Today, due to the dominance of the commercial activity logic and conceptual incompatibilities, it is seen that insurance programs that can perform prevention, rehabilitation and compensation functions simultaneously and holistically are limited worldwide.

Retrospective evaluations reveal that occupational injury insurance programs implemented in economically developed countries are institutionally established, operate effectively and have a high social value. These systems stand out as structures that aim not only to compensate for loss of income but also to increase safety in working life and protect the workforce.

Workplace injury insurance programs have their historical origins in 19th-century Europe. The first national regulation in this field was implemented in 1884 with the law passed in Germany under the leadership of Chancellor Otto von Bismarck and formed the basis of modern occupational injury insurance systems. This regulation has been decisive in the development of social insurance not only as an individual guarantee tool, but also as an institutional reflection of the social responsibility of the state (Burdygina, 2007).

In some countries, occupational injury insurance systems rely heavily on a preventive approach. The main purpose of these systems is to improve working conditions and occupational safety standards in order to reduce the number of accidents that occur in workplaces. This goal is achieved by differentiating insurance premiums according to the risk level of workplaces or by actively supporting and financing preventive and awareness-raising activities. Such practices strengthen employers' sense of responsibility and contribute to the development of insurance culture in the long run.

Some trends emerging on a global scale make the need for reform in occupational injury insurance systems even more evident. In particular, the emergence and rapid spread of new technologies are transforming the nature of occupational risks; In

addition, it creates new opportunities in the fields of risk prevention, occupational medicine practices and rehabilitation. These developments necessitate a more flexible, preventive and integrated structure of insurance systems (Núrǵalıeva, 2021).

Global competition and economic transformations lead to radical changes in the employment structure. In this process, while the weight of the industrial sector decreased, there was a significant shift in the workforce towards the service sector. At the same time, workplace organizations are transforming; Non-standard forms of employment such as part-time, temporary and contract work are becoming widespread. The development of private entrepreneurship, technological progress and the increase in automation gradually reduce the need for physical labor.

Demographic trends also directly affect the structure of the workforce. The increase in the level of education, the increase in women's participation in the labor force, the increase in life expectancy and the decrease in fertility rates lead to significant changes in both the quantity and quality of the labor force. These developments are reshaping the structural characteristics and quality of the workforce.

The experience of economically developed countries reveals the necessity of continuous modernization of occupational injury insurance systems. In this context, it is important to strengthen legal regulations that increase the responsibility and motivation of employers to reduce occupational injuries and diseases. The approach in question; It aims to effectively implement preventive measures, mitigate the consequences of loss of working capacity, regain lost work capacity and reduce preventable deaths.

The International Labour Organization (ILO) emphasizes that a holistic approach should be adopted in the development of compulsory insurance systems against occupational injuries and diseases, addressing the functions of prevention, rehabilitation and compensation together.

3.2.2. European Union

European Union countries have important advantages such as risk-based premiumization, strong control mechanisms and low mortality rates in insurance systems created against occupational accidents and diseases. However, differences in implementation between member states and the lack of preventive funds in some countries are among the factors that limit the effectiveness of the system. On the other hand, the dissemination of preventive policies such as Vision Zero and the implementation of AI-supported risk monitoring systems offer significant opportunities for EU countries. However, reducing investments in occupational health and safety during economic crises poses a potential threat.

In the European Union, the risk-based approach is at the center of occupational health and safety policy. In accordance with the Framework Directive 89/391/EEC on Occupational Health and Safety, employers are obliged to assess occupational risks in the workplace in advance, take the necessary preventive measures and reduce the risks at the source. In many member states (especially Germany, the Netherlands and the Nordic countries) these risk assessments have been directly linked to the determination of social insurance contributions and the financing of preventive programmes. In this way, the risk-based approach functions not only as an administrative obligation but also as an economic incentive mechanism.

3.2.3. United states of America

The USA has strengths in occupational health, such as advanced risk analysis methods (e.g., HAZOP, FTA) and the efficiency provided by the private sector. However, the fragmented nature of the interstate system and the difficulties faced by low-income workers in accessing services stand out as the weak points of the system. Steps such as the implementation of standardization policies at the federal level and the development of digital audit systems offer important opportunities to strengthen the system. On the other hand, the persistence of system inequality and the lack of integration with health insurance pose a threat to sustainability.

3.2.4. Russian federation

In the Russian Federation, too, the insurance system for occupational accidents and diseases is based on a risk classification in which workplaces are divided according to hazard classes. In this system, implemented by the Social Insurance Fund (as of 2023, the Russian Social Fund), premium rates are determined according to the risk level of the workplace and aim to encourage employers to provide safer working conditions. However, it is stated in academic evaluations that this approach often remains compensation-oriented in practice, and the risk prevention dimension can be implemented to a limited extent.

3.2.5. In Türkiye

In Türkiye, the risk-based approach is mainly regulated within the framework of the Occupational Health and Safety Law No. 6331. This Law imposes an obligation on employers to conduct risk assessments, take preventive measures, and inform employees. However, there is no structural integrity between the social insurance system (occupational accidents and occupational diseases insurance carried out by SSI within the scope of Law No. 5510) and occupational health and safety legislation. Although risk assess-

ments are important in terms of administrative and criminal sanctions, the systematic differentiation of insurance premiums according to the risk level remains limited.

Social protection of citizens, together with social security and social support mechanisms, constitute the basic elements of the social policy of the state in Russia, Türkiye and European Union countries as well as in Kazakhstan. The current social policy approach prioritizes strengthening social justice and social welfare, the active participation of individuals in economic life and ensuring safe conditions in working life. This approach aims to transform social insurance systems into preventive and strengthening tools, rather than just compensating for loss of income.

In this context, the state develops various programs and policy tools in line with the new social contract understanding and creates conditions that encourage employers to create new employment areas. Active labor market policies and social insurance incentives in the European Union; Employment incentives and premium supports in Türkiye; In Russia, on the other hand, publicly supported employment programs are concrete examples of this approach. For Kazakhstan, the comprehensive implementation of social insurance and occupational health and safety policies based on a risk-based approach is considered as an important tool that can contribute to both the protection of workers and sustainable economic growth (Qazaqstan Respublikasynyñ Prezidentiniñ Jarlyǵy No. 949, 2002).

In accordance with the legal regulations in force, employers are not only responsible for the provision of social benefits; It is also explicitly responsible for creating safe working conditions and preventing occupational injuries and diseases.

This responsibility is implemented through compulsory occupational accident insurance mechanisms developed in line with the basic principles adopted by the International Labour Organization (ILO) and on the basis of plans, models and programs implemented in developed countries and international organizations. These mechanisms have emerged as a result of policy choices aimed at strengthening social protection against occupational accidents and systematically implementing preventive approaches (IAIS, 2019).

Insurance has an important place in the economy as a sub-field of the financial sector. This importance of insurance; The way it emerges is shaped by numerous legal regulations that have an impact on its development process and the regulatory functions it undertakes in different sectors.

3.2.6. Kazakhstan

An analysis of the current legislation shows that national regulations are generally in line with internati-

onal standards, but there are several shortcomings, gaps and normative contradictions in practice. These problems are particularly evident in the differences in conceptual definitions.

In this context, Article 1, paragraph 27 of the Labor Code of the Republic of Kazakhstan defines an event connected with workers' activities as a situation resulting in injury, sudden deterioration of health, temporary or permanent loss of working capacity or death that occurs while performing his/her duties on behalf of the employee's own employer or the sending employer or on the instructions of the receiving party (Petrov, 2020).

The Law of the Republic of Kazakhstan "On compulsory insurance against injury to an employee in the performance of his work (official) duties" provides for the determination of the degree of loss of professional working capacity suffered by employees who are injured or died as a result of exposure to harmful and/or dangerous factors of production, Occupational Accidents, sudden deterioration in health, occupational diseases or poisoning in the performance of their professional duties. This issue is regulated in Article 16-1 of the Law, and under certain conditions, these events are considered as occupational accidents.

However, it is seen that the said Law refers to some norms that are not included in the current text of the Labor Code of the Republic of Kazakhstan. This situation leads to normative incompatibilities between basic legislative texts and uncertainties in practice. The historical analysis of the amendments shows that since the entry into force of the Labor Law on January 1, 2016, the said Law has been amended 18 times, but none of these amendments include provisions to eliminate the structural problems arising in Articles 16-1 and 22.

On the other hand, within the framework of the project titled "Economic Problems of Secure Labor and Institutional Transformation of the Insurance Mechanism in the Republic of Kazakhstan", scientific research on working conditions and labor security is carried out by the Labor Protection Research Institute within the scope of targeted program funding. These studies revealed that the statistical data kept by different public institutions and organizations regarding occupational accidents do not coincide with each other. This situation significantly complicates state oversight and evidence-based policy development processes.

The main reason why the current statistics do not fully reflect the number of insured employees is that in Kazakhstani legislation, insurance is not made directly through employees, but through employers and workplaces. In addition, although the International Labour Organization (ILO) norms have been transposed into national legislation, it has been determined that preventive mechanisms are not used effectively enough in practice.

In this comparative framework, the reforms proposed in Kazakhstan aim to redefine the role of insurance institutions, institutionally strengthen non-compensatory functions and bring insurance activities more in line with the principles of the welfare state. The experiences of Russia, the European Union and Türkiye show that a successful transformation is not only with institutional restructuring; It shows that it is possible by considering risk-based bonus systems, effective audit mechanisms, reliable statistical infrastructure and social dialogue tools together.

Opinion and policy documents have made a significant contribution to understanding the direction of transformation in the system and current debates in professional circles. A comprehensive analysis of these documents reveals that the problem under consideration is multidimensional, structurally complex, and of high social importance. Monographs, academic articles and thesis studies on social insurance, occupational health and safety and occupational risk management also confirm the topicality of the research topic both at the international level and in terms of Kazakhstan.

The last stage of political and legal development in the country is closely related to the implementation of the State Legal Reform Program and the subsequent implementation of the Legal Policy Concepts (2002 to the present). These documents determined the direction and priorities of all legislative areas, starting from constitutional law; envisaged the conceptual reconsideration of labor law and the social insurance system. In this process, codified laws were adopted, implementation mechanisms were developed and legal awareness was strengthened at the social level.

Finally, the second paragraph of Article 24 of the Constitution of the Republic of Kazakhstan provides the constitutional basis for compulsory social insurance reforms, guaranteeing everyone's right to safe and hygienic working conditions, fair wages without discrimination, and social protection against unemployment (Qazaqstan Respublikasynyñ Konstytuciyası, 1995).

The National Development Plan until 2025 envisages a specific method based on a risk-based approach in the field of occupational safety and health. According to this approach, risk assessment makes it possible to systematically identify harmful and dangerous factors arising from production processes in each workplace and to reduce the risk of occupational accidents and occupational diseases. This understanding aligns with the International Labour Organization's (ILO) emphasis on preventive policies and modern social security approaches.

The main strengths of the insurance system in Kazakhstan include the allocation of funds for preventive activities, the proposal for a two-component premium system, and the development of digital audit mechanisms. However, as the system is still in the

process of development, there may be infrastructure deficiencies in some areas. Steps such as harmonization with European Union models and dissemination of occupational safety trainings offer opportunities for the development of the system. On the other hand, the interruption of the continuity of implementation by political changes and the limited industrial investments are important threats.

4. Conclusion and Comparative Policy Recommendations

This study comparatively examined the compulsory social insurance systems against occupational accidents in the European Union, USA, RF, Türkiye and Kazakhstan in terms of normative structure, institutional capacity and policy orientations. The findings show that the compensation function stands out as the basic element of social insurance in these systems; on the other hand, it reveals that there are significant differences in the integration of prevention and rehabilitation functions (risk-management and reintegration mechanisms) into the legal and institutional framework.

The results of the analysis show that the compulsory social insurance system against occupational accidents in Kazakhstan faces structural problems that limit its development and weaken its social function. The current system exhibits a structure that focuses on compensating for the damages incurred rather than being a tool to prevent risks.

4.1. Joint International Recommendations

At the international level, standardized data systems should be developed on the basis of the definitions recommended by organizations such as ILO and WHO in order to carry out reporting, premiumization and prevention activities for occupational accidents and diseases more effectively. Differentiated bonus systems based on risk level should be implemented in all countries, ensuring that workers in high-risk sectors receive higher protection. Additionally, practices such as tax incentives for preventive actions and low premium advantages should encourage employers' investments in occupational health and safety.

4.1.1. Suggestions from the EU

The experience of the European Union reveals that an effective occupational injury insurance system should include the principles of prevention, rehabilitation and fair compensation in an integrated manner. In this context, it is possible to adapt the good practices developed in the EU to the conditions of Kazakhstan.

First of all, it is necessary to develop a preventive occupational health and safety culture. The EU Framework Directive on Occupational Safety and He-

alth (89/391/EEC) imposes an obligation on employers to assess and mitigate occupational risks. In order to effectively implement this approach in Kazakhstan, it is important to put economic incentive mechanisms in place. Differentiated insurance premiums based on working conditions and occupational accident statistics can prompt employers to take preventive measures.

Such an approach is in line with the practices adopted by professional insurance associations (Berufsgenossenschaften) in financing preventive programs in Germany and can contribute to transforming the insurance system from a mere compensation payer to an active risk management tool (Sapařgaliev, 2019).

Secondly, it is necessary to create an integrated operator that combines compensation, rehabilitation and prevention functions into a single structure. In the models widely applied in the European Union countries, private insurance funds or public agencies (especially in the cases of Austria and Finland) gather compensation payments, medical and vocational rehabilitation services and the organization of preventive activities in a single center. Structuring the State Social Insurance Fund in Kazakhstan in line with this understanding will ensure more effective use of resources, reduce corporate conflicts of interest and allow the system to be managed holistically. Thirdly, standardization and integration of accounting, monitoring, and data collection processes are imperative. In order to produce reliable and comparable statistics, it is necessary to establish a unified data collection system in line with European standards. In this context, a structure similar to the European System of Accident at Work Statistics (ESAW) will make it possible to analyze the causes of accidents at work, to establish comparative indicators and to develop targeted preventive measures.

In this context, the strategic objective of the reform is not only to improve the system with limited and superficial regulations; but to comprehensively transform it from a structure based on compensation to a proactive, preventive and socially strong model. Such a transformation will not only contribute to the effective protection of the right to safe work guaranteed in the Constitution of Kazakhstan, but will also make it possible to strengthen employee rights, increase labor productivity and support the competitiveness of the national economy. It will also serve to create a healthy, safe and sustainable working environment.

In the European Union, compulsory social insurance is not only a compensatory mechanism against occupational accidents; it is implemented as a holistic coordinated social policy tool structured in line with the objectives of preventing risks, increasing workplace safety and rehabilitating employees. In Union law, proactive risk management, employer responsibility and inter-institutional coordination come to

the fore; this approach strengthens the preventive and restorative dimensions of social insurance in line with the standards of the International Labour Organization (ILO).

4.1.2. Suggestions from the USA

In the United States, common data definitions should be established at the federal level to ensure the comparability of occupational accident and occupational disease data between states. Low-cost and accessible "microinsurance" schemes should be implemented so that low-income, migrant or temporary workers can also benefit from the system. In addition, artificial intelligence-based early warning and monitoring systems should be developed and supported in order to detect dangerous trends in industrial organizations in advance.

4.1.3. Recommendations for the Russian Federation

The strengths of the system for occupational health and safety in the Russian Federation include the background risk model, the existence of a compulsory insurance law, and the process of digitalization. However, regional inequalities occur due to geographical size and climatic difficulties, and the lack of sufficient development of occupational safety culture is among the weaknesses of the system. Practices such as the development of regional risk analysis systems and the creation of databases at the national level offer important opportunities. However, especially in the northern regions, the loss of manpower, old infrastructure and high risk levels in the mining sector pose a threat.

In order to effectively analyze the differences arising from climatic and geographical conditions in Russia, it should be ensured that the background risk model is integrated into legal regulations. Region-specific inspection teams with special budgets should be formed for high-risk regions (e.g. Polar region, Siberia). All processes of the social insurance system should be transferred to the digital environment and open data access should be provided for transparency.

4.1.4. Recommendations for Türkiye

The social insurance system in Türkiye, especially within the framework of the Social Insurance and General Health Insurance Law No. 5510, is largely in harmony with the European Union acquis and International Labour Organization (ILO) conventions at the normative level. However, the ongoing structural incompatibilities between legislation and practice draw attention. The preventive function of the system remains weak, the compensation-based approach comes to the fore and institutional capa-

city is not used effectively enough. This situation becomes even more evident, especially in sectors such as construction and agriculture, where unregistered employment is common.

The limited inspection capacity in the field of occupational health and safety, the low level of employer awareness and the lack of coordination between institutions significantly reduce the effectiveness of the social insurance system. Additionally, the decrease in public investments in this field during economic fluctuations and the limited use of digital infrastructure are among the factors that threaten the sustainability of the system. On the other hand, developing e-Government infrastructure, increasing the employment of occupational health experts and benefiting from international good practices offer important opportunities to improve the current situation.

In this context, the following policy recommendations have been developed in order to make Türkiye's social insurance system more effective and integrated:

- The preventive insurance approach should be strengthened. Occupational health and safety risk assessments, workplace monitoring mechanisms, and preventive financing tools should be integrated directly into insurance legislation.
- Insurance premiums should be differentiated according to the risk level and occupational health and safety performance of the workplaces. This system will encourage employers to create safer working environments.
- Mobile inspection teams should be established to combat unregistered work; these teams should be supported by e-Government-based integrated data systems.
- A "Preventive Risk Fund" should be established within the Social Security Institution, which is financed by employer contribution and will be used only in preventive activities.
- Cultural transformation should be supported through education policies. Occupational health and safety courses should be made compulsory in vocational high schools and technical departments of universities.
- Rehabilitation mechanisms after Occupational Accidents and reintegration into the labor market should be developed. Thus, the restorative and regenerative aspect of the social insurance system will be strengthened.
- Multi-layered prevention strategies such as Vision Zero, which are implemented in EU countries, should be adapted to the Turkish context and disseminated at the national level.

These recommendations are not only by ensuring legislative harmonization in Türkiye's social insurance system; At the same time, it will contribute to ap-

proaching international standards by increasing the quality of application and institutional effectiveness. This transformation will support the concrete implementation of the social state principle and strengthen long-term social welfare.

4.1.5. Recommendations for Kazakhstan

Although the compulsory social insurance system in the Republic of Kazakhstan for events related to business activities has been formally brought closer to international standards, its actual effectiveness is still not sufficient. Low insurance coverage, limited improvement of insurance conditions (maximum 33%), as well as the institution of "mixed" liability applied in determining the degree of occupational incapacity for work lead to social injustice. This situation prevents full and fair compensation for damages caused by occupational accidents and occupational diseases (Baiterekova et al., 2025, p. 124–125).

However, the research findings clearly reveal the inadequacies in institutional and information infrastructure. The lack of a uniform and reliable insurance statistics, the lack of an individual registration system for occupational accident victims, the incompatibilities between public and institutional statistics, and the inability to establish an integrated database system seriously limit the state's capacity to monitor and produce effective policies. Furthermore, existing life insurance companies struggle to balance financial sustainability with social mission, leading to a weakening of the social aspect of the system (Baiterekova et al., 2025, p. 125–126).

In this context, the further modernization of the occupational accident insurance system should be based on the implementation of the prevention, rehabilitation and compensation functions envisaged by the International Labour Organization (ILO) with a comprehensive approach. The development of new technologies, structural transformations in the labor market and demographic trends change the nature of occupational risks; This situation necessitates the reconsideration of legal regulations. Therefore, national legislation needs to be structured in a way that encourages employers to take preventive measures, mitigates the consequences of occupational diseases and accidents, and supports the recovery of labor force (Baiterekova et al., 2025, p. 126–127).

The proposed approach envisages the standardization of the conceptual framework for a uniform definition of occupational accidents. In order to increase the effectiveness of compulsory employee accident insurance under Kazakhstan's legislation, it is possible to strengthen the institutional structure and carry out social insurance by a single fund (operator) (Smatlayev et al., 2023, p. 48) .

The compulsory social insurance system in Kazakhstan is in the process of transformation due to inter-

national obligations and integration processes within the framework of the Eurasian Economic Union (EEU). However, the preventive dimension of the system remains limited; institutional fragmentation, terminological ambiguities in legislation and irregularities in practice weaken the impact of the social state principle in the field.

Within this structural framework, the proposed policy steps for Kazakhstan are listed below:

- The two-component premium system (basic premium + risk level difference) should be included in the legislation and started to be implemented on a sectoral basis. This model will encourage employers to make preventive investments in high-risk sectors.
- Insurance legislation should be harmonized with the ILO's Convention No. 121 and the EAEU's common financial markets regulations. This harmonization process should position social insurance as a public service policy.
- By creating a "National Risk Map", the risk levels of all sectors and workplaces should be monitored with digital systems and these data should be made public.
- Occupational safety trainings should be subject to strict supervision by the state, even if they are carried out through insurance companies. The outputs of the trainings must be certified with national qualification certificates.
- Institutional coordination mechanisms should be strengthened. Communication and task sharing between social security institutions, supervisory authorities and local governments should be clarified.
- Rehabilitation and labour market reintegration mechanisms should be developed inspired by EU examples. Occupational recovery processes after occupational accidents will support the restorative dimension of social insurance.

These proposals will make Kazakhstan's social insurance system more holistic, accountable and risk-based, aligning it with both national goals and regional obligations.

5. Conclusion

This study examined the compulsory social insurance systems applied against occupational accidents in the European Union, the United States, the Russian Federation, Türkiye and Kazakhstan in a comparative framework in terms of normative structure, institutional capacity and policy orientations. The main findings of the study can be summarized under three headings: first, the dominant role of compensation; second, the insufficient institutionalization of prevention and rehabilitation in some systems; and third, the need for stronger coordination between

insurance, occupational health and safety, and labour-market reintegration policies. The findings show that the compensation function is at the center of the system in all countries; however, it revealed that there are significant structural differences in the integration of complementary functions such as prevention and rehabilitation into the institutional and legal framework.

The example of the European Union shows that with the principles of proactive risk management, employer obligation and institutional coordination, it is possible to structure social insurance not only as a compensation mechanism, but also as a preventive and restorative social policy tool. While the US model offers flexibility in areas such as technological innovation and microinsurance despite state-based applications; The Russian Federation model is notable for its "background risk" approach specific to geographical and environmental risks. Accordingly, the comparative analysis shows that the most effective systems are those that combine compensation with preventive financing, reliable data collection, workplace-based risk assessment and post-accident rehabilitation.

Türkiye and Kazakhstan, on the other hand, stand out as countries where the compensation-oriented structure is dominant in practice and there are serious deficiencies in the integration of prevention and rehabilitation functions into the system, although they comply with international norms to a large extent in their social insurance legislation. In particular, informal employment, poor institutional coordination, inadequate data infrastructure and lack of preventive financing mechanisms are the main factors that reduce the effectiveness of the system in these countries. For this reason, the findings concerning Türkiye and Kazakhstan should be presented not as separate and lengthy country descriptions, but as common reform priorities: stronger inspection, more reliable data infrastructure, risk-based financing, better trained occupational health and safety professionals, and effective rehabilitation mechanisms. For Türkiye, the main reform required is to strengthen supervision in the fight against occupational accidents and occupational diseases, and in particular to make internal workplace supervision more effective. To this end, occupational health and safety professionals should receive more qualified and practice-oriented training; institutions providing such training should be subject to strict supervision and should preferably be limited to universities and public institutions. In addition, occupational safety specialists and workplace physicians should be granted stronger, special job security against employers. Their contracts should be terminated only on grounds, and compensation for non-reinstatement and lost wages should be set at a deterrent level. In this way, occupational health and safety professionals would be able to perform their duties independently

and contribute more effectively to the development of a safety culture in workplaces. This point may be shortened in the final version, since the conclusion should not repeat the detailed country-specific recommendations already discussed in the previous sections.

In this context, the policy steps proposed in the study are; It includes multidimensional reform proposals such as risk-based premiumization, digital monitoring systems, strengthening institutional coordination, cultural transformation through education, development of rehabilitation mechanisms after occupational accidents and ensuring prevention-rehabilitation-compensation balance. More systematically, these recommendations can be grouped into five categories: (i) legal harmonization with ILO and comparative standards; (ii) institutional coordination between insurance bodies, labour inspectorates and health authorities; (iii) preventive financing through risk-based premiums and dedicated funds; (iv) reliable and integrated data systems; and (v) rehabilitation and reintegration of injured workers into the labour market. In addition, the standardization of data collection processes in line with ILO standards and European Union practices will make it possible for social insurance to become more transparent, accountable and compatible with the principle of the social state.

As a result, the success of social insurance systems established against occupational accidents is not limited to normative compliance. An effective system; It requires a structure in which preventive approaches are institutionalized, rehabilitation is strengthened and the entire process is managed in a data-based, transparent and participatory manner. Therefore, the core conclusion of the study is that legal compliance alone is not sufficient. Social insurance must be transformed from a post-accident payment mechanism into an integrated risk-management system. In this context, the strategic goal of the reform for countries such as Kazakhstan and Türkiye is to move away from the traditional understanding based on compensation and to make social insurance an active risk management and social development tool. This transformation will contribute not only to strengthening employee rights but also to increasing the efficiency and sustainability of national economies.

In conclusion, the comparative findings show that the future of occupational accident insurance lies in an integrated model combining compensation, prevention, rehabilitation, reliable data governance and institutional coordination. For Kazakhstan and Türkiye, the main reform priority is to move beyond a predominantly compensation-oriented model and to establish a preventive, data-based and socially protective insurance system compatible with ILO standards and comparative best practices.

References

- Abikenova, S., Nasyrova, G. A., Shayakhmetova, A. G., & Sarybayeva, I. E. (2023). Prevention as a factor of economic sustainability of workplace accident insurance programs. *European Journal of Sustainable Development*, 12(4), 289–304. <https://doi.org/10.14207/ejsd.2023.v12n4p289>
- Baiterekova, K., Smatlayev, B., & Ogurlu, Y. (2025). Legal foundations of social insurance in reducing occupational accident risks in the Republic of Kazakhstan. *Bulletin of the L. N. Gumilyov Eurasian National University. Law Series*, 4(153), 121–131. <https://bullaw.enu.kz/index.php/main/article/view/635/298>
- Burdygina, E. A. (2007). *Áleýmettik-ekonomikalyq júieniń transformaciia kezeńinde Reseyde áleýmettik saqtandyru dyń damýy* (Orenburg oblysy materialdary boynsha) [The development of social insurance in Russia during the transformation of the socio-economic system (based on materials from Orenburg region)] (Doctoral dissertation, Samara State University of Economics). Samara State University of Economics.
- Eker, Doğukan. *İş Sağlığı ve Güvenliğinde Kamusal Yaptırımlar* [Public Sanctions in Occupational Health and Safety]. Istanbul: On İki Levha Publishing, 2021.
- Ekmekçi, Ömer, Ayşe Köme Akpulat, and Ayşe Ledün Akdeniz. *İş Sağlığı ve Güvenliği Hukuku* [Occupational Health and Safety Law]. 2nd ed. Istanbul: On İki Levha Publishing, 2022.
- Gendler, S. G., Rudakov, M. L., & Falova, E. S. (2020). Analysis of the risk structure of injuries and occupational diseases in the mining industry of the Far North of the Russian Federation. *Naukovyi Visnyk Natsionalnoho Hirnychoho Universytetu*, 2020(3), 81–88. <https://doi.org/10.33271/nvngu/2020-3/081>
- International Association of Insurance Supervisors. (2019). Insurance core principles and common framework for the supervision of internationally active insurance groups. <https://www.iaisweb.org/uploads/2022/01/191115-IAISICPs-and-ComFrame-adopted-in-November-2019.pdf>
- International Labour Organization. (1964). Convention concerning employment injury benefits (No. 121). <https://www.ilo.org>
- Kutal, Metin. "Türk Hukuku'nda İş Kazalarının ve Meslek Hastalıklarının Denetlenmesi Sorunu." Prof. Dr. Savaş Taşkent'e Armağan, 2019.
- Nūrǵaliev, E. N. (2021). Qazaqstan Respublikasynda öndiristik jaraqattar men kásiptik ayrıldardan mindetti áleýmettik saqtandyru júiesin jetildirý [Improving the system of mandatory social insurance against occupational injuries and diseases in the Republic of Kazakhstan]. *Eńbek Qwqyǵy*, 4, 45–52.
- Petrov, S. I. (2020). Öndiristik jaraqattan saqtandyru dyń triedi funkciyas: aldın alu, oñaltu, ötemaqy (halyqaralyq tájiribe jáne QR üşin perspektivalar) [The triadic function of insurance against industrial injuries: prevention, rehabilitation, compensation]. *Bulletin of L. N. Gumilev Eurasian National University. Law Series*, 3, 120–128.
- Puinko, L. E. (2020). Aspects of digitalization of social insurance in the context of analysis of the effectiveness of the system of mandatory social insurance of industrial injuries in the Russian Federation (2005–2018). *Advances in Economics, Business and Management Research*, 138, 713–720.
- Qazaqstan Respublikasynyń Konstituciyası. (1995, August 30). <https://adilet.zan.kz/kaz/docs/K950001000>
- Qazaqstan Respublikasynyń Prezidentiniń Jarlyǵy No. 636. (2018, February 15). Qazaqstan Respublikasynyń 2025 jylǵa deingi damu ulttyq josparyn bekıtu jáne keibir Jarlyqtarınıń kúşin joıy turaly. <https://adilet.zan.kz/kaz/docs/U1800000636>
- Qazaqstan Respublikasynyń Prezidentiniń Jarlyǵy No. 949. (2002, September 20). Qwqyqtyq siyasaty tujıırdaması turaly. <https://adilet.zan.kz/kaz/docs/U020000949>
- Qazaqstan Respublikasynyń Prezidentiniń Qaulysy No. 1569. (1994, February 12). Qwqyqtyq reformany júzege asyru jöindegi memlekettik baǵdarlama turaly. <https://adilet.zan.kz/kaz/docs/K940001569>

Qazaqstan Respublikasynyñ Zańy No. 285-VI. (2019, December 26). Eýraziialyq ekonomikalyq odaq müşe memleketterdiñ qarjy nariğı salasynndağı zañnamasyn ülestiru turaly kelisimdi ratifikaciıalaý turaly. https://online.zakon.kz/Document/?doc_id=33273558

Saparǵalıev, G. K. (2019). Áleymettik memlekettiñ konstituciıalyq negizderi jáne azamattardyñ eńbek qwqyqtaryn qorǵaw [The constitutional foundations of the welfare state and protection of citizens' labor rights]. *Qwqyq jáne memleket*, 1–2(78–79), 25–34.

Shin, I., Oh, J.-B., & Yi, K. H. (2011). Workers' compensation insurance and occupational injuries. *Safety and Health at Work*, 2(2), 148–157. <https://doi.org/10.5491/SHAW.2011.2.2.148>

Smatlayev, B. M., Abikenova, S. K., & Saktaganova, I. S. (2023). Legal analysis of the implementation of insurance programs in the Republic of Kazakhstan to prevent accidents at work and assess the need for investments in safe work at the expense of the insurance fund formed in the compulsory accident insurance system. *Bulletin of L. N. Gumilyov Eurasian National University. Law Series*, 144(3), 42–50. <https://doi.org/10.32523/2616-6844-2023-144-3-42-50>

Takala, J., Hämmäläinen, P., Nenonen, N., Takahashi, K., Chimed-Ochir, O., & Rantanen, J. (2017). Comparative analysis of the burden of injury and illness at work in selected countries and regions. *Central European Journal of Occupational and Environmental Medicine*, 23(1–2), 6–26.

Zehiroǵlu, Şeyma. Türk ve Alman Sosyal Güvenlik Hukukunda İş Kazası Kavramı: B. İşverence Yürütülmekte Olan İş Nedeniyle Uǵranılan Kazalar [The Concept of Occupational Accident in Turkish and German Social Security Law: B. Accidents Suffered Due to Work Carried Out by the Employer]. Istanbul: On İki Levha Publishing, May 2024.

Employee Involvement and Safety Behavior: A Serial Mediation Model¹



Yasemin Arı Kovancı / Res. Asst. Dr.

Karamanoğlu Mehmetbey University, Faculty of Health Sciences
yaseminari@kmu.edu.tr

Abstract

It is of critical importance for employees to exhibit safety behaviors to prevent occupational accidents and injuries. Safety culture has emerged as one of the key factors shaping employees' safety behaviors and promoting workplace safety. Accordingly, this study aims to investigate the relationships between employee involvement, safety awareness and competency, reporting culture, which represent key dimensions of safety culture, and safety behavior, and to examine the serial mediation effect of safety awareness and competency and reporting culture in the relationship between employee involvement and safety behavior. Research data were collected through a questionnaire administered to 276 participants working in 24 enterprises operating in the metal sector, and the analyses were conducted using data obtained from 253 participants. The data were analyzed using a serial mediation model implemented in

Mplus. The findings indicate that safety awareness and competency, together with reporting culture, have a serial mediation effect on the relationship between employee involvement and safety behavior. In this context, the research results indicate that employee involvement alone may not be sufficient for employees to exhibit safety behaviors and highlight the importance of enhancing safety awareness and competency alongside employee involvement, as well as promoting the broader implementation of reporting culture.

Keywords: Occupational Health and Safety, Safety Behavior, Employee Involvement, Safety Awareness and Competency, Reporting Culture

JEL Codes: J28

¹This study was approved by the Social and Human Sciences Scientific Research and Publication Ethics Committee of Karamanoğlu Mehmetbey University (Decision No: 14-2025/323).

Citation: Arı Kovancı, Y. (2026). Employee involvement and safety behavior: A serial mediation model. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Despite extensive global efforts to improve occupational health and safety (OHS), occupational accidents and diseases continue to pose a serious threat to workers' health and safety. Approximately three million workers worldwide lose their lives each year due to such accidents and diseases (ILO, 2023; ILO, 2025; ILOSTAT, 2025). Similarly, in Turkey, occupational accidents remain among the most critical issues in working life. According to data from the Social Security Institution (SSI), the number of insured having work accident in Turkey increased from 221,366 in 2014 to 733,646 in 2024 (SSI, 2014; SSI, 2024). Over the past decade, the number of insured having work accident has increased by approximately 231%. This situation highlights that ensuring a safe and healthy working environment remains one of the fundamental priorities of working life.

Metals and metal alloys are widely used as raw materials in a variety of industrial branches due to their durability and quality. This has resulted in the metal sector becoming a significant component of the manufacturing chain. The metal sector, which holds strategic importance for the Turkish economy due to its economic scale and employment capacity, is among the sectors where workplace hazards and risks are particularly prominent and where occupational accidents occur frequently (Bayram et al., 2022). Many operations in the metal sector involve exposure to chemical hazards such as heavy metals, dust, gasses, fumes, and vapors; physical hazards including noise, high temperatures, electricity, radiation, and vibration; as well as ergonomic risk factors such as manual lifting, repetitive movements, and inappropriate posture (Altundaş Hatman et al., 2024; Fuentes-Bargues et al., 2025), all of which may contribute to the occurrence of occupational accidents and diseases.

In this context, identifying the causes of occupational accidents is essential for developing effective preventive measures and establishing safe and healthy working environments (Fuentes-Bargues et al., 2025; Dursun, 2013). The literature emphasizes that a large proportion of preventable occupational accidents result from employees' unsafe behaviors (Li et al., 2025). Research indicates that unsafe behaviors play a significant role in more than 80% of all recorded occupational accidents (Barkhordari et al., 2019; Bayram et al., 2022; Li et al., 2025). This highlights the critical importance of the human factor and safety behavior in preventing occupational accidents or at least minimizing their occurrence (Fernández-Muñoz et al., 2007; Ünal et al., 2021; Amirah et al., 2024).

Safety culture has emerged as one of the key concepts emphasized in the OHS literature for promoting employees' safety behaviors and preventing occupational accidents (Fernández-Muñoz et al., 2007; Fernandez-Muniz et al., 2009; Dursun, 2013; Amirah et al., 2024; Kovacic et al., 2025). Many studies in the

literature (Fernández-Muñoz et al., 2007; Lin et al., 2008; Håvold and Nasset, 2009; Zhang et al., 2020, 80; Ünal et al., 2021; Bayram et al., 2022) consider employee involvement, safety awareness and competency, and reporting culture as core dimensions of safety culture. In this context, the present study aims to investigate the relationships among employee involvement, safety awareness and competency, reporting culture, and safety behavior, and to test the serial mediation effects of safety awareness and competency and reporting culture in the relationship between employee involvement and safety behavior. The fact that metal sector employees are at high risk of occupational accidents and diseases constitutes one of the main reasons for conducting this study in this sector. The literature includes numerous studies examining the relationships between safety behavior and various dimensions of safety culture, such as managers' commitment, safety awareness and competency, safety training, and safety priority. However, studies that directly examining the mediating relationships among the variables within the framework of the model proposed in this study remain limited. In this regard, including safety awareness and competency and reporting culture as mediator variables and examining their mediating roles in the relationship between employee involvement and safety behavior distinguishes this study from previous research. In the following sections of the paper, the relevant literature is first reviewed and the hypotheses formulated for the study are presented. This is followed by a description of the research method. Subsequently, the findings are presented and discussed. Finally, the conclusions of the study are evaluated, and the limitations of the research are addressed.

2. Literature Review and Hypothesis Development

2.1. Safety Behavior

It is widely acknowledged that the human factor constitutes one of the primary causes of occupational accidents (Wadsworth and Smith, 2009; Fernandez-Muniz et al., 2009; Subramaniam et al., 2016; Barkhordari et al., 2019). In this regard, employees' behaviors are considered one of the most important determinants of workplace safety (Hrenov et al., 2016). Employees' exhibition of safety behaviors plays a significant role in reducing occupational accidents, occupational diseases, and material damage (Bayram et al., 2022; Amirah et al., 2024).

In this context, effective risk management is closely associated with employees' behaviors (Wadsworth and Smith, 2009). Accordingly, safety culture is regarded as an important managerial tool that shapes employees' safety-related attitudes, values, beliefs, and behaviors. The aim of a positive safety culture

is to establish a work environment in which employees are aware of workplace risks and continuously take precautions against them (Vredenburg, 2002; Fernández-Muñiz et al., 2007; Fernandez-Muniz et al., 2009). By focusing on employees' attitudes and behaviors, safety culture plays a crucial role in promoting safety behaviors in the workplace (Vredenburg, 2002; Dursun, 2013; Abeje and Luo, 2023; Tekeli Kaya and Ergör, 2024). In this regard, the literature frequently emphasizes that safety behavior is associated with key dimensions of safety culture, including employee involvement, safety awareness and competency, and reporting culture. Accordingly, the relevant literature is reviewed in the following subsections.

2.2. Employee Involvement

Ensuring employees' involvement in safety-related processes is of critical importance for establishing a healthy and safe working environment (Bayram et al., 2022). Employee involvement plays a fundamental role in the development and effective implementation of safety culture (Zhang et al., 2020; Lu, 2016). The presence of practices that encourage employees' involvement in safety-related activities can be considered one of the key indicators of safety culture. Employees' awareness of the importance of safe work practices, their compliance with regulations and work procedures, their active participation in meetings, and their willingness to propose improvements related to workplace safety can all be regarded as reflections of a positive safety culture (Fernández-Muñiz et al., 2007).

Employees can be directly involved in decision-making processes related to workplace safety through participation in safety committees (Subramaniam et al., 2016). Their active involvement in decision-making and problem-solving strengthens their commitment to OHS (Fernandez-Muniz et al., 2009). In the literature, it is stated that employees' involvement in the design, implementation, monitoring, and follow-up of the safety management process supports the adoption of OHS practices by employees and, ultimately, contributes to reduction of occupational accidents and injury rates (Subramaniam et al., 2016).

For employees to demonstrate safety behaviors, it is essential that they clearly recognize their critical roles in promoting workplace safety, that is, actively involved in the development of work instructions, procedures, and safety rules (Fernandez-Muniz et al., 2009). The relationship between employee involvement and safety behavior has been widely examined in the literature (Fernández-Muñiz et al., 2007; Fernandez-Muniz et al., 2009; Dursun, 2012; Dursun 2013; Subramaniam et al., 2016; Zhang et al., 2020; Ismail, 2020; Ünal et al., 2021). The findings reported by Dursun (2013) indicate that employee invol-

vement has a significant and positive effect on safety behavior. According to the results of that study, employees' being involved in the development of safety procedures and the improvement of working conditions enables employees to exhibit safer behaviors while performing their tasks. Ünal et al. (2021) found that employee involvement plays a mediating role in the relationships between managers' commitment and safety behavior (OHS performance), safety awareness and competency, and reporting culture. Their findings further indicate that employees' involvement in OHS contributes to the development of positive attitudes toward OHS and positively influences safety behavior. Based on these findings, the following hypothesis was formulated: "Employee involvement has a significant and positive effect on safety behavior" (Hypothesis 1).

2.3. Safety Awareness and Competency

Today, safety threats constitute a significant challenge in many sectors, and insufficient safety awareness and the inability to properly assess workplace hazards are among the primary contributing factors. This situation can directly or indirectly influence many industrial incidents that result in employee injuries, hour loss, and equipment damage (Kumar et al., 2025). In this context, safety awareness can be defined as individuals' ability to identify workplace hazards, understand safety procedures, and anticipate risks before they develop into accidents. Safety awareness can be understood as a cognitive attribute that influences the way workers perceive and respond to safety instructions, ultimately shaping both rule compliance and proactive safety behaviors (Alshammari et al., 2025; Esmaeili et al., 2025). Safety awareness is particularly important for organizations in ensuring the effective implementation of safety rules and procedures and, consequently, in contributing to the reduction of occupational accidents (Jaafar and Ahmad, 2023). Although employees' safety awareness is important, the prevention of accidents is also associated with safety competencies. It is widely acknowledged that safety competency play an important role in the development of a safety culture (Rahman et al., 2022, 2). Safety competency refers to the practical knowledge and technical skills required to perform a task safely (Alshammari et al., 2025). Employees with higher levels of competency are more capable of preventing occupational accidents and reducing the severity of their consequences (Rahman et al., 2022, 2).

Employees' involvement in safety-related activities fosters a sense of responsibility for safety actions, enabling them to adopt a proactive approach to safety management and enhancing their awareness of workplace safety risks (Tsao et al., 2017). Accordingly, workplaces that encourage employees' involvement in OHS-related activities are reported to experience

improvements in hazard awareness (Subramaniam et al., 2016, 230). The findings reported by Tsao et al. (2017) indicate that employee involvement significantly promotes teamwork, ultimately enhancing employees' safety awareness and safety behavior. In this direction, the hypothesis, "Employee involvement has a significant and positive effect on safety awareness and competency" (Hypothesis 2) was formulated in the research.

Safety awareness plays a fundamental role in the development of employees' safety behaviors (Alshammari et al., 2025). The relationship between safety awareness and competency and employees' safety behaviors has been widely emphasized in the literature (Dursun, 2012; Ünal et al., 2021; Dursun and Keser, 2014; Uzuntarla et al., 2020; Jaafar and Ahmad, 2023; Alshammari et al., 2025; Esmaeili et al., 2025). The findings reported by Uzuntarla et al. (2020) indicate a significant and positive relationship between safety awareness and safety behavior. According to the results of that study, increases in employees' safety awareness levels lead to improvements in their safety behaviors. Similarly, the findings reported by Alshammari et al. (2025) suggest that greater awareness of workplace risks and safety procedures contributes to the demonstration of safer behaviors. Their study also revealed that safety behavior is largely influenced by employees' perceptions of their own skills, abilities, and confidence in dealing with workplace hazards. Within this framework, as a result of the study, it was stated that safety awareness and competency play an important role in shaping of employees' safety behaviors. Based on these findings, the following hypothesis was formulated: "Safety awareness and competency have a significant and positive effect on safety behavior" (Hypothesis 4).

2.4. Reporting Culture

The reporting of occupational accidents and near-misses is often hindered by various barriers. Fear of punishment, along with feelings of shame and guilt, are among the most prominent obstacles to reporting (Hasanspahić et al., 2023; Karakavuz and Gere, 2025). In addition, employees may refrain from reporting incidents because the reporting process is frequently perceived as time-consuming (Pedrosa et al., 2025). These challenges underscore the importance of establishing a strong reporting culture. Reporting culture represents a key component of safety culture and reflects employees' willingness to report occupational accidents and near-misses openly, honestly, and without hesitation (Håvold and Nettet, 2009; Douglas et al., 2014; Lu, 2016; Hasanspahić et al., 2023).

According to Reason (1997), establishing an effective safety culture requires the presence of a reporting culture in which employees are willing to report errors and near misses. Organizations that foster a

well-established safety culture are more likely to experience fewer occupational accidents and injuries, higher levels of hazard and irregularity reporting, and greater employee motivation to participate in preventive activities. In other words, these organizations are more likely to adopt a proactive approach OHS. In such work environments, employees are encouraged to share suggestions and voice concerns without fear of negative consequences (Kovacic et al., 2025; Reason, 1998). By encouraging the consistent and accurate reporting of incidents and near misses, reporting culture contributes to data-driven decision-making processes (Ghahramani et al., 2025). In this context, an effective safety reporting system constitutes a keystone for the prevention of occupational accidents (Jones et al., 1999; Tsao et al., 2017).

Employee involvement contributes to the establishment of a good reporting culture (Tsao et al., 2017). As employee involvement increases, employees' willingness to report OHS-related issues also tends to increase (Ünal et al., 2021). The findings reported by Ünal et al. (2021) indicate a significant and positive relationship between employees' involvement in OHS and reporting culture. Similarly, the results of the study conducted by Tsao et al. (2017) show that employee involvement significantly influences safety reporting. Based on these findings, the following hypothesis was formulated: "Employee involvement has a significant and positive effect on reporting culture" (Hypothesis 3).

Safety awareness supports employees' proactive behaviors, such as hazard reporting (Alshammari et al., 2025). Indeed, safety awareness encourages individuals to take initiative, report potential dangers, and comply with safety regulations, thereby contributing to the reduction of occupational accidents and injuries (Esmaeili et al., 2025). Based on this perspective, the following hypothesis was formulated: "Safety awareness and competency have a significant and positive effect on reporting culture" (Hypothesis 6).

However, the findings reported by Dursun (2013) indicate that reporting culture has a significant and positive effect on employees' safety behavior. Similarly, Aytaç and Dursun (2018) found a significant and positive relationship between reporting culture and safety behavior. Hrenov et al. (2016) emphasized that the reporting of near-miss incidents constitutes an important tool for improving employees' behaviors. Reported near-miss incidents and occupational accidents play a crucial role in improving workplace safety and enable the prevention of similar undesirable events (Hasanspahić et al., 2023). The findings reported by Tsao et al. (2017) suggest that employee involvement may contribute to the development of a good reporting culture, which in turn can enhance employees' safety behaviors. These findings highlight the importance of reporting culture in shaping employees' safety behavior. Based on these findin-

gs, the following hypothesis was formulated: “Reporting culture has a significant and positive effect on safety behavior” (Hypothesis 5).

Previous studies (Fernández-Muñiz vd., 2007; Fernandez-Muniz vd., 2009; Dursun, 2013; Lu, 2016; Tsao vd., 2017; Ünal vd., 2021; Bayram vd., 2022; Esmaeili vd., 2025; Karakavuz and Gerede, 2025) have shown that employee involvement is associated with safety awareness and competency, reporting culture, and safety behavior. In addition, safety awareness and competency have been reported to be associated with reporting culture and safety behavior (Uzuntarla ve diğerleri, 2020; Rahman et al., 2022; Jaafar and

Ahmad, 2023; Alshammari vd., 2025). Based on these findings, it was proposed that safety awareness and competency and reporting culture may play a serial mediating role in the relationship between employee involvement and safety behavior. Accordingly, the main hypothesis of the study was formulated as follows: “Safety awareness and competency and reporting culture have a serial mediation effect in the relationship between employee involvement and safety behavior” (Hypothesis 7). The serial mediation model proposed in this study is presented in Figure 1.

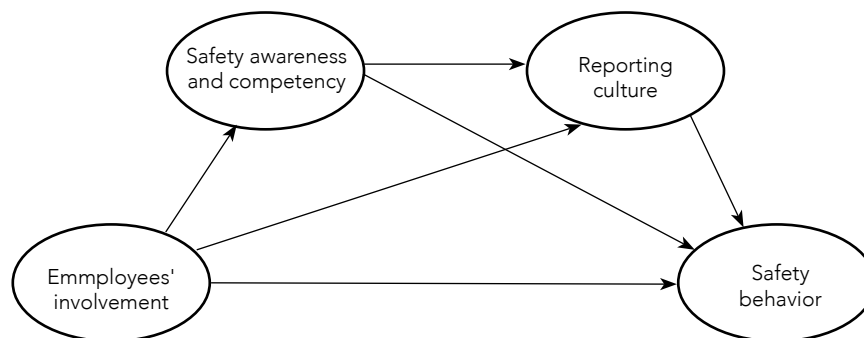


Figure 1. The Research Model

3. Method

3.1. Research Design

This study was conducted using a cross-sectional quantitative research design to examine the relationships among employee involvement, safety awareness and competency, reporting culture, and safety behavior, and to test the serial mediation model presented in Figure 1. In analyses involving multiple mediators, serial mediation models are preferred when the mediator variables are not only associated with the independent and dependent variables but also exhibit a causal sequence and interaction (mediational chain) among themselves (Taylor et al., 2008). Therefore, this study utilises a serial mediation model—also conceptualised as a mediational chain—wherein the total effect of the independent variable on the dependent variable is transmitted through a sequence of mediators operating in a causal order (Hayes, 2018a). The defining theoretical distinction between serial and parallel mediation models lies in the causal specification and the directional flow among the mediators. Unlike parallel models, which assume mediators operate independently, the serial mediation framework tests a sequential causal mechanism. In this structure, the independent variable is hypothesised to trigger a change in the first mediator, which subsequently influences the second mediator, ultimately culminating in an effect

on the dependent variable (Hayes, 2022). To theoretically validate this model, the specified sequence must exhibit clear logical or temporal precedence. Empirically, the specific indirect effect traversing this sequential chain is evaluated by multiplying the corresponding path coefficients, thereby isolating the precise mechanism of the serial transmission (Rijnhart et al., 2021).

3.2. Study Group

In this study, data were collected from a total of 276 employees working in 24 enterprises operating in the metal sector in the Manisa Organized Industrial Zone (MOSB) in Turkey. Participants were recruited on a voluntary basis using a convenience sampling method (Gravetter and Forzano, 2018). The inclusion of participants from different enterprises was intended to improve the generalizability of the sample to the population and to provide a certain degree of variability in the responses.

During the evaluation of the suitability of the data for multivariate analyses, outliers were removed to prevent them from adversely affecting the results of the regression analyses (Hair et al., 2010). Consequently, the analyses were conducted using the data obtained from 253 employees. Table 1 presents the sample sizes of the data collected from the enterprises.

Table 1. Number of Employees from Each Enterprise

Enterprise	Sample Size (Full Data)		Sample Size (Outliers removed)	
	N	Percentage (%)	N	Percentage (%)
A	57	20.7	57	22.5
B	28	10.1	28	11.1
C	27	9.8	26	10.3
D	23	8.3	16	6.3
E	17	6.2	15	5.9
F	15	5.4	12	4.7
Other	109	39.5	99	39.1
Total	276	100.0	253	100.0

Following the removal of outliers, the distribution of employees across enterprises was examined (Table 1). Employees from Enterprise A represented the largest proportion of the sample (22.5%), followed by those from Enterprise B (11.1%) and C (10.3%). The "Other" category included employees from 18

different enterprises. As the number of employees from each of these enterprises was relatively small, they were combined and reported as a single category. Following the examination of the data and the removal of outliers, the characteristics of the sample were determined and are presented in Table 2.

Table 2. Characteristics of the Study Group

Variable	Category	Frequency	Percentage (%)
Gender	Female	58	22.9
	Male	195	77.1
Age	18-24	44	17.4
	25-39	126	49.8
	40-54	73	28.9
	55+	10	4.0
Educational Level	Primary school	3	1.2
	Middle school	13	5.1
	High school	188	74.3
	Associate degree	24	9.5
	Bachelor's degree	19	7.5
	Postgraduate	6	2.4
Job Position	Worker	188	74.3
	Foreman	17	6.7
	Technician	20	7.9
	Occupational safety specialist	6	2.4
	Occupational nurse	4	1.6
	Manager	6	2.4
	Other	12	4.7
Tenure at the Current Workplace	Less than 1 year	9	3.6
	1-5 years	62	24.5
	6-10 years	87	34.4
	11-20 years	56	22.1
	21 years or more	39	15.4

Work Experience	Less than 1 year	6	2.4
	1-5 years	61	24.1
	6-10 years	65	25.7
	11-20 years	37	14.6
	21 years or more	84	33.2
Total		253	100.0

An examination of Table 2 indicates that the majority of the participants were male (77.1%), whereas females accounted for 22.9% of the sample. This distribution may be associated with the higher proportion of male employees in the metal sector where the study was conducted. Regarding age distribution, nearly half of the participants (49.8%) were between 25 and 39 years of age. In terms of educational level, a substantial proportion of the participants (74.3%) were high school graduates. The majority of the participants (74.3%) were workers. In addition, a considerable proportion of the participants (33.2%) had 21 years or more of experience in their current job, indicating that a notable segment of the sample possessed long-term work experience.

3.3. Data Collection Tools

The questionnaire used in this study consisted of the employee involvement, safety awareness and competency, reporting culture, and safety behavior scales, along with a personal information form.

Personal Information Form: This form included questions designed to collect information on employees' socio-demographic and occupational characteristics, such as age, gender, educational level, job position, total work experience, and tenure at the current workplace.

Employee Involvement: This scale was developed by Fernández-Muñoz et al. (2007). Consisting of four items, the scale measures employees' compliance with safety procedures and their involvement in improving working conditions. A sample item is: "Employees participate actively in devising, executing and monitoring safety plans". In the culture in which the scale was originally developed, the Cronbach's alpha coefficient was reported as 0.761, with RMSEA and CFI values of 0.059 and 0.963, respectively. In their own study, Ünal et al. (2021) reported a Cronbach's alpha coefficient of 0.869, an average variance extracted (AVE) value of 0.719, a composite reliability (CR) value of 0.911, and factor loadings ranging from 0.592 to 0.754.

Safety Awareness and Competency: Developed by Lin et al. (2008), this five-item scale measures employees' safety awareness and their competency in dealing with safety related issues. Representative items include "I understand the safety rules for my job"

and "I can deal with safety problems at my workplace". In the culture in which the scale was originally developed, the Cronbach's alpha coefficient was reported as 0.835, with factor loadings ranging from 0.61 to 0.84. In their own study, Ünal et al. (2021) reported a Cronbach's alpha coefficient of 0.899, an AVE of 0.713, a CR of 0.926, and factor loadings ranging from 0.587 to 0.736.

Reporting Culture: Developed by Håvold and Nesset (2009), this scale consists of five items. The scale measures willingness to report accidents, near misses, and unsafe conditions. In addition, it reflects perceptions regarding the importance of reporting culture within the organization. The scale includes items such as "Reporting accidents/incidents is important for working safely in our organisation" and "People are willing to report near misses". As can be inferred from the items, reporting culture encompasses employees' perceptions. In the culture in which the scale was originally developed, the Cronbach's alpha coefficient was reported as 0.76, with factor loadings ranging from 0.47 to 0.73. In their own study, Ünal et al. (2021) reported a Cronbach's alpha coefficient of 0.897, an AVE of 0.709, a CR of 0.924, and factor loadings ranging from 0.615 to 0.686.

Safety Behavior: Developed by Neal et al. (2000), this scale measures employees' safety behaviors in performing their work. The scale consists of six items across two subdimensions: safety compliance and safety participation. Representative items include "I use the correct safety procedures for carrying out my job" and "I voluntarily carry out tasks or activities that help to improve workplace safety". In their own study, Ünal et al. (2021) reported a Cronbach's alpha coefficient of 0.930, an AVE of 0.741, a CR of 0.945, and factor loadings ranging from 0.698 to 0.774.

The Turkish adaptations of the scales used in this study were carried out by Dursun (2012). All measurement instruments were administered using a five point Likert scale. Participants were asked to read each item and indicate the response that best reflected their views on a scale ranging from "strongly disagree" (1) to "strongly agree" (5).

3.4. Data Collection

This study was approved by the Social and Human Sciences Scientific Research and Publication Ethics

Committee of Karamanoğlu Mehmetbey University (Decision No: 14-2025/323). The data were collected between 09 December 2025 and 13 January 2026. During the data collection process, the researcher informed the managers of the participating enterprises about the purpose of the study and obtained permission to conduct the research within their enterprises. Subsequently, an employee from each enterprise facilitated the distribution of the digital questionnaire to the employees. During the data collection process, participants were provided with a written explanation outlining the purpose and procedures of the study before completing the digital questionnaire. Informed consent was obtained from all participants prior to their participation, and the data collection forms were administered in a digital

format. In addition, the importance of providing sincere responses was emphasized through instructions presented on the digital questionnaire, and participants were asked to complete the questionnaire with due care. They were also informed that they could discontinue their participation at any time.

3.5. Data Analysis

The analysis began with an examination of the reliability coefficients. The internal consistency of all scales used in the study was assessed using Cronbach's α coefficients. The reliability coefficients obtained from the data collected in this study are presented in Table 3.

Table 3. Reliability Coefficients of the Scales

Scale	Cronbach's α
Safety Awareness and Competency	0.911
Employee Involvement	0.898
Reporting Culture	0.839
Safety Behavior	0.899

The Cronbach's α values were calculated as 0.911 for the Safety Awareness and Competency scale, 0.898 for the Employee Involvement scale, 0.839 for the Reporting Culture scale, and 0.899 for the Safety Behavior scale. These results indicate that the scales demonstrate high reliability and are suitable for use

in line with the objectives of the study.

Evidence regarding the validity of the scales was examined using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The results are presented in this section. The EFA results are presented in Table 4.

Table 4. EFA Results

Scale					
		Safety Awareness and Competency	Employee Involvement	Reporting Culture	Safety Behavior
Factor Loadings (EFA)	Item				
	1	0.858	0.805	0.294	0.815
	2	0.917	0.880	0.795	0.844
	3	0.816	0.807	0.860	0.908
	4	0.859	0.834	0.880	0.856
	5	0.828		0.846	0.678
	6				0.740
Eigenvalues	Factor				
	1	3,667	2,770	2.947	3,940
	2	.480	.756	.969	.666
	3	.375	.273	.633	.575
	4	.299	.201	.282	.419
	5	.179		.170	.222
	6				.179
Explained Variance		73.349	69.245	58.932	65.659

When the EFA results of the scales used in the study were examined, the factor loadings of the Safety Awareness and Competency Scale ranged from .816 to .917, those of the Employee Involvement Scale ranged from .805 to .880, those of the Reporting Culture Scale ranged from .294 to .880, and those of the Safety Behavior Scale ranged from .678 to .908. With the exception of one item ($\lambda = 0.294$), all factor loadings were above the recommended threshold value. The theoretical literature suggests that when an item is considered important to a scale's content

validity, it may be retained despite a relatively low factor loading (Crocker and Algina, 1986). Since the item's factor loading was close to the threshold and it was considered important for content coverage, it was retained in the scale. In the CFA, the factor loading for this item was re-examined and found to exceed the threshold (Table 5). Following the examination of the reliability and EFA results, CFA was conducted using Mplus, and the results are presented in Table 5.

Table 5. CFA Results

		Scale			
		Safety Awareness and Competency	Employee Involvement	Reporting Culture	Safety Behavior
Standardized Factor Loadings (CFA)	Item				
	1	0.830	0.874	0.505	0.892
	2	0.924	0.925	0.825	0.881
	3	0.765	0.867	0.904	0.988
	4	0.805	0.901	0.953	0.863
	5	0.755		0.914	0.784
	6				0.767
χ^2		25.953	84.022	208.056	109.196
df		5	2	5	9
CFI		0.975	0.976	0.953	0.981
TLI		0.950	0.927	0.906	0.968
RMSEA		0.129	0.403	0.401	0.210
SRMR		0.025	0.057	0.044	0.033

The CFA results indicated that the factor loadings ranged from .805 to .924 for the Safety Awareness and Competency Scale, from .867 to .925 for the Employee Involvement Scale, from .505 to .953 for the Reporting Culture Scale, and from .767 to .988 for the Safety Behavior Scale. Examination of the model fit indices revealed that the CFI exceeded .95 and the TLI exceeded .90, while the RMSEA and SRMR values were below .403 and .057, respectively. Simulation studies have shown that RMSEA imposes a disproportionately harsher penalty on relatively small models with a limited number of variables and low degrees of freedom (Nevitt and Hancock, 2000). Based on these considerations, because RMSEA and χ^2 statistics are sensitive to sample size, the use of CFI and TLI alongside these indices is recommended when evaluating model fit (Hu and Bentler, 1999; Kline, 2023). The results obtained from the model fit indices provide evidence for the construct validity of the scales (Crocker and Algina, 1986).

Following the examination of the CFA results, additional analyses were conducted to assess the presen-

ce of common method bias. The results of Harman's single-factor test (Tehseen et al., 2017) indicated the presence of four factors with eigenvalues greater than 1. The first factor accounted for 49% of the total variance, whereas the remaining factors explained between 5% and 8% of the total variance. According to the criteria of Harman's single-factor test, the fact that the first factor explained less than 50% of the total variance suggests that common method bias is not a serious concern. In addition, all scale items were loaded onto a single factor, and the model fit of this one-factor structure was examined using CFA. The analysis was conducted in Mplus. The results yielded CFI and TLI values of 0.684 and 0.647, respectively. The poor fit of the one-factor model provides further evidence that common method bias is unlikely to be a significant issue in the study (Podsakoff et al., 2012).

Subsequently, the suitability of the data for multivariate analyses was assessed by examining the Durbin Watson, VIF, and tolerance values. The Durbin Watson value was 1.770, while the VIF values ranged

between 1.637 and 1.879 and the tolerance values ranged between 0.532 and 0.611. A Durbin Watson value between 1.5 and 2.5, a tolerance value greater than 0.20, and a VIF value lower than 10 indicate the absence of multicollinearity among the variables and confirm that the data are appropriate for multivariate analyses (Hair et al., 2010). Following this step, a multiple regression analysis was conducted among the study variables, and the serial mediation model was subsequently tested (Hayes, 2018b; Stride et al., 2015). In testing the serial mediation model, the total scores obtained from the scales were used and the analysis was conducted with observed

variables. SPSS 27.0 and Mplus software were used for the analysis.

4. Findings

Correlation analysis, hierarchical multiple regression analysis, and serial mediation analysis were employed to examine the relationships among safety behavior, safety awareness and competency, employee involvement, and reporting culture. The findings are presented in this order. The relationships among the variables are presented in Table 6.

Table 6. Correlations among the Variables

	Safety Behavior	Safety Awareness and Competency	Employee Involvement
Safety Behavior	1.00		
Safety Awareness and Competency	0.719*	1.00	
Employee Involvement	0.559*	0.622*	1.00
Reporting Culture	0.679*	0.577*	0.544*

* $p < .001$

The correlation analysis revealed strong, positive and statistically significant relationships between safety behavior and safety awareness and competency ($r=0.719$, $p<.001$), employee involvement ($r=0.559$, $p<.001$), and reporting culture ($r=0.679$, $p<.001$); between safety awareness and competency and employee involvement ($r=0.622$, $p<.001$) and reporting culture ($r=0.577$, $p<.001$); and between reporting culture and employee involvement ($r=0.544$, $p<.001$). The presence of moderate to strong cor-

relations ($r>0.50$) among the variables suggests that further examination of their predictive relationships is warranted. Therefore, the results of the regression analyses were subsequently examined.

In the hierarchical multiple regression analysis, the predictors were entered into the model in successive steps according to the proposed theoretical framework. The results of the hierarchical multiple regression analysis are presented in Table 7.

Table 7. Model Summary

Model	R	R ²	Adjusted R ²	Standard Error	ΔR^2	p
1	0.719	0.517	0.515	1.96	0.517	.000
2	0.788	0.622	0.619	1.74	0.105	.000

The results of the hierarchical multiple regression analysis indicate that the model is statistically significant ($F(1, 251)=268.538$, $p=.000$). When the predictor variables were entered into the model, safety awareness and competency and reporting culture emerged as significant predictors ($p<.01$), whereas employee involvement was not a significant predic-

tor. Safety awareness and competency explains 51% of the variance in Model 1; when reporting culture is added in Model 2, the explained variance reaches 61%. Among the predictors, safety awareness and competency emerged as the strongest predictor of safety behavior. The model coefficients are presented in Table 8.

Employee Involvement and Safety Behavior: A Serial Mediation Model

Table 8. Model Coefficients

Model	B	Standard Error	β	t	p	Confidence Interval	
						Lower Bound	Upper Bound
1	Constant	7.852	1.172			5.544	10.160
	Safety Awareness and Competency	0.846	0.052	0.719	16.387	.000	0.744 0.947
2	Constant	3.680	1.154	3.189	.002	1.407	5.952
	Safety Awareness and Competency	0.577	0.056	0.490	10.291	.000	0.466 0.687
	Reporting Culture	0.473	0.057	0.396	8.317	.000	0.361 0.585

Examination of the regression coefficients indicate that, in Model 1, safety awareness and competency had a strong predictive effect on safety behavior ($\beta=0.719$, $p=.000$). When reporting culture was added to the equation in Model 2, the effect of safety awareness and competency on safety behavior decreased but remained statistically significant ($\beta=0.490$, $p=.000$). This finding shows that there is a significant relationship between safety awareness

and competency and reporting culture. Employee involvement was not a significant predictor of safety behavior. Based on the regression results, it can be inferred that safety awareness and competency, along with reporting culture, play a mediating role in the effect of employee involvement on safety behavior. Based on this inference, a serial mediation model was tested, and the results are presented in Table 9.

Table 9. Serial Mediation Model Results

Hypothesis	Direct Effect	B (S.E.)	95%CI (Lower, Upper)	β (S.E.)	p	Result
1	EI→SB	0.080 (0.058)	-0.030, 0.194	0.069 (0.048)	.163	Rejected
2	EI→SAC	0.655 (0.068)	0.530, 0.771	0.658 (0.038)	.000	Accepted
4	SAC→SB	0.589 (0.069)	0.455, 0.727	0.504 (0.056)	.000	Accepted
3	EI→RC	0.299 (0.064)	0.168, 0.422	0.299 (0.066)	.000	Accepted
6	SAC→RC	0.384 (0.073)	0.237, 0.524	0.381 (0.067)	.000	Accepted
5	RC→SB	0.415 (0.061)	0.294, 0.517	0.359 (0.054)	.000	Accepted
Hypothesis		B (S.E.)	95%CI (Lower, Upper)		p	Result
7	EI→SAC→SB	0.386 (0.055)	0.286, 0.500		.000	Accepted
	EI→RC→SB	0.124 (0.032)	0.069, 0.199		.000	
	EI→SAC→RC→SB	0.105 (0.025)	0.064, 0.167		.000	
	Total indirect effect	0.615 (0.060)	0.509, 0.745		.000	
	Total effect	0.695 (0.068)	0.570, 0.835		.000	

EI: Employee involvement, SAC: Safety awareness and competency, RC: Reporting culture, SB: Safety behavior

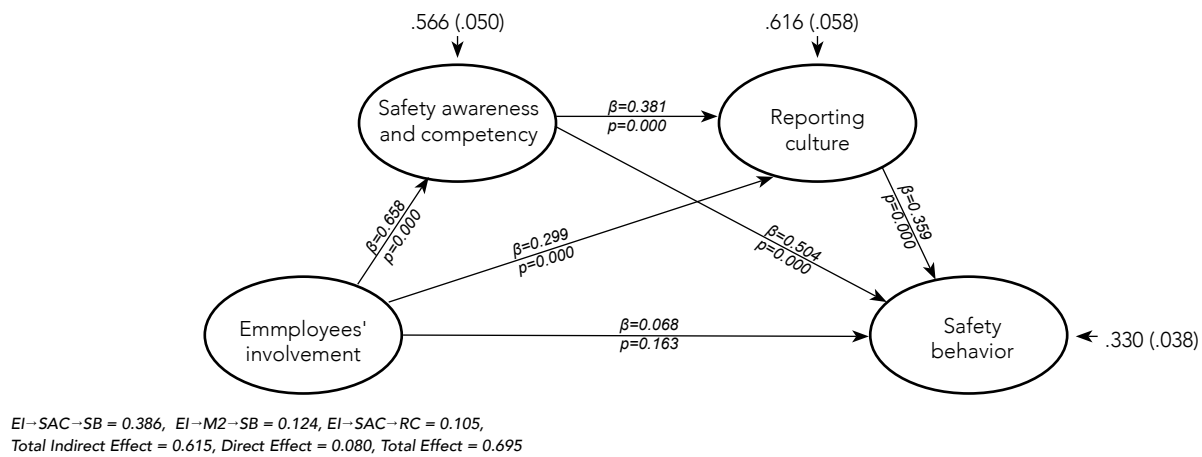


Figure 2. Path Diagram of the Model and Its Results

The model results indicated that, after the mediator variables were included in the model, the direct effect of employee involvement on safety behavior was not statistically significant ($\beta=0.080, p=0.163$). It was found out that employee involvement significantly and positively predicted safety awareness and competency ($\beta=0.655, p<.001$) and reporting culture ($\beta=0.299, p<.001$). Safety awareness and competency also significantly and positively predicted reporting culture ($\beta=0.384, p<.001$). In addition, safety awareness and competency ($\beta=0.589, p<.001$) and reporting culture ($\beta=0.415, p<.001$) were found to positively and strongly predict safety behavior.

Examination of the indirect effects revealed that safety awareness and competency ($B=0.386$ [95%CI = 0.286, 0.500], $p<.001$) and reporting culture ($B=0.124$ [95%CI = 0.069, 0.199], $p<.001$) had significant mediating roles in the relationship between employee involvement and safety behavior. The serial mediation analysis indicates that employee involvement affects safety behavior indirectly through safety awareness and competency and subsequently reporting culture. The serial mediation pathway ($B=0.105$ [95%CI = 0.064, 0.167], $p<.001$), the total indirect effect ($B=0.615$ [95%CI = 0.509, 0.745], $p<.001$), and the total effect ($B=0.695$ [95%CI = 0.570, 0.835], $p<.001$) were all significant. Overall, the effect of employee involvement on safety behavior is transmitted sequentially through safety awareness and competency, and reporting culture. Safety awareness and competency explain 43% of the variance in safety behavior, while reporting culture explains 38% of the variance in safety behavior. The model's explanatory power for the dependent variable was calculated as 67%.

5. Discussion

This study explored the relationships between employee involvement, safety awareness and competency, reporting culture, and safety behavior, and examined which mechanisms employees' safety behaviours are shaped through. In this regard, the

findings indicate that employee involvement, safety awareness and competency, and reporting culture collectively contribute to the shaping of employees' safety behaviors by influencing one another.

The findings of the study indicate that employee involvement has a significant and positive effect on safety awareness and competency. This finding indicates that employees' involvement in safety-related activities contributes to employees' being able to see safety at work as a priority, being able to comprehend their responsibilities regarding workplace safety, being able to understand the safety rules required by their work, and comply with these rules, and increasing their competency in coping with safety problems (Fernández-Muñiz et al., 2007; Lin et al., 2008). The present finding is consistent with previous studies (Lu, 2016, 82; Tsao et al., 2017; Ünal et al., 2021) reporting that employee involvement contributes to increased safety awareness. Lu (2016) also considers employee involvement as one of the important indicators influencing safety culture and states that employees' involvement in safety contributes to the increase of awareness toward safety issues and to the more effective management of safety risks. This may be explained by the fact that employees who directly perform the tasks may have a better understanding of the hazards and risks related to their jobs and work environment (Karakavuz and Gereide, 2025, 106).

The findings obtained reveal that safety awareness and competency have a significant and positive effect on safety behavior. Similar findings were reported by Dursun and Keser (2014), who emphasized that activities and regulations aimed at increasing employees' safety awareness encourage employees to demonstrate safer behaviors while performing their work. The present finding is also consistent with other studies (Dursun, 2013; Uzuntarla et al., 2020; Filiz et al., 2024; Alshammari et al., 2025; Esmaeili et al., 2025) showing that safety awareness supports employees' safety behaviors. Increased safety awareness enables employees to better identify and unders-

tand potential hazards in the workplace, thereby contributing to the development of safety behaviors (Esmaeili et al., 2025). Indeed, employees who are more aware of the potential consequences of unsafe practices are considerably more likely to comply with established safety procedures, use personal protective equipment, and avoid risk-taking behaviors (Alshammari et al., 2025).

The findings indicate that safety awareness and competency have a significant and positive effect on reporting culture. This finding indicates that employees' seeing safety at work as a priority, their better comprehension of their responsibilities regarding workplace safety and safety rules, increase employees' willingness to report accidents, near-misses, and unsafe conditions (Lin et al., 2008; Håvold and Nettet, 2009). Similarly, previous studies (Filiz, et al., 2024; Esmaeili et al., 2025; Alshammari et al., 2025) have reported that higher levels of safety awareness support employees in reporting potential hazards and complying with safety regulations.

The findings indicate that reporting culture has a significant and positive effect on safety behavior. This finding indicates that employees' being encouraged to report unsafe conditions, reporting being regarded as important in terms of working safely, and the increase in employees' willingness to report accidents and near-misses support employees' behaviors such as using safety equipment while carrying out their tasks, complying with safety procedures, and making extra efforts to improve safety at work (Håvold and Nettet, 2009; Neal et al., 2000). Similarly, previous studies (Håvold and Nettet, 2009; Dursun, 2012; Dursun 2013; Aytaç and Dursun, 2018) have emphasized the importance of reporting culture in promoting the development of safety behaviors. Supporting this finding, Desai et al. (2025), in their qualitative study, reported that an effective reporting system fosters greater attention to safety issues among employees and increases their likelihood of their compliance with safety protocols. The views expressed by participants in the study further revealed that employees are encouraged to take proactive steps in OHS, supported in proposing improvements to the work environment, and able to contribute to quicker decision-making on safety-related issues through the reporting mechanism. In this respect, reporting culture may help organizations identify potential hazards and take necessary precautions before they develop into more serious incidents (Asif et al., 2022).

The findings of this study indicate that safety awareness and competency and reporting culture have a serial mediation effect on the relationship between employee involvement and safety behavior. In the initial analyses examining the relationship between employee involvement and safety behavior, a strong correlation and a relatively high regression coefficient

were observed. However, when safety awareness and competency and reporting culture were included in the model in subsequent multivariate analyses, the direct relationship between employee involvement and safety behavior disappeared. Although the statistically significant positive correlations between employee involvement and safety behavior is consistent with findings reported in previous studies (Dursun, 2012; Dursun 2013; Ünal et al., 2021) the results of the regression and mediation analyses suggest that other variables play an important role in this relationship. In this context, the findings point to the fact that employee involvement may not directly be reflected in safety behavior; that employee involvement increases safety awareness and competency, strengthens the reporting culture, and that as a result of these interactions employees exhibit safety behaviors.

Given that the metal sector is characterized by labor-intensive and hazardous working environments that pose substantial risks for occupational accidents and diseases, and that effective approaches are needed to prevent these risks, fostering a positive safety culture and promoting employees' safety behaviors are of critical importance in metal sector enterprises (Asif et al., 2022; ILO, 2023; Fuentes-Bargues et al., 2025). The findings of this study suggest that the effect of employee involvement on safety behaviors is mediated by safety awareness and competency and reporting culture. In this regard, the findings suggest that, in addition to encouraging employee involvement, implementing practices that enhance safety awareness and competency and strengthen reporting culture may play an important role in promoting employees' safety behaviors in metal sector enterprises.

6. Limitations

This study has several limitations. First, the research is limited to data obtained from employees working in enterprises operating in the metal sector in MOSB in Turkey. Therefore, the findings may vary across different countries and sectors. Future research is encouraged to replicate similar studies in different national and sectoral contexts. Second, this study relies on self-report data based on participants' perceptions. Future studies may benefit from complementing self-report measures with field observations of employees' safety behaviors or with objective indicators such as occupational accident and near-miss records. Third, the findings indicating that the effect of employee involvement on safety behavior is mediated by safety awareness and competency and reporting culture are based on cross-sectional data and therefore do not capture longitudinal effects. Accordingly, future longitudinal studies may provide further insights into how these variables evolve over time.

7. Conclusion

As is known, a substantial proportion of occupational accidents and injuries occurring in workplaces is attributed to employees' unsafe behaviors. This indicates that employees' behaviors constitute one of the key factors in ensuring workplace safety. As for safety culture at work, it is effective in shaping employees' behaviors. In workplaces where a positive safety culture prevails, employees' safe behaviors tend to be positively influenced. Accordingly, this study examined the relationships between employee involvement, safety awareness and competency, and reporting culture—considered key dimensions of safety culture—and safety behavior. In addition, the study investigated the serial mediation effects of safety awareness and competency and reporting culture in the relationship between employee involvement and safety behavior. The findings indicate that safety awareness and competency and reporting culture have a serial mediation effect on the relationship between employee involvement and safety behavior.

In the metal sector, where the prevention of occupational accidents and the improvement of workplace safety are of paramount importance, practices that foster a positive safety culture and support employees' safety behaviors play a crucial role. The findings of this study suggest that, in shaping employees' safety behaviors in workplaces, it is important to develop practices that not only encourage employee involvement but also enhance safety awareness and competency and promote a strong reporting culture. These findings provide valuable insights into strengthening safety culture and improving workplace safety in the metal sector, which is considered one of the high-risk sectors with respect to occupational accidents and diseases.

Based on these findings, in addition to increasing employees' involvement in safety-related activities at work, carrying out activities toward promoting safety awareness, developing employees' knowledge and skills necessary for safe work, and creating a reporting culture that encourages the reporting of accidents, unsafe conditions, and near-misses may contribute to the development of employees' safety behaviours. Within this framework, it is important to develop practices that support employees in recognizing and fulfilling their responsibilities for ensuring workplace safety. In addition, training and awareness activities should be organized to ensure that employees are informed about potential hazards they may encounter in the workplace and the preventive measures required to address these hazards. In this regard, safety training represents one of the key activities contributing to the development of employees' safety behaviors.

Moreover, accessible and effective reporting mechanisms should be established to enable employees to

report unsafe conditions, accidents, and near-misses without hesitation. Such mechanisms can facilitate the early reporting of these events and conditions, thereby contributing to risk reduction and the prevention of potential occupational accidents. In addition, recognizing and rewarding employees who contribute to the creation of a safer and healthier work environment through such reporting may encourage greater employee involvement reporting practices. Furthermore, providing feedback regarding unsafe conditions, accidents, and near-misses reported by employees, sharing the improvement actions implemented in response to these reports with employees, and making employees' contributions visible may contribute to strengthening the reporting culture.

References

- Abeje, M. & Luo, F. (2023). The influence of safety culture and climate on safety performance: Mediating role of employee engagement in manufacturing enterprises in Ethiopia. *Sustainability*, 15(14): 1-23.
- Alshammari, T. M., Rabi, M., Al-Kheetan, M. J. & Alkherret, A. J. (2025). The influence of managers' safety perceptions and practices on construction workers' safety behaviors in Saudi Arabian projects: The mediating roles of workers' safety awareness, competency, and safety actions. *Safety*, 11(3): 1-25.
- Altundaş Hatman, E., Öngel, F. S., Erkoç Yavuz, M., & Gülenç, N. (2024). Work-related diseases and risk factors associated with work-related musculoskeletal disorders among unionized metal industry workers: A cross-sectional study. *International Journal of Occupational Safety and Ergonomics*, 30(1), 194-204. <https://doi.org/10.1080/10803548.2023.2284538>.
- Amirah, N. A., Him, N. F. N., Rashid, A., Rasheed, R., Zaliha, T. N. & Afthanorhan, A. (2024). Fostering a safety culture in manufacturing through safety behavior: A structural equation modelling approach. *Journal of Safety and Sustainability*, 1(2): 108-116. <https://doi.org/10.1016/j.jsasus.2024.03.001>.
- Asif, M., Mane, M., Sahoo, P. K., & Gupta, S. (2022). The role of safety culture in reducing incidents in high-risk industries. *Health Leadership and Quality of Life*, 1, 1-8.
- Barkhordari, A., Malmir, B., & Malakoutikhah, M. (2019). An analysis of individual and social factors affecting occupational accidents. *Safety and Health at Work*, 10(2), 205-212.
- Bayram, M., Arpat, B. & Ozkan, Y. (2022). Safety priority, safety rules, safety participation and safety behaviour: The mediating role of safety training. *International Journal of Occupational Safety and Ergonomics*, 28(4): 2138-2148. <https://doi.org/10.1080/10803548.2021.1959131>.
- Crocker, L., Algina, J., 1986. Introduction to classical and modern test theory. Orlando: Harcourt Brace Jovanovich College Publishers.
- Desai, V. P., D'souza, L., Singh, A. & Bhadauria, V. (2025). Organizational elements that shape construction employees' approach and behavior towards OSH. *Journal of Engineering, Project and Production Management*, 15(1): 1-11.
- Dursun, S. (2012). İş güvenliği kültürü: Kavram, modeller ve uygulama. İstanbul: Beta Yayınevi.
- Dursun, S. (2013). İş güvenliği kültürünün çalışanların güvenli davranışları üzerine etkisi. *Sosyal Güvenlik Dergisi*, 3(2): 61-75.
- Dursun, S. & Keser, A. (2014). İş güvenliği farkındalığı ve iş güvenliği davranışları arasındaki ilişkilerin araştırılması: Uygulamalı bir araştırma. *Çalışma İlişkileri Dergisi*, 5(2): 1-9.
- Douglas, E., Cromie, S., Leva, M. C. & Balfe, N. (2014). Model-

- ling the reporting culture within a modern organisation. *Chemical Engineering Transactions*, 36: 589-594, doi:10.3303/CET1436099.
- Esmaili, S. V., Esmaili, R., Mohammadi, A., Baharlouei, M., Jalali, M., Kavousi, A. & Pouyakian, M. (2025). The mediating role of risk perception in the relationship between chemical safety knowledge, GHS awareness and safety behavior. *Scientific Reports*, 15: 1-19. <https://doi.org/10.1038/s41598-025-28333-7>
- Fernández-Muñoz, B., Montes-Peón, J. M. & Vázquez-Ordás, C. J. (2007). Safety culture: Analysis of the causal relationships between its key dimensions. *Journal of safety research*, 38(6): 627-641.
- Fernandez-Muniz, B., Montes-Peon, J. M. & Vazquez-Ordas, C. J. (2009). Core elements of safety culture and safety performance: Literature review and exploratory results. *International Journal of Society Systems Science*, 1(3): 227-259.
- Filiz, E., Aydoğdu, A. & Karataş, C. (2024). Investigation of nurses' behavior and awareness of work environment safety: The case of a public hospital in konya province. *Hacettepe Sağlık İdaresi Dergisi*, 27(2): 237-252.
- Fuentes-Bargues, J. L., Sánchez-Lite, A., Geijo-Barrientos, J. M., Romero-Barriuso, A., Villena-Escribano, B. M., & González-Gaya, C. (2025). Analysis of occupational accidents in the construction metal products manufacturing subsector in Spain: Trends and risk factors. *The International Journal of Advanced Manufacturing Technology*, 1-12. <https://doi.org/10.1007/s00170-025-16835-7>.
- Ghahramani, A., Samadi, Z., Mansouri, M. & Aghaei, F. (2025). Investigating the culture and practice of reporting occupational incidents in Iranian industries: A mixed-methods study. *BMC Public Health*, 25(1): 1-13, <https://doi.org/10.1186/s12889-025-25332-1>.
- Gravetter, F. J. & Forzano, L. B. (2018). *Research methods for the behavioral sciences*. Belmont, CA: Wadsworth Cengage Learning.
- Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate data analysis*, (7. baskı). Pearson Prentice Hall.
- Hasanspahić, N., Frančić, V., Vujičić, S. & Biočić, T. (2023). Reporting culture - A prerequisite for safety in shipping. *Journal of Maritime Sciences*, 24(2): 91-112.
- Håvold, J. I. & Nasset, E. (2009). From safety culture to safety orientation: Validation and simplification of a safety orientation scale using a sample of seafarers working for Norwegian ship owners. *Safety Science*, 47(3): 305-326. <https://doi.org/10.1016/j.ssci.2008.05.002>.
- Hayes, A. F. (2018a). Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. *Communication monographs*, 85(1), 4-40.
- Hayes, A. F. (2018b). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (Second Edition). The Guilford Press.
- Hayes, A. F. (2022). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (3rd ed.). Guilford Press.
- Hrenov, G., Paas, Ö., Tint, P. & Reinhold, K. (2016). Workers' representation in OHS activities: Example of Estonian industrial sector. *Agronomy Research*, 14(2): 377-391.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1-55.
- ILO. (2023). *Safe and healthy working environments for all: Realizing the fundamental right to a safe and healthy working environment worldwide*. Geneva: International Labour Office.
- ILO. (2025). *Issue Paper: OSH statistics (supporting the review and update of the international OSH statistical standards at the 22nd ICLS in 2028)*. Geneva: International Labour Office.
- ILOSTAT. (2025). *The right to occupational safety and health: Still unrealized*. Available at: <https://ilostat.ilo.org/blog/the-right-to-occupational-safety-and-health-still-unrealized/> (accessed on February 2, 2025).
- Ismail, N. N. H. (2020). Employees' perceptions towards the relationship between safety management practices and safety performance of SMEs industry in Kelantan. *International Journal of Entrepreneurship and Management Practices*, 3(11): 1-9.
- Jaafar, R. & Ahmad, M. A. I. (2023). The influences of occupational safety and health awareness factors among workers: A case study in a company in north malaysia. *Journal of Techno-Social*, 15(1): 98-104.
- Jones, S., Kirchsteiger, C. & Bjerke, W. (1999). The importance of near miss reporting to further improve safety performance. *Journal of Loss Prevention in the process industries*, 12(1): 59-67.
- Karakavuz, H., & Gerede, E. (2025). Evaluation of success factors of occupational health and safety management systems with the analytical hierarchy process: The case of ground handling companies in Turkey. *International Journal of Occupational Safety and Ergonomics*, 31(1), 99-109.
- Kovacic, F., Katic, T., & Palacic, D. (2025). A comprehensive framework for occupational health and safety performance evaluation. *Working and Living Environmental Protection*, 22(3), 123-131.
- Kumar, N. S., Pinakapani, P. & Thirupathi, C. (2025). Occupational safety awareness, practice, and their correlation among employees of food and beverage industries of Telangana, India. *International Journal of Occupational Safety and Health*, 15(1): 86-95.
- Kline, R. B. (2023). *Principles and practice of structural equation modeling* (5th ed.). Guilford Press.
- Li, X., Li, Y., Yang, C., Wang, M., Shi, J., Zhou, C., Li, X. & Yuan, J. (2025). Analysis of typical unsafe behaviors and common characteristics in accidents: A case study of accidents occurring over the past 3 years in China. *International Journal of Occupational Safety and Ergonomics*, 31(2): 615-624.
- Lin, S. H., Tang, W. J., Miao, J. Y., Wang, Z. M. & Wang, P. X. (2008). Safety climate measurement at workplace in China: A validity and reliability assessment. *Safety Science*, 46(7): 1037-1046. <https://doi.org/10.1016/j.ssci.2007.05.001>.
- Lu, X. (2016). *Managing safety risks in international companies: Establishing a proactive safety culture*. Available at: <http://eprints.hud.ac.uk/id/eprint/30283/> (accessed on December 23, 2025).
- Neal, A., Griffin, M. A. & Hart, P. M. (2000). The impact of organizational climate on safety climate and individual behavior. *Safety Science*, 34(1-3): 99-109. [https://doi.org/10.1016/S0925-7535\(00\)00008-4](https://doi.org/10.1016/S0925-7535(00)00008-4).
- Neveitt, J., & Hancock, G. R. (2000). Improving the root mean square error of approximation for nonnormal conditions in structural equation modeling. *The Journal of experimental education*, 68(3), 251-268.
- Pedrosa, M. H., Salazar, A. K., Cardoso, C. & Guedes, J. C. (2025). Study on safety culture following the implementation of a near-miss management system in the traditional manufacturing industry. *Safety*, 11(1): 1-21. <https://doi.org/10.3390/safety11010023>
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual review of psychology*, 63(1), 539-569.
- Rahman, F. A., Arifin, K., Abas, A., Mahfudz, M., Basir Cyio, M., Khairil, M., ... & Samad, M. A. (2022). Sustainable safety management: A safety competencies systematic literature review. *Sustainability*, 14, 1-17.
- Reason, J. (1997). *Managing the risks of organisational accidents*. Routledge, Taylor & Francis Group.
- Reason, J. (1998). *Achieving a safe culture: Theory and practice*. Work & Stress: An International Journal of Work, Health & Organisations, 12(3), 293-306.
- Rijnhart, J. J. M., Lamp, S. J., Valente, M. J., MacKinnon, D. P., Twisk, J. W. R., & Heymans, M. W. (2021). Mediation analysis methods used in observational research: A scoping review and recommendations. *BMC Medical Research Methodology*, 21, 1-17.
- SSI. (2014). *Sosyal Güvenlik Kurumu İstatistik Yıllıkları*. <https://www.sgk.gov.tr/Istatistik/Yillik/fcd5e59b-6af9-4d90-a451-ee-7500eb1cb4/> (24 Ocak, 2026).

- SSI. (2024). Sosyal Güvenlik Kurumu İstatistik Yıllıkları. <https://www.sgk.gov.tr/Istatistik/Yillik/fcd5e59b-6af9-4d90-a451-ee-7500eb1cb4/> (24 Ocak, 2026).
- Subramaniam, C., Mohd. Shamsudin, F., Mohd Zin, M. L., Sri Ramalu, S. & Hassan, Z. (2016). Safety management practices and safety compliance in small medium enterprises: Mediating role of safety participation. *Asia-Pacific Journal of Business Administration*, 8(3): 226-244.
- Stride, C. B., Gardner, S., Catley, N. & Thomas, F. (2015). Mplus code for mediation, moderation, and moderated mediation models templates from Andrew Hayes' PROCESS analysis examples', <http://www.offbeat.group.shef.ac.uk/FIO/mplusmedmod.htm>
- Taylor, A. B., MacKinnon, D. P., & Tein, J. Y. (2008). Tests of the three-path mediated effect. *Organizational research methods*, 11(2), 241-269.
- Tehseen, S., Ramayah, T., & Sajilan, S. (2017). Testing and controlling for common method variance: A review of available methods. *Journal of management sciences*, 4(2), 142-168.
- Tekeli Kaya, S. & Ergör, O. A. İş Kazalarını Önlemede Güvenlik Katılımının Rolü: Metal Sektöründe İki Büyük Ölçekli İş Yerinin Analizi. *Kuzey Ege Teknik Bilimler ve Teknoloji Dergisi*, 1(1): 1-14.
- Tsao, M. L., Hsieh, C. J. & Chen, L. Y. (2017). The Role of Management Commitment and Employee Involvement in Safety Management. *International Journal of Organizational Innovation*, 10(2): 52-74.
- Uzuntarla, F., Kucukali, S. & Uzuntarla, Y. (2020). An analysis on the relationship between safety awareness and safety behaviors of healthcare professionals, Ankara/Turkey. *Journal of Occupational Health*, 62(1): 1-7.
- Ünal, Ö., Akbolat, M., Amarat, M. & Tilkilioğlu, S. (2021). The role of the human factor in occupational safety and health performance. *International Journal of Occupational Safety and Ergonomics*, 27(1): 179-184. <https://doi.org/10.1080/10803548.2018.1554932>.
- Vredenburg, A. G. (2002). Organizational safety: Which management practices are most effective in reducing employee injury rates?. *Journal of Safety Research*, 33(2): 259-276.
- Wadsworth, E. & Smith, A. (2009). Safety culture, advice and performance. *Policy and Practice in Health and Safety*, 7(1): 5-31.
- Zhang, J., Fu, J., Hao, H., Fu, G., Nie, F. & Zhang, W. (2020). Root causes of coal mine accidents: Characteristics of safety culture deficiencies based on accident statistics. *Process Safety and Environmental Protection*, 136: 78-91. <https://doi.org/10.1016/j.psep.2020.01.024>

The Effects of Job Demands and Job Resources on Subjective Well-Being and Turnover Intention

Mehtap Şeker / Asst. Prof. Dr. 

Sivas Cumhuriyet University, Gemerek Vocational School
mehtapseker@cumhuriyet.edu.tr

Mecbure Aslan Teke* / Asst. Prof. Dr. 

Kahramanmaraş Sütçü İmam University, Pazarcık Vocational School
mecbureaslan@ksu.edu.tr

*Corresponding Author

Abstract

The target of the study is to determine the effects of job demands and job resources on employees' subjective well-being and their turnover intentions, and to evaluate the implications of these interactions in terms of workplace dynamics. The research was conducted through a survey of 350 participants working in medium-sized businesses in the food sector in the city center of Kayseri. The data in the research were evaluated and the results determined using normality tests, descriptive statistical analyses, confirmatory factor analyses, correlation and regression analyses performed with SPSS 25 and Amos software. The study revealed that job demands and

job resources positively influence employees' subjective well-being and intention to leave. While these results, particularly regarding the positive effect of job demands on subjective well-being and intention to leave, differ from studies in the literature, the positive effect of job resources is similar to other studies. The study also found that subjective well-being negatively affects the intention to leave the job.

Keywords: Job Demands, Job Resources, Subjective Well-being, Turnover Intentions.

JEL Codes: L20, L21, L25

Citation: Şeker, M. & Aslan Teke, M. (2026). The effects of job demands and job resources on subjective well-being and turnover intention. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Job demands and resources are two fundamental notions that refer to the requirements, challenges, and expectations employees encounter in their working lives, as well as the supportive elements that help them cope with these challenges. Job demands generally encompass organizational aspects of work that increase employees' physical or psychological effort, lead to energy depletion, and are therefore evaluated negatively (Schaufeli & Bakker, 2004). Heavy workload, time pressure, or emotional demands can be given as examples of such demands (Xanthopoulou *vd.*, 2007). In contrast, job resources refer to elements considered beneficial and mitigating the adverse effects of job demands, such as employee motivation, personal development, and advancement (Schaufeli & Taris, 2014). Support from colleagues, feedback from supervisors, autonomy, and supportive leadership can be provided as examples of job resources (Metin, 2010).

Theoretically, it is argued that high job demands increase the risk of stress, burnout, and decreased job satisfaction among employees; conversely, strong job resources counterbalance these negative effects by protecting employees' subjective well-being. Subjective well-being is a subjective assessment, encompassing both cognitive and emotional dimensions, that reflects the extent to which a person perceives their life as meaningful, satisfying, and positive (Diener, 1984, Diener and Diener, 1996). Therefore, subjective well-being is directly related not only to an individual's personal life but also to their experiences in their work life. In this context, in situations where high job demands prevail in work life, providing sufficient levels of supportive job resources is critical for employees to maintain their subjective well-being.

It is known that job demand and resources affect not only the subjective well-being of employees, but also their attitudes towards organizational outcomes. One of the most prominent of these attitudes is turnover intention. According to Schaufeli and Bakker (2004), intention to leave a job refers to an employee's conscious and planned tendency to leave their current organization. In other words, turnover intention involves employees planning to leave their current job or considering alternative employment opportunities without necessarily taking action to quit. In this context, excessively high work demands and insufficient work resources can increase the intention to leave a job (Bon & Shire, 2017). On the other hand, strong work resources both mitigate the negative effects of their demands and play an important role in increasing individual' organizational commitment and motivation, and reducing their intention to leave the job (Schaufeli & Taris, 2014; Bakker, Demerouti, Boer, & Schaufeli, 2003).

In conclusion, job demands and job resources play a decisive role in shaping both employees' subjective well-being and their turnover intentions. Therefore, for organizations, developing strategies that balance job demands and provide sufficient job resources not only helps reduce the anxiety and worry employees face at work and improves their subjective well-being, but also contributes to reducing turnover intention. Accordingly, this research evaluates the variables of subjective well-being, job demands, job resources, and turnover intention, which have been shown in the literature to interact with each other, in terms of their effects on employees and the workplace environment.. Various studies addressing these areas exist in the literature. However, a review of national and international research indicates that job demands and job resources have often been examined in a limited manner, and studies that evaluate these concepts together with subjective well-being and turnover intention within a holistic framework remain scarce. Therefore, this study goals to conduce to the literature by analyzing these variables collectively; to identify the positive and negative impacts of job demands and work resources on employees; and particularly to reveal their implications for employees' subjective well-being and turnover intentions.

2 . Conceptual Framework

2.1. Job Demands and Job Resources

One theoretical approach to explaining the effects of the organizational environment on employee behavior and attitudes, such as employee happiness and job performance, is the Job Demands-Resources (JD-R) theory. This theory suggests that the job qualifications of employees in different sectors and various positions can be conceptualized under two main dimensions: job demands and job resources (Tummers & Bakker, 2021).

Job demands are conceptualized as elements that require a certain level of effort or exertion from the employee, as well as a certain level of attention and reaction, within the context of the work environment and the structural characteristics of the job (Jones & Fletcher, 1996). Job demands encompass the efforts employees must demonstrate in performing their jobs, sometimes requiring physical strength, sometimes emotional resilience, and sometimes relational and organizational skills. While these job requirements don't always lead to harmful consequences for the employee, when experienced continuously and intensely, they can become a significant source of stress and cause negative psychological conditions such as burnout, anxiety, and depression among employees (Schaufeli & Bakker, 2004).

Cavanaugh et al. (2000), building on the processor theory of stress, categorized job demands into two categories: challenging and hindering requirements, and suggested that coping processes and outcomes vary depending on this category of demand. Demands related to challenging requirements represent stressful situations; however, when successfully managed, they can be beneficial for personal growth and advancement. In contrast, hindrance demands obstruct job performance and hinder personal development and progress. Since Cavanaugh et al. (2000) proposed dividing job demands into two categories: challenging demands and hindering demands, numerous studies have focused on the conceptual and consequences distinction between these demands. For instance, Lin, Oi-ling, Kan, and Xin-wen (2009) provided important insights regarding employee motivation and the effects of workplace stress. According to their findings, employees may experience burnout particularly when job demands are perceived as restrictive, whereas developmental or growth-oriented job demands may be viewed as beneficial for employees. Similarly, Tadić, Bakker, and Oerlemans (2015) addressed job demands within the framework of compulsive and deterrent stressors developed by Le Pine and colleagues (2005). Accordingly, challenge demands like workload and work complicity require effort and energy; however, when managed effectively, they can contribute to employees' development, ascertain, and achieving the aim. For example, highly complex job responsibilities necessitate a significant transfer of energy while also fostering expertise and experience. Conversely, hindrance demands include job descriptions and conditions that require effort and strength but offer little or no opportunity for competence development (Le Pine et al., 2005; Van den Broeck et al., 2010). In conclusion, it may not be accurate to evaluate job demands solely as negative or harmful. Indeed, Bakker et al. (2007, 2010) argued in their studies that not all job demands may lead to harmful consequences (Tadić et al., 2015).

Work resources consist of structural and social elements of work that support employees in achieving their work goals, mitigate various costs that may arise from work demands, and encourage individual development and professional learning processes (Schaufeli, 2017). These resources may manifest in various forms, including social support, autonomy and control over tasks, performance feedback, opportunities for development, and engagement in meaningful work. For instance, support from colleagues or supervisors can enable employees to cope more effectively with workplace challenges; control over one's work may help employees manage job demands more efficiently; and structured performance feedback can enhance motivation by fostering individual learning processes and professional development (Schaufeli, 2017).

Job demands and job resources, which reflect specific aspects or characteristics of work in every occupation, are important because they initiate two distinct processes within the work environment (Bakker & Demerouti, 2014). Essentially, this framework integrates two psychological processes. The first is the stressful process involving health problems or strain, such as burnout, caused by excessive work demands and insufficient work resources. The second is a more desirable and motivating process triggered by abundant work resources, such as organizational commitment and the desire to remain in the workplace (Schaufeli & Bakker, 2004; Schaufeli, 2017). Accordingly, workplace demands and job-related resources create a holistic model that generates different processes and effects. In this context, the third proposition of the JD-R theory is that both together affect occupational well-being. This combined effect is reflected in workplace performance in two ways: initially, job-related resources alleviate the stress caused by job demands; finally, job demands reinforce the motivation and commitment supported by job resources (Bakker & Demerouti, 2014).

In conclusion, the JD-R theory demonstrates that there is a reciprocal interaction among the structural characteristics of work and employees' well-being and motivation. The theory explains that work demands and work resources in the workplace do not produce only positive outcomes; it also clarifies the mechanisms through which negative effects may emerge. In this context, it presents a framework that emphasizes the need to reorganize job characteristics from the employees' perspective and design the work environment in a way that makes it less tiring for employees (Bakker & Demerouti, 2014). In essence, the theory highlights the importance of simultaneously reducing job demands while increasing job resources (Schaufeli, 2017).

2.2. Subjective Well-Being

Subjective well-being is a concept composed of individuals' perceptions or evaluations of their lives and is commonly referred to as happiness in everyday language. These perceptions primarily involve a cognitive dimension, encompassing evaluative judgments such as life satisfaction. In addition, subjective well-being includes an affective dimension, manifested through pleasant and unpleasant emotional responses (Diener & Diener, 1996). In this context, subjective well-being at the cognitive level is shaped by an individual's increasing satisfaction in different areas like their work life, family life, and personal life; while at the emotional level, it is related to the person having positive feelings and thoughts about their life when life events are evaluated positively (Myers & Diener, 1995).

According to Diener (1984), subjective well-being has three fundamental characteristics. First, it is ba-

sed on a subjective evaluation; thus, the essence of well-being lies in individuals' personal judgments regarding the quality and nature of their own lives. Second, subjective well-being emphasizes positive criteria or indicators rather than solely focusing on negative aspects. Third, the dimensions of subjective well-being encompass a global assessment of all aspects of an individual's life. Owing to this characteristic, subjective well-being not only allows for the assessment of affect or satisfaction within specific life domains but also highlights a holistic evaluation of one's overall life experience.

A person's happiness in life and high levels of subjective well-being significantly improve the individual's circumstances in four key areas: well-being and lifespan, employment and earnings, interpersonal connections and community involvement (Gencer, 2018). In this context, high subjective well-being reflects the predominance of positive thoughts and emotional states regarding one's life. On the other hand, individuals with low levels of subjective well-being tend to evaluate their life circumstances and experiences negatively, and are more susceptible to experiencing negative emotions such as anxiety about the future, depressive mood, and anger (Myers & Diener, 1995).

The primary aim of scholars examining subjective well-being extends beyond merely eliminating distress; it also involves promoting the organization and improvement of individuals' lives. As subjective well-being constitutes a significant component of quality of life, its measurement is crucial for understanding how individuals' lives can become more fulfilling and meaningful. Furthermore, numerous studies have demonstrated that high levels of subjective well-being not only provide advantages at the individual level but also contribute to the effective functioning of societies (Gencer, 2018). For example, various studies have explored the relationships between subjective well-being and variables such as age, gender, physical health, economic status, genetic characteristics, marital status, and personality. Among these, the studies conducted by Diener et al. (1999), Myers and Diener (1995), and Lykken and Tellegen (1996) are particularly noteworthy.

2.3. Turnover Intention

Psychological studies indicate that individuals' intentions are often significant predictors of their behaviors. From this perspective, Kristensen and Westergård-Nielsen (2004) suggest that job-seeking behavior is in fact a significant reflection of a person's act of leaving their job. (Böckermann & Ilmakunnas, 2004). Accordingly, turnover intention can be defined as an individual's behavioral attitude toward withdrawal from the workplace, whereas turnover refers to the actual act of leaving the organization (Aydoğdu & Işıkçıl, 2011).

According to Sutherland and Wilhelm (2004: 56), turnover intention can be classified as voluntary or involuntary. They define voluntary turnover intention as an action initiated by employees due to expectations of a better employment environment or dissatisfaction with their current job. In contrast, involuntary turnover intention is described as termination initiated by the employer for reasons unrelated to employee misconduct or performance.

Turnover intention can be classified into three categories: unavoidable, desirable, and undesirable turnover intention. Unavoidable turnover intention arises from circumstances such as family-related reasons, personal illness, or retirement. Desirable turnover intention occurs due to employee inadequacy. In contrast, undesirable turnover intention refers to the departure of skilled and well-trained employees as a result of organizational problems such as insufficient support, role conflict, and lack of supervision (Rizvan, Arshad, Munir, Iqbal, & Hussain, 2014).

Studies examining the reasons why employees leave their jobs are found not only in research focusing on job and organizational characteristics such as job and organizational design and job stress, but also in literature where human resources are important and their management is addressed. Studies on job and organizational design have shown that job demands; various stress factors; and conditions such as task repetition and routinization are positively correlated with turnover. For example, Almalki et al. (2012) found meaningful relationships between turnover intention and demographic variables.

Turnover intention is defined as a cognitive process that includes thinking about leaving, planning to leave, and the desire to quit; it may also result in an intention to stay, depending on employees' levels of loyalty and commitment to their organizations. Therefore, various other factors may influence individuals' intention to remain within an organization (Vigneshwaran & Mohankumar, 2022). Employees exposed to unfavorable working conditions tend to have higher intentions to change jobs. For instance, employees who face uncertainty, work in mentally demanding roles, believe that there are no opportunities for promotion, or experience discrimination are more likely to be willing to leave their jobs (Böckermann & Ilmakunnas, 2004).

Vigneshwaran and Mohankumar (2022) explain various antecedents affecting employees' intentions to leave their jobs in terms of conflict between family and work, work and general life balance. From their perspective, factors such as work stress, work satisfaction, demographic variables (e.g., monthly income, etc.), opportunities for responsibility and autonomy in developing one's own work activities, organizational identity, and a sense of commitment, such as dedication to the job, are considered antecedents of turnover intention. An example of research in this

area is the study conducted by Ahmad, Bashir and colleagues (2012). The results of their research show that work satisfaction and work stress are significantly and negatively correlated with turnover intention. Accordingly, as levels of job stress increase, employees' intention to leave the job also increases.

In another study, Galetta, Portoghese, and Battistelli (2011) showed that providing individuals with more responsibility and autonomy in their work can improve feelings of identification and commitment in the workplace, thereby reducing turnover intention. The study emphasized the importance of intrinsic motivation in promoting affective commitment and found that affective commitment fully mediated the relationship between intrinsic motivation and turnover intention. In this context, the findings have shown that the higher individuals' intrinsic motivation towards their jobs, the more likely they are to develop a sense of integration and commitment to their organizations, and this negatively affects their intention to leave the job.

Randhawa (2007) examined turnover intention and reported significant correlations between turnover intention and demographic variables such as age, qualifications, and job title. The study showed that age, title, and competency were meaning and negatively associated with turnover intention, and that an employee's intention to leave an organization was largely influenced by their age, title, and experience. The negative relationships identified in the study suggest that as age, experience, and organizational status increase, turnover intentions decrease significantly.

2.4. The Relationship Between Job Demands, Job Resources, and Subjective Well-Being

When examining the connection among work characteristics and individuals' subjective well-being in the context of job demands and resources related to job requirements, responsibilities, and the nature of the work, studies conducted across different occupational groups show that the JD-R model has a significant impact on employees' capacity to experience their lives with positive or negative emotions. For instance, a study conducted by Claeys, Vandepitte, Clays, and Annemans (2023) found that job demands and job resources are directly related to subjective well-being. While job resources show a positive correlation with subjective well-being, job demands show a negative correlation. Moreover, job resources appear to have a stronger relationship with subjective well-being compared to job demands. Job satisfaction mediates these relationships, indirectly contributing to employees' subjective well-being. The findings reveal that improving work resources has a significant impact on increasing employees'

subjective well-being.

In another study examining the effects of job characteristics on subjective well-being, JD-R model was employed to assess the relative importance of job characteristics in relation to the subjective well-being of teachers in the United Kingdom. The findings revealed that teachers demonstrated higher levels of subjective well-being when work-life conflict decreased. Furthermore, various job resources were found to mitigate the negative effects of job demands. Another research investigating work demands and work resources explored the subjective well-being of accountants and assessed the mediating role of job resources in the link between work demands and subjective well-being. Within the accounting field, various work demands that adversely influence subjective well-being tend to build up over time. In contrast, work resources were found to exert a positive effect on subjective well-being (Ostermeier, Koops, & Peccei, 2023).

Another study addressing job demands and job resources examined the subjective well-being of accountants and analyzed the mediating effect of job resources on the relationship between job demands and subjective well-being. In the accounting profession, various job demands that negatively affect subjective well-being tend to accumulate. In contrast to the effects of job demands, job resources were found to have a positive impact on subjective well-being. The study also revealed that job demands and job resources directly influence subjective well-being without mediation. Moreover, it was determined that work resources (such as task autonomy and social support) serve as a mediator in the association between subjective well-being and work demands (both quantitative and qualitative), and that when professionals in this field encounter the highest intensity of work demands, they are likely to perceive themselves as having fewer resources available to manage those demands (Molina-Sánchez et al., 2019).

In addition to these investigations, Han, Yin, and Wang (2020) and Zhao, Yuan, and Hu (2024) also explored the association between work demands, work resources, and subjective well-being. Han et al. (2020) reported that work demands have a detrimental effect on the subjective well-being of academic personnel, whereas work resources positively influence their subjective well-being. Likewise, Zhao et al. (2024) found that teaching load is negatively related to subjective well-being and that the harmful impact of work demands primarily arises from teaching-related duties. Overall, these empirical findings are consistent with the JD-R model; however, it is also stated that the relationships between job characteristics and employee well-being are not solely unidirectional and may develop reciprocally over time (Lesener et al., 2019).

2.5. The Relationship Between Job Demands and Job Resources and Turnover Intentions

There are two lines of research that examine the relationships between work demands and turnover intention, and between work resources and turnover intention. The first pertains to the literature on job and organizational design as well as occupational stress, which emphasizes work and organizational factors that may prompt employees to leave their positions. The second relates to the human resource management literature, which highlights practices that help organizations achieve their strategic objectives by attracting, retaining, and efficiently managing personnel. Both perspectives are significant within the JD–R model framework. While the job design and occupational stress literature primarily concentrates on work demands, the human resource management literature emphasizes work resources (Hoonakker et al., 2013).

There are empirical studies examining the direct effects of individual characteristics, working conditions, and job attributes on employees' likelihood of leaving their jobs and their tenure. For example, unfavorable working conditions have been shown to increase turnover intention (Böckermann & Ilmakunnas, 2004). The JD–R model assumes that two sets of working conditions—namely demands and resources—can each trigger different processes. High job demands are likely to lead to strain reactions (e.g., stress, burnout), which may result in increased absenteeism and turnover. On the other hand, resources (e.g., decision latitude, social support) are more likely to promote goal achievement, leading to positive work attitudes and reduced turnover intention. Job resources refer to the physical, psychological, social, and organizational aspects of a job that are effective in achieving work goals, reducing job demands and their associated costs, and promoting learning. In this context, job resources are not only functional in attaining work objectives but also foster personal growth and development (Hoonakker et al., 2013).

Hoonakker and colleague (2013) investigated the association between work demands, work resources, and turnover intention within the JD–R model framework, emphasizing gender-based differences in these relationships. Their results suggest that emotional exhaustion serves as a mediator between work demands and turnover intention, while job satisfaction mediates the link between work resources and turnover intention. Furthermore, significant gender differences were identified within these associations. High employee turnover intentions have always been a significant concern for the telecommunications sector. This issue is particularly pronounced among employees in developing countries, where turnover

intentions are notably high (Bon & Shire, 2017). Bon and Shire (2017) showed in their study that employees facing high job demands are more likely to intend to leave their jobs. Indeed, this result reveals a link between job demands and employees' intentions to leave their jobs. Within the framework of the JD–R model, workload—considered one of the employees' job demands—was investigated by Jasiński and Derbis (2022), who found that workload is the strongest direct predictor of the intention to leave one's current job or profession. Organizational constraints and interpersonal conflicts in the workplace trigger negative experiences, which in turn lead to turnover intentions. Among these factors, interpersonal conflicts at work are the strongest predictors of negative emotions in the workplace. The findings of this study indicate that workload directly influences both types of turnover intentions, while organizational constraints and interpersonal conflicts indirectly increase intentions to leave the job or profession by eliciting negative affect at work.

Other studies examining turnover intention include those by Mansour and Azeem (2024) and Galetta et al. (2011). Galetta and colleagues. (2011) reported that granting employees responsibility and autonomy in managing their work tasks can enhance their sense of identification with and commitment to the workplace, which in turn decreases turnover intention. They suggest that when employees are intrinsically motivated toward their work, they cultivate a sense of organizational identification and attachment, which is inversely related to their intention to leave the organization. Mansour and Azeem (2024), in contrast, examined the impact of work–family conflict, emotional exhaustion, and elevated job demands on flight attendants' turnover intentions. Their results indicated a positive association between heightened job demands and the intention to leave. Hoare & Vandenberghe (2024) state in their study that employee well-being is more strongly influenced by job demands, while job resources, although also supporting well-being, play a particularly stronger role in reducing turnover intentions. These findings emphasize that both job demands and resources affect employees' subjective well-being and also play an important role in shaping their intentions to stay with or leave the organization. Therefore, turnover intention is considered one of the key outcomes of the job demands–resources model.

3. Research Method

A quantitative research method was adopted in the study. Data were collected using a survey technique from employees working in food sector enterprises located in the city center of Kayseri.

In this study, food sector businesses operating in Kayseri province were selected, taking into account cost and accessibility factors in the data collection process. The fact that the food sector combines high

job demands and significant job resources provides a context consistent with the theoretical framework of the research, as it offers a work environment that can affect employees' subjective well-being and turnover intentions. Furthermore, the accessibility of

Kayseri province for the researcher and the reduction of data collection costs increased the feasibility of the study. Accordingly, considering both theoretical suitability and practical limitations, the Kayseri food sector was determined as the research sample.

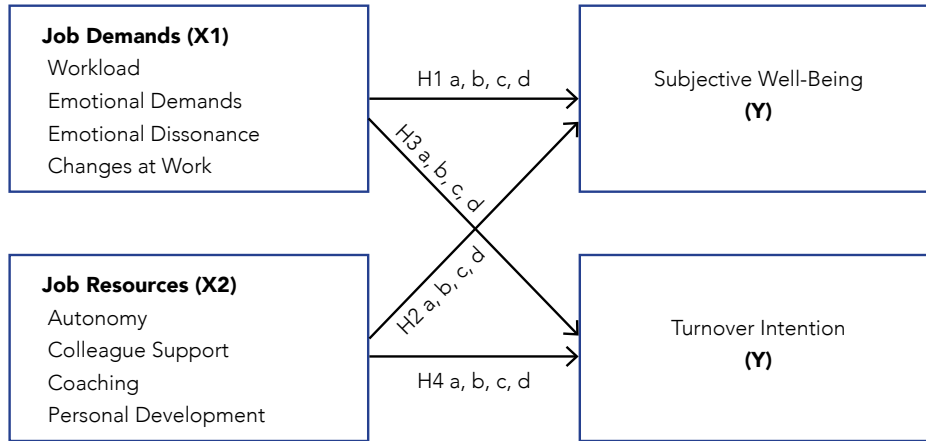


Figure 1. Developed Research Model

The hypotheses developed within the framework of this research model are as follows:

H1a: Workload, as a job demand, negatively affects employees' levels of subjective well-being.

H1b: Emotional demands, as a job demand, negatively affect employees' levels of subjective well-being.

H1c: Emotional dissonance, as a job demand, negatively affects employees' levels of subjective well-being.

H1d: Changes at Work, one of the job demand, negatively affect employees' levels of subjective well-being.

H2a: Autonomy, as a job resource, positively affects employees' levels of subjective well-being.

H2b: Colleague support, as a job resource, positively affects employees' levels of subjective well-being.

H2c: Coaching, as a job resource, positively affects employees' levels of subjective well-being.

H2d: Personal development, as a job resource, positively affects employees' levels of subjective well-being.

H3a: Workload, one of the job demand, positively affects employees' turnover intention.

H3b: Emotional demands, one of the job demand, positively affect employees' turnover intention.

H3c: Emotional dissonance, one of the job demand, positively affects employees' turnover intention.

H3d: Changes at Work, one of the job demand, positively affect employees' turnover intention.

H4a: Autonomy, one of the job resources negatively affects employees' turnover intention.

H4b: Colleague support, one of the job resource, negatively affects employees' turnover intention.

H4c: Coaching, one of the job resource, negatively affects employees' turnover intention.

H4d: Personal development, one of the job resource, negatively affects employees' turnover intention.

H5: Subjective well-being negatively affect turnover intention.

4. Study Sample

The study's population compose of 7,086 workers employed in the food sector in Kayseri (SGK, 2024). The sample comprises 350 employees working in these businesses in Kayseri. Data were collected through both face-to-face and online surveys. In studies where the population size is 20,000, a sample size of 318 is considered sufficient (Bayram, 2004: 10). Furthermore, Hair, Black, Tatham, and Anderson (2010) suggest that a sample size five times larger than the number of survey items is considered good and sufficient. The measurement instrument used in this study consists of a total of 68 items: 29 items for the subjective well-being scale, 3 items for turnover intention, and 36 items for job demands and resources. Therefore, a sample of 350 participants is considered more than sufficient. Approval for the study has been obtained from the Ethics Committee of the Faculty of Social and Human Sciences at Sivas Cumhuriyet University (No: E-99711239-050-04-518679, Date: 21.01.2025).

5. Data Collection Instruments

The study utilized scales for job demands and job resources, a turnover intention scale, and a subjective well-being scale. Accordingly:

Subjective Well-Being Scale: To determine emp-

loyees' levels of subjective well-being, the 29-item Oxford Happiness Inventory (Hills & Argyle, 2002) was utilized. The survey items were presented with response options ranging from (1) Strongly Disagree to (5) Strongly Agree to assess the level of subjective well-being. The Turkish adaptation of the scale was obtained from the study by Yurcu and Atay (2015). The validity of the scale is considered acceptable, as indicated by values like RMSEA: 0.82, CFI: 0.94, and χ^2/df : 4.2, as reported in Doğan and Sapmaz (2012: 302).

Turnover Intention Scale: To measure employees' intention to leave their jobs, the scale developed by Cammann et al. (1979) and used in Gülerterkin's (2013) study was utilized. Questions were evaluated on a Likert-type scale answered with, for example, (1) Strongly Disagree (Gülerterkin, 2013). This three-item scale, adapted from the Michigan Organizational Assessment Questionnaire, was found to be reliable, with a reliability coefficient of 0.88 based on reliability and validity analyses (Yapıcı, 2008: 118).

Job Demands and Resources Scale: The scale developed by Xanthopoulou et al. (2007) and used in Metin's (2010) study was used to assess what the job-related demands and resources are in the workplace. Items were rated on a scale ranging from (1) Never to (5) Always. The job demands dimension includes four sub-dimensions: workload, emotional deman-

ds, emotional dissonance, and changes at work. The job resources dimension consists of four sub-dimensions: automation, colleague support, coaching, and personal development (Metin, 2010).

6. Findings

Participants' demographic characteristics were analyzed through frequency analysis. Regarding gender composition, 35% of the respondents were female and 65% were male. The age distribution was as follows: 1.3% were between 16–20 years old, 13.4% between 21–30, 38.6% between 31–40, 40.5% between 41–50, and 6.2% between 51–60. In terms of marital status, 68.3% of the participants were married, whereas 31.7% were single.

With respect to educational attainment, 9.5% had completed high school, 23.2% held an associate degree, 52.3% possessed a bachelor's degree, 13.4% had a master's degree, and 1.6% had earned a doctoral degree. Concerning organizational tenure, 19.9% had worked at the company for 1–5 years, 43.8% for 6–10 years, 30.1% for 11–15 years, and 6.2% for 16 years or more.

The relationships between the scales were examined using correlation analysis and are presented in Table 1.

Table 1. Correlation Results of Research Variables

	1	2	3	4	5	6	8	9	10	11	12
Turnover Intention	1										
Subjective Well-being	-,211**	1									
Workload	-,098	,478**	1								
Emotional Demands	-,128**	,501**	,720**	1							
Emotional Dissonance	-,133**	,531**	,743**	,895**	1						
Changes at Work	-,149**	,510**	,680**	,851**	,840**	1					
Job Demands	-,143**	,547**	,817**	,952**	,945**	,940**	1				
Autonomy	-,239**	,570**	,436**	,439**	,450**	,508**	,504**	1			
Colleague Support	-,286**	,570**	,481**	,418**	,436**	,484**	,494**	,819**	1		
Coaching	-,288**	,613**	,473**	,438**	,459**	,454**	,492**	,829**	,885**	1	
Personal Development	-,243**	,587**	,473**	,396**	,411**	,432**	,460**	,826**	,870**	,912**	1
Job Resources	-,282**	,622**	,492**	,448**	,466**	,493**	,515**	,911**	,941**	,970**	,953**

**p<0,01

According to Table 1, job demands, job resources, and their sub-dimensions are negatively correlated with turnover intention (** $p < 0.01$: -0.143; -0.282**), while job demands, job resources, and their sub-dimensions are positively correlated with subjective well-being (** $p < 0.01$: 0.547; 0.622**). In other words, as job demands and resources decrease, the turnover intention the job decreases, while as job demands and resources increase, subjective well-being levels also increase. The study also observed an inverse relationship between subjective well-being and turnover intention (** $p < 0.01$: -0.211**).

6.1. Validity and Reliability Analyses of the Scales, Normal Distribution and Mean of the Data

As a result of the analysis, the following index values were examined for the scales: $\chi^2/sd < 5$, RMSEA, TLI value, and some other index values. A model is considered to have a good fit if

its $\chi^2/sd < 5$ is less than 5 and its CFI and TLI values are 0.90 or higher (Schermele-Engel, Moosbrugger & Müller, 2003).

Table 2. Calculated Fit Indices for the Scales

Acceptable Compliance Indexes	Turnover Intentions	Subjective Well-being	Job Demands and Job Resources
$\chi^2/sd < 5$	2,151	3,645	2,367
GFI > 0.90	0,951	0,936	0,952
AGFI > 0.90	0,916	0,921	0,912
CFI > 0.90	0,921	0,912	0,905
TLI > 0.90	0,907	0,917	0,936
RMSEA < 0.08	0,076	0,079	0,066

Source: Hu & Bentler (1999); Kline (2016).

When the fit indices were examined, it was determined that the measurement models showed a good level of fit with the data. These findings indicate that the factor structures of the scales were validated and that they reliably measured the relevant constructs. To determine the reliability levels of the scales, a

reliability analysis was conducted and Cronbach's alpha coefficients were examined. Accordingly, the values determined for turnover intention were 0.931, for subjective well-being 0.844, and for job demands and job resources 0.766, indicating that the scales are reliable.

Table 3. Standard Deviation, Variance, Mean, Skewness and Kurtosis Values of the Data

	TI	SW	JD	JD_W	JD_EDE	JD_EDİ	JD_CW	JR	JR_A	JR_PS	JR_C	JR_PD
Mean	2,2440	3,2958	3,3449	3,4003	3,3361	3,3817	3,2946	3,3915	3,2767	3,3867	3,4118	3,4771
Standard Deviation	1,02537	,75073	,92269	,97230	1,00703	,96872	1,01444	,97208	1,02876	1,01018	1,02230	1,04386
Variance	1,051	,564	,851	,945	1,014	,938	1,029	,945	1,058	1,020	1,045	1,090
Skewness	1,203	-,417	-,483	-,363	-,468	-,462	-,502	-,518	-,386	-,480	-,476	-,538
Kurtosis	,518	-,772	-1,028	-,839	-,819	-,779	-,874	-,819	-,818	-,748	-,809	-,749

In this study, the data shows a normal distribution, meaning that the kurtosis and skewness values, mean, and frequency values indicate that the data are normally distributed. As reported in the literature, skewness and kurtosis coefficients within the range of ± 1.5 are considered indicative of normal distribution. According to Tabachnick and Fidell (2015), values falling among -1.5 and +1.5 suggest that the data exhibit a normal distribution. In Table 3, the mean for turnover intention variable was found to be 2.2440, the mean for the subjective well-being vari-

able was 3.2958, the mean for the job demands variable was 3.3449, and the mean for the job resources variable was 3.3915.

6.2. Results of Regression Analyses of Variables

The regression analysis results and data of the variables in the study, conducted within the framework of the hypotheses formulated, are given in Tables 4 and 5.

Table 4. The Effect of Job Demands, Job Resources on Subjective Well-being

Independent Variables	B	S.D.	p	R	R2	Adj. R2	F	t	DW
Job Demands	,450	,039	,000	,553	,306	,304	134,081	11,579	1,765
Workload	,380	,030	,000	,492	,242	,239	96,882	9,843	1,802
Emotional Demands	,377	,037	,000	,505	,255	,253	10,206	104,162	1,807
Emotional Dissonance	,416	,038	,000	,536	,288	,285	122,707	11,077	1,835
Changes at Work	,382	,036	,000	,517	,267	,264	110,663	10,520	1,708
Job resources	,479	,035	,000	,620	,384	,382	189,798	13,777	1,733
Autonomy	,416	,034	,000	,570	,324	,322	146,036	12,085	1,737
Colleague Support	,423	,035	,000	,570	,325	,322	146,167	12,090	1,802
Coaching	,449	,033	,000	,611	,374	,372	181,440	13,470	1,730
Personal Development	,420	,033	,000	,584	,340	,338	156,944	12,528	1,753

Dependent Variable: Subjective Well-being

Based on the findings of the regression analyses, as presented in Table 4, job demands and their sub-dimensions—workload, emotional demands, emotional dissonance, and changes at work—positively affect subjective well-being. Accordingly, an increase in job demands increases the level of subjective well-being. In this case, hypotheses H1a, H1b, H1c, and H1d, which predicted a negative effect, were rejected. On the other hand, job resources and their

sub-dimensions, such as automation, colleague support, coaching, and personal development, have a positive effect on subjective well-being, and as job resources increase, the level of subjective well-being also increases ($B = 0.479$, $p < 0.01$). The job resources dimension explains 38% of an individual's subjective well-being ($R^2 = 0.384$). Based on these results, hypotheses H2a, H2b, H2c, and H2d are confirmed.

Table 5. The Effect of Job Demands, Resources, Subjective Well-being on Turnover Intentions

Independent Variables	B	S.D.	p	R	R2	Adj. R2	F	t	DW
Job Demands	-,159	,063	,012	,143	,021	,017	6,377	-2,525	1,904
Workload	-,117	,060	,053	,111	,012	,009	3,767	-1,941	1,896
Emotional Demands	-,131	,058	,025	,128	,016	,013	5,079	-2,254	1,911
Emotional Dissonance	-,141	,060	,020	,133	,018	,014	5,476	-2,340	1,891
Changes at Work	-,151	,057	,009	,149	,022	,019	6,934	-2,633	1,927
Job resources	-,297	,058	,000	,282	,079	,076	26,232	-5,122	1,945
Autonomy	-,239	,056	,000	,239	,057	,054	18,467	-4,297	1,939
Colleague Support	-,290	,056	,000	,286	,082	,079	29,986	-5,195	1,966

Coaching	-,289	,055	,000	,288	,083	,080	27,496	-5,244	1,934
Personal Development	-,238	,055	,000	,243	,059	,056	19,002	-4,359	1,941
Subjective Well-being	-,288	,077	,000	,211	,045	,041	14,177	-3,765	1,866

Dependent Variable: Turnover Intention

Based on the findings of the regression analyses, as presented Table 5, job demands and their sub-dimensions, namely emotional demands, emotional dissonance and changes at work, negatively affect turnover intention ($B = -0.159$, $p < 0.01$). The job demands dimension explains 2.1% of an individual's turnover intention ($R^2 = 0.021$). Accordingly, an increase in job demands reduces turnover intention. In this case, hypothesis H3, which predicts a positive effect, is rejected in the study. On the other hand, all job resources and their sub-dimensions negatively affect turnover intention, with turnover intention decreasing as job resources increase ($B = -0.297$, $p < 0.01$). The job resources dimension explains 7.9% of an individual's turnover intention ($R^2 = 0.079$). Based on these results, hypotheses H4a, H4b, H4c, and H4d are confirmed, while hypotheses H3a, H3b, H3c, and H3d are rejected due to the presence of a negative effect.

As also shown in Table 5, subjective well-being negatively affects turnover intention ($B = -0.288$, $p < 0.01$). The level of subjective well-being explains 21% of the variation in an individual's turnover intention ($R^2 = 0.211$). This finding shows that as the level of subjective well-being increases, turnover intention decreases, and confirms hypothesis H5.

7. Discussion

Following the correlation and regression examinations, it was determined that among the subdimensions of job demands, workload, emotional demands, emotional dissonance, and changes in the workplace exerted a beneficial effect on the level of subjective well-being. This finding indicates that an increase in job demands may enhance the level of subjective well-being; however, this outcome is not consistent with other studies in the literature. For example, different findings were reported in the studies conducted by Han and co-authors (2020), Zhao and co-authors (2024), Molina-Sánchez and co-authors (2019), Claees and co-authors (2023), and Ostermeier et al. (2023), Dishon-Berkovits, M. et al (2024), Pulido-Martos, M., et al. (2023) and Jin, M., et al. (2025).

According to the research findings, emotional demands evaluated within the scope of job requirements, emotional dissonance, and workplace changes outside of workload were found to have a negative impact on the intention to leave the job. However, these findings do not align with studies

in the existing literature (e.g., Hoonakker and colleagues, 2013; Bon & Shire, 2017; Jasiński & Derbis, 2022). The findings that differ from the literature may be attributed to variables such as the socio-economic structure of our country, as well as cultural, sectoral, psychological, and individual differences. Therefore, these aspects of the job demands variable could be addressed by other researchers to shed light on alternative evaluations. Another possible reason for this discrepancy can be explained by the impact of job resources on job demands. The literature frequently emphasizes that job resources play a critical role in mitigating the negative consequences of job demands faced by employees. Jin et al. (2016) demonstrate that person–organization fit can function as a protective organizational resource for employees. In this regard, it is suggested that high levels of person–organization fit may reduce the negative impact of job demands and perceived threats on employees' turnover intentions. Moreover, this difference can be evaluated within the framework of challenge demands and hindrance demands as explained by Cavanaugh and colleagues (2000). Tadić and colleagues (2014) argue that difficult demands, like workload and occupational intricacy, although requiring effort, facilitate learning and goal achievement when their adverse aspects are effectively managed. In this situation, complicated work assignments demand substantial amounts of energy but may also promote employees' growth in expertise and proficiency. In conclusion, based on the work of Bakker et al. (2007, 2010), it can be argued that, given that not all job demands are inherently harmful, these demands may also have a positive effect on employees' turnover intentions.

The first finding of the study regarding job resources is that job resources like autonomy, colleague support, coaching, and personal development positively affect employees' levels of subjective well-being. These findings are in line with those documented in the literature by Han and colleagues (2020), Zhao and colleagues (2024), Molina-Sánchez and colleagues (2019), Claees and colleagues (2023), and Ostermeier and colleagues (2023). The second finding related to job resources is that subdimensions such as automation, coworker support, coaching, and personal development have a negative effect on turnover intention. This result is consistent with other studies in the literature, such as those by Galetta and colleagues (2011), Hoonakker and col-

leagues (2013), and Bon and Shire (2017). As seen, most job demands and job resources variables are associated with and have an impact on employees' intention to leave their jobs. For instance, studies conducted by Moloney, W. et al. (2018), Eriksson, A. et al. (2021), and Montecinos, C. et al. (2026) examined these relationships and effects. In addition, Leep-Lazar, K. et al. (2026) supported a model proposing that high job demands and insufficient job resources negatively affect mental health and increase employees' intention to leave their jobs.

In conclusion, the findings of this study reveal that increased job demands and job-related resources reduce employees' intentions to leave their jobs. Additionally, it was observed that increases in job resources and job demands were also associated with higher levels of employees' subjective well-being. This indicates that both employees' commitment to their jobs and their psychological well-being are closely related to the balance between the resources provided in the work environment and the demands they face. Therefore, providing sufficient resources in the workplace and appropriately managing job demands plays a significant role in reducing employees' intentions to leave their jobs and increasing their subjective well-being. Furthermore, with respect to the impact of subjective well-being on turnover intentions, the results indicate that as individuals' subjective well-being rises, employees' turnover intention declines. For example, a study carried out by Li and colleagues (2025) on nurses revealed that turnover intention was inversely associated with subjective well-being. However, a separate study conducted by Özçelik and Özkoç (2019) found that subjective well-being had a positive influence on employees' turnover intentions. Indeed, research in the literature that directly and thoroughly examines the impact of subjective well-being on turnover intentions remains relatively scarce. While the present study shows similarities with the study by Li et al., it differs from the findings reported by Özçelik and Özkoç.

8. Conclusion

In summary, this study found that: firstly, work demands and work resources are positively related to and positively influence subjective well-being; secondly, work demands and work resources are negatively related to and reduce turnover intention; and finally, employees' subjective well-being negatively affects their turnover intention. Based on these findings, it can be said that work demands and resources, which express the qualities related to the duties and responsibilities of the jobs performed by employees, significantly affect the subjective well-being levels of employees, both in their work lives and in their general lives; in other words, they significantly

influence their perception of happiness throughout their lives. Furthermore, considering the extent to which job demands and resources are met in the job environment, as well as employees' subjective well-being, it is concluded that employees may tend to develop an intention to either remain in the organization or leave their jobs. These findings will both improve employee well-being, health, and motivation in the workplace, and provide employers and managers with valuable information about job demands and resources, employee subjective well-being, and turnover intentions. Furthermore, the research findings provide insights into the measures and changes that managers should take in the work environment. Therefore, this study more clearly reveals the needs of employees in organizations regarding their work environment from the perspective of organizational behavior.

Limitations encountered during research may include studies being restricted to a single sector or region. Examining the same variables across different sectors or with different variables could contribute more significantly to the literature. For example, the way work is carried out, its management, and the needs of the workforce—that is, job demands and resources—may differ between a manufacturing sector and a service sector. Therefore, research conducted across sectors can yield more diverse results and information, making significant contributions to the literature.

Author Contribution Statement

The authors contributed equally to this study.

Ethical Statement

Ethical approval for this study was obtained from the Social and Human Sciences Ethics Committee of Sivas Cumhuriyet University (Approval No.: E-99711239-050-04-518679, Date: 21.01.2025).

Informed consent was obtained from all participants, and the data were collected in accordance with confidentiality principles.

Financial Support

This research received no financial support.

References

- Ahmad, B., Shahid, M., Huma, Z. E., & Haider, S. (2012). Turnover intention: An HRM Issue in Textile Sector. *Interdisciplinary Journal of Contemporary Research in Business*, 3(12), 125-130.
- Almalki, M.J., FitzGerald, G. & Clark, M. (2012). The Relationship Between Quality of Work-Life and Turnover Intention of Primary Health Care Nurses in Saudi Arabia, *BMC Health Services Research Journal*, 12,1-11.
- Aydogdu S. & Asikgil B. (2011). An empirical study of the rela-

The Effects of Job Demands and Job Resources on Subjective Well-Being and Turnover Intention

- onship among job satisfaction, organizational commitment and turnover intention. *Int Rev Manag Mark*, 1(3), 43–53.
- Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2007). Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology*, 99(2), 274–284.
- Bakker, A. B., Van Veldhoven, M., & Xanthopoulou, D. (2010). Beyond the demand-control model: Thriving on high job demands and resources. *Journal of Personnel Psychology*, 9(1), 3–16.
- Bakker, A. B. & Demerouti, E. (2014). *Work and wellbeing: wellbeing: a complete reference guide, Volume III*. Edited by Peter Y. Chen and Cary L. Cooper. John Wiley & Sons, Ltd. Published.
- Bakker, A.B., Demerouti, E., Boer, B. & Schaufeli, W.B. (2003). Job Demands and Job Resources as Predictors of Absence Duration and Frequency, *Journal of Vocational Behavior*, 62, 341-356.
- Bayram, N. (2004). Sosyal bilimlerde SPSS ile veri analizi. (1. Baskı). Bursa: Ezgi Kitabevi.
- Bon, A. T. & Shire, A. M. (2017). The Impact of Job Demands on Employees' Turnover Intentions: A Study on Telecommunication Sector. *International Journal of Scientific and Research Publications*, 7, (5), 406-412.
- Böckermann, P. & Ilmakunnas, P. (2004). Job Disamenities, Job Satisfaction and On the Job Search: Is There A Nexus? NBER Discussion Paper, 36, Florida: National Bureau of Economic Research.
- Cammann, C., Fichman, M., Jenkins, D. & Klesh, J. (1979). Michigan Organizational Assessment Questionnaire. Michigan: University of Michigan, Ann Arbor.
- Cavanaugh, M. A., Boswell, W. R., Roehling, M. V., & Boudreau, J. W. (2000). An Empirical Examination of Self-reported Work Stress among U.S. Managers. *Journal of Applied Psychology*, 85(1), 65–74.
- Claes S, Vandepitte S, Clays E., ve Annemans L. (2023) How Job Demands and Job Resources Contribute to Our Overall Subjective Well-Being. *Frontiers in Psychology*, 14, 1220263.
- Diener, E., & Diener, C. (1996). Most People Are Happy. *Psychological Science*, 7, 181-185.
- Diener, E. (1984). Subjective Well-Being. *Psychological Bulletin*, 95, 542-575.
- Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L. (1999). Subjective Well-Being: Three Decades of Progress. *Psychological Bulletin*, 125, 276-302.
- Dishon-Berkovits, M., Riva, E., & Lucchini, M. (2024). The Relationship Between Job Demands, Resources and Subjective Well-being: The Role of Work-Family Conflict Across the Life Course. *Current Psychology*, 43(9), 8085-8101.
- Doğan, T., & Sapmaz, F. (2012). Kişiler Arası İlişki Tarzları ve Öznel İyi Oluş. *Türk Eğitim Bilimleri Dergisi*, 10(3), 585-602.
- Eriksson, A., Jutengren, G., & Dellve, L. (2021). Job Demands and Functional Resources Moderating Assistant and Registered Nurses' Intention to Leave. *Nursing Open*, 8(2), 870-881.
- Galletta, M., Portoghese, I., ve Battistelli, A. (2011). Intrinsic Motivation, Job Autonomy and Turnover Intention in the Italian Healthcare: The Mediating Role of Affective Commitment. *Journal of Management Research*, 3(2), 1-19.
- Gencer, N., (Çeviren) (2018). Öznel İyi Oluş: Genel Bir Bakış. *Hitit Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 11(3), 2621-2638.
- Gülertekin, S. (2013). Duygu iklimi ve Liderlik Tarzının İşten Ayrılma Niyetine Etkileri: Alanya'daki Turizm İşletmelerine Yönelik Bir Araştırma, Yüksek Lisans Tezi Çanakkale Onsekiz Mart Üniversitesi Sosyal Bilimler Enstitüsü Turizm İşletmeciliği Anabilim Dalı, Çanakkale.
- Han, J., Yin, H., & Wang, J. (2020). Examining The Relationships between Job Characteristics, Emotional Regulation and University Teachers' Well-Being: The Mediation of Emotional Regulation. *Frontiers in Psychology*, 11, 1727–1727.
- Hair, J. F., Black, W. C., Tatham, R. L. & Anderson, R. E. (2010). *Multivariate Data Analysis*. Upper Saddle 676 River, NJ: Prentice Hall.
- Hills, P. & Argyle, M. (2002). The Oxford Happiness Questionnaire: A Compact Scale for The Measurement of Psychological Well-Being. *Personality and Individual Differences*, 33, 1073-1082.
- Hoare, C., & Vandenberghe, C. (2024). Are They Created Equal? A Relative Weights Analysis of The Contributions of Job Demands and Resources to Well-Being and Turnover Intention. *Psychological Reports*, 127(1), 392-418.
- Hoonakker, P.L.T., Carayon, P. & Korunka, C. (2013). Using The Job-Demands-Resources Model to Predict Turnover in The Information Technology Workforce – General Effects and Gender Differences. *Horizons of Psychology*, 22, 51–65.
- Hu, L. T. & Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. *Structural Equation Modeling :A Multidisciplinary Journal*, 6(1), 1-55.
- Jasiński, A.V. & Derbis, R. (2022). Work Stressors and Intention to Leave The Current Workplace and Profession: The Mediating Role of Negative Affect At Work. *International Journal of Environmental Research and Public Health*, 19(21), 1-16.
- Jin, M. H., McDonald, B., & Park, J. (2018). Person–organization Fit and Turnover Intention: Exploring The Mediating Role of Employee Followership and Job Satisfaction Through Conservation of Resources Theory. *Review of Public Personnel Administration*, 38(2), 167-192.
- Jin, M., Ji, Y., Ding, S., & Wu, X. (2025). The Effects of Dual Job Demands on Primary and Secondary School Teachers' Subjective Well-Being: A Moderated Mediation Model. *Current Psychology*, 44(13), 13154-13166.
- Jones, F. & Fletcher, B. C. (1996). Job Control and Health. In M. J. Schabracq, J. A. M. Winnubst, & C. L. Cooper (Eds.), *Handbook of work and health psychology* (pp. 33–50). Chichester: Wiley.
- Kline, R.B. (2016). *Principles and Practise of Structural Equation Modeling* (4th ed.), New York: Guilford Press.
- Kristensen, N., & Westergård-Nielsen, N. (2004). Does Low Job Satisfaction Lead to Job Mobility? IZA Discussion Paper No. 1026.
- Leep-Lazar, K., Ma, C., Dickson, V. V., & Stimpfel, A. W. (2026). Job Demands, Resources, Mental Health, and Intention to Leave Among Early-Career Nurses: A Cross-Sectional Study. *International Journal of Nursing Studies*, 178, 105396, 1-12.
- LePine, J. A., Podsakoff, N. P., & LePine, M. A. (2005). A Meta-Analytic Test of The Challenge Stressor-Hindrance Stressor Framework: An Explanation for Inconsistent Relationships Among Stressors and Performance. *Academy of Management Journal*, 48(5), 764–775.
- Lesener, T., Gusy, B., & Wolter, C. (2019). The Job Demands-Resources Model: A Meta-Analytic Review of Longitudinal Studies. *Work & Stress*, 33(1), 76-103.
- Li, Y., Zhang, Q., Deng, X., Zhang, J., Li, J., Xia, G., Zhang, J. & Chen, Y.-P. (2025). Relational Job Characteristics and Turnover Intention Among Nurses: The Mediating Role of Subjective Well-Being. *BMC Nursing*, 24(1), 987, 1-10.
- Lin, L. I. N., Siu, O. L., Shi, K., & Bai, X. W. (2009). Challenge and Hindrance Job Demands, Job Resource and Their Relationships with Vigor and Emotional Exhaustion, *International Conference on Management Science & Engineering*, September, 14-16.
- Lykken, D., & Tellegen, A. (1996). Happiness Is A Stochastic Phenomenon, *Psychological Science*, 7(3), 186-189.
- Mansour, S. & Azeem, M.F. (2024). How Do Increased Job Demands Resulting from Rationalization of Costs Exhaust Flight Attendants and Push Them to Leave? An International Study, *Journal of Air Transport Management*, 115, 1-12.
- Metin, B. (2010). *The Antecedents and Consequences of Burnout, Work Engagement and Workaholism*, Master's Thesis, Middle East Technical University, Ankara.
- Molina-Sánchez, H., Ariza-Montes, A., Ortiz-Gómez, M. & Leal-Rodríguez, A. (2019). The Subjective Well-Being Challenge in The Accounting Profession: The Role of Job Resources Horacio. *International Journal of Environmental Research Public Health*, 16, 3073, 1-17.

- Moloney, W., Boxall, P., Parsons, M., & Cheung, G. (2018). Factors Predicting Registered Nurses' Intentions to Leave Their Organization and Profession: A Job Demands-Resources Framework. *Journal of Advanced Nursing*, 74(4), 864-875.
- Montecinos, C., Allende, C., Valenzuela, J. P., Vanni, X., & Kuzmanic, D. (2026). Chilean Principals' Intention to Leave Their School: A Job Demand and Resource Analysis. *Journal of Educational Administration*, 64(1), 61-76.
- Myers, D.G. & Diener, E. (1995). Who Is Happy? *Psychological Science*, 6(1), 10-19.
- Ostermeier, J., Willem Koops, W. & Peccei, R. (2023). Effects of Job Demands and Resources on The Subjective Well-Being of Teachers. *Review of Educations*, 11(3), 1-19.
- Özçelik Bozkurt, H. & Özkoç, A. G. (2019). Çalışanlarda Öznel İyi Olma Halinin Algılanan İstihdam Edilebilirlik ve İşten Ayrılma Niyeti ile İlişkisi: Konaklama İşletmelerinde Bir Uygulama. *Journal of Tourism and Gastronomy Studies*, 7(1), 265-285.
- Pulido-Martos, M., Cortés-Denia, D., Luque-Reca, O., & Lopez-Zafra, E. (2023). Authentic Leadership and Personal and Job Demands/Resources: A Person-Centered Approach and Links with Work-Related Subjective Well-Being. *Current Psychology*, 42(33), 28994-29011.
- Randhawa, G. (2007). Relationship between Job Satisfaction and Turnover Intentions : an Empirical Analysis, *Indian Management Studies Journal*, 11, 149-159.
- Rizwan, M., Arshad, M. Q., Munir, H. M. A., Iqbal, F. & Hussain, A. (2014). Determinants of employees intention to leave: A Study from Pakistan, *International Journal of Human Resource Studies*, 4(3), 1-18.
- Schaufeli, B. & Bakker, A. B. (2004). Job demands, Job Resources, and The Irrelationship with Burnout and Engagement: A Multi-Sample Study. *Journal of Organizational Behavior*, 2(3), 293-315.
- Schaufeli, W. B. (2017). Applying The Job Demands-Resources Model: A 'How to' Guide to Measuring and Tackling Work Engagement and Burnout. *Organizational Dynamics*, 46(2), 120-132.
- Schaufeli, W. B., & Taris, T. W. (2014). A Critical Review of The Job Demands-Resources Model: Implications for Improving Work and Health. In G. F. Bauer & O. Hämmig (Eds.), *Bridging Occupational, Organizational and Public Health: A Transdisciplinary Approach*, 43-68.
- Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating The Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures. *Methods of Psychological Research*, 8(2), 23-74.
- Sutherland, M., ve Wilhelm, J. (2004). Factors Affecting the Retention of Knowledge Workers. *SA Journal of Human Resource Management*, 2(2), 55-64.
- Tabachnick, B. G. & Fidell, L. S. (2015). *Using Multivariate Statistics* (6th ed.). Pearson. (Turkish translation by M. Baloğlu, Nobel Academic Publishing).
- Tadić, M., Bakker, A. B. & Oerlemans, W. G. (2015). Challenge versus hindrance job demands and well-being: A Diary Study on The Moderating Role of Job Resources. *Journal of Occupational and Organizational Psychology*, 88(4), 702-725.
- Tummers, L.G. & Bakker, A. B. (2021). Leadership and Job Demands-Resources Theory: A Systematic Review. *Frontiers in Psychology*, 12, 1-13.
- Van den Broeck, A., De Cuyper, N., De Witte, H. & Vansteenkiste, M. (2010). Not all Job Demands Are Equal: Differentiating Job Hindrances and Job Challenges in The Job Demands- Resources Model. *European Journal of Work and Organizational Psychology*, 19, 735-759.
- Vigneshwaran, D., & Mohankumar, S. (2022). Intent to Quit: A Literature Review. *Global Multidisciplinary Research & Academic Foundation (GMRAF)*. Chennai https://www.researchgate.net/publication/366596333_Intent_To_Quit_A_Literature_Review [Retrieved June 4, 2024]
- Xanthopoulou, D., Bakker, A. B., Demerouti, E. & Schaufeli, W. B. (2007). The Role of Personal Resources in The Job Demands-Resources Model. *International Journal of Stress Management*, 14(2), 121.
- Yapıcı, N. (2008). İş Yerinde SistematiK Yıldırma (Mobbing), Algılanan Nedenleri ve İş Tatmini ile İşten Ayrılma Niyeti Üzerine Etkisi: Antalya İli Tarım Sektöründe Bir Araştırma. Yüksek Lisans Tezi, Akdeniz Üniversitesi Sosyal Bilimler Enstitüsü, Antalya.
- Yurcu, G. & Atay, H. (2015). Çalışanların Öznel İyi Oluşunu Etkileyen Demografik Faktörlerin İncelenmesi: Antalya İli Konaklama İşletmeleri Örneği, *Manas Sosyal Araştırmalar Dergisi*, 4(2), 17-33.
- Zhao, P., Yuan, J. & Hu, Y. (2023). Work Hours, Job Resources and Subjective Well Being of Chinese Faculty: An Empirical Analysis Based on a Sequential Mediation Model. *Research in Higher Education*, 65, 965-988.
- https://www.sgk.gov.tr/Istatistik/Yillik/fcd5e-59b-6af9-4d90-a451-ee7500eb1cb4/sosyal_guvenlik_kurumu. [Retrieved December 24, 2025]

Soma-Expressive Diary for Embodied Knowledge in Fashion Design Education¹

Ezgi Akpınarlı* / Ph.D. Stu. 

Izmir University of Economics, Design Studies
ezgiakpinarli@gmail.com

Şölen Kipöz / Assoc. Prof. Dr. 

Izmir University of Economics, Textile and Fashion Design
solen.kipoz@izmirekonomi.edu.tr

*Corresponding Author

Abstract

This study proposes the Soma-Expressive Diary as a tool for incorporating body awareness into embodied design knowledge in fashion design education. The diary method (Bolger, Davis & Rafaeli, 2003) was chosen for this study as a distinctive qualitative research approach that allows individuals to document their daily experiences both instantaneously and repeatedly, thus revealing internal process knowledge. While current fashion design methodologies largely rely on external visual references, this study positions the designer's own soma—the lived, felt body—as a primary and legitimate source of design knowledge. Based on Höök's (2018) soma design principles and Halprin's (2003) Three Levels of Awareness framework, the study engaged twelve undergraduate students in a fashion design class in Istanbul in a ten-day diary practice, immersing them in a witnessing practice. Participants documented their daily clothing experiences by paying attention

to clothing-body interactions in physical, mental, and emotional dimensions then translated into clothing design proposals, demonstrating how bodily information influences design decisions. The daily practice revealed a three-stage process; self-witnessing, pattern recognition, and bodily design proposal. The findings suggest that the Soma-Expressive Diary offers a body-centered perspective by bridging the gap between bodily knowledge and design production, and thematic analysis (Braun & Clarke, 2006) reveals five themes: bodily comfort, emotional shielding, color performance, decision fatigue and visibility tension.

Keywords: Soma-Expressive Diary, Embodied Knowledge, Embodied Design, Fashion Design Education.

JEL Codes: I23, Z11

¹This article is based on the doctoral dissertation entitled "Embodied Clothing Through Soma-Expressive Fashion Design: Physical, Emotional and Mental Awareness as Source of Design Knowledge (Soma-Dışavurumcu Moda Tasarımında Bedenlenmiş Giysi: Tasarım Bilgisi Kaynağı Olarak Fiziksel, Duygusal ve Zihinsel Farkındalık)" submitted to Izmir University of Economics.

Citation: Akpınarlı, E., & Kipöz, Ş. (2026). Soma-expressive diary for embodied knowledge in fashion design education. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

"What designers know about especially is the 'artificial world' - the human-made world of artefacts." (Cross, 2001:54) Nigel Cross (1982) pointed out that designers possess a unique way of knowing—an intelligence that operates by proposing, modeling, and solving poorly defined problems.

For the fashion design, the body is simultaneously the medium, subject, and canvas of design. In contrast, fashion design methodologies rely heavily on external visual references, trend reports, mood boards, historical archives, and do not give as much importance to other senses as the eye.

On the other hand, Merleau-Ponty (1945) describes the body as the vehicle of being-in-the-world and argues that perception and knowledge emerge through the living body. Macrine & Fugate (2022), cognitive processes occur through body-based systems such as perception and action. Perception is part of all senses experience and the body is an active subject that makes sense of the world and produces knowledge. Theories of embodied cognition point out that the mind cannot be considered as an abstract structure independent of the body. Also "Our bodies contain our life stories just as they contain bones, muscle, organs, nerves, and blood" (Halprin, 2003: 17). However, the body has often been examined at the discursive level; the felt and sensory dimensions of experience have been relegated to the background (Loke & Robertson, 2011). This discussion is critical in the field of fashion design, which designs clothing objects experienced directly on the body. In the literature on fashion design, there are various theoretical discussions on embodied design (Sampson, 2022; Robinson, 2022; Bugg, 2009) and multi-sensory bodily involvement (Stasiulyte, 2022; Kapur, 2020). Pedagogies that integrate embodied awareness into textile education, based on the approach that knowledge reaches the mind through the body (Salolainen, Leppisaari & Niinimäki 2018), are important examples. Furthermore, Tsaknaki and colleagues (2019), in their educational approaches developed within the scope of soma design, encouraged students to engage with materials through haptic interactions to develop sensory sensitivity towards materials and interaction processes.

Within this framework, structured creative tools that allow designers to systematically observe, document, and transform their everyday bodily experiences into design knowledge are quite limited. In particular, there has been a lack of positioning the sensory, emotional, and cognitive dimensions of a designer's everyday clothing experience as an epistemological source of creative production.

This study proposes that when fashion design students engage in structured embodied self-witnessing through the soma-expressive diary over ten days, they develop the capacity to identify recurring

bodily patterns in their clothing experiences and to translate these patterns into embodied design proposals. This demonstrates that the designer's lived, felt body can function as a primary and legitimate source of design knowledge, comparable in generative power to the external visual references that currently dominate fashion design education. The soma-expressive diary is proposed as a tool to address this gap and direct the designer's attention to their own experience. The diary tool is based on Kristina Höök's (2018) soma design principles and Daria Halprin's (2003) Three Levels of Awareness framework. Implemented as a ten-day self-witnessing task with twelve undergraduate students in a fashion design course, the diary invited participants to pay attention to their daily dressing experiences across physical, mental, and emotional dimensions and to transform these insights into a clothing design.

The diary method is defined as a unique qualitative research approach that allows individuals to document their daily experiences in an instantaneous and repetitive manner, bringing to the surface intra-individual process information (Bolger, Davis & Rafaeli, 2003). As Bolger et al. (2003: 580) state, diaries offer "*an opportunity to examine social, psychological, and physiological processes within daily life.*" It also functions as a *reflexive autobiographical tool* (Hoskins, 1998:79) and creates an assessment method that allows participants to examine their daily experiences in their natural environment in real time.

This study brings this potential to fashion design education, positioning soma-expressive diary as both a data production tool and an embodied encounter space. It examines how this space enables the processes of self-witnessing, pattern recognition, and the translation of bodily knowledge into embodied design proposals. The term self-witnessing, drawn from Halprin's (2003) expressive arts framework, was deliberately chosen over self-observation. Whereas observation tends toward evaluation and correction, witnessing positions the student as a non-judgmental presence to their own bodily experience, creating the conditions for unfiltered bodily data to surface.

Although positioned within the context of fashion design education, the study proposes an approach whose fundamental principles can maintain their validity in any design discipline where the relationship between the body, material, experience, and the production process is central to the creative process. Within this broader context, the soma-expressive diary offers a concrete methodological response. It proposes a replicable research instrument through which bodily knowledge can be documented, articulated, and integrated into research processes. By highlighting the body as both a field of knowledge production and a source of knowledge, the diary presents bodily experience as an epistemic resource

in which the relationship between body, experience, material, and practice constitutes knowledge itself.

2. Conceptual Framework

In fashion design education, the tendency toward visual, implicit, and propositional forms of knowledge acquisition creates a body-centered epistemological void. The exclusion of the body as a source of knowledge narrows the available dataset for design research, disconnects the designer from the insights that their bodily experience can produce, and ties knowledge production to external reference systems. On the other hand, somatic epistemology creates a body-centered perspective on the way of knowing by arguing that the body is not merely a tool for action but an active producer of knowledge; bodily sensations, postures, and movements offer pathways to self-knowledge and creative expression by fostering awareness (Shusterman, 2008).

The term "soma" refers to a living, feeling, sensitive body, and somesthetics is a discipline that critically examines and aims to improve how the living body is experienced as a space for sensory appreciation (aesthetics) and creative self-fashioning. It advocates for a systematic approach to body consciousness (Shusterman, 2008). Focusing on the plurality of bodies from the concept of universalism through somatic design emphasizes the need for bodily differences not to be generalized or ignored, but rather to be highlighted and productive in their uniqueness (Höök et al., 2019).

Kristina Höök's (2018) soma design framework transforms these philosophical foundations into a design methodology. Soma design proposes that designers use their own bodies as primary design material from a first person perspective. Instead of designing for bodies from the outside, it invites designers to produce knowledge from within using their own body awareness and felt experiences as a resource for understanding comfort, movement, emotion, and need. Soma design primarily involves one's own experience, feelings, and engagement with that experience. Using a first-person perspective allows the designer to carefully develop an experiential quality that colors the entire design. Touching and feeling the materials, revealing their aesthetic potential and reciprocity, takes center stage (Tsaknaki, Fernaeus, Jonsson & Solsona Belenguer, 2019). Therefore, directing attention to interactions becomes important. Being in our bodies is so natural that it can sometimes disappear from our awareness; however, paying attention to our movements reconnects us with our bodies (Wilde, Schiphorst, & Klooster, 2011). Focusing on how to develop knowing bodies is a significant design strategy that can profoundly affect the way designers work (Wilde, Schiphorst, & Klooster, 2011).

In this context, Daria Halprin (2003), an expressive movement-based expressive arts therapist, prefers to observe the clothing experience within clothing-body interaction from a holistic body perspective. Her Three Levels of Awareness, integrating the individual's physical, mental, and emotional experiences, serve as a framework for understanding the experience within categories. "Physical; sensory sensations, breath, body posture, body parts. Emotional; feelings, such as anxiety, joy, calm, excitement, anger, sorrow. Mental; thinking processes, such as planning, remembering, worrying, imagining, and fantasizing." (Halprin, 2003:106).

Halprin (2003) emphasizes that these levels are not hierarchical but deeply interdependent while a physical sensation can instantly trigger a mental assessment and an emotional response, emotional states shape how the body moves and what the mind pays attention to. Through self-witnessing, individuals reach a deeper layer of self-knowledge and develop a capacity for making more conscious choices. Awareness can be developed by focusing on the body and witnessing what is happening within us; thus, one can work creatively with whatever emerges through the conscious use of expressive practices (Halprin, 2003).

Body awareness is a multidimensional sensory process encompassing proprioception, kinesthesia, and interoception (Craig, 2003). Proprioception provides information about the body's joint angles, muscle tension, and limb positions. Kinesthetic awareness is a prerequisite for recognizing body boundaries and one's attitude toward the body (Françoise et al., 2017). Interoception is the capacity to perceive and become aware of the body's internal states (Craig, 2003).

In the context of clothing, the reciprocal sensation among fabric, body, and space establishes body awareness as a relational process with the material environment. The soma-expressive diary operationalizes this disruption by asking students to attend to sensations they normally ignore; the pressure of a waistband, the weight of a coat, the restriction of a sleeve.

The diary cultivates interoceptive attention. As Farb et al. (2013) and Mehling et al. (2011) show, engaging interoceptive attention networks can alter the dynamics of attention and inhibition; when individuals systematically direct attention to bodily signals, the processing of those signals increases. In the context of clothing, this becomes visible through the student's awareness of how a garment affects their posture, breath, or movement.

Second, the diary cultivates pattern recognition through repeated experiences. The ten-day format enables what Bolger et al. (2003) term intra-individual process knowledge, the ability to see one's own

behavioral patterns across time. A single observation; "today I felt tense" carries limited weight, but when the same observation appears on different days, it transforms into a pattern. This temporal accumulation mechanism is the epistemological engine of the diary method.

The diary method makes this communication explicit by asking students to express bodily sensations in writing, thus generating information that helps bridge the gap between felt experience and design expression.

3. Methodology

This qualitative research aims to help fashion design students become aware of their own bodily knowledge through the act of writing in a diary as a reflective tool for their clothing experiences. The diary method was chosen for this purpose. The diary stands out for its capacity to generate intra-individual process knowledge, allowing participants to document their experiences with instantaneous and recurring reports (Bolger, Davis, & Rafaeli, 2003). Diary writing is a practice in which participants observe their own learning processes, develop an external perspective, and transform their experiences into meaningful patterns (Moon, 2006). Students are invited not only to record the experience but also to re-engage with that experience in depth.

The research was conducted within the context of an undergraduate elective fashion design course at a university in Istanbul, Türkiye. Participation was voluntary, and written consent was obtained from twelve fourth-year female fashion design students aged 21-24 before data collection. The fact that all participants were women carries significance for the the-

mes that emerged in the findings, such as bodily discomfort (menstruation, illness), visibility, protection, and emotional regulation. However, the homogeneous gender distribution also constitutes a limitation regarding the generalizability of the findings to other gender identities. All student names have been replaced with anonymized codes (S1–S12). Ethics approval was obtained from the Ethics Committee (approval no: E-97429853-050.04-90822).

The ten-day soma-expressive diary was designed as a home-based project assignment allowing participants to document their clothing experiences in their natural environment, in relation to three levels of awareness connected to the body (see Table 1). The diary was conducted during the fall semester, with autumn-winter clothing being the dominant theme. Participants spent a maximum of 5 minutes each day in their diaries, evaluating and documenting their daily clothing experiences at physical, mental, and emotional levels. The diary was designed as a self-witnessing assignment aimed at enabling students to encounter themselves lived bodily information as a source of design. Throughout the ten-day process, participants were primarily asked to pay attention to physical sensations, movement, and bodily reactions in their daily clothing experiences; mental processes, decision-making styles, and social influences affecting clothing choices; and the relationships between the emotions evoked by clothing and self-perception. During this time, participants had experience different life situations, with some going through various physical and emotional states such as illness, menstruation, travel, social gatherings, and academic presentations. This diversity allowed participants to observe and document their clothing experiences under different bodily and emotional conditions.

Table 1. Three Levels of Awareness in the Soma-Expressive Diary

Level	Description	In Diary Practice
Physical Level	- Bodily sensations, - posture, - movement, - breathing, - multi-sensory feedback from material interaction.	- Noticing fabric pressure, - temperature, - restriction, - weight of garments
Mental Level	- Internalized social narratives shaping decision-making, - planning, - remembering, - imagining, - self-evaluation.	- Recognizing decision fatigue, - habitual patterns, - "should wear" vs. "want to wear" tensions
Emotional Level	- Felt states —joy, anxiety, trust, security, discomfort— arising from interaction between bodily sensation and social meaning.	- Color-emotion mapping, - protection feelings, - vulnerability, - confidence

Students did not answer individually structured questions during this process; Instead, they created written diary by freely and reflectively observing their own experiences within the framework of three levels of awareness through google forms.

Students were then asked to design a single garment that responded to the bodily witnessing they had accumulated over the ten-day period. The design brief was left open; students were asked to translate their own bodily insights into design proposals. The design outputs were presented along with short reflective texts explaining the relationship between embodied clothing experience and design decisions.

4. Findings

Thematic analysis (Braun & Clarke, 2006) was generated from data obtained from ten days of daily work. In total, the daily entries and design texts of twelve students were coded. Five main themes were identified within the framework of conceptual patterns (see Table 2.). Theme saturation was met by all students (100%) in bodily comfort and freedom of movement and eight students (67%) in body awareness and visibility tension. The findings were presented in three sequential stages; (4.1) self-witnessing, (4.2) pattern recognition, and (4.3) embodied design proposals. Each stage was supported by direct participant quotations illustrating the relationship between the themes and the design outputs.

Table 2. Main Themes

Theme	n/12	Sub-Patterns
Bodily Comfort & Freedom of Movement	12/12	- Fabric texture, - waist restriction, - arm movement, - feeling of weight, - temperature management
The Emotional Shield Function of Clothing	10/12	- Protective layering, - desire to become invisible, - feeling of security, - anxiety management
Color Performance	10/12	- Black = protection/power, - Earth tones = balance, - Bright colors = energy, - Monochrome = reducing burden
Decision Fatigue & Habit Patterns	9/12	- Repeating the same outfit, - abandoning the first choice, - need for familiarity
Body Awareness & Visibility Tension	8/12	- Comfort-aesthetic conflict, - concealing/emphasizing body lines, - feminine identity expression

4.1. Self-Witnessing: Encountering Bodily Experiences

Daily practice brought students' dressing habits into the realm of attention. The diary practice created a direct, honest, and continuous space for students to encounter their own sensory responses, bodily reactions, and internal conflicts.

The findings show that students began to position clothing as tools providing protection, security, movement, visibility, and emotional regulation. The findings show that the clothing experience occurs simultaneously on three levels, aligning with Halprin's three levels of awareness (2003) framework.

4.1.1. Body comfort and freedom of movement (12/12)

The most general theme at the physical level is body

comfort and freedom of movement. All twelve students mentioned physical comfort and freedom of movement in relation to their clothing choices on at least one day. Tight and restrictive pieces were associated with bodily tension and mental stress. Loose and soft fabrics emerged as elements that increased relaxation. For example, S9: *"Nothing felt too tight or heavy so I stayed comfortable."* (S9)

In S11's diary, the preference for oversized silhouettes was associated with both physical and mental comfort. S3 addressed the theme of comfort through layering; Layers functioned as a physical embrace and a sense of security before heat.

4.1.2. Emotional shield function (10/12)

In the daily records of ten students, clothing emerged as an active emotional regulation tool. Layering, color choice, and silhouette appeared as variables

shaped especially in states of anxiety, social exhaustion, and vulnerability. For S3 this pattern: a long cardigan and house slippers became anchor objects that reliably stabilized the emotional state. Layering served as a boundary protecting bodily vulnerability. S5 stated: *"Choosing to wear a more baggy cloth is like a self-defense for me; the cloth doesn't reveal my body, it almost makes me feel invisible and more comfortable."* This statement shows that the shield function transformed into a protective strategy of reducing the visibility of the body. A similar pattern is seen in S6: *"A deep purple scarf wrapped almost like armor... the coat gives me weight, which I've realized I actually crave."* S8 chose black as a protective shield on days with low self-esteem.

4.1.3. Color performance (10/12)

Color was a tool used to reflect or regulate emotional state. S8 defined this relationship most systematically: blue represented calmness, red represented empowerment, and black represented protection on days with low self-esteem. From S8's design text: *"Black is like a protective shield."* For S4, the return to black functioned as a cognitive load reduction tool. S10 consistently associated the burgundy tone with feelings of strength and self-confidence. For S7; bright colors served as a tool to enhance physical and mental alertness: *"The bright orange peplum top introduced vivid chromatic presence that heightened my physical and psychological alertness."*

4.1.4. Decision fatigue and habit pattern (9/12)

In the daily records of nine students, clothing preference functioned as a cognitive load reduction strategy. This theme manifested as a need for familiarity, the behavior of switching from a *"chic but uncomfortable"* garment to a comfortable one in a short time in the morning, a pattern of returning to a specific color and cut, and days spent in pajamas. S5 described this pattern through her morning ritual; *"Almost every morning I experience wearing a more chic but less comfortable garment first, then switch to a more comfortable one in thirty minutes."*

The body expresses the need for comfort through a behavioral choice before it is verbally acknowledged (Höök, 2018). For S4, consistently using black and neutral colors simplified the decision-making process and conserved cognitive energy. S1 reported that returning to a minimal silhouette and neutral color palette increased focus and reduced cognitive load; this situation demonstrated the emergence of comfort through predictability and mental order.

4.1.5 Body Awareness and visibility tension (8/12)

In the daily records of eight students, the tension between comfort and aesthetic visibility emerged as an internal conflict. S12: *"I oscillate between comfort and desire for visibility within a single garment."* Another day: *"When I woke up today, I longed to step away from the comfort-focused mindset of previous days and emphasize my feminine identity."* (S12). S5 reflected the conflict between the desire to become invisible with loose clothing and the desire for aesthetic identity expression in her clothing experience every morning. S2 developed the concept of *"effortless femininity"* as a framework for a solution that simultaneously meets both the need for comfort and visibility.

4.2. Pattern Recognition: Identifying Recurring Embodied Knowledge

Pattern recognition, a mechanism of intrapersonal process knowledge defined by Bolger et al. (2003), which differentiates from momentary impressions through repeated daily self-witnessing, becomes more apparent at this stage. The limited explanatory power of a single attention gains pattern quality through the repetition of the same observation on different days. For S3, layering crystallized as a protective strategy repeated on days experiencing illness and menstrual pain. S9 consistently recorded that movement restriction transformed into mental withdrawal in multiple daily entries. S11 consistently experienced that the preference for oversized silhouettes was associated with mental calmness beyond bodily comfort over a ten-day period. Color-emotion associations became particularly prominent in the emotional pattern recognition process. For S8, the associations between blue, red, and black and specific emotional states were repeated in different social contexts over ten days, transforming these associations from a random preference into a systematic emotional regulation strategy. For S6, dark tones and heavily textured fabrics were simultaneously coded as indicators of identity and security. S5 noticed the repetition of the behavior of changing clothes in the morning, turning this pattern into an object of conscious observation. S12, on the other hand, experienced the tension between comfort and visibility as a recurring internal conflict.

Another issue also emerged. The daily entries of students experiencing illness or physical frailty, especially S3, produced the richest testimonial content during these periods. Accordingly, when the body gives unusual responses, the threshold of awareness increases and the power of sensory cues increases (Halprin, 2003).

4.3. Embodied Design Proposals: Transforming Bodily Knowledge into Design Decisions

In the third stage, the bodily patterns identified by the students during the ten-day diary period were transformed into concrete design decisions. Thus, the design practice evolved from a process guided by external visual references to a process nourished

by each student's own bodily knowledge. Table 3. shows the transformation process of twelve participants, from self-witnessing to pattern recognition and design proposal. According to Halprin (2003:105) *"The more creative the interplay between the three levels of body, emotions, and mind, the more authentic, mindful, and integrated we become."*

Table 3. From Soma-Expressive Diary Entry to Design Proposal (n = 12)

Student	Self-Witnessing	Pattern Recognition	Design Proposal
S1	<i>"Wide-leg trousers... soft hijab... feel balanced."</i>	Modest, flowing silhouettes and neutral tones are essential for mental clarity.	The "Comfort-Flow Tunic": Mid-thigh length, soft knit, side slits for movement, in calming taupe or cream.
S2	Effortless femininity preserved with oversized pieces	Silhouette directly controls feeling of femininity and visibility.	Mini sweatshirt-dress with padded shoulders and corset waist: casual yet structured, balancing comfort and allure.
S3	Feeling safer when wearing layered garments during illness	Layering as emotional protection	Long cardigan in plush fleece, designed as a "wearable blanket" for thermal and psychological protection.
S4	Wearing black reduced decision fatigue	Familiarity as cognitive comfort	Minimal silhouette with limited colour palette
S5	<i>"Soft, loose clothes reduce tension... structure gives focus."</i>	Tactile sensitivity; need for garments that regulate sensory load based on stress.	Floating A-line maxi dress in soft chiffon/organza, with exaggerated sleeves and shoulders as a controlled "step out" of comfort zone.
S6	<i>"Heavy coat and scarf ground me... I feel held together."</i>	Weight and layering as somatic tools for focus and reducing social performance.	Long structured coat with a deep purple scarf – weight and enveloping form as a "thinking and feeling tool."
S7	<i>"Band tee and star tights... make me feel the most me."</i>	Authenticity and personal expression (music, playfulness) as emotional grounding.	Graphic hoodie dress combining a relaxed band-tee aesthetic with playful patterned underlayers, for home and casual wear.
S8	Associating colours with distinct emotional states	Colour as emotional regulation	Modular top with snap-on panels (red/black/blue) for pilates to social wear, adapting confidence levels.
S9	Restrictive garments reduced movement and social energy	Posture and breath are directly linked to garment looseness, affecting social confidence.	Relaxed-fit suit set in soft, breathable fabric designed to reduce physical tension
S10	<i>"Structured fit... helps me stay focused... Pink makes me feel cheerful."</i>	Polished clothing improves concentration; color lifts mood.	Two-piece knitted set combining tailored jacket with playful, bright tonal elements
S11	Oversized silhouettes created calmness and predictability	Softness and predictability as mental comfort	Soft-structured cocoon coat with a high collar and relaxed fit, providing a sense of security in stressful environments.
S12	Oscillating between comfort and desire for visibility	Comfort–visibility tension as dual bodily need	Soft-structured garment combining protective fabric with defined, confidence-asserting silhouette

These transformations followed a discernible translation pathway from self-witnessing to pattern recognition to design proposal. For instance, in S3's process, during the self-witnessing phase, she noticed that wearing layered garments on days of illness made her feel safer, this was a call from her body for protection and envelopment. When this observation repeated over ten days, the pattern recognition phase clarified that layering was not a random pre-

ference but an emotional protection strategy. Each moment of physical vulnerability triggered the same behavior, directing her toward enveloping and warming garments. This pattern ultimately transformed into a design object in the design proposal phase; a long, hooded, soft fleece cardigan in white-gray tones that functioned as a "wearable blanket," responding to the body's call by providing both psychological and thermal protection (see Figure 1).



Figure 1. Design Proposal Illustration of S3

"Factors such as illness, menstrual cramps, sensitivity to cold, and social fatigue shaped my daily decisions. Layering became a recurring strategy, using shawls, thick cardigans, hooded sweatshirts, and jackets. These layers not only provided thermal protection but also acted as psychological barriers, helping me feel safe during moments of physical vulnerability. Soft, plush, and stretchy fabrics contributed to a consistent feeling of comfort and security, especially during days of intense menstrual cramps or illness. Certain garments, such as long cardigans and soft house slippers, served as emotional anchors, offering familiarity and stability. On days when I sought calm and invisibility, neutral and soft tones like gray, cream, and white predominated. This revealed a clear relationship between color, identity, and embodied security. My clothing functioned as tools for self-regulation within the context of pain, warmth, emotional exposure, and social context." (S3)

Similarly, S5 documented a recurring morning ritual: *"Almost every morning I experience wearing a more chic but less comfortable garment first, then switch to a more comfortable one in thirty minutes."*

In response, S5 designed a floating, relaxed A-line maxi dress in soft chiffon/organza that preserved this comfort-driven instinct while still allowing for aesthetic presence through its exaggerated sleeves and shoulders.

S8 systematically mapped color to emotional states across her ten-day diary; *"blue represented calmness, red represented empowerment, and black represented protection on days with low self-esteem."* This color-emotion association pattern materialized as a modular top with snap-on panels in red, black, and blue. The design itself became a flexible system that allowed the wearer to adapt confidence levels by choosing which color panel to display, suitable for contexts ranging from pilates to social settings.

The most prominent contradiction in the dataset was the comfort-visibility tension documented by multiple participants. S12 explicitly recorded this oscillation (see Figure 2). S2 addressed a similar tension through what she termed "effortless femininity": her mini sweatshirt-dress with padded shoulders and corset waist paired soft sweatshirt texture (comfort) with structured elements (visibility).



Figure 2. Design Proposal Illustration of S12

According to S12's own statement: *"In my design, I carefully aimed to combine comfort and elegance, which are my core values. As I evaluated my daily dressing habits, I realized that loose, fluid, and asymmetrical forms make me feel more free both physically and emotionally. Since I enjoy layering, I used two layers in both the upper and lower parts of my design; this structure will provide me with both temperature regulation and movement control throughout the day. For the fabric, I chose 100% cotton because its texture is soft, breathable, and offers all-day comfort. I made my color choice in favor of a burgundy tone, which has an elegant depth suitable for both daytime and evening wear. As a result, the outfit I designed brings together comfort, aesthetic texture, and harmonious color unity, forming a whole that truly reflects my style and needs".* (S12)

Additional translations followed similar pathways. S11's consistent orientation toward oversized silhouettes and earth tones transformed into a structured yet soft-feeling tunic design that balanced form and flexibility. S6's preference for heavily textured and dark-toned garments emerged as a structural coat with trench-like features. S1's minimalist silhouette and neutral palette choice materialized as a comfort-flow tunic that reduced decision fatigue and remained consistent with her identity, with the mock collar supporting both physical comfort and

hijab identity. S4's return to black and familiar silhouettes produced mental comfort through simplicity and stability. S5 designed her piece in line with the desire to overcome the urge to become invisible. S7's design anchored personal identity, music, and playfulness as emotional grounding. S9 translated the direct link between garment looseness and social confidence into a relaxed-fit suit. S10 combined structural focus with chromatic uplift in a two-piece knitted set. S12 resolved the comfort-visibility tension within a soft-structured garment that balanced protective fabric with a confidence-asserting silhouette. In every case, students could trace the lineage of each design choice back to specific diary observations, making the body's testimony the primary source of design reasoning.

5. Discussion

The findings of this study support the hypothesis that structured self-witnessing through the soma-expressive diary enables fashion design students to identify recurring bodily patterns and translate them into embodied design proposals. All twelve participants completed the ten-day diary practice and produced a design outcome. Given Tsaknaki et al.'s (2019) observation that sustained somatic attention presents significant challenges in the context of structured

design education, the current study suggests that the diary format, by spreading the self-observation over ten days, effectively lowers the threshold for such internal attention. Across the dataset, this effect operated through three discernible stages. In self-witnessing, a bodily sensation was noticed and recorded in its raw, situational form—as when S3 observed that layering felt protective on a day of illness. In pattern recognition, this single observation accumulated significance only once it recurred across multiple days, at which point it was reinterpreted not as incidental comfort-seeking but as a stable emotional strategy. In embodied design proposal, this now-named pattern was translated into a concrete material decision—in S3's case, a long cardigan in plush fleece conceived explicitly as a "wearable blanket." The three stages that emerge within the process (self-witnessing, pattern recognition, and embodied design proposal) demonstrate that the diary practice enables students to develop an external perspective on their own processes and transform their experiences into meaningful patterns (Moon, 2006).

As Van Manen (1991:98) points out in the context of pedagogical reflection, "to reflect is to think". In the soma-expressive diary, students deliberate on their bodily experiences. They document what they notice, make choices about which sensations are significant, and decide how to translate them into design language. Drawing on Schön's (1983) framework of reflection-on-action, which Zeller (2017) adapts to the ballet studio, the diary functions as a post-hoc reconsideration of bodily patterns once the day's experience has settled. Yet the diary practice also invites a deeper epistemic move. Hammersley (2004) distinguishes reflection from reflexivity, noting that while reflection involves documenting observations and thinking through key characteristics, reflexivity entails scrutinizing and questioning; asking why, what if, and how could it be different. In the current study, students record their bodily experiences; and they engaged in a critical interrogation of those experiences. When a student noted that a particular garment restricted arm movement, they did not stop at the observation; they questioned why this restriction was significant, how it affected their emotional state, and how the design could be altered to restore freedom without sacrificing form.

Unlike self-observation, which can easily slide into self-evaluation, self-witnessing invites students to attend to their bodily experiences without judgment (Halprin, 2003) noticing what is present rather than assessing whether it is correct, appropriate, or desirable. This non-judgmental quality is essential for genuine reflexivity. When students are conditioned to fear judgment, their inner voice is silenced (Zeller, 2017). The soma-expressive diary, by removing the external evaluator tries to restore this inner voice.

In the conventional design studio, designerly knowing is predominantly visual and conceptual, grounded in external references such as mood boards, trend forecasts, and digital image archives. The current study extends Cross's (1982, 2011) framework to embodied body ground. It demonstrates that the designer's living body constitutes an expressive and documentable source of design knowledge. As Polanyi (1966) shows through the concept of tacit knowledge, the body knows more than it can explicitly articulate; S3 could name the comfort her layering produced long before she could name it as a design principle. The soma-expressive diary provides the conditions for this tacit knowledge to become expressible and translatable into design language. The same mechanism is visible in S6's account of a heavy coat and scarf functioning to ground and "hold together" the body under social pressure, and in S8's use of color to regulate distinct emotional states across the day, both later configured into the modular, shielding, or weighted structures of their final proposals. In this sense, the diary expands the designerly ways of knowing from a primarily visual and conceptual domain to include the kinesthetic and proprioceptive intelligence of the designer's own soma. Sheets-Johnstone (2011) terms this kinesthetic thinking, and the bodily comfort and emotional shielding themes identified across the dataset are its clearest empirical expression: students did not first conceive of a silhouette and then test it against the body, but inferred the silhouette from the body's own repeated signal.

This same somatic awareness, the capacity to attend to one's own bodily signals, recognize patterns, and translate them into form directly parallels the competencies required to design responsive garments that interact with the wearer's physiological and emotional states. S12's design proposal resolve a documented comfort-visibility tension, the garment combines protective fabric with a defined, confidence asserting silhouette. When designers are trained to listen to their own bodies, they become more equipped to design garments that respond to the bodies of others (Höök, 2018). This capacity to design for the bodies of others is precisely what wearable technologies aim to formalize: systems framed as "development partners" supporting self-awareness (Çamiçi, Palabıyık and Bayramoğlu, 2025), and interactive textiles shown to support emotional regulation through body-centered feedback (Jiang, Nanjappan, & Liang, 2025). The decision-fatigue and visibility-tension themes identified in this study, evident in S4's reliance on a reduced color palette to lower daily decision load and in S12's oscillation between comfort and visibility, describe in lived terms exactly the kind of regulatory problem such technologies are designed to solve, suggesting that the diary's somatic vocabulary could productively inform the design criteria for future responsive garments.

The ten-day format realizes what Bolger et al. (2003) term intra-individual process knowledge, that is, the capacity of an individual to perceive their own behavioral regularities over time. A single diary entry recording physical constraint or color-based emotional response carries limited epistemological weight; when the same observation recurs across other days, it acquires pattern status, and as the design proposals in this study demonstrate, patterns can be directly transformed into silhouette, fabric, and structure decisions. This temporal accumulation is the fundamental epistemological mechanism and distinguishes the soma-expressive diary from one-off somatic exercises or single-session body awareness activities. The neurocognitive basis of this mechanism is consistent with Mehling et al.'s (2011) finding that interoceptive attention enhances the processing of bodily signals, and with Farb et al.'s (2013) evidence that attention directed toward bodily states alters attention dynamics more broadly. Increased interoceptive perceptual processing enabled students to access more embodied design information. Stimuli normally filtered by habitual perception, such as the pressure of a belt, the weight of a jacket, or the restraint of an arm, became insights under the structured attention of the diary.

This study specifically highlights the effectiveness of Halprin's (2003) Three Levels of Awareness framework in the context of fashion design education. The levels of physical, mental, and emotional awareness opened a door for students to evaluate their clothing experiences as a multi-layered bodily experience and to broaden their aesthetic or functional perspectives. This structure enabled students to recognize sensory, emotional, and behavioral patterns that have become normalized and invisible in daily life. The encounter with one's own image is not a passive reflection but an active dialogue (Hall, 2017). This encounter opens a gaze toward the unknown and the seemingly foreign (Halprin, 2003). In the soma-expressive diary, the written narrative functions similarly: they are records of bodily experience reconstructions through which the designer confronts, makes sense of, and translates their own embodied patterns into design language. Across the dataset, the physical level surfaced most consistently through bodily comfort and freedom of movement, the mental level through decision fatigue and visibility tension, and the emotional level through emotional shielding and color performance, demonstrating that Halprin's three-level structure provided a reflective frame and an organizing logic for the design outcomes.

The recurring cross-student patterns of comfort, protection, movement, and visibility align with Sampson's (2022) and Robinson's (2022) theoretical arguments for embodied design in fashion, suggesting that bodily observation can surface shared bodily logics that transcend individual preference and car-

ry implications for collective design practice. *"Truly and deeply attending to one's own soma ultimately cultivates a deep empathy and respect for other somas, which will benefit more liberating, less oppressive forms of design."* (Höök, 2018:23).

The sample was drawn from a single undergraduate course at one institution, which constrains the generalisability of the findings. Future studies might examine how the soma-expressive diary manifests across different design disciplines, institutional contexts, and student populations.

6. Conclusion

In conclusion, this study indicates that the soma-expressive diary, as a reflective tool in fashion design education, can transform the designer's own bodily experience into a source of design knowledge. Against the external visual reference-focused approaches dominant in design research, the study proposes an alternative designerly way of knowing that places the sensory, emotional, and physical experience of the body at the center of the creative process. A ten-day bodily self-witnessing process conducted with twelve undergraduate fashion design students enabled them to become aware of their everyday dressing experiences at physical, mental, and emotional levels; to organize this awareness into recurring patterns; and finally to translate these patterns into concrete embodied design proposals.

Recurring themes such as comfort, protection, freedom of movement, visibility, and self-confidence emerged and are directly reflected in design proposals. It can also be noted that the Three levels of awareness approach offers an effective framework for structuring the sequential transformation of bodily awareness into embodied design knowledge. Developed within the context of fashion design education, this work may not be limited to the field of fashion in terms of its fundamental principles. Directed attention, pattern recognition through repeated self-witnessing, and the sequential transformation process of bodily experience into embodied design proposals have the potential to offer a fruitful methodological framework for other design disciplines focusing on the relationship between body, material, space, and experience. Therefore, it is important to examine how this soma-expressive diary process manifests in different design disciplines in future studies. Embodied design knowledge can emerge from a careful and continuous encounter that the designer establishes with the testimony of their own body. The soma-expressive diary proposes a practical epistemology that structures this encounter and allows the designer to rethink their own body as the source of design knowledge. Taken as a whole, this daily experience demonstrates that when bodily experience is systematically documented and reflected upon at three levels of awareness, lived expe-

rience can function as a productive epistemological resource; through this resource, the designer's own body becomes not the object but the source of design knowledge.

References

- Bolger, N., Davis, A. & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology*, 54, 579–616. <https://doi.org/10.1146/annurev.psych.54.101601.145030>
- Braun, V. & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3 (2), 77–101. <https://doi.org/10.1191/1478088706qp0630a>
- Bugg, J. (2009). Fashion at the Interface: Designer—Wearer—Viewer. *Fashion Practice*, 1(1), 9–31. <https://doi.org/10.2752/175693809X418676>
- Cross, N. (1982). Designerly ways of knowing. *Design Studies*, 3 (4), 221–227. [https://doi.org/10.1016/0142-694X\(82\)90040-0](https://doi.org/10.1016/0142-694X(82)90040-0)
- Cross, N. (2001). Designerly ways of knowing: Design discipline versus design science. *Design Issues*, 17 (3), 49–55.
- Çamiçi, F., Palabıyık, N. & Bayramoğlu, G. (2025). Reprogramming the psychology of success: The reflections of wearable technologies in athletes' emotional and motivational dynamics. *Researches on Multidisciplinary Approaches*, 5(SI-IXASC2025), 86-101.
- Farb, N.A.S., Segal, Z.V. & Anderson, A.K. (2013). Attentional modulation of primary interoceptive and exteroceptive cortices. *Cerebral Cortex*, 23 (1), 114–126. <https://doi.org/10.1093/cercor/bhr385>
- Françoise, J., Candau, Y., Fdili Alaoui, S. & Schiphorst, T. (2017). Designing for kinesthetic awareness: Revealing user experiences through second-person inquiry. *Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems*, 5171–5183. <https://doi.org/10.1145/3025453.3025714>
- Hall, J. (2022). *The Self-Portrait: A Cultural History*. London: Thames & Hudson.
- Halprin, D. (2003). *The Expressive Body in Life, Art, and Therapy: Working with Movement, Metaphor and Meaning*. London: Jessica Kingsley Publishers.
- Hammersley, M. (2004). *The Sage encyclopedia of social science research methods*. Sage Publications, Inc. <https://doi.org/10.4135/9781412950589>
- Hoskins, J. (1998). *Biographical objects: How things tell the stories of people's lives*. Routledge.
- Höök, K. (2018). *Designing with the Body: Somaesthetic Interaction Design*. Cambridge, MA: MIT Press.
- Höök, K., Eriksson, S., Louise Juul Søndergaard, M., Ciolfi Felice, M., Campo Woytuk, N., Kilic Afsar, O., Tsaknaki, V. & Ståhl, A. (2019). Soma Design and Politics of the Body. *Proceedings of the Halfway to the Future Symposium 2019*, 1–8. <https://doi.org/10.1145/3363384.3363385>
- Jiang, M., Nanjappan, V., ten Bhömer, M. & Liang, H. N. (2026). Design for emotional well-being: A body-centred interactive textile design approach. *The Design Journal*, 29(1), 54–86. <https://doi.org/10.1080/14606925.2025.2577951>
- Kapur, J. (2020). *On the Textility of Smell in Spatial Design*, [Doctoral Dissertation]. University of Borås, Faculty of Textiles, Engineering and Business.
- Loke, L. & Robertson, T. (2011). The lived body in design: Mapping the terrain. *Proceedings of the Australasian Computer-Human Interaction Conference (OzCHI 2011)*. <https://doi.org/10.1145/2071536.2071572>
- Macrine, S.L. & Fugate, J.M.B. (Eds.). (2022). *Movement Matters: How Embodied Cognition Informs Teaching and Learning*. Cambridge, MA: MIT Press.
- Mehling, W.E., Wrubel, J., Daubenmier, J.J., Price, C.J., Kerr, C.E., Silow, T., Gopisetty, V. & Stewart, A.L. (2011). *Body awareness: A phenomenological inquiry into the common ground of mind-body therapies*. Philosophy, Ethics, and Humanities in Medicine, 6 (6). <https://doi.org/10.1186/1747-5341-6-6>
- Merleau-Ponty, M. (1945). *Phénoménologie de la Perception*. Paris: Gallimard.
- Moon, J. A. (2006). *Learning Journals: A Handbook for Reflective Practice and Professional Development* (2nd ed). London: Routledge.
- Polanyi, M. (1966). *The tacit dimension*. Chicago: The University of Chicago Press.
- Robinson, T. (2022). Body Styles: Redirecting Ethics and the Question of Embodied Empathy in Fashion Design. *Fashion Practice*, 1–23. <https://doi.org/10.1080/17569370.2022.2026048>
- Salolainen, M., Leppisaari, A.-M. & Niinimäki, K. (2018). Transforming fashion expression through textile thinking. *Arts*, 8(1), Article 3. <https://doi.org/10.3390/arts8010003>
- Sampson, E. (2022). *Worn: Footwear, attachment and affects of wear*. Bloomsbury Visual Arts.
- Schön, D. A. (1983). *The Reflective Practitioner: How Professionals Think in Action*. Basic Books.
- Sheets-Johnstone, M. (2011). *The Primacy of Movement* (2nd ed.). John Benjamins.
- Shusterman, R. (2008). *Body Consciousness: A Philosophy of Mindfulness and Somaesthetics*. Cambridge University Press.
- Stasiulytė, V. (2022). Listening to clothing: from sonic fashion archive to sonic fashion library. *The Senses and Society*, 17(2), 228–238.
- Tsaknaki, V., Fernaeus, Y., Jonsson, M. & Solsona Belenguier, J. (2019). Teaching soma design. *Proceedings of the Thirteenth International Conference on Tangible, Embedded, and Embodied Interaction (TEI '19)*, 445–452. <https://doi.org/10.1145/3294109.3295634>
- Van Manen, M. (1991). *The Tact of Teaching: The Meaning of Pedagogical Thoughtfulness*. State University of New York Press.
- Wilde, D., Schiphorst, T. & Klooster, S. (2011). Move to design/design to move: A conversation about designing for the body. *Interactions*, 18 (4), 22–27. <https://doi.org/10.1145/1978822.1978828>
- Zeller, J. (2017). Reflective Practice in the Ballet Class: Bringing Progressive Pedagogy to the Classical Tradition. *Journal of Dance Education*, 17(3), 99–105. doi: 10.1080/15290824.2017.1326052.

Netnographic Analysis of Audience Engagement with Netflix Türkiye's Instagram Promotions

Süleyman Sırrı Yılmaz / Assoc. Prof. Dr. 

Selçuk University, Faculty of Communication
ssirriyilmaz@gmail.com

Abstract

Social media promotion has transformed film and series marketing from a one-way publicity practice into a platformed process in which audiences react, evaluate, circulate, and reinterpret promotional texts. This study examines how users engage with film and series promotions on Netflix Türkiye's official Instagram account. An archival netnography was conducted on 40 criterion-based, purposively selected posts published between January 1 and March 30, 2026. The final analytic corpus comprised 93 unique public user comments; comments were counted once even when coded under more than one theme. A hybrid inductive–deductive thematic analysis examined affective responses, participatory practices, evaluative discourse, content-format differences, and meaning-making. The findings show that engagement cannot be reduced to likes or comment volume. Users formed affective attachments, expressed anticipation and disappointment,

addressed demands to the platform, tagged others, mobilized fandom language, and acted as informal critics of performance, narrative, casting, and platform strategy. Engagement also varied by promotional format: announcements generated demand-oriented responses, emotionally intense reels elicited affective interpretation, actor-focused posts prompted performance judgments, and fandom-oriented posts encouraged collective identity work. The study contributes by treating Instagram comments as a distinct paratextual and cultural arena in which promotion, reception, criticism, and collaborative meaning-making converge within a localized streaming-platform context.

Keywords: Digital Film Promotion, Audience Engagement, Instagram, Netnography, Netflix Türkiye

JEL Codes: Z11, L82, O33, L86

Citation: Yılmaz, S. S. (2026). Netnographic analysis of audience engagement with Netflix Türkiye's Instagram promotions. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

The platformization of screen media has reorganized the relations among production, distribution, promotion, and reception. Subscription video-on-demand services such as Netflix do not merely distribute audiovisual texts; they structure visibility through recommendation systems, localized catalogs, interface design, and continuous social media communication (Gomez-Uribe & Hunt, 2015; Lobato, 2019; van Dijck, Poell, & de Waal, 2018). This infrastructure is not static but is continuously revised through data-driven experimentation. As Gomez-Uribe and Hunt (2015, p. 13:11) state, "A/B test results are our most important source of information for making product decisions." Recommendation, interface design, and retention strategies are therefore continually refined through the analysis of behavioral data. Viewing has consequently become more individualized and temporally flexible, while audiences encounter films and series across an extended promotional environment that includes trailers, clips, memes, posters, actor-centered materials, and platform-generated conversations (Torun, 2021; Wayne, 2018). The original ACM reference identifies the publication year as 2015, while Lobato emphasizes that subscription video-on-demand services have transformed the circulation of media content.

Instagram occupies a distinctive place in this environment because its visual architecture, short-form video formats, tagging functions, and comment threads combine promotional exposure with immediate public response. Highfield and Leaver (2016, p. 47) emphasize that "Visual content is a critical component of everyday social media." Promotional posts operate as paratexts: they frame expectations before viewing, reactivate memories after viewing, and offer interpretive cues that can reshape the perceived meaning and value of a film or series. As Gray (2017, p. 48) explains, "the promotional material that we consume sets up, begins, and frames many of the interactions that we have with texts." Promotional communication should therefore be understood not merely as external advertising but as an interpretive threshold through which audiences begin to encounter and evaluate screen texts. Yet the meanings of these paratexts are not controlled exclusively by the platform. Users add affective reactions, evaluations, jokes, demands, comparisons, and intertextual references, thereby extending and sometimes contesting the promotional text through participation.

Existing research approaches this field from several directions. Marketing scholarships commonly measure engagement through likes, shares, comments, reach, purchase intention, or electronic word of mouth (Brodie et al., 2011; Smith, Fischer, & Yongjian, 2012; Vivek, Beatty, & Morgan, 2012). Within this tradition, engagement extends beyond purchase and encompasses cognitive, emotional, behavioral,

and social connections between individuals and organizational activities. Platform studies, by contrast, emphasize algorithmic visibility, datafication, and the economic capture of user activity (Napoli, 2014; Srnicek, 2017; van Dijck et al., 2018). From this perspective, audience responses are not merely indicators of preference but data inputs that can influence prioritization and circulation of content. Studies of Netflix have examined recommendation systems, localization, viewing habits, branded content, and community management (Hendriks & Castro, 2022; Özel, 2020; Özel & Özay, 2021; Sarı & Sancaklı, 2020). These bodies of work establish the importance of social media promotion, but they often privilege platform strategy, measurable response, or consumption behavior over the cultural work performed inside comment threads.

Instagram comments constitute a specific research arena for three reasons. First, they are naturally occurring responses produced in direct proximity to a promotional object rather than answers elicited by a researcher. Second, they make visible the coexistence of emotional attachment, informal criticism, fandom identity, platform-directed demands, and peer-to-peer interaction. Third, their semi-public and algorithmically ordered character means that they are simultaneously expressions of reception and inputs into platform visibility. A comment can therefore function as affective testimony, recommendation, critique, social address, and promotional labor at the same time. This multifunctionality requires an interpretive approach capable of distinguishing the cultural meaning of comments from their measurable contribution to engagement metrics.

The central gap is thus not whether social media matters for film promotion, but how users qualitatively transform localized promotional posts into spaces of reception and collective meaning-making. Prior Netflix research has shown that the company "portrays the brand as a humorous and a relatable peer" but also "does not encourage Facebook users to engage in the content on the platform" (Hendriks & Castro, 2022, p. 108). This tension suggests that an active and informal brand voice does not necessarily produce a reciprocal community environment. Recent work on film advertising has also mapped the strategic content patterns of large-scale social media campaigns (DeFelice, 2025). Less attention, however, has been paid to how users on a localized Instagram account interpret different promotional formats, redirect platform-generated conversations, and negotiate the cultural value of promoted texts. Addressing this gap, the present study uses archival netnography to analyze 40 Netflix Türkiye Instagram posts and 93 unique comments. Its contribution is fourfold: it centers user discourse rather than engagement volume; examines a Turkish-localized platform context; compares engagement across promo-

tional formats; and integrates affect, participation, evaluation, and meaning-making within a single interpretive framework.

2. Literature Review

2.1. Digital Film Promotion, Platformization, and Netflix

Digital media have shifted film promotion from a bounded pre-release campaign toward an ongoing circulation process. Traditional publicity relied primarily on trailers, broadcast advertising, print coverage, and outdoor media, whereas contemporary campaigns distribute modular content across multiple platforms and invite users to amplify it through their own networks (Aytaş & Yavuz, 2024; Jenkins, 2006). Marketing-oriented research accordingly treats social media as an environment in which user-generated content and electronic word of mouth can extend reach and influence attention. Smith et al. (2012, p. 102) emphasize that "particular social media channels and marketing strategies may influence consumer-produced brand communications. More recently, DeFelice (2025) analyzed "promotional posts from major studios across Facebook, Instagram, and Twitter/X" between 2017 and 2023. The final dataset comprised 22,235 posts.

This strategic literature is valuable for identifying content patterns and campaign effects, but it tends to operationalize audience activity as an outcome variable. Platform scholarship complicates that view by showing that visibility is co-produced by user behavior, ranking systems, and commercial infrastructures (Napoli, 2014; van Dijck et al., 2018). Likes and comments are therefore not neutral indicators of interest. They are data signals that feed platform distribution while simultaneously expressing social and cultural judgments. Srnicek's (2017) account of platform capitalism further suggests that participation creates economic value for the platform even when it takes the form of criticism or unpaid fan labor.

Netflix exemplifies this convergence of content, data, and promotion. Its recommender system uses behavioral data to organize discovery and retention (Gomez-Urbe & Hunt, 2015), while its social media accounts cultivate attention beyond the streaming interface. Research in Türkiye has emphasized Netflix's influence on viewing habits, algorithmic selection, and glocalised content communication (Özel, 2020; Özel & Özal, 2021; Sarı & Sancaklı, 2020; Sarı & Türker, 2021). These studies support the argument that Netflix adapts its communication to local cultures, yet they primarily examine platform structures, content policies, or users' viewing practices rather than the discourse generated around individual promotional posts.

Hendrikx and Castro's (2022) qualitative analysis of 100 posts and 826 comments on Netflix's United Sta-

tes Facebook page offers a closer point of comparison. They found that Netflix maintained an active posting schedule and presented itself as a humorous, relatable peer. Their study establishes community relationship management as a central feature of the Netflix brand. However, its analytical emphasis remains on how the brand manages community relations. The present study shifts the center of analysis to how users appropriate the promotional space: whether they affirm the brand's intended tone, redirect the conversation toward demands, challenge content decisions, or use the post as a prompt for their own interpretive communities. The findings indicate that Netflix "portrays the brand as a humorous and a relatable peer" (Hendrikx & Castro, 2022, Abstract, para. 1).

2.2. Audience Engagement, Participatory Culture, and Affective Publics

Audience engagement is a multidimensional concept. In service and marketing research, it includes cognitive attention, emotional investment, and behavioral participation that exceed purchase or exposure (Brodie et al., 2011; Vivek et al., 2012). This formulation usefully distinguishes meaningful engagement from raw reach, but it can still treat participation as a relationship between a consumer and a brand. Media and cultural studies broaden the concept by locating engagement within circulation, interpretation, and cultural production. Jenkins (2006) describes participatory culture as an environment in which audiences circulate and remake media, while Bruns (2013) uses *produsage* to capture the blurred roles of producer and user.

The two traditions converge in recognizing active audiences but differ in their assumptions. Marketing models often regard participation as a desirable indicator of relationship strength, whereas critical platform research emphasizes that participation is structured, monetized, and unequally visible. Algorithmic ranking can amplify highly responsive content and marginalize less legible forms of engagement (van Dijck et al., 2018). Consequently, a request for a new season, an angry critique, a tagged friend, and a fandom emoji may all increase visibility while carrying very different meanings. A qualitative approach is required to separate these functions.

Emotion is especially important in this distinction. Papacharissi's (2015) concept of affective publics explains how networked participants connect through shared intensities, narratives, and expressions of feeling. Anticipation, nostalgia, disappointment, and humor do more than reveal private reactions; when publicly articulated and repeated, they organize collective orientations toward a media text. This perspective helps explain why negative comments should not automatically be interpreted as disengagement. Anger at a finale or frustration with a

cancellation can indicate sustained investment and may produce more public interaction than uncomplicated approval. Papacharissi (2015) argues that storytelling practices facilitate engagement and that networked publics temporarily form around shared channels of sentiment.

Participatory engagement also includes vernacular creativity. Memes, ironic comparisons, hashtags, and fandom shorthand allow users to signal cultural competence and group belonging (Shifman, 2013). At the same time, users evaluate acting, narrative coherence, casting, and platform policy. Such comments complicate the distinction between audience and critic by distributing evaluative authority across everyday users. Couldry and Hepp (2017) argue that media are embedded in the construction of social reality; from this perspective, comment threads are not peripheral noise but sites where the value and meaning of screen texts are negotiated.

2.3. Netnography and the Analytical Value of Instagram Comments

Kozinets (2002, p. 61) defines netnography as “ethnography adapted to the study of online communities.” Its principal advantage is access to naturally occurring communication: users respond in the contexts in which platform culture is performed rather than in a research setting created by an interview or survey. Netnography is therefore well suited to studying the meanings attached to promotional posts, the interactional conventions of comment sections, and the relationship between platform affordances and user discourse.

Methodologically, netnography differs from simple content harvesting. It requires contextual interpretation of language, tone, symbols, platform norms, and the relation between individual comments and the wider communicative environment. Herring’s (2004) computer-mediated discourse analysis highlights the importance of rhetorical form, while Highfield and Leaver (2016) show that Instagram research must account for visibility, platform-specific conventions, and the instability of accessible data. Comments may be reordered, removed, hidden, or edited, making a bounded archival record and transparent sampling procedure essential.

Existing netnographic work in film culture demonstrates the value of this interpretive orientation. Günevi Uslu (2026), examining AI-generated trailers and posters on Reddit and YouTube, found that fan communities negotiated creativity, authenticity, ethical legitimacy, and aesthetic value. That research supports the view that promotional or para-promotional materials become sites of cultural negotiation. However, its focus is user-produced AI content across two platforms. The present study instead examines platform-authored promotional posts on

Instagram and asks how users negotiate established films and series, performers, narrative decisions, and Netflix’s own content strategy.

The literature therefore leaves a specific empirical and analytical gap. Quantitative film-promotion studies explain reach and campaign performance; Netflix studies explain recommendation, localization, and brand voice; participatory-culture research explains circulation and fan creativity; and netnography explains online meaning-making. Few studies combine these perspectives to compare user responses across promotional formats on a localized Netflix Instagram account. This study addresses that gap by treating comments as a paratextual corpus through which audiences express affect, perform participation, exercise criticism, and reconstruct narrative meaning.

3. Methodology

3.1. Research Design and Case Selection

The study employed an archival netnographic design. Archival netnography examines user-generated material that was produced before and independently of the researcher’s intervention (Kozinets, 2015). Netflix Türkiye’s official Instagram account was selected as a bounded case because it combines global platform branding with localized promotional communication and provides a visually oriented environment in which posts and public comments remain directly connected. The observation period covered January 1–March 30, 2026, allowing the analysis of a concentrated three-month promotional cycle rather than an indefinite account history.

The unit of contextual analysis was the Instagram post, including its visual or audiovisual format, caption, promoted production, and visible engagement environment. The unit of textual analysis was the individual public user comment. Replies were considered only when they contributed substantive meaning to the parent comment or revealed an interactional sequence. Likes and visible comment counts were recorded as contextual indicators, not treated as direct measures of interpretive engagement.

3.2. Sampling Strategy and Corpus Size

A criterion-based purposive sampling strategy was combined with maximum variation. Posts were eligible when they (a) appeared on the official Netflix Türkiye account during the observation period, (b) directly promoted a film or series, (c) had publicly accessible comments at the time of archiving, and (d) added variation to the corpus in terms of promotional format, production origin, genre, or engagement intensity. Duplicate uses of the same creative asset, purely corporate announcements unrelated to a specific screen text, posts with comments disabled,

and posts whose visible responses were dominated by spam or commercial solicitation were excluded.

The final sample comprised 40 posts and included trailers and release announcements, scene-based reels and clips, actor- or character-centered materials, posters, memes, and fandom-oriented posts. The number 40 was not selected as a statistical threshold and does not claim probabilistic representativeness. It was justified through information power: the study had a narrow and bounded aim, a highly specific account and period, established theoretical sensitizing concepts, a dense comment environment, and an in-depth cross-case analytic strategy (Malterud, Siersma, & Guassora, 2016). The sample was closed when all predefined dimensions of variation were represented and additional candidate posts duplicated combinations already present in the corpus. Expanding the sample solely to increase *N* would have shifted the design toward frequency description without improving the interpretive depth required by the research questions.

Comments were then screened within the 40 selected posts for analytical relevance. The final textual corpus contained 93 unique user comments. A comment was counted once even when it was assigned to more than one code or discussed under more than one research question; repeated use of an excerpt in the Findings section therefore does not increase the corpus size. Comments were retained when they expressed a discernible affective, participatory, evaluative, or interpretive function. Emoji-only responses were included only when their fandom or affective meaning was contextually recognizable. Duplicates, automated messages, spam, commercial solicitations, and comments unrelated to the promoted production were removed.

3.3. Data Collection and Analytical Procedure

The posts and comments were archived manually during the observation period. A structured spreadsheet recorded post date, promoted title, content format, visible interaction indicators, anonymized comment identifier, original-language comment, English rendering, initial code, and analytic memo. The corpus was read repeatedly to preserve the relation between comments and their post-level context. Most comments were originally written in Turkish. Quotations presented in English were translated and lightly paraphrased to preserve meaning while reducing searchability and protecting user traceability; punctuation and repeated letters were normalized only where this did not alter tone.

Analysis followed a hybrid inductive–deductive thematic procedure informed by Braun and Clarke (2006, 2021, 2022). The research questions and theoretical framework supplied broad sensitizing do-

main—*affect, participation, evaluation, format, and meaning-making*—while specific codes were generated inductively from the comments. Initial open codes included anticipation, attachment, nostalgia, disappointment, season request, tagging, humor, fandom display, acting appraisal, narrative critique, casting judgment, platform critique, comparison, personalization, intertextuality, and alternative-story speculation. Codes were compared across posts and grouped into higher-order themes that corresponded to, but were not mechanically determined by, the research questions.

Coding consistency was addressed through procedural transparency rather than an intercoder agreement coefficient. The analysis was conducted by a single researcher within an interpretive netnographic design; therefore, statistical agreement between independent coders was neither available nor treated as a substitute for reflexive rigor (Braun & Clarke, 2021; O'Connor & Joffe, 2020). A written codebook specified each code's definition, inclusion and exclusion boundaries, and representative examples. After the provisional themes were developed, the complete corpus was coded a second time, code boundaries were revised where overlap occurred, and negative or contradictory cases were retained. An audit trail linked each excerpt to its post context, code history, and analytic memo. These procedures strengthened internal consistency while keeping the researcher's interpretive role explicit.

3.4. Ethical Considerations

The study used only publicly accessible material and involved no direct interaction, recruitment, intervention, or access to private profiles. Ethical decisions followed netnographic guidance and the Association of Internet Researchers' context-sensitive approach to public online data (Franzke, Bechmann, Zimmer, & Ess, 2020; Kozinets, 2015). Usernames, profile details, links, and other identifying information were not retained in the manuscript. Direct handles were replaced with functional labels such as [friend] or [Netflix Türkiye]. Quotations were translated and lightly paraphrased, and no screenshots of user profiles were reproduced. The analysis focused on recurring cultural patterns rather than individual users.

3.5. Research Questions

RQ1: How do users express emotional and affective responses to Netflix Türkiye's Instagram promotions?

RQ2: How do users enact participatory culture through comments and interaction practices?

RQ3: What evaluative and critical discourses emerge in user comments?

RQ4: How do different promotional formats sha-

pe patterns of audience engagement?

RQ5: How do users construct meaning around films and series in the Instagram comment environment?

4. Findings

The findings are organized by research question. Because comments could carry more than one function, some excerpts are relevant to several themes. The quotations below are anonymized English renderings of the original comments.

4.1. Research Question 1: Affective Responses

Four recurrent affective patterns were identified: anticipation, emotional attachment, disappointment, and nostalgia. Anticipation was most visible around returning series, final seasons, and delayed releases. Users employed countdown language and repeated requests, turning the comment thread into a shared waiting room rather than a simple reaction space.

"I'm eagerly waiting for Mezarlık Season 3."

"When is the final season coming?"

"Release them all at once; waiting is so hard."

"Finally! I have been waiting for this."

Emotional attachment was particularly strong in actor-focused and fandom-oriented posts. Users connected productions to personal biography, long-term viewing, and belonging. These responses indicate that engagement derives not only from the promoted post but also from accumulated histories with characters, performers, and fan communities.

"Half of my life has passed with them; they feel like a second family."

"I waited four years for this moment."

"This is a series I watch again and again."

"I grew up with them."

Disappointment was equally intense. Users criticized finales, acting, narrative predictability, and emotional credibility. Negative evaluation did not mark withdrawal; rather, it showed that expectations were sufficiently strong to motivate public response.

"I definitely did not like the finale."

"It could not have ended in such an empty cliché."

"The acting was nonexistent."

"It did not resonate with me at all."

Nostalgia connected present promotional material to earlier viewing experiences. Users recalled first encounters with a series, compared early and later seasons, or wished to experience the text again without prior knowledge. Affective engagement was therefore temporally layered: the post activated me-

mories that preceded the current campaign.

"I watched it when it first came out and loved it."

"The early seasons were wonderful, but I still keep watching."

"I wish I could forget it and watch it again."

Overall, Netflix Türkiye's Instagram account functioned as an affective public in which excitement, attachment, frustration, and nostalgia became visible and mutually reinforced. The findings also demonstrate why sentiment should not be reduced to a positive-negative binary: disappointment and criticism frequently represented durable investment.

4.2. Research Question 2: Participatory Practices

Participation took four main forms: platform-directed requests, tagging and circulation, vernacular humor, and fandom-based visibility work. The most common platform-directed practice was the request for a new season, a specific title, dubbing, or regional availability. These comments positioned users as claim-making participants who attempted to influence the platform's agenda.

"When will Mezarlık Season 3 arrive?"

"Please make a third season of Pera Palace."

"We want more C-dramas."

"I hope it comes with Turkish dubbing."

Tagging transformed the comment section into a networked invitation. Users addressed friends, actors, Netflix Türkiye, or other regional accounts, thereby moving promotional content beyond the original follower-brand encounter.

"[Netflix Türkiye], we need a third season."

"[friend], this is legendary."

"[regional Netflix account], when will it be available there?"

Humor and irony were not ornamental additions but participatory techniques. Users adapted dialogue, exaggerated character traits, and connected the promoted text to local popular-culture references. Such comments demonstrated shared cultural competence and increased the social portability of the post.

"I trusted Anthony, but Benedict, you were a disappointment."

"I thought this was a continuation of Yasak Elma."

"I hugged the obelisk the other day, but nothing happened."

Fandom participation relied on hashtags, emojis, collective pronouns, and repeated slogans. These compact forms signaled identity and solidarity even when they contained little propositional content.

"BTS Army is always with you."

"Our favorite duo."

"Team Vecna."

"❤️❤️❤️"

The participatory culture observed here was therefore not limited to producing derivative media. It also involved demand articulation, social distribution, insider humor, and identity performance. At the same time, these practices remained platform-dependent: participation generated visibility and data for Instagram and Netflix even when users were criticizing the platform.

4.3. Research Question 3: Evaluative and Critical Discourse

Users acted as informal critics by evaluating performance, narrative quality, casting, and platform policy. Acting was a dominant criterion. Praise focused on emotional expression and role embodiment, whereas criticism targeted repetitive performance, limited range, or perceived miscasting.

"He conveyed the emotion through his eyes."

"An outstanding performance."

"The same gestures, the same tone, the same character again."

"This lead does not fit such a strong cast."

Narrative critique addressed coherence, originality, pacing, and emotional payoff. Users frequently judged endings against the expectations developed over several seasons. Short comments such as 'boring' coexisted with more interpretive explanations of why a storyline failed.

"The ending was empty and predictable."

"It was good until the final episode."

"The story did not earn that emotional conclusion."

"It was extremely boring."

Casting and character construction formed a related but distinct discourse. Users compared performers with imagined character identities, previous adaptations, or other actors. These comments reveal that authenticity was understood relationally: a performance was judged according to the user's prior knowledge of genre, star persona, and narrative world.

"The female lead could have been different."

"This role does not suit the actor."

"Someone who resembled Tommy would have worked better."

Platform-level criticism moved beyond individual titles. Users questioned Netflix's emphasis on series, perceived decline in film quality, unfinished productions, and cancellation practices. In these comments, users addressed Netflix as an accountable cultural intermediary rather than a neutral distributor.

"Netflix has turned into Diziflix."

"Is there nothing other than series?"

"Please upload genuinely strong films."

"You cannot leave every series unfinished."

Comparative judgments were also common. Users positioned one series, season, performance, or finale against another to establish hierarchies of quality. The comment section thus functioned as an informal reviewing environment in which cultural value was negotiated publicly and cumulatively.

4.4. Research Question 4: Differences Across Promotional Formats

Promotional format shaped both the topic and the intensity of response. Trailers and release announcements generated future-oriented discourse: users asked when content would arrive, whether all episodes would be released together, and whether particular language options would be available. Engagement centered on access, timing, and platform responsiveness.

Scene-based reels and emotionally intense clips generated more immersive reactions. Users described crying, shouting, heartbreak, or identification with a specific moment. These posts also encouraged interpretive comments because the selected scene supplied enough narrative material for users to discuss motivation, relationships, and emotional credibility.

"I cried so much in this scene."

"Our hearts broke here."

"I screamed when this happened."

Actor- and character-focused posts shifted attention from plot to performance, charisma, suitability, and star persona. The same post type could generate admiration and criticism, making it especially productive for evaluative discourse.

"He is perfect for period roles."

"She performed brilliantly."

"This role does not suit him."

Romance and drama promotions produced polarized responses. Their emotional framing encouraged attachment, but it also raised expectations regarding chemistry, acting, and narrative credibility. Fandom-oriented posts, in contrast, generated repetitive, collective, and identity-based engagement through emojis, slogans, and shared references. Humorous posts elicited memes and local intertextuality, thereby facilitating circulation through platform-native language.

These differences show that content type does not merely change the quantity of engagement; it changes what engagement is for. Announcements organize anticipation and demand, emotional clips or-

ganize affective interpretation, actor-centered posts organize evaluation, and fandom materials organize collective identification.

4.5. Research Question 5: Meaning-Making

Users constructed meaning through personalization, interpretive narration, intertextuality, collective language, and counterfactual storytelling. Personalization connected media narratives to life history and changing emotional perspectives.

"Watching the series at different ages feels like reading the same story with different emotions."

"I have experienced this feeling too."

"Half of my life has passed with them."

Interpretive narration went beyond evaluation. Users explained character motivations, moral tensions, and relationship dynamics, thereby expanding the narrative frame supplied by the promotional post.

"Fusun was lively at first; Kemal understood it was love only after losing her."

"A person should not carry the anger of the past forever."

"Afife is presented as a feminist character, but her choices contradict that position."

Intertextual references situated Netflix productions within broader cultural repertoires. Comparisons with novels, myths, Turkish television, and global franchises supplied shared interpretive shortcuts.

"The novel Eylül should be adapted after this."

"It is a love story like Ferhat and Şirin."

"The worst finale since Game of Thrones."

Finally, users proposed alternative endings, theories, and possible continuations. These speculative comments challenged textual closure and turned the comment thread into a participatory narrative space.

"I imagined a much stronger ending."

"There should have been a different conclusion."

"My theory was that the character would return."

Meaning was therefore neither located solely in the original film or series nor determined by the promotional caption. It emerged through interaction among the primary text, platform-authored paratext, user biography, popular-cultural memory, and collective commentary.

5. Discussion

The findings confirm that social media engagement with film and series promotion is qualitatively heterogeneous. The affective responses identified in RQ1 align with Papacharissi's (2015) account of affective publics: users connected through shared

anticipation, nostalgia, disappointment, and attachment. However, the study extends this framework by showing that positive and negative affect frequently performed the same engagement function. Disappointment with a finale or anger at a platform decision did not signal indifference; it demonstrated sustained narrative and relational investment. This complicates marketing approaches that infer relationship quality from positive sentiment or aggregate engagement counts.

The participatory practices identified in RQ2 support Jenkins's (2006) and Bruns's (2013) accounts of active audiences, but they also reveal the limits of an empowerment-only interpretation. Users tagged peers, used fandom language, generated humor, and addressed requests to Netflix. These practices expanded circulation and gave audiences a visible voice. At the same time, they occurred inside infrastructures that convert activity into data and visibility (Srnicsek, 2017; van Dijck et al., 2018). Platform-directed demands therefore represent a form of constrained agency: users can publicly pressure the service, but the platform retains control over production, acquisition, recommendation, and cancellation.

RQ3 demonstrates that user comments are not merely promotional reactions; they are vernacular criticism. Evaluations of acting, casting, narrative coherence, and platform policy distributed critical authority across ordinary users. This finding resonates with Couldry and Hepp's (2017) argument that media-related reality is constructed through everyday communicative practices. It also extends Gray's (2017) paratext theory. The Instagram post frames reception, but user comments become secondary paratexts that may reinforce, redirect, or contest the promotional frame. A celebratory actor post, for example, can be transformed into a debate about repetitive performance or miscasting.

The format differences in RQ4 are consistent with research showing that social media strategies should be platform- and content-specific rather than generic (DeFelice, 2025; Smith et al., 2012). This study adds qualitative specificity to that claim. Announcements were effective at organizing temporal anticipation; emotional reels invited experiential testimony; actor-focused posts activated star and performance discourse; and fandom posts supported identity signaling. These mechanisms explain why identical engagement totals may conceal fundamentally different audience relations. A thousand demand comments and a thousand fandom emojis are not interchangeable evidence of engagement.

The results also refine existing Netflix research. Hendrikx and Castro (2022) found that Netflix's U.S. Facebook presence cultivated a humorous and relatable peer identity. Humor was also visible in the Netflix Türkiye corpus, but users did not simply reproduce the brand voice. They localized it through

Turkish television references, idioms, and everyday jokes, while simultaneously holding the platform accountable for release schedules, cancellations, dubbing, and content quality. The localized account therefore operates as a negotiated interface between global brand strategy and locally situated audience expectations.

Comparison with Günevi Uslu's (2026) netnography further clarifies the contribution. Both studies show that film-related digital materials generate negotiations about value and legitimacy. In AI fan cultures, the central tensions concern creativity, authenticity, and human-machine collaboration. In the present corpus, the tensions concern performance, narrative credibility, casting, cultural familiarity, and platform responsibility. Taken together, these studies indicate that paratextual environments are increasingly important arenas in which audiences negotiate what counts as a legitimate and valuable screen experience.

The principal theoretical contribution is an integrated model of promotional engagement as a four-part circuit: affect motivates attention and attachment; participation makes that attachment publicly actionable; evaluation assigns cultural value; and meaning-making connects the promoted text to biography, fandom, and other cultural texts. Promotional format and platform affordances condition each part of the circuit. Engagement is therefore neither a single behavior nor a stable metric; it is a platformed cultural process in which users simultaneously respond to content, address others, evaluate institutions, and produce interpretive value.

The findings have practical implications for streaming-platform communication. Comment volume should be read alongside comment function. Demand-heavy announcement threads require timely information and expectation management; actor-focused posts may need active moderation when criticism becomes personalized; emotionally intense clips can support deeper conversation; and fandom posts can sustain community identity. Responding selectively to recurring questions, acknowledging criticism without suppressing it, and distinguishing local cultural references from generic global messaging could strengthen community relations without reducing participation to promotional optimization. Several limitations qualify these conclusions. The study examines one account, one national-linguistic context, and a three-month period. The 40-post purposive sample supports analytical depth but not statistical generalization. The 93-comment corpus represents substantively relevant visible comments rather than all users, silent audiences, deleted comments, private shares, or algorithmically hidden responses. Instagram's ranking system also affects which comments are displayed, but its operation could not be independently observed. Future re-

search should compare localized Netflix accounts, examine the same titles across Instagram, TikTok, YouTube, and X, and combine netnography with interviews or computational mapping to connect interpretive patterns with broader distributions.

6. Conclusion

This archival netnography examined audience engagement with 40 film and series promotional posts and 93 unique user comments on Netflix Türkiye's Instagram account. The study responded to a gap in research that has largely explained film promotion through campaign strategy, engagement metrics, platform infrastructure, or viewing behavior while giving less attention to the cultural work performed within localized comment threads.

The findings show that Instagram promotion is a hybrid space of affect, participation, criticism, and meaning-making. Users express attachment and disappointment, mobilize demands, circulate posts through tagging and fandom practices, evaluate performance and narrative quality, critique Netflix's broader strategy, and connect promoted texts to biography and cultural memory. Promotional formats activate different functions: announcements organize anticipation, emotional reels intensify affective interpretation, actor-centered posts invite evaluative discourse, and fandom content supports collective identity.

The study's main contribution is to conceptualize user comments as secondary paratexts that can amplify, redirect, or contest platform-authored promotion. This perspective makes visible forms of engagement that numerical indicators cannot distinguish. It also shows that localized streaming-platform communication is not simply the transmission of a global brand voice; it is an ongoing negotiation in which users articulate local expectations and participate in the cultural valuation of films and series.

References

- Aytaş, M., & Yavuz, G. (2024). Netflix çağı: Dijital seyir platformları ve belgesel sinemada anlatının dönüşümü. *İdil*, 13(113), 59–69. <https://doi.org/10.7816/idil-13-113-04>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328–352. <https://doi.org/10.1080/14780887.2020.1769238>
- Braun, V., & Clarke, V. (2022). Conceptual and design thinking for thematic analysis. *Qualitative Psychology*, 9(1), 3–26. <https://doi.org/10.1037/qp0000196>
- Brodie, R. J., Hollebeek, L. D., Jurić, B., & Ilić, A. (2011). Customer engagement: Conceptual domain, fundamental propositions, and implications. *Journal of Service Research*, 14(3), 252–271. <https://doi.org/10.1177/1094670511411703>
- Bruns, A. (2013). From prosumption to produsage. In R. Towse

- & C. Handke (Eds.), *Handbook on the digital creative economy* (pp. 67–78). Edward Elgar. <https://doi.org/10.4337/9781781004876.00016>
- Couldry, N., & Hepp, A. (2017). *The mediated construction of reality* (Vol. 10). Cambridge: Polity press.
- DeFelice, C. (2025). Reclaiming Premium Brand Equity: Establishing and Testing A Post-Pandemic Framework for Theatrical Film Advertising on Social Media. *Journal of Current Issues & Research in Advertising*, 1–26. <https://doi.org/10.1080/10641734.2025.2584782>
- Franzke, A. S., Bechmann, A., Ess, C. M., & Zimmer, M. (Eds.) (2020). *Internet Research: Ethical Guidelines 3.0*. AoIR (The International Association of Internet Researchers). <https://aoir.org/reports/ethics3.pdf>
- Gomez-Urbe, C. A., & Hunt, N. (2015). The Netflix recommender system: Algorithms, business value, and innovation. *ACM Transactions on Management Information Systems*, 6(4), Article 13. <https://doi.org/10.1145/2843948>
- Gray, J. (2017). *Show sold separately: Promos, spoilers, and other media paratexts*. New York University Press.
- Günevi Uslu, E. (2026). Algorithmic participation: A netnographic analysis of AI-generated trailers and posters. *Romaya Journal*, 1, 1–12. <https://doi.org/10.5281/zenodo.18461772>
- Hendriks, A., & Castro, D. (2022). Netflix's community relationship management: An analysis of its Facebook-USA page. *Journal of Media Business Studies*, 19(2), 108–125. <https://doi.org/10.1080/16522354.2021.1932396>
- Herring, S. C. (2004). Computer-mediated discourse analysis: An approach to researching online behavior. In S. A. Barab, R. Kling, & J. H. Gray (Eds.), *Designing for virtual communities in the service of learning* (pp. 338–376). New York: Cambridge University Press.
- Highfield, T., & Leaver, T. (2016). Instagrammatics and digital methods: Studying visual social media. *Communication Research and Practice*, 2(1), 47–62. <https://doi.org/10.1080/22041451.2016.1155332>
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York University Press.
- Kozinets, R. V. (2002). The field behind the screen: Using netnography for marketing research in online communities. *Journal of Marketing Research*, 39(1), 61–72. <https://doi.org/10.1509/jmkr.39.1.61.18935>
- Kozinets, R. V. (2015). *Netnography: Redefined* (2nd ed.). Sage.
- Lobato, R. (2019). *Netflix nations: The geography of digital distribution*. New York University Press.
- Malterud, K., Siersma, V. D., & Guassora, A. D. (2016). Sample size in qualitative interview studies: Guided by information power. *Qualitative Health Research*, 26(13), 1753–1760. <https://doi.org/10.1177/1049732315617444>
- Napoli, P. M. (2014). Automated media: An institutional theory perspective on algorithmic media production and consumption. *Communication Theory*, 24(3), 340–360. <https://doi.org/10.1111/comt.12039>
- O'Connor, C., & Joffe, H. (2020). Inter-coder reliability in qualitative research: Debates and practical guidelines. *International Journal of Qualitative Methods*, 19. <https://doi.org/10.1177/1609406919899220>
- Özel, S. (2020). Talebe bağlı video servisleri çağında Netflix etkisi. *İnsan ve İnsan*, 7(26), 115–138. <https://doi.org/10.29224/insanveinsan.786938>
- Özel, S., & Özyay, D. (2021). Yeni medya ortamlarında izleyici seçimi ve öneri algoritmaları: Netflix örneği. *Ankara Üniversitesi İlefi Dergisi*, 8(2), 297–324. <https://doi.org/10.24955/ilef.1023026>
- Papacharissi, Z. (2015). *Affective publics: Sentiment, technology, and politics*. Oxford University Press.
- Sarı, Ü., & Sancaklı, P. (2020). Küyerelleşmenin dijital platformların içerik tanıtımına etkisi: Netflix örneği. *Erciyes İletişim Dergisi*, 7(1), 243–260. <http://10.17680/erciyesiletisim.647463>
- Sarı, Ü., & Türker, H. (2021). Dijital platform kullanıcılarının izleme alışkanlıklarına yönelik bir araştırma: Netflix örneği. *Anadolu Üniversitesi Sosyal Bilimler Dergisi*, 21(1), 59–80. <https://doi.org/10.18037/ausbd.902558>
- Shifman, L. (2013). *Memes in digital culture*. MIT Press.
- Smith, A. N., Fischer, E., & Yongjian, C. (2012). How does brand-related user-generated content differ across YouTube, Facebook, and Twitter? *Journal of Interactive Marketing*, 26(2), 102–113. <https://doi.org/10.1016/j.intmar.2012.01.002>
- Srnicek, N. (2017). *Platform Capitalism*. Polity Press, Cambridge Malden, MA.
- Torun, A. (2021). Sinemada Netflix'te dijital izleme ortamları ve yeni alışkanlıklar: Bir sosyal ortam olarak sinema ve film izleme pratiklerindeki dijital dönüşüm. *Sinefilozofi, Özel Sayı 3*, 370–387. <https://doi.org/10.31122/sinefilozofi.871301>
- Van Dijck, J., Poell, T., & De Waal, M. (2018). *The platform society: Public values in a connective world*. Oxford university press.
- Vivek, S. D., Beatty, S. E., & Morgan, R. M. (2012). Customer engagement: Exploring customer relationships beyond purchase. *Journal of Marketing Theory and Practice*, 20(2), 122–146. <https://doi.org/10.2753/MTP1069-6679200201>
- Wayne, M. L. (2018). Netflix, Amazon, and branded television content in subscription video-on-demand portals. *Media, Culture & Society*, 40(5), 725–741. <https://doi.org/10.1177/0163443717736118>

The Arshin (Zira) as a Historical Unit of Length in the Islamic World: A Comparative Study

Murat Çağlayan* / Assoc. Prof. Dr. 

Mardin Artuklu University, Faculty of Engineering and Architecture, Department of Architecture
muratcaglayan@artuklu.edu.tr

Berat Çelebioğlu / Res. Asst. Dr. 

Mardin Artuklu University, Faculty of Engineering and Architecture, Department of Architecture
beratcelebioğlu@artuklu.edu.tr

*Corresponding Author

Abstract

Historical systems of measurement are essential for the accurate documentation, interpretation, and conservation of architectural heritage. In the Islamic world, the arshin (zira) was one of the principal units of length, yet its metric value varied considerably across regions, periods, and practical contexts. This study examines the arshin through a comparative historical framework based on major scholarship on Islamic and Ottoman metrology, together with relevant documentary and material evidence. The analysis focuses on the principal forms of the arshin, their reported metric equivalents, and their internal subdivisions. The results show that the arshin did not function as a single fixed unit, but rather as a family

of related measures shaped by chronology, geography, and use. This variability is reflected not only in total length, but also in the organization of subunits such as fingers, knuckles, handbreadths, lines, and points. The study concludes that the arshin should be interpreted as a context-dependent metrological structure and that such an approach provides a more reliable basis for the documentation and interpretation of architectural heritage in the Islamic world.

Keywords: Arshin, Zira, Historical Metrology, Islamic World, Measurement Systems.

JEL Codes: N35

Citation: Çağlayan, M., & Çelebioğlu, B. (2026). The arshin (zira) as a historical unit of length in the Islamic world: A comparative study. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Historical systems of measurement are of central importance to architectural heritage studies because they inform the documentation, interpretation, and conservation of historic built environments. Recent research has emphasized that reliable documentation and structured information management are fundamental to the interpretation and conservation of historic buildings, particularly where dimensional logic must be reconstructed from heterogeneous evidence (Li et al., 2025). As Li et al. (2025:1) note, “balancing precision and efficiency, ambiguous information structures, and the absence of standardized protocols” remain persistent challenges in digital heritage documentation. This observation is especially relevant where historical dimensions must be interpreted together with documentary and material evidence. This point has also been reinforced in studies that approach heritage knowledge as an information-based process closely connected to documentation and conservation practice (Parente et al., 2025). The identification of original units of length is therefore essential for reconstructing design logic, proportional relationships, construction practices, and modular organization in historical buildings. When premodern units are inaccurately translated into modern metric values, the interpretation of dimensions, spans, proportions, and restoration evidence may become distorted.

Within the Islamic world, historical measurement systems present a particularly complex field of study because of their regional diversity and unstable correspondence with modern metric units (Hinz, 1990). Earlier work by Özdural (1990) has also shown that medieval Islamic architectural practice cannot be separated from broader systems of geometry and measurement. In the Ottoman context, the problem becomes even more pronounced because units of measurement changed over time and could not always be directly aligned with modern standards (Özdural, 1998). Arseven (1950) likewise records that multiple units of length continued to coexist in later Ottoman practice, reflecting the absence of a single fixed standard. Sönmez (1997) further demonstrated that Ottoman measurement systems were marked by both technical diversity and practical ambiguity. In a later study, the same author emphasized that these ambiguities created difficulties for architectural surveys and for the interpretation of original dimensions in historic structures (Sönmez, 1999). Taken together, these studies indicate that historical systems of measurement should not be treated as universally stable quantities, but as context-dependent structures requiring careful comparative analysis.

A broader theoretical perspective on this issue is provided by recent research on body-based units of measure, which has shown that such systems were

not merely pre-standard survivals, but persistent and adaptive components of human technical culture (Kaaronen et al., 2023). Kaaronen et al. (2023:948) state that “Measurement systems are important drivers of cultural and technological evolution.” This perspective is particularly useful for the study of Islamic metrology, where units such as the arshin were grounded in embodied reference systems while also acquiring administrative and technical meanings over time.

At the same time, body-based units must be interpreted critically, because anthropometric measurement systems may naturalize particular assumptions about whose body is taken as the normative basis of measurement. A later architectural example is Le Corbusier’s Modulor, an anthropometric proportional system based on a standardized male body and intended as a universal architectural measure (Le Corbusier, 1954). Although this example is historically distant from Islamic metrology, it is useful as a reminder that embodied measurement can carry social and disciplinary assumptions as well as technical meanings. In the present study, this point is used cautiously: the arshin is not treated as a universal bodily constant, but as a unit whose meaning was shaped by its field of use, including architecture, trade, craft production, and textile measurement.

Among the units of length used in the Islamic world, the arshin (Persian), or zira (Arabic), occupies a particularly important place. The term appears in Turkish dialects in forms such as arshun, archin, arjin, alchin and is generally associated with the distance from the elbow to the tip of the middle finger; its Arabic equivalent is zira (Erkal, 1991). Yet the arshin did not correspond to a single immutable length. Historical evidence compiled by Hinz (1990) shows that several forms of the unit were in circulation, including the black cubit (zira al-sawda), the legal cubit (zira al-shariyya), the small and large Hashimi cubits (zira al-bilalliyya and zira al-hashimiyya), the public cubit (zira al-amma), the architect’s cubit (zira al-benna / zira al-mimariyya), and textile or market-related measures such as zira al-bezz, the market arshin, and the endaze, each with different metric values and practical contexts. Özdural’s (1998) study of Ottoman architectural metrology further confirms that the arshin must be understood as a historically variable unit rather than as a fixed equivalent. For architectural heritage research, this variability is especially important because the identification of the relevant unit may directly affect the reading of dimensions, modules, and constructional logic in historic structures.

The historical variability of the arshin becomes even more evident when its internal subdivisions are considered. In Islamic and Ottoman systems of measurement, subunits such as fingers, knuckles, handbreadths, lines, and points played a central role in structuring the unit (Hinz, 1990). A particularly impor-

tant source in this respect is *Risale-i Mimariyye*, edited by Gökyay (1975), which records that the Ottoman architectural arshin was divided into sixty equal parts until AH 994 (AD 1585/1586). Crane's (1987) study of the same treatise confirms this division and clarifies its architectural context. Özdural (1998) also interpreted this shift as more than a simple numerical adjustment, arguing that it reflected a structural change in the practical use of measurement. This observation is highly significant for architectural heritage studies because it shows that historical dimensions cannot be understood solely through total metric values; they must also be interpreted through the internal logic of subdivision and application.

Ottoman evidence likewise demonstrates that the arshin cannot be regarded as a standardized unit of fixed length. Ayverdi (1973) calculated the sixteenth-century architectural arshin at approximately 73.33 cm on the basis of construction records related to the Süleymaniye Mosque. Özdural (1998) reported a closely related value of approximately 73.4 cm for the same general period and situated this measure within a broader metrological framework. Arseven (1950), by contrast, recorded the nineteenth-century architectural arshin as 75.8 cm and also distinguished function-specific units such as the market arshin and the endaze (length measurement for fabric). More recent scholarship on Ottoman architecture has shown that dimensional logic and proportional order remain central to the interpretation of mosque architecture (Erdoğan, 2024). Erdoğan (2024: 89) identifies "the system of ratio-proportion" as a fundamental principle of architectural theory. This point is important because it links measurement directly to formal order in Ottoman architecture. This line of inquiry has been extended by studies that read Sinan's architecture through modular and recursive geometric design principles (Diker, 2026). As Diker (2026: 271) argues, modular circles and squares may have served as "a foundational design tool, guiding both the aesthetic and structural logic" of Sinan's architecture. This supports the view that systems of measurement were closely connected to the conceptual organization of architectural design. Although these recent studies do not address the arshin directly as a metrological problem, they reinforce the broader point that historical dimensions and proportional systems are indispensable for the interpretation of Ottoman architectural heritage.

This study approaches the arshin not only as a technical unit of measurement but as a historical construct shaped by cultural, administrative, and regional contexts. It also examines comparatively the various forms of the arshin used in the Islamic world and evaluates their historical variability in relation to architectural heritage research. Drawing on metrological studies, architectural treatises, documentary evidence, and recent heritage-oriented scholarship, the article considers different forms of the arshin,

their metric equivalents, and their internal subdivisions within their historical contexts. It argues that the arshin should be interpreted as a context-dependent metrological structure rather than as a fixed universal unit. By doing so, the study aims to provide a more reliable framework for the documentation and interpretation of architectural heritage and to contribute to a more systematic understanding of historical measurement systems in the Islamic world.

2. Materials and Methods

2.1. Research Scope and Source Base

The study examines the arshin (zira) as a historical unit of length in the Islamic world through a comparative evaluation of textual, metrological, and material evidence. The primary source base consists of major studies on Islamic and Ottoman systems of measurement, especially those that discuss the terminology, metric equivalents, subdivisions, and historical transformation of the arshin and related units. Hinz (1990) provides the broadest comparative framework for Islamic measures across different regions. Özdural (1990, 1998) offers two distinct lines of contribution: one concerning the relationship between measurement and geometric reasoning in medieval Islamic architecture, and another focusing specifically on Ottoman architectural metrology and the Sinan-period arshin. Ottoman-period variation and practical diversity are further documented by Arseven (1950) and Sönmez (1997, 1999).

In addition to the published literature, the study also takes into account documentary and material evidence preserved in architectural and metrological sources. These include the Nilometer of al-Rawda in Cairo as a reference point for the black cubit described by Hinz (1990), the information preserved in *Risale-i Mimariyye* as edited by Gökyay (1975), and the architectural interpretation of the same treatise provided by Crane (1987). The study also considers the documentation of a nineteenth-century measuring rod identified locally as *deiraa* (zira), as reported in the historical material discussed in the source text, together with textile and market arshin values reported by Göyünç (1976) and Hinz (1990). Although the study does not generate a new numerical dataset in the modern statistical sense, it assembles dispersed historical evidence into a structured comparative framework relevant to the interpretation of architectural heritage.

2.2. Comparative Method

The study adopts a historical-comparative method in order to identify continuities, differences, and transformations in the recorded value and use of the arshin. In the first stage, references to different forms of the arshin were collected from the literature and

grouped according to period, geography, terminology, and reported metric equivalent. Hinz (1990) was used as the principal reference for the broader Islamic world. Özdural's (1998) work was used where Ottoman metrology and the Sinan-period arshin required closer definition. Arseven (1950) and Sönmez (1997) were used to identify later Ottoman variations and function-specific units.

In the second stage, the reported metric values were compared in order to determine whether similarly named units corresponded to identical or divergent measures. This step was necessary because the same unit name did not always denote the same absolute length. In the third stage, each occurrence of the arshin was interpreted in relation to chronology, regional setting, and field of application. This procedure made it possible to distinguish between terminological continuity and metrological continuity, which are not necessarily the same.

2.3. Terminological and Metrological Assessment

A central part of the method consists of the combined analysis of terminology and metric correspondence. Measurement terms were therefore treated not merely as lexical labels, but as indicators of historically specific metrological systems. Particular attention was paid to terms such as zira, arshin, zira al-shariyya, zira al-sawda, zira al-hashimiyya, and zira al-benna. The semantic history of the term arshin and its linguistic circulation were considered with reference to Erkal (1991). The metric values attached to these terms were primarily assessed through Hinz (1990) and Özdural (1998).

Where the literature records more than one name for units of similar or identical size, those terms were evaluated comparatively. Likewise, where the same term appears with different metric values depending on period or region, the variation was treated as historically meaningful rather than accidental. The purpose of the analysis is therefore not to establish one definitive value for the arshin, but to reconstruct the range and structure of its historical variability.

2.4. Analysis of Subunits

The study also examines the internal subdivisions of the arshin, since these are essential for understanding how the unit functioned in practice. Hinz (1990) was used to identify the role of subunits such as fingers and handbreadths in broader Islamic systems of measurement. Gökyay's (1975) edition of *Risale-i Mimariyye* was used for the Ottoman terminology of engüşt, boğum, hat, and nokta. Crane's (1987) study was used to clarify the architectural context and interpretive importance of these subdivisions.

Particular emphasis was placed on the shift from the

sixty-part system to the twenty-four-part system in the Ottoman architectural arshin. This change was not treated merely as a numerical adjustment. Following Özdural's (1998) interpretation, it was examined as a structural transformation affecting the practical logic of measurement itself. By incorporating both total lengths and subdivision systems into the analysis, the study approaches the arshin as a layered historical unit rather than as a single scalar value.

2.5. Relevance to Architectural Heritage

The methodological perspective of this study is directly connected to architectural heritage research. Accurate identification of historical units of length is essential for recognizing original dimensional logic, modular systems, proportional organization, and constructional practice in historic buildings. Recent work on architectural documentation and information modeling has emphasized that reliable interpretation depends on structured and historically grounded knowledge (Li et al., 2025). This broader conservation-oriented perspective is also supported by recent work on heritage building information modelling and architectural heritage information management (Parente et al., 2025).

The present study therefore evaluates the arshin not only as an abstract metrological category, but also as a practical unit relevant to the documentation and interpretation of built heritage in the Islamic world. Recent scholarship on Ottoman architectural proportion and modular order also shows that dimensional systems remain central to the reading of historic buildings (Erdoğan, 2024). In this sense, the comparative study of historical measurement units provides a methodological tool for reducing interpretive uncertainty in architectural analysis.

2.6. Limitations of the Study

The study is limited by the nature of the historical evidence on which it relies. The available sources do not always provide precise chronological boundaries for the use of specific units. Hinz (1990) himself notes that many metric equivalents are approximate rather than absolute. Ottoman-period studies also show that practical and terminological inconsistency persisted over time (Sönmez 1997, 1999). In some cases, normative definitions and actual usage cannot be fully separated.

These limitations, however, do not weaken the comparative approach adopted here. On the contrary, they reinforce the central premise of the study: that the arshin should be approached as a variable and context-dependent metrological structure. The method used here is therefore intended not to eliminate ambiguity entirely, but to interpret it systematically within a historically grounded framework.

3. Results

3.1. Principal Metric Variants of the Arshin

The comparative review of the historical literature shows that the arshin (zira) did not correspond to a single fixed metric value across the Islamic world. Hinz (1990) records the black cubit (zira al-sawda) at approximately 54.04 cm. The same source gives the legal cubit (zira al-shariyya) as approximately 49.87 cm. Although both units were divided into twenty-four subunits, their total lengths differed. The same comparative framework also identifies additional forms such as the large and small Hashimi cubits, the Umariyya cubit, the Durr/Fiddiyya cubit, zira al-bezz in textile and commercial contexts, and architectural or carpenter's cubits in Ottoman and Egyptian

settings. These examples show that the arshin functioned as a family of related measures rather than as a single technical value.

The literature also records more than one Hashimi cubit. Hinz (1990) reports a smaller Hashimi cubit, referred to as zira al-bilalliyya or zira al-hashimiyyat al-saghir, at approximately 60.05 cm. The same study gives a larger Hashimi cubit, identified by names such as zira al-amal, zira al-hashimiyya, zira al-malik, and zira al-ziyadiyya, at approximately 66.50 cm. Özdural (1990) further notes that Hashimi-type measures in medieval Islamic sources did not remain metrically stable and could vary over time. Selected historical length units used in the Islamic world are summarized in Table 1.

Table 1. Major historical arshin or zira units and their subdivisions. Textile-related measurements are indicated where relevant, while public, commercial, and architectural uses are listed in regular form. Source: Compiled by the authors based on Ayverdi (1973), Gökyay (1975), Göyünç (1976), Hinz (1990), Özdural (1990, 1998), Arseven (1950), and Sönmez (1997, 1999).

Unit Name	Region	Period	Metric Equivalent
Zira' al-'Amal (work arshin); Zira' al-Hāshimiyya; Zira' al-Malik; Zira' al-Ziyādiyya; Large Hashimi (royal) arshin	Middle East	Abbasid period	66.5 cm (32 fingers; 1 finger = 2.07 cm)
Zira' al-'Ammā (public arshin); Zira' al-Sawda' (black arshin); Zira' al-Raṣāṣiyya	Middle East	Abbasid period	54.04 cm (24 fingers; 1 finger = 2.25 cm)
Zira' al-Shar' iyya (legal arshin); Zira' al-Yad (hand arshin); Zira' al-Yūsufiyya (Qadi Yusuf arshin); Zira' al-Barīd	Middle East	Abbasid period	49.87 cm (24 fingers; 1 finger = 2.07 cm)
Zira' al-Bilalliyya; Small Hashimi arshin	Middle East	Abbasid period	60.05 cm (24 fingers; 1 finger = 2.50 cm)
Zira' al-'Umariyya (Caliph Omar's arshin)	Middle East	Abbasid period	72.81 cm
Zira' al-Durr (Fiddiyya)	Middle East	Abbasid period	50.3 cm
Zira' al-Bezz (pik)	Cairo	15th century	58.18 cm
Zira' al-Bezz (pik)	Aleppo	16th century	67.9 cm
Zira' al-Bennā / al-Mi' māriyya (architect's arshin)	Ottoman World	16th–17th centuries 18th century 19th century	72.1–73.4 cm 76.4 cm 75.8 cm
Zira' al-Bezz (pik)	India	17th century	68 cm
Gez-Zar (zira)	Iran	17th century Present day	95 cm 104 cm
Zira' al-Mi' māriyya (architect's arshin); Zira' al-Najjārīn (carpenter's arshin)	Egypt	19th century	75 cm
Zira' al-Baladiyya	Middle East	19th century	58.26 cm

Market arshin	Ottoman World	19th century	68.5 cm
Endaze	Ottoman World	19th century	65 cm
Zira‘ al-Istanbulliyya	Egypt	19th century	68.57 cm
Zira‘ al-Bezz (pik)	Jerusalem	19th century	64.77 cm
Zira‘ al-Bezz (pik)	Baghdad-Basra	-	82.9 cm
Zira‘ al-Bezz (pik)	Damascus	-	63.03 cm
Zira‘ al-Bezz (pik)	Tripoli al-Sham	-	64 cm

3.2. Subdivision Systems of the Arshin

The results further show that the variability of the arshin extended beyond total length and included its internal subdivisions. In the case of the legal cubit, each of the twenty-four fingers measured approximately 2.07 cm. In the black cubit, each finger measured approximately 2.25 cm (Hinz, 1990). This indicates that the value of the finger itself varied according to the type of arshin to which it belonged.

Hinz (1990) also records that some medieval Abbasid measures were divided into twenty-four parts, while others were divided into thirty-two. The same study notes that Indian systems could be divided into forty or forty-one fingers. Ottoman practice likewise preserved several different subdivision schemes. Sönmez (1997) states that the Aleppo arshin and the market arshin were divided into twenty-two fingers. The same source records the endaze as divided into twenty-one fingers. Sönmez (1997) also notes that the architectural arshin (*zira al-benna*) was divided into twenty-four fingers. These findings show that the internal arithmetic of the unit varied historically.

According to Arseven (1950), the metric equivalents of certain units of measurement, as recorded in a study commissioned by the Bab-ı Ali for the French in 1841, are summarized in Table 2, together with major Ottoman architectural and market arshin units and their subdivisions.

These variations emerged because standards were established through different institutional and practical mechanisms. Legal and fiscal contexts required measures suited to administrative calculation; commercial and textile contexts favored units aligned with commodities and market exchange; and architectural or craft contexts required measures compatible with construction procedures, modular subdivision, and the transfer of dimensions on site. Regional centers also preserved local traditions, while imperial or administrative reforms could recalibrate and partially standardize units without eliminating earlier usages. For this reason, metrological variation should be read as the product of overlapping legal, commercial, craft, and regional contexts rather than as simple inconsistency.

Table 2. Ottoman Architectural and Market Arshin Units and Their Subdivisions

Unit	Metric Equivalent	Subdivision
1 architect's arshin (<i>zira‘ al-bennā</i>) / architectural arshin (<i>zira‘ al-mi‘ māriyya</i>)	75.8 cm	2 kadem, 24 fingers
1 <i>kadem</i>	37.9 cm	12 fingers
1 market arshin	68 cm	22 fingers
1 finger	3.15 cm	12 <i>hat</i>
1 <i>hat</i>	2.63 mm	12 <i>nokta</i>
1 <i>nokta</i> (dot)	0.21 mm	-

3.3. Ottoman Variants and Diachronic Change

Ottoman evidence reveals a clear diachronic transformation in the metric value of the arshin. Özdural (1998) reports that the Ottoman arshin measured approximately 72.1 cm in the 1520s. The same study gives 73.4 cm for the last quarter of the sixteenth century. Özdural also reports 76.4 cm for the third quarter of the eighteenth century. In the same context, the architectural arshin standardized under Selim III is given as 75.8 cm.

Ayverdi (1973) calculated the sixteenth-century architectural arshin as 73.33 cm on the basis of construction records related to the Süleymaniye Mosque. Cantay (1986) likewise identified a value of approximately 73.33 cm in analytical studies of sixteenth-century Ottoman architecture. In the same study, Cantay (1986) also reported a secondary measure of approximately 55 cm, corresponding to three-quarters of the period arshin. Arseven (1950) recorded the nineteenth-century architectural arshin as 75.8 cm. Arseven also distinguished the market arshin,

whose textile-related value is often treated as approximately 68 cm despite source values around 68.5 cm (Göyünç, 1976: 473; Hinz, 1990: 72). The same source gave the endaze as 65 cm. Arseven further recorded the Aleppo arshin at 68 cm. Together; these data indicate both chronological change and functional differentiation within Ottoman systems of length measurement.

3.4. Evidence from Risale-i Mimariyye

One of the clearest results of the present study concerns the structural transformation of the Ottoman architectural arshin described in *Risale-i Mimariyye*. Gökyay (1975) records that the zira al-benna was divided into sixty equal parts, referred to as engüşt, until AH 994 (AD 1585/1586). Crane confirms the same subdivision in his study of the treatise (1987).

Gökyay (1975) also records that after this date the unit was divided into twenty-four knuckles. In the later system, each new finger was further divided into twelve hat. Each hat was further divided into twelve nokta.

Using the sixteenth-century arshin value of 73.4 cm, Özdural's (1998) calculation yields an engüşt value of approximately 1.22 cm. The later twenty-four-part system yields a knuckle value of approximately 3.05 cm. The same calculation indicates that ten engüşt correspond to four knuckles. These numerical relations show that the transition from the earlier to the later system involved a substantial reorganization of the internal structure of the unit. The transformation from the sixty-part finger (engüşt) system to the twenty-four-part knuckle (boğum) system is illustrated in Figure 1.

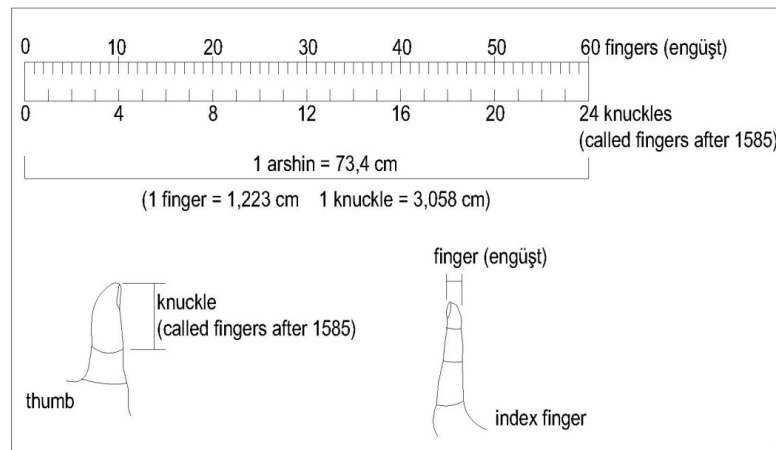


Figure 1. Schematic Representation of the Sixteenth-Century Ottoman Architectural Arshin (73.4 cm), Showing its Earlier Division into 60 Fingers and its Later Division into 24 Knuckles (Referred to as Fingers After 1585), Based on the Evidence of *Risale-i Mimariyye* and Özdural's (1990, 1998) Metrological Interpretation. Source: Drawing by Murat Çağlayan.

3.5. Material Evidence from a Nineteenth-Century Measuring Rod

The documentary evidence is supported by several material and applied references rather than by a single isolated object. At the scale of built infrastructure, the Nilometer of al-Rawda in Cairo provides a durable architectural reference point for the black cubit discussed by Hinz (1990). Although it is not a portable measuring rod, the Nilometer shows that a cubit value could be materially inscribed in a functional structure and linked to administrative measurement practice rather than preserved only as an abstract textual definition.

The Mardin rod remains the clearest portable measuring instrument considered in this study. The source text records a nineteenth-century zira rod documented in Mardin, Türkiye and identified locally as diraa. The object measures 75 cm in total length and is divided into twenty-four fingers arranged in six groups of four. The rod is made of walnut wood, and its grouped marking system indicates practical

craft use rather than purely schematic representation (Çağlayan, 2017). This organization is significant because the six groups of four fingers would have allowed a craftsman to repeat, halve, group, and transfer dimensions in everyday building or carpentry work without converting each measurement into an abstract numerical value. The documented measuring rod, its front and side faces, and its twenty-four-part subdivision are shown in Figure 2.

A second comparative example is the nineteenth-century Egyptian architectural and carpenter's cubit of 75 cm reported by Hinz (1990). Its close agreement with the 75 cm Mardin rod suggests that comparable craft-oriented zira values circulated beyond a single local case. Documentary examples from textile and commercial practice, such as the Cairo, Aleppo, Jerusalem, Damascus, Baghdad-Basra, and Tripoli al-Sham zira al-bezz values listed in Table 1, together with the Ottoman market arshin and endaze, further demonstrate that concrete application varied by craft, commodity, and region. These examples do not have identical evidentiary status:

the Mardin rod is a surviving object, the Nilometer is a built-context reference, and the textile and market cases are documentary records of applied measu-

res. Considered together, however, they strengthen the argument that the arshin was used through practical, context-specific measuring traditions.

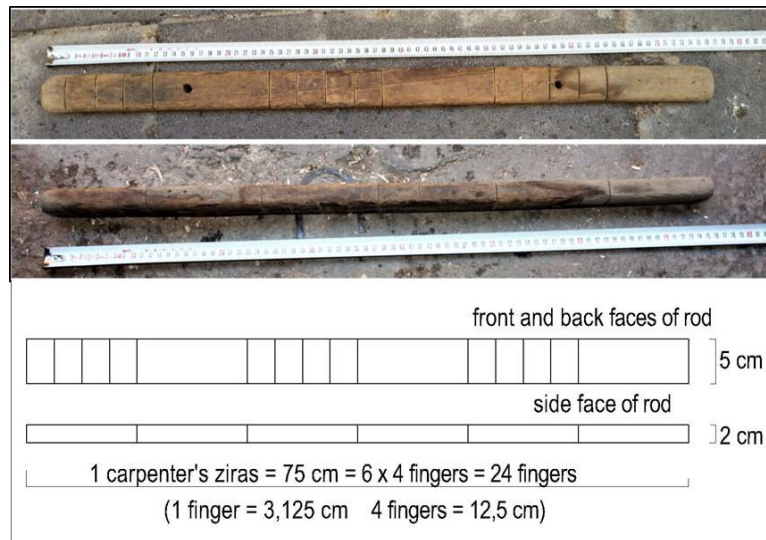


Figure 2. A nineteenth-century carpenter's zira documented in Mardin, illustrating the front and back faces, the side face, and the subdivision of the 75 cm rod into 24 fingers arranged in six groups of four. Source: Photograph and drawing by Murat Çağlayan.

3.6. Summary of Results

Taken together, the results show that the arshin should not be understood as a singular and immutable unit. Rather, the evidence reveals a historically layered system in which total length, subdivision pattern, terminology, and practical application all varied across time and space. This variability was shaped by legal-administrative, architectural, craft, commercial, textile, and regional contexts. The arshin thus appears not as one stable measure, but as a family of related units whose metric values and internal organization were historically contingent.

4. Discussion

The findings of this study show that the arshin (zira) cannot be treated as a fixed and universally stable unit of length in the Islamic world. Hinz (1990) demonstrated that several forms of the unit coexisted with different metric values. Özdural (1998) likewise showed that the historical meaning of the arshin changed according to period and technical context. This indicates that historical systems of measurement should not be approached through a simple one-to-one conversion into modern metric units.

A major implication of these results is that terminological continuity does not imply metrological continuity. The use of the terms arshin or zira across different regions and periods does not mean that they referred to the same absolute length in every case. This is clear in the distinction between the legal cubit and the black cubit, both documented by Hinz (1990) as twenty-four-part units with different total

lengths. Özdural's (1990) earlier work also supports the view that measurement in the medieval Islamic world was embedded in broader technical and geometric systems rather than reducible to a single invariant scalar value. The historical meaning of a measurement term must therefore be reconstructed through documentary, technical, and regional context rather than inferred from nomenclature alone.

The Ottoman evidence further highlights the dynamic character of the arshin by showing that variation occurred not only across regions but also over time within the same political and cultural framework. Özdural (1998) recorded a progression from approximately 72.1 cm in the early sixteenth century to 76.4 cm in the eighteenth century. Arseven (1950) documented the nineteenth-century architectural arshin at 75.8 cm. Ayverdi's (1973) calculation of approximately 73.33 cm for the sixteenth-century architectural arshin confirms that an earlier Ottoman metric standard differed from the later one. Cantay (1986) also identified a closely related value in his analysis of sixteenth-century Ottoman architecture. These findings suggest that Ottoman architectural measurement underwent both recalibration and partial standardization over time.

At the same time, Ottoman practice remained functionally differentiated. Arseven (1950) distinguished the architectural arshin from the market arshin and the endaze. Sönmez (1997) likewise emphasized that different units could coexist according to use and technical domain. In a later study, Sönmez (1999) also pointed out that this variability complicates the interpretation of measured drawings and architectural surveys. Context-specific standardizati-

on here means that a unit could be regularized within a particular domain of use such as architectural surveying and construction, market exchange, textile measurement, or carpentry without becoming universally identical across all domains. Architectural arshin values were shaped by building practice and state-sponsored construction; market and textile measures were shaped by commercial exchange and commodity-specific conventions; and regional units reflected local administrative and craft traditions. Standardization in historical metrology therefore appears to have been partial and context-specific rather than absolute.

The transformation described in *Risale-i Mimariyye* is particularly significant because it demonstrates that the historical variability of the arshin operated at the level of measurement structure itself, not only at the level of total length. Gökyay (1975) records the earlier sixty-part organization of the Ottoman architectural arshin. Crane (1987) confirms the same subdivision system in his analysis of the treatise. Özdural (1998) interpreted the later shift to a twenty-four-part system as a structural transformation rather than a simple technical adjustment. In this respect, the arshin was not merely rescaled but reconstituted as a working unit through a new internal arithmetic. This supports the broader argument of the article: historical units cannot be interpreted only through their metric equivalents, because their subdivisions determined how builders and craftsmen divided dimensions, transferred measurements, and made proportional decisions in practice.

From the perspective of architectural heritage, these findings have direct interpretive consequences. Accurate identification of historical units of length is essential for reconstructing dimensional logic, modular systems, and constructional practice in historic buildings. Research on heritage documentation has shown that reliable interpretation depends on structured and historically grounded information (Li et al., 2025). Li et al. (2025: 1) likewise refer to “ambiguous information structures” as a central problem in documentation-oriented heritage workflows. Similar conclusions have been reached in recent work on heritage building information modelling and heritage knowledge management (Parente et al., 2025). If a historical measurement is assigned an incorrect metric equivalent, the interpretation of spans, openings, wall thicknesses, and proportional schemes may also become misleading. A historically grounded understanding of the arshin therefore contributes not only to metrological history, but also to more reliable architectural heritage analysis.

Recent scholarship on Ottoman architecture reinforces this point from another direction. Erdoğan (2024) has shown that proportional logic remained central to the interpretation of Ottoman mosque architecture. Diker (2026) has further demonstrated that

modular and recursive geometric principles can be productive for understanding Sinan’s design language. Although these studies do not focus directly on the arshin as a metrological problem, they support the broader conclusion that historical dimensions and proportional systems are indispensable for the interpretation of Ottoman architectural heritage.

The material and applied evidence discussed above provides an important bridge between textual definitions and practice. The Mardin rod is the most direct surviving object: it measures 75 cm and is divided into twenty-four parts (Çağlayan, 2017), corresponding closely to the late Ottoman architectural arshin documented by Arseven (1950) and to the nineteenth-century Egyptian architectural and carpenter’s cubit reported by Hinz (1990). Its six groups of four fingers are especially significant because they translate the abstract unit into a usable craft instrument: a carpenter could repeat, halve, group, and transfer measurements without converting every dimension into a modern metric value. In this sense, the rod shows that the arshin functioned as a practical device of craftsmanship as well as a textual or administrative category. The Nilometer of al-Rawda in Cairo, by contrast, demonstrates how a cubit could be embedded in an architectural and administrative setting, while the zira al-bezz, market arshin, and endaze examples show how craft and commodity-specific practices generated different applied values. The evidence therefore suggests that the values recorded in written sources were not merely abstract definitions, but could also be embodied in built structures, instruments, and practical measuring routines.

Taken together, the evidence supports the interpretation of the arshin as a context-dependent metrological structure rather than a singular and invariant unit. Its variability in metric value, subdivision pattern, terminology, and practical function indicates that it operated as a family of related measures whose meaning depended on historical circumstances. A more reliable approach is therefore to treat the arshin as a structured field of variation, within which specific forms can be identified and compared. Such an approach offers a stronger basis for future research in architectural heritage, history of metrology, and the interpretation of historical building practice.

5. Conclusions

This study has shown that the arshin (zira) should not be understood as a single and universally fixed unit of length in the Islamic world. Hinz (1990) demonstrated that multiple forms of the unit coexisted with different metric values in different regions. Özdural (1998) further showed that the meaning and use of the arshin varied according to historical and technical context. Arseven’s (1950) Ottoman data also con-

firm that different function-specific units remained in use in later periods. The arshin must therefore be understood not as one stable measure, but as a historically differentiated family of related units.

The findings also indicate that the variability of the arshin was structural rather than incidental. Differences in total length were accompanied by differences in internal subdivision. Gökyay (1975) documented the sixty-part organization of the Ottoman architectural arshin in *Risale-i Mimariyye*. Crane (1987) confirmed the same textual evidence in its architectural context. Özdural (1998) interpreted the later shift to a twenty-four-part system as a change in the internal logic of measurement rather than a mere rescaling. This shows that historical units of measurement should be approached as layered technical systems rather than as simple equivalents in modern metric form.

From the perspective of architectural heritage, these results are especially important because the identification of historical length units directly affects the interpretation of dimensional logic, modular systems, and construction practice in historic buildings. Research on heritage documentation has emphasized the importance of historically grounded data for reliable interpretation (Li et al., 2025). Similar emphasis has been placed on heritage knowledge management and conservation-oriented information structures (Parente et al., 2025). Recent studies of Ottoman architectural proportion and modular design also show that dimensional systems remain central to the interpretation of historic buildings (Erdoğan 2024, Diker 2026). A historically grounded reading of the arshin can therefore contribute to more reliable documentation, restitution, and conservation-oriented analysis.

Taken together, the evidence supports the interpretation of the arshin as a context-dependent metrological structure composed of related but non-identical forms. Instead of seeking a single universal metric equivalent, future research should continue to examine the historical conditions under which particular forms of the arshin were defined, transmitted, and applied. Further cataloguing of surviving measuring rods, built-context references such as nilometers, and craft-specific documentary cases would strengthen the connection between metrological history and material practice. The findings highlight the importance of historical metrology as a tool for understanding past systems of knowledge, practice, and standardization in the Islamic world.

References

- Arseven, C. E. (1950). *Sanat Ansiklopedisi*; Vol. 2, pp. 1561-1572, İstanbul: Millî Eğitim Basımevi.
- Ayverdi, E. H. (1973). *Osmanlı Mimarisinde Fatih Devri 1451-1481*, Vol. 3, pp. 371-372, İstanbul: İstanbul Fetih Cemiyeti.
- Cantay, T. (1986). XVI. Yüzyıl Türk Mimarisinde Bazı Tasarım ve Çizim Esasları. II. Uluslararası Türk-İslam Bilim ve Teknoloji Tarihi Kongresi Bildirileri; 28 April–2 May 1986; Vol. 2, pp. 53–65. İstanbul.
- Crane, H. (1987). *Risāle-i Mi'māriyye: An Early-Seventeenth-Century Ottoman Treatise on Architecture: Facsimile with Translation and Notes*; Leiden: E.J. Brill.
- Çağlayan, M. (2017). *Mardin Ortaçağ Anıtları ve Yapım Teknikleri*, pp. 202-203, İstanbul: Hiper Yayın.
- Diker, H. F. (2026). Unlocking Sinan's Architectural Language: Modular Design Through Geometric Recursion. *Nexus Network Journal Architecture and Mathematics*. 28, pp. 271–297. doi:10.1007/s00004-025-00857-5.
- Erdoğan, A. (2024). "Oranlamak Dahi Kadim Türkîdir": Osmanlı Cami Mimarisinde (Geometrik) Oran-Orantı İlkesi. *Sanat Tarihi Yıllığı*, 33, 89-129. <https://doi.org/10.26650/sty.2024.1409812>
- Erkal, M. (1991). *Arşın. Türkiye Diyanet Vakfı İslâm Ansiklopedisi*; Vol. 3, pp. 411–413, İstanbul: TDV Yayınları.
- Gökyay, O. Ş. (1975). *Risale-i Mimariyye, Mimar Mehmet Ağa Eserleri*; Ankara: Türk Tarih Kurumu.
- Göyünç, N. (1976). XVIII. Yüzyılda Türk İdaresinde Nauplia (Anabolu) ve Yapıları. İsmail Hakkı Uzunçarşılı'ya Armağan; pp. 461-485, Ankara: Türk Tarih Kurumu.
- Hinz, W. (1990). *İslam'da Ölçü Sistemleri*; İstanbul: Marmara Üniversitesi Yayınları.
- Kaaronen, R. O., Manninen, M. A. & Eronen, J. T. (2023). Body-based units of measure in cultural evolution. *Science* (New York, N.Y.), 380(6648), pp. 948–954. <https://doi.org/10.1126/science.adf1936>
- Le Corbusier. (1954). *The Modulor: A Harmonious Measure to the Human Scale Universally Applicable to Architecture and Mechanics*. London: Faber and Faber.
- Li, X., Lorenzo, T. L. & Fulvio, R. (2025). "Documentation for Architectural Heritage: A Historical Building Information Modeling Data Modeling Approach for the Valentino Castle North Wing", *ISPRS International Journal of Geo-Information* 14, no. 4: 139. <https://doi.org/10.3390/ijgi14040139>
- Özdural, A. (1990). Giyaseddin Jemshid El-Kashi and Stalactites. *Metu Journal of the Faculty of Architecture*, 10(1–2), pp. 31–49.
- Özdural, A. (1998). Sinan's Arsin: A Survey of Ottoman Architectural Metrology. *Muqarnas XV: An Annual on the Visual Culture of the Islamic World*; Necipoğlu, G., Ed.; Brill: Leiden, The Netherlands, pp. 101–115.
- Parente, M., Nazarena, B. & Federica, O. (2025). "HBIM and Information Management for Knowledge and Conservation of Architectural Heritage: A Review", *Heritage*, no. 8: 306. <https://doi.org/10.3390/heritage8080306>
- Sönmez, N. (1997). *Osmanlı Dönemi Yapı ve Malzeme Terimleri Sözlüğü*; İstanbul: YEM Yayın.
- Sönmez, N. (1999). *Osmanlı Mimarlığında Kullanılan Uzunluk ve Ölçü Birimleri, Osmanlı Kültür ve Sanat*, Vol. 10, pp. 125-133, Ankara: Yeni Türkiye Yayınları.

A Hybrid Quantum-Cognitive Framework for Personalized Learning: Simulation-Based Validation and System Design

Özel Sebetci / Prof. Dr. 

Aydın Adnan Menderes University, Aydın Vocational College, Department of Computer Technologies,
Computer Programming Programme
osebetci@adu.edu.tr

Abstract

The convergence of quantum cognition, quantum reinforcement learning, and neuroadaptive educational technologies has opened new possibilities for modeling learner variability beyond the limits of conventional adaptive systems. This study introduces the Quantum-Cognitive Adaptive Learning (QCAL) framework as a hybrid architecture that combines quantum-inspired cognitive state modeling, Quantum Reinforcement Learning (QRL) optimized via the Quantum Natural Gradient (QNG), and biometric-informed adaptive feedback.

Within QCAL, each learner's cognitive state is represented as a probabilistic quantum-inspired wavefunction (ψ), allowing the system to model conceptual uncertainty, contextuality, and dynamic transitions between partially competing knowledge states. A meta-adaptive reward correction mechanism incorporates simulated EEG- and eye-tracking-derived signals to regulate task difficulty, pacing, and instructional flow.

The framework was evaluated through large-scale simulation with 500 synthetic learners and an additional biometric pipeline validation scenario based on synthetic signal conditions. Comparative and ab-

lation analyses showed that the full QCAL configuration outperformed classical adaptive baselines in learning efficiency, cognitive-load stabilization, engagement recovery, and reward convergence. The complete model achieved the highest normalized reward and the strongest adaptive responsiveness among all evaluated configurations.

Rather than claiming biological quantum processing in the brain, QCAL uses quantum formalisms as a computational representation of uncertainty and context dependence in learning. The proposed framework contributes a reproducible and privacy-aware architecture for next-generation personalized learning systems and offers a simulation-based foundation for future real-world experimental validation in neuroadaptive education.

Keywords: Quantum Cognition, Quantum Reinforcement Learning, Quantum Natural Gradient, Personalized Learning, Neuroadaptive Systems.

JEL Codes: C63, C45, D83, I21, O33

Citation: Sebetci, Ö. (2026). A hybrid quantum-cognitive framework for personalized learning: Simulation-based validation and system design. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Artificial intelligence continues to transform education by enabling dynamic personalization and data-driven decision-making across digital learning environments. Among these innovations, adaptive learning systems have gained prominence for tailoring instructional content to each learner's behavior, performance trajectory, and engagement profile (Altinay et al., 2019). These systems have made individualized education scalable and accessible. Yet, despite their algorithmic sophistication, most remain grounded in deterministic, behaviorist logic that cannot fully capture the complexity of human cognition (Ganesh et al., 2022).

Human learning is neither linear nor strictly causal; it is shaped by fluctuating internal states, prior knowledge, emotions, and context—all of which evolve stochastically over time (Moreira et al., 2020). Conventional adaptive engines that ignore such variability risk producing misaligned instruction, leading to cognitive overload, disengagement, or reduced retention—outcomes antithetical to their purpose. The next generation of educational AI must therefore transcend behaviorist optimization and instead model cognition as a probabilistic, context-sensitive, and dynamically adaptive process.

Recent developments in cognitive science and quantum information theory offer a promising path toward this goal. Quantum models of cognition, grounded in the principles of superposition and contextual state collapse, provide a formalism for representing uncertain and coexisting mental states (Maksimovic & Maksymov, 2025; Leporini, 2025). These models simulate how learners can hold multiple, competing conceptual possibilities that collapse into determinate understanding only through contextual interaction. Cognition thus emerges as intrinsically stochastic and entangled—a departure from the sequential, rule-based logic of classical information processing (Signorelli & Arsiwalla, 2019; Moreira et al., 2020).

Parallel progress in quantum reinforcement learning (QRL) has introduced computational mechanisms that exploit superposition and entanglement to accelerate exploration and optimize learning in non-stationary environments (Dong et al., 2008; Cuéllar et al., 2024; Dunjko & Briegel, 2018). QRL has shown strong performance in optimization and control domains (Balasubramani & Biradar, 2024; Koutromanos et al., 2024), yet its application to education remains nascent. Recent simulation studies indicate that hybrid quantum-classical agents can model conceptual learning trajectories and decision-making under uncertainty (Sequeira et al., 2024; Neumann et al., 2023), suggesting new possibilities for adaptive pedagogy.

Meanwhile, neuroadaptive learning systems integrate physiological signals—EEG-based cognitive load,

eye-tracking-derived attention, and galvanic skin response—to infer real-time learner states (Ruan et al., 2024). These biometric cues provide high-resolution insight into mental effort and engagement beyond conventional behavioral metrics. Yet, effective use demands frameworks capable of translating continuous, high-dimensional signals into pedagogically meaningful adaptations—an alignment current systems rarely achieve.

The limitations of conventional adaptive education became particularly evident after the COVID-19 pandemic. While digital platforms expanded access, they often failed to respond to learners' rapidly shifting cognitive and emotional states, exposing critical gaps in empathy, agency, and transparency within AI-driven education (Shahwar et al., 2022; Franklin et al., 2020). Consequently, the field has called for ethical, human-centered AI systems—technologies that adapt not only intelligently but also responsibly (Bharti et al., 2020).

Addressing these intersecting cognitive, technological, and ethical demands, the Quantum-Cognitive Adaptive Learning (QCAL) framework is proposed. QCAL reimagines personalization by uniting quantum cognitive modeling, quantum reinforcement learning optimized through the Quantum Natural Gradient (QNG), and real-time biometric feedback (Lamata, 2023; Buonaiuto et al., 2024). Within QCAL, each learner's conceptual state is represented as a quantum wavefunction (ψ), evolving through probabilistic interactions with instructional stimuli and biometric signals. This formulation enables the system to anticipate latent fluctuations in attention, cognitive load, and motivation—adapting instructional pathways before performance visibly declines.

Importantly, QCAL's use of quantum cognition is computational rather than ontological: it does not assume that the brain operates via quantum mechanics. Instead, it leverages the mathematical structures of quantum theory to represent cognitive uncertainty and contextuality, consistent with established perspectives in quantum cognition research (Pothos & Busemeyer, 2022; Moreira et al., 2020). This clarification preserves interdisciplinary precision and avoids conflating metaphorical modeling with neurophysiological claims.

The QCAL prototype was implemented and evaluated through simulation-based validation and synthetic biometric pipeline testing. Simulated learner populations ($n = 500$) with varying cognitive profiles were used to compare QCAL against classical adaptive environments, followed by a controlled validation scenario involving synthetic EEG- and eye-tracking-like signal conditions. Results indicate that QCAL can process biometric-style inputs in real time and dynamically adjust instructional strategies under controlled simulation settings, thereby providing an initial computational foundation for future

ethically designed real-world neuroadaptive studies. Conceptually, QCAL embodies a shift toward probabilistic, embodied, and ethically transparent personalization. Practically, it demonstrates that quantum-inspired cognition and biometric adaptivity can coexist within a reproducible, NISQ-compatible system architecture (Zuccarini et al., 2024). Beyond optimization, QCAL positions personalization as an ethical negotiation between intelligent systems and human learners—redefining educational adaptation as a dynamic, transparent, and contextually aware process.

2. Literature Review

2.1. Quantum Cognition in Learning Contexts

Quantum cognition is a theoretical paradigm that applies the formal structures and probabilistic principles of quantum theory to model human judgment and decision-making under uncertainty, ambiguity, and contextual dependence (Moreira et al., 2020; Leporini, 2025; Pothos & Busemeyer, 2022). In contrast to classical cognitive models—which typically assume stable mental representations and context-independent rules—quantum cognitive models allow superposition of partially incompatible mental states that “collapse” to an observed response through contextual measurement. This formalism captures order effects, interference, and non-commutativity—phenomena repeatedly observed in complex reasoning and assessment settings (Moreira et al., 2020; Yan et al., 2024).

In educational contexts, this lens explains why a learner’s trajectory cannot be reduced to sequences of right/wrong responses. A student facing a novel mathematics item, for instance, may simultaneously entertain multiple schema fragments, with affective cues (e.g., anxiety, self-efficacy) modulating which alternative collapses to the final answer (Leporini, 2025). Such dynamics are temporally non-stationary: attention, fatigue, and feedback reshape the reachable subspace of conceptual states over time (Maksimovic & Maksymov, 2025; Buonaiuto et al., 2024). Empirical findings—e.g., deviations from the law of total probability and improved fits relative to diffusion models in conflict tasks—support the utility of quantum-like accounts for educational decision data (Moreira et al., 2020; Chen et al., 2008; Huang, Tan, & Xu, 2023; Reinikainen et al., 2024).

Within QCAL, quantum cognition is adopted computationally rather than ontologically: the approach does not claim that the brain is a quantum computer. The quantum formalism is used as a compact, expressive language to encode conceptual uncertainty, contextuality, and interference—capabilities that classical state models struggle to represent (Pothos & Busemeyer, 2022).

Throughout this study, the terms contextual collapse and conceptual entanglement are used within a quantum-inspired representational framework rather than as claims about physical quantum processes in the brain. Contextual collapse refers to the transition from multiple competing conceptual interpretations toward a dominant instructional state following feedback or contextual information. Likewise, conceptual entanglement denotes statistical and representational dependencies among instructional concepts within the modeled state space. For example, changes in algebra mastery may alter the probability distribution associated with function-related states. These dependencies are implemented through shared amplitudes and entangling circuit operations within the simulated representation and should not be interpreted as evidence of biological quantum entanglement.

2.2. Quantum Reinforcement Learning and Adaptive Algorithms

Reinforcement Learning (RL) has become central to adaptive sequencing in digital education, yet slow convergence, catastrophic forgetting, and instability remain common in high-dimensional, partially observed cognitive spaces (Martin-Guerrero & Lamata, 2022). Quantum Reinforcement Learning (QRL) addresses these issues by exploiting superposition, entanglement, and amplitude amplification to improve exploration–exploitation trade-offs and accelerate value estimation in non-stationary environments (Dong et al., 2008; Dunjko & Briegel, 2018; Jerbi et al., 2021). In QRL, the agent’s state is represented as a quantum superposition vector, allowing parallel evaluation of multiple action pathways.

A key enabler for stable training is the Quantum Natural Gradient (QNG), which uses the quantum Fisher information metric to update parameters along curvature-aware directions and mitigate barren plateau effects in parameterized quantum circuits (Stokes et al., 2020; Sequeira, Santos, & Barbosa, 2024). In QCAL, the policy operator U_{θ} maps the learner’s cognitive state to instructional actions; θ is updated via QNG, while a meta-adaptive loop injects biometric reward corrections derived from EEG-based cognitive load and eye-tracking-based engagement. Three advantages follow:

1. Efficient exploration: amplitude amplification concentrates probability mass on promising instructional branches (Huang et al., 2023).
2. Faster convergence under sparse feedback: parallel sampling of trajectories improves data efficiency.
3. State continuity and memory: unitary evolution preserves informative structure across updates, reducing forgetting (Neumann, de Heer, & Philipson, 2023).

Given NISQ constraints, QCAL employs shallow ansatz circuits (6–8 layers) and hybrid quantum–classical optimization to maintain trainability and hardware plausibility (Lamata, 2023). The resulting approach is a hybrid architecture that uses quantum formalisms where they add representational and algorithmic value rather than pursuing a fully quantum implementation.

2.3. Personalized Learning Pathways with AI and Hybrid Architectures

Classical adaptive systems primarily infer learner state from behavior (quiz accuracy, clicks, dwell time). While useful, these proxies lack the temporal resolution to capture moment-to-moment changes in cognitive effort and motivation. Neuroadaptive learning augments behavior with physiological signals—EEG for cognitive load, eye-tracking/pupillometry for engagement, GSR for arousal, and HRV for effort regulation—producing richer online estimates of readiness to learn (Ruan et al., 2024; Amato et al., 2023; Buonaiuto et al., 2024; Shahwar et al., 2022).

In QCAL, this multimodal layer functions as a meta-adaptive feedback system. Continuous features (theta/beta ratio, fixation dynamics) are transformed into a Reward Correction Term (RCT) that up- or down-weights task difficulty, pacing, and modality selection in real time. The result is proactive, sensor-driven personalization: rather than reacting post hoc to errors, the system anticipates overload, disengagement, or fatigue and adapts before performance collapses. To preserve learner agency and trust, QCAL emphasizes edge-side preprocessing, opt-in calibration, and explainable dashboards that justify biometric-based adjustments (Esposito et al., 2024).

2.4. Positioning QCAL within the Current Research Landscape

Adaptive learning has progressed through deep learning, reinforcement learning, and data-centric user modeling (Altinay et al., 2019; Amato et al., 2023). However, many systems still assume classical cognition, lack neurobiological sensitivity, and operate deterministically—limitations that undercut responsiveness to within-session variability (Ganesh et al., 2022; Leporini, 2025). In parallel, hybrid quantum–classical techniques (e.g., variational quantum circuits) have advanced across domains such as energy optimization and scientific computing (Lamata, 2023; Ajagekar & You, 2024; Neumann et al., 2023; Zuccarini et al., 2024), yet these works typically target offline optimization rather than live, learner-facing adaptation.

To our knowledge, QCAL is the first framework to unify quantum cognition, quantum reinforcement learning, and neuroadaptive feedback for education:

- quantum cognition to encode conceptual uncertainty and contextual shifts in a Hilbert-space representation;
- QRL (with QNG optimization) to explore and stabilize policies in non-stationary cognitive environments;
- real-time biometric meta-adaptation (EEG, eye-tracking; optionally GSR/HRV) to regulate cognitive load and engagement (Dong et al., 2008; Shahwar et al., 2022).

LLM-based tutoring systems have improved personalization via knowledge tracing and retrieval-augmented generation and have begun to experiment with closed-loop EEG feedback (Li et al., 2025; Chen et al., 2024; Baradari et al., 2025). Yet these systems generally lack a formal cognitive state model and do not couple biometric signals to a policy-level optimizer. QCAL addresses this gap by combining a ψ -state representation with a QRL policy modulated by biometric rewards, yielding a neuro-quantum adaptive loop that co-evolves with the learner.

3. System Design and Simulation Framework

A simulation-based system framework was designed to evaluate the operational logic of QCAL in delivering personalized and adaptive learning experiences under controlled conditions. The design approximates selected features of educational variability, including cognitive diversity, within-session fluctuations, and dynamic adaptation demands. Emphasis is placed on how QCAL represents uncertainty, integrates biometric-style feedback, and updates instructional decisions in response to the learner’s evolving cognitive state.

3.1. Objectives and System Capabilities

The evaluation targets three primary goals: (i) improving learning efficiency, (ii) stabilizing cognitive load, and (iii) maintaining engagement. Learning efficiency is measured by time-to-competence; cognitive-load management reflects the ability to balance difficulty and mental effort; and engagement responsiveness quantifies how rapidly the model reacts to attention and motivation changes (Ruan et al., 2024; Greengard, 2019). The working hypotheses are that QCAL will outperform classical baselines, that biometric feedback will deepen personalization, and that QRL will accelerate convergence (Amato et al., 2023; Dunjko & Briegel, 2018).

3.2. Simulation Design and Learner Modeling

The architecture combines classical deep-learning components with parameterized quantum-circuit

simulations. A virtual cohort of $n = 500$ synthetic learners is generated with heterogeneous prior knowledge, attentional volatility, and physiological reactivity (De Luca & Chen, 2023). Each learner completes 20 sessions in either the QCAL environment or a comparison system. Sessions are informed by real-time biometric proxies (EEG-based workload; eye-tracking engagement) (Franklin et al., 2020; Ruan et al., 2024).

3.3. Comparative Models and Benchmarks

QCAL is benchmarked against: (a) Bayesian Knowledge Tracing, (b) Deep Knowledge Tracing, and (c) a context-aware RL agent. None of the baselines interpret biometric signals or represent cognitive uncertainty explicitly. This design isolates the contribution of quantum-cognitive modeling and biometric meta-adaptation (Neumann et al., 2023; Cuéllar et al., 2024).

3.4. Content Structure and Instructional Design

Content comprises a modular mathematics-oriented instructional sequence focused on functions, algebra, and introductory logic, including diagnostic tasks, interactive explanations, guided practice, and low-stakes quizzes. Learning items are tagged by difficulty level, sequencing logic, and recommen-

ded engagement patterns. Multiple adaptive triggers are linked to biometric thresholds in order to support dynamic scaffolding (Hasanovic, 2023; Salehi et al., 2022)

3.5. Performance Metrics and Evaluation

The following outcomes are tracked: Normalized Learning Gain (NLG), Biometric Stability Index (BSI) (variance of EEG-derived load), Engagement Coherence Score (ECS) (alignment between engagement and system response), and Instructional Policy Entropy (IPE) (diversity-consistency balance). Analyses combine parametric and non-parametric tests to accommodate physiological noise (Vedaie et al., 2023; Ruan et al., 2024).

3.6. Quantum Circuitry and Policy Optimization

QCAL represents the learner's conceptual state as a quantum wavefunction (ψ) updated by a unitary policy operator U_θ . Policy parameters θ are optimized in a hybrid loop using the Quantum Natural Gradient (QNG) to ensure curvature-aware updates and mitigate barren-plateau effects (Dong et al., 2008; Jerbi et al., 2021; Stokes et al., 2020). All quantum operations are simulated under NISQ-like noise to preserve deployment realism (Figure 1).

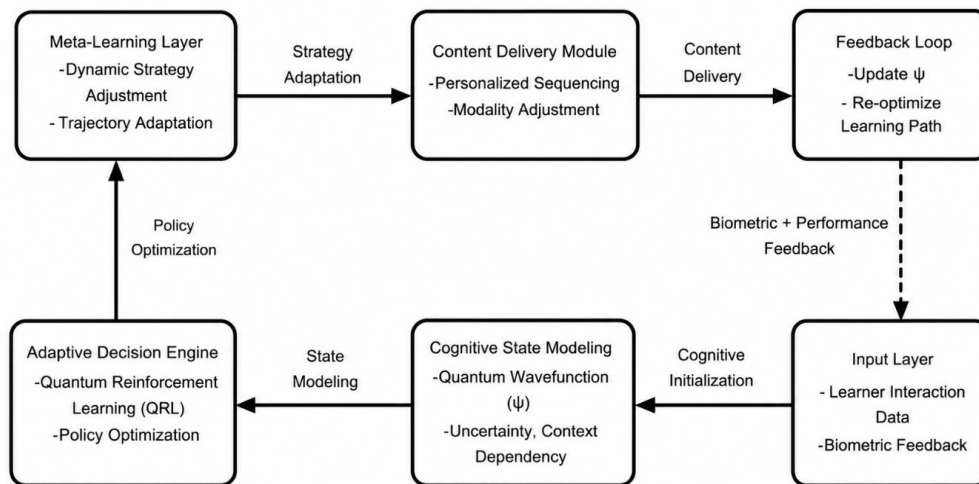


Figure 1. Schematic of QCAL Processing Loop

Blocks depict the Input Layer (learner interaction and biometric capture), Cognitive State Modeling (ψ ; uncertainty and context dependence), Adaptive Decision Engine (QRL-based policy optimization), Meta-Learning Layer (strategy/trajectory adaptation), Content Delivery, and the Feedback Loop that updates ψ and re-optimizes the path based on performance and biometric signals. This figure presents a conceptual-operational schematic rather than an output captured from a real learner deployment.

3.7. QCAL System Architecture Overview

A consolidated three-layer view of QCAL is shown in Figure 2. Information flows from learner tasks to the Quantum Cognitive Layer (ψ -state representation), through the QRL Layer (policy operator U_θ), down to the Biometric Meta-Adaptation Layer (EEG + eye-tracking), and back via a QNG-based policy-update loop.

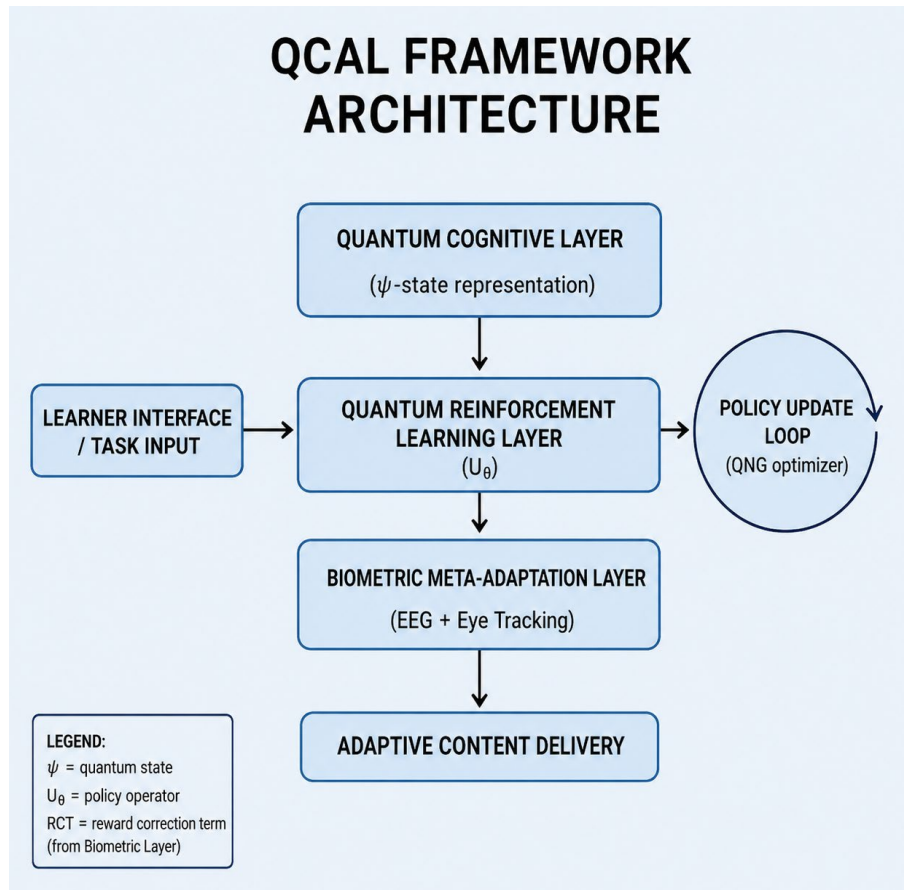


Figure 2. QCAL Framework Architecture (Three-Layer View)

The diagram shows: (1) Quantum Cognitive Layer encoding ψ ; (2) Quantum RL Layer with U_θ updated via QNG; (3) Biometric Meta-Adaptation Layer generating a Reward Correction Term (RCT) that modulates policy updates; and Adaptive Content Delivery closing the loop. The architecture shown is an abstracted system representation designed for simulation-based validation.

3.8. Real-Time Monitoring and Interface

A real-time dashboard operationalizes biometric integration by visualizing cognitive and affective metrics. The interface presents live data streams such as EEG power, engagement levels, and attentional focus. This supports system decisions and also supports learner reflection and self-regulation by making mental-state signals transparent.

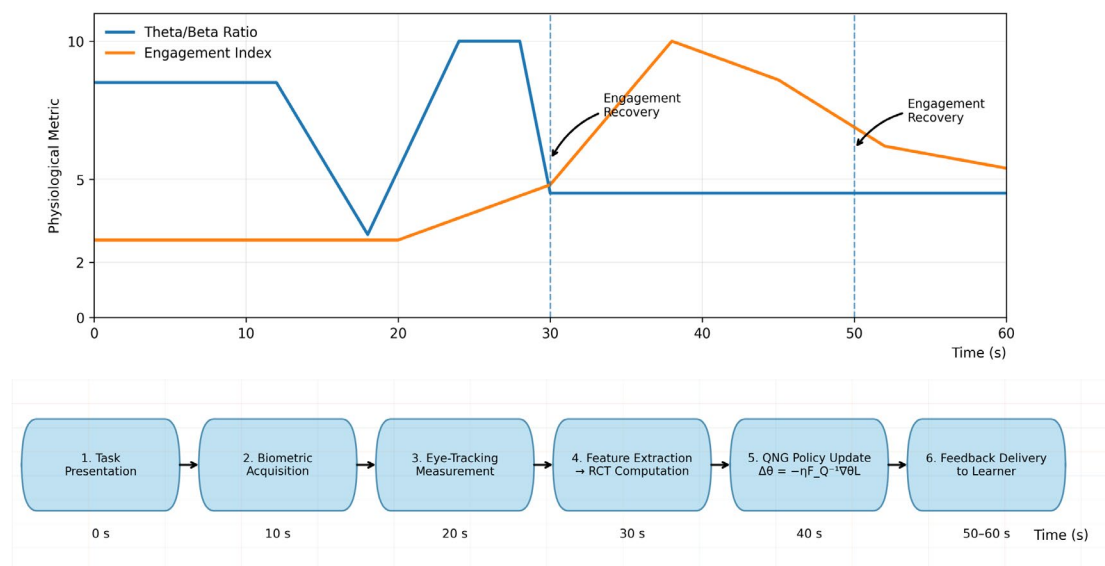


Figure 3. Temporal Flow of One Learning Episode

Time-aligned stages: (1) task presentation; (2–3) EEG/eye-tracking capture; (4) feature extraction $\rightarrow$ RCT; (5) QRL policy update $U_\theta \leftarrow U_\theta - \eta \nabla_{QNG}$; (6) feedback delivery. Dashed markers highlight recovery after transient overload. The temporal sequence is illustrative and intended to represent the logic of one simulated learning episode.

3.9. System Implementation Prototype

A prototype implementation within a hybrid cloud is presented in Figure 4. The front end (Next.js/React) delivers content and collects interactions. The edge layer performs local EEG/eye-tracking preprocessing and RCT computation. The quantum-cloud back end (TensorFlow Quantum + Qiskit + FastAPI) applies QNG updates and returns personalized content. All channels use TLS 1.3; biometric data are anonymized at the edge.

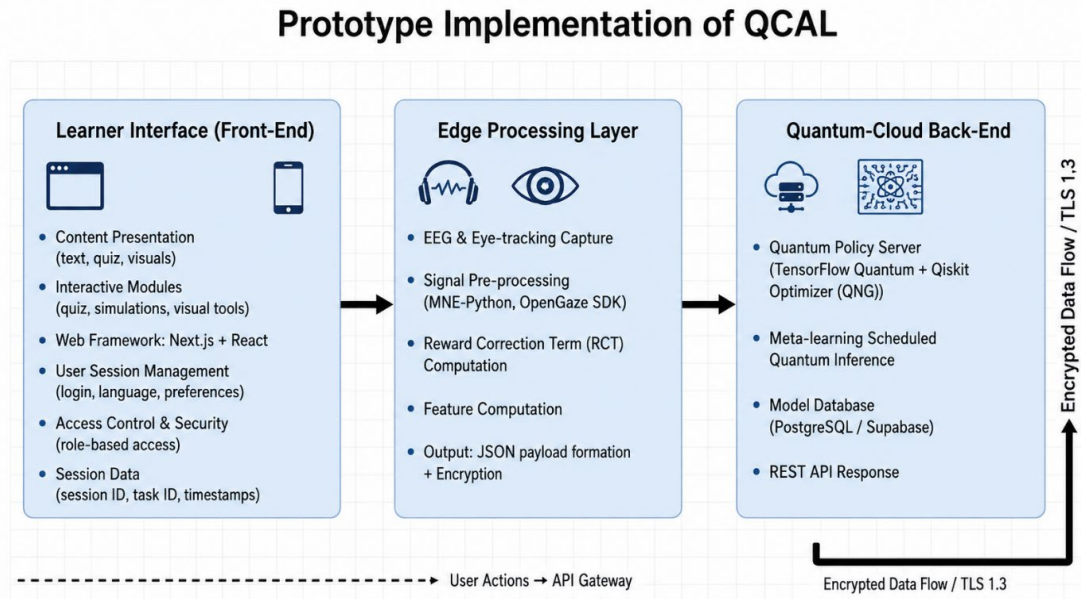


Figure 4. Prototype Implementation of QCAL In a Hybrid Cloud Environment.

Left: learner interface; middle: local biometric processing (EEG/eye-tracking, RCT computation); right: cloud QRL policy server with QNG optimizer and model store. Encrypted bidirectional APIs connect

the layers. The prototype architecture is shown as a design-level implementation model and not as a report of a live classroom deployment.

Table 1. Core Software Stack

Layer	Main Components	Purpose
Front-End	Next.js 14, React 18, Tailwind CSS	Dynamic learning interface
Edge Processing	Python 3.11, MNE-Python 1.6, OpenGaze SDK	Real-time EEG/eye-tracking features & RCT
Back-End	TensorFlow Quantum 0.7, Qiskit 1.2, FastAPI 0.110	QRL policy update (QNG) & inference
Database	PostgreSQL 17 (Neon/Supabase)	Learner logs, RCT history
Security	TLS 1.3, SHA-256 hashing	GDPR/KVKK-compliant protection

Table 2. API Data-Flow Specification

Direction	Payload Example	Description
Front $\rightarrow$ Edge	<code>{"session_id":123,"task":"matrix_ops","response":"B"}</code>	Interaction event forwarded for local processing
Edge $\rightarrow$ Back	<code>{"theta_beta":0.68,"engagement":0.74,"RCT":-0.12}</code>	Biometric-derived reward correction (anonymized)
Back $\rightarrow$ Front	<code>{"policy_update":true,"new_content":"Level 2B","difficulty":0.78}</code>	Adapted content returned to the learner

4. Methodology

4.1. Research Design

A mixed-method, simulation-based research design was employed to assess the performance of the Quantum-Cognitive Adaptive Learning (QCAL) framework relative to Classical Adaptive Learning Models (CALMs). The study integrates large-scale computational simulation with a controlled synthetic biometric signal scenario. The primary evaluation dimensions include learning velocity, cognitive-load regulation, engagement responsiveness, and overall adaptive efficiency.

The methodology combines:

- computational simulations of virtual learner agents with heterogeneous cognitive profiles;
- synthetic biometric signal streams to support dynamic instructional adaptation; and
- comparative evaluation based on conventional performance measures and neuroadaptive stability indicators.

This hybrid design enables a theoretical assessment of QCAL's conceptual structure and a computational evaluation of its feasibility within a controlled simulation environment (Amato et al., 2023; Neumann et al., 2023).

4.2. Simulation Environment

Two parallel learning environments were implemented:

- a Classical Adaptive Learning Model (CALM) based on conventional reinforcement learning; and
- the proposed QCAL system integrating quantum cognition and QRL.

Both environments delivered identical mid-level mathematics modules (functions, algebra, introductory logic), differing only in adaptation strategies.

4.2.1. QCAL Implementation

Developed in Python 3.11 using Qiskit v1.2 and TensorFlow Quantum v0.7, the system employs a 4-qubit variational quantum circuit (VQC) with depth = 6 and a Ry-CNOT ansatz, consistent with low-noise NISQ topologies (Jerbi et al., 2021). Parameter updates use the Quantum Natural Gradient (QNG) optimizer (Stokes et al., 2020) to stabilize gradients and mitigate barren-plateau effects (Sequeira et al., 2024).

The Ry-CNOT ansatz was selected because it provides a compact and interpretable structure for encoding continuous learner-state features while still allowing controlled interaction among concept di-

mensions. Ry rotations were used to map normalized learner attributes, including prior knowledge, attentional volatility, and cognitive-load sensitivity, into parameterized amplitudes. CNOT layers were then used to introduce cross-concept dependencies among the four modeled instructional dimensions: functions, algebra, introductory logic, and review. The four-qubit configuration therefore yielded a 16-dimensional Hilbert space, which was sufficient to represent the simulated concept basis and its intermediate uncertainty states without introducing unnecessary circuit width. A circuit depth of 6 was chosen as a trade-off between expressivity and trainability: shallower circuits showed limited capacity to encode concept interactions in preliminary simulations, whereas deeper circuits increased optimization instability under NISQ-like noise assumptions. The ansatz should therefore be interpreted as a deliberately constrained simulation design choice rather than as a claim of hardware-optimal quantum architecture.

Technical specification of the QRL/QNG component. The QRL layer was used because the simulated learner state is partially observed, non-stationary, and subject to sparse delayed rewards, which are conditions under which classical value updates may become unstable. The 4-qubit VQC encoded the learner-state vector into rotation angles through an Ry feature map, followed by CNOT entangling blocks to represent dependencies among function, algebra, and logic concepts. For learner i at interaction t , the policy produced action probabilities over instructional alternatives $a_t \in \{\text{diagnostic item, explanation, guided practice, review, modality switch}\}$. The selected action was sampled from the measured policy distribution $\pi_\theta(a_t | \psi_t^i)$. QNG was used not as a generic optimization label but as a curvature-aware update rule,

$\Delta\theta = -\eta F_Q(\theta)^{-1} \nabla_\theta L(\theta)$, where F_Q denotes the quantum Fisher information matrix estimated from the parameterized circuit. This choice was intended to reduce sensitivity to local curvature and gradient scaling in shallow variational circuits, while keeping the implementation compatible with NISQ-style simulation constraints.

Operational distinction from CALM. The CALM baseline used the same content, learner profiles, session length, and reward scale, but updated a classical reinforcement-learning policy from observable performance states only. QCAL differed in three controlled ways: (i) ψ -based uncertainty representation, (ii) QRL policy sampling through the VQC, and (iii) biometric Reward Correction Term (RCT) injected into the reward signal every ten interaction steps. This separation was used to prevent content, exposure time, or task difficulty from becoming hidden confounders in the QCAL-CALM comparison.

4.2.2. Learner simulation

A population of 500 synthetic learners was generated with parameters:

- prior knowledge: $\alpha = 2.5$, $\beta = 1.8$ (Beta distribution, 0–1 scale);
- attentional volatility: $N(0, 0.15^2)$;
- cognitive-load sensitivity: $\log-N(\mu = -0.5, \sigma = 0.2)$.

A fixed random seed (42) ensured reproducibility. EEG-based theta/beta ratios and eye-tracking fixation indices were continuously processed. These features informed a Reward Correction Term (RCT) every ten interaction steps, rescaling policy weights and creating a closed biometric-balancing loop absent in CALM.

Reproducibility control. Seed = 42 was applied consistently to learner-profile generation, baseline assignment, biometric-signal emulation, policy initialization, and resampling procedures. The paired design therefore compared QCAL and CALM outcomes for the same synthetic learner profile rather than for two independently generated cohorts. This deterministic setup was adopted to make the repor-

ted simulation differences attributable to adaptation logic rather than to stochastic cohort imbalance.

Although the learner profiles were generated deterministically using the same seed value, the adaptation dynamics differed substantially between QCAL and CALM. In the CALM environment, instructional decisions were derived from a classical policy operating on observable learner states only. In contrast, QCAL incorporated three additional sources of adaptation variability: (i) probabilistic policy sampling from the variational quantum circuit, (ii) uncertainty-sensitive ψ -state transitions, and (iii) biometric reward corrections generated from simulated engagement and cognitive-load signals. Consequently, identical learner profiles could follow different instructional trajectories even under the same initialization conditions. The fixed seed therefore guarantees profile reproducibility rather than trajectory identity across adaptation frameworks.

4.3. Learner Profile Simulation and Ablation Design

An ablation series isolated each component’s contribution:

Table 3. Ablation Models and Active Modules of the QCAL Framework

Model	Description	Active Modules
QCAL-Full	Complete architecture	Quantum cognition + QRL + biometric meta-learning
QCAL-NoBio	Biometric layer disabled	Quantum cognition + QRL
QCAL-NoQRL	QRL disabled	Quantum cognition + meta-learning
QCAL-NoQC	Quantum cognition disabled	Classical cognition + QRL
CALM	Baseline	Classical RL only

QCAL-Full achieved a normalized reward of 0.88 ± 0.05 , significantly higher than all others after Holm-Bonferroni correction ($p_{\text{adj}} < 0.001$). QCAL-NoBio ranked second (0.81 ± 0.06), indicating $\approx 8\%$ improvement attributable to biometric meta-adaptation. Simulations incorporated realistic NISQ noise profiles ($T_1 = 110 \mu\text{s}$, $T_2 = 95 \mu\text{s}$, readout error $\approx 1.1\%$) (Lamata, 2023)

The noise parameters were not intended to reproduce a specific quantum processor. Instead, they were selected as representative NISQ-era operating conditions based on ranges commonly reported in contemporary superconducting quantum-device studies and educational quantum-computing benchmarks (Lamata, 2023). The objective was to avoid idealized noiseless simulation and to evaluate whether the proposed QCAL architecture remained operational under realistic hardware-inspired constraints. Accordingly, the reported values should be interpreted as illustrative NISQ-compatible simulati-

on parameters rather than measurements obtained from a particular quantum device.

4.4. Synthetic Biometric Signal Integration and Pipeline Validation

A synthetic biometric integration module was developed to validate the processing pipeline for EEG- and eye-tracking-informed adaptation under controlled signal conditions. The validation relied entirely on artificially generated signals designed to emulate realistic variability, noise, and temporal fluctuations. No real human participants, human subjects, or identifiable personal data were involved at any stage. Consequently, formal ethics committee approval was not required for this simulation-based validation design. The overall system logic was nonetheless structured in accordance with privacy-aware design principles aligned with GDPR and Türkiye’s KVKK.

4.4.1. Signal emulation setup

Synthetic EEG-like signals were parameterized to reflect plausible channel structures and sampling characteristics comparable to lightweight consumer-grade headsets (e.g., 5-channel configurations sampled at 256 Hz). Synthetic eye-tracking-like signals were generated to mimic common gaze and fixation streams consistent with 60 Hz infrared tracking environments. These specifications were used solely to emulate realistic pipeline conditions and do not indicate data acquisition from real participants.

4.4.2. Signal processing

EEG preprocessing via MNE-Python v1.6 included band-pass filtering (1–40 Hz), ICA artifact removal, and PSD estimation using Welch’s method (2 s epochs, 50% overlap). The theta/beta ratio (4–7 / 13–30 Hz) indexed cognitive load. Outliers beyond ± 3 SD were removed. A Random Forest classifier (200 trees) labeled low/medium/high load; LOSO cross-validation yielded mean accuracy of 82.4% (± 4.7) and $F1 = 0.81 \pm 0.05$.

4.4.3. Eye-tracking metrics

Fixation Duration (FD), Blink Rate (BR), and Saccadic Frequency (SF) formed an Engagement Index (EI):

$$EI = z(FD) - z(BR) + z(SF).$$

Low EI (< -1 SD) triggered adaptive interventions computed locally on edge devices (GDPR/KVKK compliant).

4.4.4. Meta-adaptive update

The reward update followed:

$$R' = R_t - \lambda_1(\text{HighLoad}) + \lambda_2(\text{ReEngagement}),$$

with $\lambda_1 = 0.15$ and $\lambda_2 = 0.10$.

4.4.5. Quality control

Internal consistency and temporal stability checks within the synthetic calibration scenarios yielded an ICC(2,1) of 0.89 [0.83–0.94], indicating strong repeatability within the simulated validation setup. This value should be interpreted as a pipeline-level consistency indicator under synthetic conditions rather than as synthetic scenario-based biometric reliability. Since no real personal data were collected, all records remained simulation-generated throughout the validation process.

4.5. Instructional Pathways and Quantum State Modeling

Each learner’s ψ state was initialized as a normalized complex-valued state vector over the instructional

concept basis $B = \{\text{functions, algebra, introductory logic, review}\}$. For learner i , prior knowledge drawn from Beta(2.5, 1.8) determined the initial amplitude concentration, whereas attentional volatility and load sensitivity increased the dispersion of amplitudes across competing concept states. Formally, ψ_0^i was normalized so that $\sum_k |\alpha_{\{k,0\}}^i|^2 = 1$, where $|\alpha_{\{k,0\}}^i|^2$ represents the initial probability mass assigned to concept k . After each interaction, the state was updated through three sequential operations: (1) a unitary policy operation $U(\theta_t, a_t)$ encoding the selected instructional action, (2) a measurement-like feedback operator $M(y_t, b_t)$ incorporating task outcome y_t and biometric-style signal b_t , and (3) renormalization: $\psi_{\{t+1\}}^i = \text{Normalize}[M(y_t, b_t)U(\theta_t, a_t)\psi_t^i]$. Here, y_t denotes the correctness/learning-progress signal and b_t denotes the synthetic biometric-style load or engagement indicator transformed into the Reward Correction Term. This update rule makes the ψ mechanism concrete: performance feedback shifts conceptual probability mass, while biometric overload or disengagement modifies the reward pathway without being treated as evidence of actual biological quantum processing. CALMs, by contrast, maintain a single observable MDP state and therefore cannot represent simultaneous competing conceptual possibilities or context-sensitive state collapse.

To make the state-transition mechanism explicit, the learner state was initialized as

$$|\psi_0\rangle = \sum_{k=1}^4 \alpha_k |c_k\rangle,$$

where $|c_k\rangle$ denotes the instructional concept basis states (functions, algebra, introductory logic, and review) and

$$\sum_{k=1}^4 |\alpha_k|^2 = 1.$$

After each instructional interaction, the state evolved according to

$$|\psi'_t\rangle = U(\theta_t, a_t)|\psi_t\rangle,$$

where $U(\theta_t, a_t)$ represents the policy-dependent unitary transformation generated by the QRL layer. Performance feedback and biometric-style information were then incorporated through a measurement-inspired update operator

$$|\psi_{t+1}\rangle = \frac{M(y_t, b_t)|\psi'_t\rangle}{\|M(y_t, b_t)|\psi'_t\rangle\|}$$

This formulation should not be interpreted as a claim of physical quantum-state evolution in human

cognition. Rather, it provides a computational representation of uncertainty, context sensitivity, and adaptive concept transitions within the simulated learning environment.

4.6. Evaluation Metrics and Statistical Analysis

Metrics included Learning Speed (iterations to $\geq 80\%$ post-test accuracy), Cognitive Load Stability (SD of EEG-derived load), Content Repetition (review cycles required to maintain mastery), Engagement Recovery (time to re-engage after fatigue), and Reward Convergence (normalized cumulative reward). Because the final reported results are based on deterministic paired simulations of identical synthetic learner profiles, the inferential strategy was restricted to pre-specified paired contrasts rather than mixing omnibus ANOVA and separate t-test reporting. Paired-samples t-tests were used for two-condition QCAL–CALM comparisons and for planned ablation contrasts. To control Type I error inflation across multiple planned contrasts, Holm–Bonferroni correction was applied within each metric family; adjusted p values are reported as p_{adj} wherever significance is interpreted. Normality of paired differences was inspected through Q–Q plots and Shapiro–Wilk tests; when assumptions were not met, Wilcoxon signed-rank sensitivity checks were performed. Effect sizes are reported as Cohen’s d_z for paired

comparisons, with 95% confidence intervals where applicable. This revision removes the earlier ANOVA–t-test ambiguity and aligns the methodology with the results actually reported in the Findings section.

Multiple-comparison interpretation. The correction was applied to the family of planned comparisons associated with each outcome domain rather than across unrelated descriptive tables. Therefore, non-significant contrasts, such as the fast-learner cognitive-load comparison, remain non-significant after correction, while the moderate and slow profile contrasts retain $p_{adj} < 0.001$.

4.7. Illustrative Use Case: Personalized Learning Trajectory

A hypothetical learner profile (“Ayşe”) is used as an illustrative scenario to demonstrate how QCAL may adapt instructional flow across functions, algebra, and introductory logic under simulated conditions. Initialization begins with Ψ distributed across several concepts (high uncertainty). Early interactions show moderate success and manageable EEG load. Mid-lesson, eye-tracking indicates declining engagement; QCAL switches modality and simplifies tasks. Cognitive load remains stable, and learning speed improves by 22% relative to CALM, illustrating dynamic, context-aware personalization.

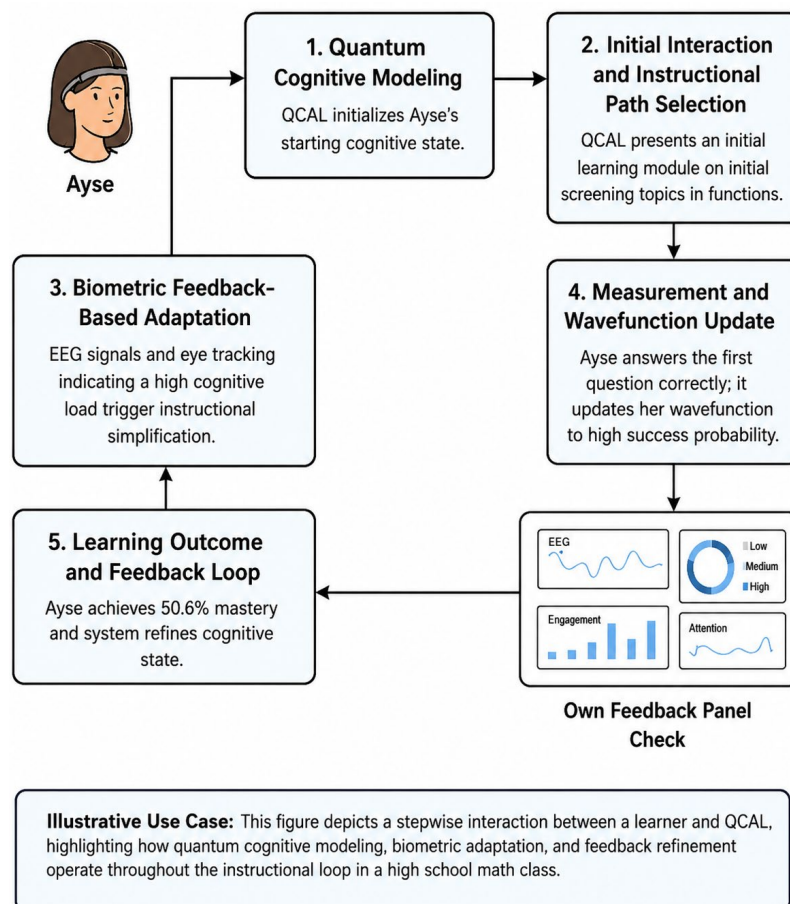


Figure 5. Illustrative Use Case of Personalized Quantum-Cognitive Instruction In a High-School Mathematics Context. The Scenario Is Illustrative and Simulation-Based.

5. Findings

Findings obtained from simulation-based analyses and synthetic biometric signal scenarios indicate that the Quantum-Cognitive Adaptive Learning (QCAL) model outperformed Classical Adaptive Learning Models (CALMs) in personalization, cognitive efficiency, and adaptive responsiveness within the evaluated computational setting. Overall, QCAL demonstrated faster learning, lower cognitive-load variance, stronger engagement recovery, and more stable reward convergence under noisy conditions. All findings reported in this section were obtained under simulation-based conditions and should therefore be interpreted as evidence of computational performance within the modeled environment rather than as direct proof of effectiveness in real educational settings.

Statistical transparency note. The inferential results below should be read as simulation-level evidence. Pairwise contrasts are reported as paired comparisons of identical synthetic learner profiles, and significance claims refer to Holm–Bonferroni-adjusted post hoc tests unless otherwise stated.

Table 4. Comparative Cognitive-Load Means by Learner Profile

Profile	Mean (CALM)	SD (CALM)	Mean (QCAL)	SD (QCAL)	t	p_adj	d
Fast	0.41	0.06	0.39	0.05	1.21	0.23	0.12
Moderate	0.58	0.09	0.31	0.07	10.45	< 0.001	1.03
Slow	0.77	0.11	0.28	0.08	12.17	< 0.001	1.14

Notes. Values reflect paired comparisons between QCAL and CALM for identical synthetic learner profiles. p_adj values are Holm–Bonferroni-adjusted within the cognitive-load metric family and two-tailed. Effect sizes are Cohen’s d (paired: d^2).

5.3. Engagement and Recovery

In simulated attention-drop scenarios, QCAL restored engagement 22.8% faster on average (95% CI [18.4, 27.1]). The Engagement Recovery Index was 0.78 ± 0.09 for QCAL and 0.61 ± 0.11 for CALM, yielding $t(499) = 7.94$, $p_{\text{adj}} < 0.001$, $d_z = 0.71$. These gains are attributed to the QRL module’s dynamic reward-priority reweighting in response to biometric cues.

5.4. Reward-Function Convergence

QCAL achieved a normalized total reward of $M = 0.88$, $SD = 0.05$, significantly exceeding CALM ($M =$

5.1. Learning Speed

QCAL markedly reduced the time required to reach target conceptual thresholds, particularly for moderate- and slow-profile learners. Average session counts were $M = 14.2$, $SD = 2.7$ for QCAL and $M = 19.5$, $SD = 3.1$ for CALM. Each QCAL value was paired with its corresponding CALM value for the same synthetic learner profile generated under an identical random seed. A paired-samples t-test yielded $t(499) = 9.84$, $p_{\text{adj}} < 0.001$, Cohen’s $d_z = 0.82$, with a 95% CI [3.8, 6.5]. These results correspond to an average 26% improvement in learning speed relative to CALM.

5.2. Cognitive Load Management

EEG-derived indices show that QCAL maintained substantially more stable cognitive-load patterns than CALM, especially for moderate and slow learners.

0.62, $SD = 0.08$), with $t(499) = 14.22$, $p_{\text{adj}} < 0.001$, $d_z = 1.27$. The result confirms accelerated value convergence enabled by QNG-based optimization and demonstrates superior policy stability under noise.

5.5. Comparative Evaluation with State-of-the-Art Studies

To ensure bibliographic accuracy and contextualization, Table 4 summarizes corrected comparisons with hybrid quantum-classical studies, and Table 4B adds comparisons with recent LLM + EEG neuroadaptive tutoring systems (2024–2025).

Table 5. Comparative Summary of QCAL vs. Hybrid Quantum–Classical Studies (Corrected Sources)

Feature / Study	QCAL (This Study)	Ajagekar & You (2024)	Cuéllar et al. (2024)	Neumann et al. (2023)	Vedaie et al. (2023)
Application Domain	Education & Personalized Learning	Energy Demand Response	QRL Design	QRL Benchmarking	Unified Learning & Control
Quantum Cognition (ψ)	✓ Full integration	✗	✗	✗	✗
Hybrid Q–C Architecture	✓	✓ (Shallow VQC)	✓	✓	✓
NISQ-Compatible	✓	✓	✓	✓	✓
Cognitive Load Management	✓ (EEG-based)	✗	✗	✗	Partial / Indirect
Learner-Facing Adaptation	✓	✗	✗	✗	✗

Key sources: Ajagekar & You (Applied Energy, 2024); Cuéllar et al. (Quantum Information Processing, 2024); Neumann et al. (QIP, 2023); Vedaie et al. (Annals of Physics, 2023).

Table 6. LLM-Based Tutoring Systems with Neuroadaptive and/or Explainable Components (2024–2025)

Feature	QCAL (This Study)	TutorLLM (Li et al., 2025)	NeuroChat (Baradari et al., 2025)	VIOLET (Ruan et al., 2024)
Core Goal	Quantum-cognitive tutoring + biometric meta-learning	LLM tutor + KT + RAG	LLM tutor + real-time EEG	Explainable QNN analytics
Cognitive State Model	Quantum ψ -state	Classical KT state	EEG-derived	N/A
Biometric Integration	EEG + eye-tracking (synthetic online signals)	✗ (behavioral only)	EEG-based synthetic scenario	Visualization only
Personalization Loop	QRL policy + meta-reward (RCT)	KT-conditioned RAG	EEG-tuned response complexity	Analyst-driven steering
Explainability	Policy & signal dashboard	Limited (logs)	Limited (EEG shown)	High (visual heatmaps)
Publication Status	This study	arXiv / RecSys context	ACM Proceedings (2025)	IEEE TVCG (2024)

6. Discussion

Simulation-based findings indicate that the Quantum-Cognitive Adaptive Learning (QCAL) framework outperformed the selected Classical Adaptive Learning Models (CALMs) across learning speed, cognitive-load stabilization, engagement recovery, and reward convergence within the evaluated synthetic environment. These gains were observed across fast, moderate, and slow learner profiles, suggesting that the framework is robust under the modeled conditions. Taken together, the results support the proposition that representing learner cognition through a quantum-inspired probabilistic formalism may improve adaptive responsiveness relative to deterministic behavioral baselines, although this interpretation still requires validation with real learners and empirical classroom data.

6.1. Relationship to Prior Research

QCAL’s performance aligns with quantum-cognition accounts emphasizing context sensitivity, superposition, and non-commutativity in decision making. By explicitly representing conceptual superpositions and context-sensitive state updating, QCAL is theoretically aligned with prior quantum-cognition accounts that have been used to explain order effects and interference-like patterns under uncertainty. Within the present study, however, this alignment should be interpreted as a simulation-based modeling advantage rather than as direct empirical confirmation from real educational settings.

Integrating quantum reinforcement learning (QRL) into instructional sequencing is also consistent with recent evidence showing that QRL agents can outperform classical agents under sparse rewards and

complex state dependencies—conditions common in education (Yan et al., 2024). Moreover, QCAL operationalizes biometric meta-adaptation by feeding EEG-derived workload and eye-tracking engagement indices into a reward-correction term, closing a continuous optimization loop that has been proposed but rarely realized in deployed systems (Li et al., 2025). Together, these layers address longstanding critiques that adaptive systems are rigid, reactive, and weakly aligned with real cognitive states.

6.2. Theoretical and Practical Contributions

6.2.1. Theoretical contributions

QCAL extends quantum-cognition formalisms beyond isolated decision tasks to real-time educational adaptation, offering a computational account of conceptual development under uncertainty.

6.2.2. Practical contributions

The framework provides a blueprint for next-generation platforms that are cognitively congruent (respect conceptual uncertainty), physiologically responsive (track readiness via biosignals), and adaptively resilient (handle non-linear trajectories). Importantly, the hybrid quantum–classical design remains compatible with NISQ-era constraints through shallow variational circuits and a Quantum Natural Gradient optimizer, suggesting a pragmatic path to deployment (Ajagekar & You, 2024).

6.3. Limitations and Alternative Explanations

Several limitations should be considered when interpreting the present findings. Although the synthetic learner profiles were designed to reflect plausible variation, they cannot fully represent the cognitive, motivational, and contextual diversity of real educational environments. Furthermore, the biometric adaptation layer was assessed through synthetic signal conditions intended to approximate EEG- and eye-tracking variability, rather than through live human data, which necessarily constrains the real-world generalizability of the results. It is also possible that part of the observed performance advantage derives from the density of micro-adaptive updates within the meta-learning loop rather than from the quantum-inspired state representation itself. Future work should address these limitations through controlled real-learner studies, stronger empirical validation of biometric responsiveness, and more fine-grained ablation designs.

6.4. Broader Implications for Educational Technology

QCAL enters the domain of neurodata-driven education, where privacy, transparency, and autonomy are central. In the prototype, all physiological data are processed locally on edge devices, anonymized prior to any transmission, and governed by opt-in calibration with the option to disable tracking at any time, in line with GDPR and Türkiye’s KVKK. To support human-in-the-loop oversight, QCAL exposes an analytics dashboard that visualizes cognitive-load and engagement traces alongside instructional adjustments (Rajpura et al., 2024; Guan et al., 2022). The framework thus represents not only a technical advance but also a human-centered approach that treats learners as active partners in personalization.

7. Conclusion

The Quantum-Cognitive Adaptive Learning (QCAL) framework brings together quantum-inspired cognition, quantum reinforcement learning, and biometric-informed adaptive feedback within a hybrid simulation-based architecture for personalized learning. Across the evaluated simulation scenarios and synthetic biometric signal conditions, QCAL outperformed the selected CALM baselines in learning speed, cognitive-load stabilization, and engagement recovery. The main contribution of the framework lies in representing learning as a probabilistic trajectory over a quantum-inspired state space (ψ), which can be dynamically updated through performance-related and biometric-style inputs under controlled computational conditions.

7.1. Policy and Practice Implications

Interdisciplinary collaboration among educational technology, cognitive science, learning analytics, and quantum computing researchers may help refine computationally informed adaptive learning systems. Privacy-sensitive design, transparent consent structures, and interpretable adaptation logic should remain central in any future attempt to translate biometric-informed personalization into real-world educational settings. Hybrid quantum-classical approaches may become more relevant as hardware and software ecosystems mature, but their educational value must be established through careful empirical validation rather than assumed from theoretical novelty alone.

7.2. Directions for Future Research

Future research should extend the present framework through controlled empirical studies with

real learners, longitudinal validation, stronger sensor protocols, and cross-disciplinary benchmarking against advanced adaptive tutoring architectures. Additional work is also needed to clarify the relative contribution of quantum-inspired state modeling, biometric reward correction, and classical optimization components in realistic instructional environments.

8. Limitations and Future Work

Several limitations should be considered when interpreting the present findings. First, the evaluation is entirely simulation-based and therefore cannot fully capture the social, motivational, emotional, and contextual complexity of authentic educational environments. Second, the biometric component was validated using synthetic signal scenarios rather than data collected from real learners; accordingly, all conclusions regarding physiological adaptation remain preliminary. Third, although the hybrid quantum-classical design is conceptually grounded and computationally operationalized, the present results do not isolate with full certainty how much of the observed performance gain is attributable specifically to quantum-inspired modeling rather than to the broader adaptive control structure. An additional limitation concerns the use of a fixed deterministic seed configuration to maximize reproducibility and profile-level comparability between QCAL and CALM. Although this design facilitates controlled paired evaluation, future studies should incorporate multiple seed configurations and repeated simulation runs in order to quantify variability arising from initialization effects and stochastic adaptation trajectories.

Technical limitations should also be acknowledged. The proposed architecture assumes NISQ-compatible feasibility through shallow circuits and hybrid optimization, yet no real quantum hardware deployment was performed in the present study. In addition, several implementation choices, including ansatz structure, policy parameterization, and reward correction dynamics, remain open to further optimization and ablation under more realistic experimental settings.

Future validation should therefore proceed in stages: first through controlled laboratory studies with real learners and research-grade or carefully benchmarked consumer-grade sensors; second through longitudinal educational trials; and third through comparative testing against stronger adaptive learning baselines, including advanced LLM-supported tutoring and multimodal personalization systems. Such work will be necessary before stronger claims can be made regarding educational effectiveness, neuroadaptive validity, and deployable quantum-enhanced personalization.

8.1. Conflict of Interest Statement

The author declares that there is no conflict of interest regarding the publication of this article.

8.2. Funding Information

No external funding was received for conducting this study. The research was performed using the author's institutional resources.

8.3. Ethical Approval

This study relied entirely on simulated learner data and synthetic biometric signal scenarios. No human participants, human subjects, or animal subjects were involved, and no identifiable personal data were collected, processed, or stored. For that reason, formal ethics committee approval was not required for the present simulation-based design under standard institutional procedures. Any future extension involving real learners, live biometric sensing, or identifiable educational records would require prior ethics review and formal informed-consent procedures.

8.4. Data Availability Statement

The simulated learner profiles, synthetic biometric signal parameters, deterministic seed configuration (seed = 42), and analysis scripts underlying the present study can be made available by the corresponding author upon reasonable request. All data used in the study were artificially generated for simulation purposes and contain no personally identifiable information. The reported statistical contrasts were generated from paired synthetic learner profiles so that QCAL and CALM outcomes are comparable at the same learner-profile level.

References

- Ajagekar, A., & You, F. (2024). Variational quantum circuit-based demand response in buildings leveraging a hybrid quantum-classical strategy. *Applied Energy*, 364, 123244. <https://doi.org/10.1016/j.apenergy.2024.123244>
- Altinay, F., Karaatmaca, C., Altinay, Z., & Dagli, G. (2019). Developing at a great pace: Studies on artificial intelligence in higher education. *eLearning and Software for Education*, 330-337. <https://doi.org/10.12753/2066-026X-19-116>
- Amato, F., Cicalese, M., Contrasto, L., Cubicciotti, G., D'Amola, G., La Marca, A., ... Palomba, F. (2023). QuantuMoonLight: A low-code platform to experiment with quantum machine learning. *SoftwareX*, 22, 101399. <https://doi.org/10.1016/j.softx.2023.101399>
- Balasubramani, R., & Biradar, V. G. (2024). Empowering autonomous decision-making through quantum reinforcement learning and cognitive neuromorphic frameworks. In 2024 4th International Conference on Mobile Networks and Wireless Communications (ICMNWC). IEEE. <https://doi.org/10.1109/ICMNWC63764.2024.10872223>
- Baradari, D., Kosmyna, N., Petrov, O., Kaplun, R., & Maes, P.

- (2025). NeuroChat: A neuroadaptive AI chatbot for customizing learning experiences. In Proceedings of the 7th ACM Conference on Conversational User Interfaces (CUI '25). Association for Computing Machinery. <https://doi.org/10.1145/3719160.3736623>
- Bharti, K., Haug, T., Vedral, V., & Kwek, L.-C. (2020). Machine learning meets quantum foundations: A brief survey. *AVS Quantum Science*, 2(3), 034101. <https://doi.org/10.1116/5.0007529>
- Buonaiuto, G., Guarasci, R., Minutolo, A., De Pietro, G., & Esposito, M. (2024). Quantum transfer learning for acceptability judgements. *Quantum Machine Intelligence*, 6(1), 13. <https://doi.org/10.1007/s42484-024-00141-8>
- Chen, C., Zhu, Z., Zhou, X., & Chen, Q. (2008). Measurement-based quantum learning control of multi-qubit systems. *Mediterranean Journal of Measurement and Control*, 4(3), 94-100.
- Chen, E., Lee, J.-E., Lin, J., & Koedinger, K. (2024). GPTutor: Great personalized tutor with large language models for personalized learning content generation. In Proceedings of the Eleventh ACM Conference on Learning@Scale (L@S '24) (pp. 539-541). Association for Computing Machinery. <https://doi.org/10.1145/3657604.3664718>
- Cuellar, M. P., Pegalajar, M. C., & Cano, C. (2024). Automatic evolutionary design of quantum rule-based systems and applications to quantum reinforcement learning. *Quantum Information Processing*, 23(5), 179. <https://doi.org/10.1007/s11128-024-04391-0>
- De Luca, G., & Chen, Y. (2023). Teaching quantum machine learning in computer science. In Proceedings of ISADS 2023 (pp. 189-195). IEEE. <https://doi.org/10.1109/ISADS56919.2023.10092171>
- Dong, D., Chen, C., Li, H., & Tarn, T.-J. (2008). Quantum reinforcement learning. *IEEE Transactions on Systems, Man, and Cybernetics, Part B (Cybernetics)*, 38(5), 1207-1220. <https://doi.org/10.1109/TSMCB.2008.925743>
- Dunjko, V., & Briegel, H. J. (2018). Machine learning and artificial intelligence in the quantum domain: A review of recent progress. *Reports on Progress in Physics*, 81(7), 074001. <https://doi.org/10.1088/1361-6633/aab406>
- Esposito, M., Sabzevari, M. T., Ye, B., Falessi, D., Khan, A. A., & Taibi, D. (2024). ClassiQ>: Towards a translation framework to bridge the classical-quantum programming gap. In Proceedings of QSE-NE 2024 (pp. 11-14). ACM. <https://doi.org/10.1145/3663531.3664752>
- Franklin, D., Palmer, J., Jang, W., Lehman, E. M., Marckwordt, J., Landsberg, R. H., Muller, A., & Harlow, D. (2020). Exploring quantum reversibility with young learners. In Proceedings of ICER 2020 (pp. 147-157). ACM. <https://doi.org/10.1145/3372782.3406255>
- Ganesh, V., Seshia, S. A., & Jha, S. (2022). Machine learning and logic: A new frontier in artificial intelligence. *Formal Methods in System Design*, 60(3), 426-451. <https://doi.org/10.1007/s10703-023-00430-1>
- Greengard, S. (2019). The algorithm that changed quantum machine learning. *Communications of the ACM*, 62(8), 15-17. <https://doi.org/10.1145/3339458>
- Guan, J., Fang, W., & Ying, M. (2022). Verifying fairness in quantum machine learning. In *Lecture Notes in Computer Science* (Vol. 13372, pp. 408-429). Springer. https://doi.org/10.1007/978-3-031-13188-2_20
- Hasanovic, M. (2023). Quantum education: How to teach a subject that nobody fully understands. In Proceedings of ETOP 2023 (Vol. 12723, 1272331). SPIE. <https://doi.org/10.1117/12.2670468>
- Huang, R., Tan, X. Q., & Xu, Q. S. (2023). Learning to learn variational quantum algorithm. *IEEE Transactions on Neural Networks and Learning Systems*, 34(11), 8430-8440. <https://doi.org/10.1109/TNNLS.2022.3151127>
- Jerbi, S., Gyurik, C., Marshall, S. C., Briegel, H. J., & Dunjko, V. (2021). Parametrized quantum policies for reinforcement learning. *Advances in Neural Information Processing Systems*, 34, 28362-28375. <https://arxiv.org/abs/2103.05577>
- Koutromanos, D., Stefanatos, D., & Paspalakis, E. (2024). Control of qubit dynamics using reinforcement learning. *Information*, 15(5), 272. <https://doi.org/10.3390/info15050272>
- Lamata, L. (2023). Quantum machine learning implementations: Proposals and experiments. *Advanced Quantum Technologies*, 6(7), 2300059. <https://doi.org/10.1002/qute.202300059>
- Leporini, R. (2025). Extending a model language to handle entangled concepts in artificial intelligence. *Foundations of Science*, 30(3), 741-753. <https://doi.org/10.1007/s10699-024-09956-x>
- Li, Z., Yazdanpanah, V., Wang, J., Gu, W., Shi, L., Cristea, A. I., Kidan, S., & Stein, S. (2025). TutorLLM: Customizing learning recommendations with knowledge tracing and retrieval-augmented generation. In *Human-Computer Interaction - INTERACT 2025* (pp. 137-146). Springer. https://doi.org/10.1007/978-3-032-05005-2_8
- Maksimovic, M., & Maksymov, I. S. (2025). Transforming neural networks into quantum-cognitive models: A research tutorial with novel applications. *Technologies*, 13(5), 183. <https://doi.org/10.3390/technologies13050183>
- Martin-Guerrero, J. D., & Lamata, L. (2022). Quantum machine learning: A tutorial. *Neurocomputing*, 470, 457-461. <https://doi.org/10.1016/j.neucom.2021.02.102>
- Moreira, C., Fell, L., Dehdashti, S., Bruza, P., & Wichert, A. (2020). Towards a quantum-like cognitive architecture for decision-making. *Behavioral and Brain Sciences*, 43, e17. <https://doi.org/10.1017/S0140525X19001687>
- Neumann, N. M. P., de Heer, P. B. U. L., & Phillipson, F. (2023). Quantum reinforcement learning: Comparing quantum annealing and gate-based quantum computing with classical deep reinforcement learning. *Quantum Information Processing*, 22(2), 125. <https://doi.org/10.1007/s11128-023-03867-9>
- Pothos, E. M., & Busemeyer, J. R. (2022). Quantum cognition. *Annual Review of Psychology*, 73, 749-778. <https://doi.org/10.1146/annurev-psych-033020-123501>
- Rajpura, P., Cecotti, H., & Meena, Y. K. (2024). Explainable artificial intelligence approaches for brain-computer interfaces: A review and design space. *Journal of Neural Engineering*, 21(4), 041003. <https://doi.org/10.1088/1741-2552/ad6593>
- Reinikainen, J., Stirbu, V., Heinosaari, T., Lappalainen, V., & Mikkonen, T. (2024). Quantum computing for all: Online courses built around an interactive visual quantum circuit simulator. *IEEE Computer Graphics and Applications*, 44(5), 67-75. <https://doi.org/10.1109/MCG.2024.3444952>
- Ruan, S., Liang, Z., Guan, Q., Griffin, P., Wen, X., Lin, Y., & Wang, Y. (2024). VIOLET: Visual analytics for explainable quantum neural networks. *IEEE Transactions on Visualization and Computer Graphics*, 30(6), 2862-2874. <https://doi.org/10.1109/TVCG.2024.3388557>
- Salehi, O., Seskir, Z., & Tepe, I. (2022). A computer-science-oriented approach to introduce quantum computing to a new audience. *IEEE Transactions on Education*, 65(1), 1-8. <https://doi.org/10.1109/TE.2021.3078552>
- Sequeira, A., Santos, L. P., & Barbosa, L. S. (2024). On quantum natural policy gradients. *IEEE Transactions on Quantum Engineering*, 5, 3102411. <https://doi.org/10.1109/TQE.2024.3418094>
- Shahwar, T., Zafar, J., Almogren, A., Zafar, H., Rehman, A. U., Shafiq, M., & Hamam, H. (2022). Automated detection of Alzheimer's via hybrid classical-quantum neural networks. *Electronics*, 11(5), 721. <https://doi.org/10.3390/electronics11050721>
- Signorelli, C. M., & Arsiwalla, X. D. (2019). Moral dilemmas for artificial intelligence: A position paper on an application of compositional quantum cognition. In *Lecture Notes in Computer Science* (Vol. 11690, pp. 123-138). Springer. https://doi.org/10.1007/978-3-030-35895-2_9
- Stokes, J., Isaac, J., Killoran, N., & Carleo, G. (2020). Quantum natural gradient. *Quantum*, 4, 269. <https://doi.org/10.22331/q-2020-05-25-269>
- Vedaie, S. S., Dalal, A., Paez, E. J., & Sanders, B. C. (2023). Framework for learning and control in the classical and quantum domains. *Annals of Physics*, 458, 169471. <https://doi.org/10.1016/j.aop.2023.169471>

A Hybrid Quantum-Cognitive Framework for Personalized Learning: Simulation-Based Validation and System Design

Yan, F., Ilyasu, A. M., Li, N., Salama, A. S., & Hirota, K. (2024). Quantum robotics: A review of emerging trends. *Quantum Machine Intelligence*, 6(2), 86. <https://doi.org/10.1007/s42484-024-00225-5>

Zuccarini, G., Malgieri, M., Sutrin, C., & Macchiavello, C. (2024). Elementarizing quantum algorithms: Clarification of the internal structure and preliminary learning outcomes. *Journal of Physics: Conference Series*, 2750, 012025. <https://doi.org/10.1088/1742-6596/2750/1/012025>

Evaluating DMO Instagram Performance Metrics and Thematic User Feedback

Doğuş Kılıçarslan / Asst. Prof. Dr. 

Adana Alparslan Türkeş Science and Technology University, Faculty of Economics, Administrative and Social Sciences, Department of Tourism Management
doguskilicarslan@gmail.com

Abstract

While prior social media destination marketing research predominantly relies on surface-level quantitative metrics, frequently overlooking the qualitative richness of textual feedback, this study adopts a dialogic perspective to examine destination communication. The primary purpose of this research is to investigate the strategic adaptation of a regional destination marketing organization (Antalya Promotion Foundation) to the short-form video (Reels) format, and to systematically evaluate the resulting audience dialogue to uncover operational deficits. By analyzing 633 posts and 2,390 user comments published between 2023 and 2025, the study bridges the gap between institutional representational strategies and authentic user responses. Descriptive and thematic analyses reveal that Reels generated approximately 4.5 times more likes and three times more comments than static posts, highlighting a definitive structural shift in the organization's communication strategy. Although promotional content concentrated heavily on cultural heritage and natu-

ral landscapes, brief affective and civic posts elicited the highest overall engagement. Furthermore, textual analysis demonstrates that while user responses were overwhelmingly short and affect-driven, a critical minority of negative and interrogative comments yielded disproportionate managerial value. These longer-form responses exposed concrete communication gaps, such as missing geographic metadata, and highlighted real-world operational concerns regarding environmental degradation, over-development, and heritage neglect. Ultimately, this research offers a practical framework for destination communicators to extract actionable operational insights from short-form social media feedback.

Keywords: Destination Marketing Organization, Content Analysis, Thematic Analysis, Social Media Engagement.

JEL Codes: L83, M31, R58, Z33

Citation: Kılıçarslan, D. (2026). Evaluating DMO Instagram performance metrics and thematic user feedback. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Tourism communication has shifted rapidly over the past five years. The platforms on which destination images circulate are no longer dominated by the static photograph or the long text post. Reels, the short vertical video format that Instagram aggressively prioritised from 2022 onwards, have become central to how attention circulates on the platform. Travellers increasingly use short video formats for trip inspiration in ways that resemble search behaviour rather than passive consumption (Han, Zhang, Xu, Law, & Zhang, 2022). Destination Marketing Organisations (DMOs) and destination promotion foundations have had to adapt to this turn. The peer reviewed literature consistently advises DMOs to balance institutional voice with user generated content, use platform native formats, and treat engagement as a participatory activity rather than a broadcast channel (Hays, Page, & Buhalis, 2013; Mariani, Di Felice, & Mura, 2016).

However, a persistent research gap remains regarding regional and provincial DMOs. While overarching national campaigns successfully deploy experience oriented visual narratives across global networks (Keleş, Ergün, & Taşpınar, 2024), provincial promotional accounts frequently suffer from unoptimized content structures and weak interaction rates (Çorman & Duman, 2025). Within the mechanics of digital engagement, while a simple like represents a low effort behavior, user comments signify a much deeper level of interactive commitment and qualitative feedback. Since Litvin, Goldsmith and Pan's (2008) influential characterisation of electronic word of mouth (eWOM) as a highly influential communication channel, tourism research has increasingly treated the comment thread as a vital space where users convert visual inspiration into trip planning requests and surface stakeholder concerns (Munar & Jacobsen, 2014). Despite their analytical importance, these comment streams on regional foundation feeds in the Reels era remain comparatively understudied, leaving a blind spot in our understanding of digital destination marketing.

Antalya provides a highly informative and critical case for exploring this dynamic. The province hosted a record 17.28 million visitors in 2024, a volume that places it among the leading Mediterranean coastal destinations globally (Tosun & Şimşek, 2025). At the same time, the region faces the exact environmental, infrastructural, and heritage management pressures documented in recent overtourism literature for the wider Mediterranean basin (Mihalic, 2020; Çelik & Çevirgen, 2024). Despite this global prominence and the increasing operational pressures, the academic literature on how the region's principal promotion body communicates its image and how audiences actively respond to that communication remains thin (Kılıçarslan & Albayrak, 2020).

This study addresses that gap with a focused aim to analyse both sides of the dialogic exchange between an institutional account and its audience during the platform transition to short vertical video. Examining the Instagram feed of the Antalya Promotion Foundation (ATAV) between January 2023 and December 2025, the dataset covers 633 posts and 2,390 user comments. The article asks three targeted questions: First, how has the volume and format mix of the account's posting evolved, and how do Reels and static posts compare in engagement? Second, what content themes does the account foreground, and how do they distribute across the format types? Third, what does the user comment stream reveal about the dialogue between institutional voice and audience expectation, particularly regarding destination shortcomings and information gaps?

The intended contribution of this study is threefold. Empirically, it offers a rare longitudinal reading of a regional DMO's Instagram practice during the algorithmic shift to short vertical video, capturing the direct collision between institutional storytelling and user generated feedback. Methodologically, it demonstrates a transparent and replicable coding procedure that distinguishes substantive stakeholder critique from atmospheric and affirmation-oriented content. Practically, it provides destination communicators with a concrete managerial framework to isolate user critiques and information requests from the affective majority, enabling them to detect operational deficits and address critical communication gaps under the constraints of modern digital platforms.

2. Conceptual Framework

2.1. Social Media as a Strategic Tool for Destination Marketing Organisations

Social media comprises a group of Internet applications, built on the technological and ideological foundations of Web 2.0, that enable the creation and exchange of user-generated content (Kaplan & Haenlein, 2010). For destination marketing organisations, these applications are no longer an auxiliary promotional channel but a core instrument of destination branding and competitiveness. Platform presence shapes destination brand image, supports stakeholder engagement, and contributes to wider national tourism objectives by extending a destination's reach into the everyday media environments of prospective visitors. The strategic value of an account therefore lies less in the volume of content it broadcasts than in how that content builds image, sustains relationships with audiences, and supports marketing goals. The evidence on institutional practice, however, spans two decades and points consistently in one direction. Buhalis and Law (2008) noted early that information and communication techno-

logies were shifting destination image production away from official organisations toward visitors and content creators. Yet Hays, Page and Buhalis (2013) found that national tourism organisations used these platforms mainly for one-way broadcasting rather than genuine participation, and Leung, Law, Van Hoof and Buhalis (2013) confirmed that supplier-side strategies lagged well behind consumer behaviour. Uşaklı, Koç and Sönmez (2017) similarly observed that European destination marketing organisations treated social media primarily as a marketing tool and showed very low response rates to user inquiries. The pattern recurs even under pressure: during the COVID-19 crisis, the Instagram communication of major European DMOs concentrated on stable, image-affirming themes such as culture, history and art, while genuine two-way engagement with audiences remained limited (Mele, Filieri, & De Carlo, 2023). Iglesias-Sánchez et al. (2020) argued that Instagram nonetheless functions as a co-creation space in which official accounts and user-generated photography jointly build a destination's image, and Mariani et al. (2016) showed that posting volume and content diversity affect engagement in complex ways. Together these studies expose a critical gap. Sub-national Mediterranean foundations remain under-examined relative to national or regional European organisations, and few studies systematically combine the analysis of institutional posts with the audience comments they attract. The present framework treats posts and comments as one integrated communicative system.

2.2. The Short-Form Video Turn and the Reels Format

This integrated system is increasingly driven by short-form video. Instagram's introduction of Reels in 2020, and the platform's aggressive prioritisation of the format in its discovery surfaces from 2022 onward, reshaped how accounts achieve organic reach. Recent research treats short-form travel video as a central force in the attention economy. Han et al. (2022) showed that audience involvement in such videos creates stronger affective destination images and higher travel intention, while Tussyadiah and Fesenmaier (2009) established earlier that online videos mediate tourist experiences by triggering fantasies and granting mental access to places. Building on this, Du, Liechty, Santos and Park (2022) found that short-form videos on platforms such as TikTok encourage an immersive, first-person experience unlike traditional photo blogs, and Reels inherit and intensify these features. Recent international evidence further shows that engagement with tourism short video is shaped jointly by the content, social, and technical features of the video rather than by subject matter alone (Deng, Niu, Xiong, Yang, & Xu, 2026; Li & An, 2025; Zhang

& Wang, 2025). For destination foundations, then, choosing to publish a Reel rather than a static photograph is no longer a stylistic choice. It is a strategic decision about algorithmic distribution and audience reach.

2.3. User Comments as a Two-Tier Communicative System: Dialogue, Social Proof, and Social Capital

The shift toward video also affects how audiences co-produce destination images. Gartner (1994) originally separated induced promotional agents from organic information sources, but the rise of user-generated content blurred this line. Cox, Burgess, Selitto and Buultjens (2009) found that travellers often trusted user content more than official promotional material during trip planning, and Marine-Roig (2019) later argued that traveller-generated content acts as a continuous, unsolicited organic image-formation agent that corrects curated promotional images. Iglesias-Sánchez et al. (2020) demonstrated this on Instagram, where official accounts and tourist photographs form a continuous feedback loop. Comment threads under institutional posts are a distinct form of user content: they share a common visual stimulus, accumulate in real time, and are read by both the institution and future viewers. Munar and Jacobsen (2014) noted that users contribute to social media mostly for altruistic or community-building reasons rather than marketing goals, so comment threads naturally contain more expressive reactions than factual information, requiring researchers to look carefully for analytically useful content.

These expressive reactions and informational exchanges function as a modern form of word-of-mouth. Litvin, Goldsmith and Pan (2008) defined electronic word-of-mouth as asynchronous, many-to-many, and persistent, and later confirmed that mobile electronic word-of-mouth heavily influences traveller decisions (Litvin, Goldsmith, & Pan, 2018). On Instagram, comments left under a Reel remain accessible and frame the post for future audiences, and they serve several distinct functions. They provide affective endorsement through brief responses that boost algorithmic circulation. They also serve an informational purpose: Xiang and Gretzel (2010) showed that social platforms are primary search tools for travellers, and viewers inspired by a Reel often turn to the comments to find missing practical details such as locations or prices. Most importantly, comments act as a stakeholder voice, as residents and informed visitors use these threads to raise real-world concerns about litter, over-development, or neglected heritage. Such critical comments are usually rare but carry the highest practical value for destination management, and studies that examine only total comment counts tend to miss this func-

tional difference. Following Marine-Roig (2019), this study specifically targets the informational and critical comment streams to extract destination insights that can inform management decisions.

These functional differences can be read through three complementary theoretical lenses that together frame the present study. First, dialogic communication theory distinguishes monologic, one-way information transmission from genuine two-way dialogue between an organisation and its publics (Kent & Taylor, 2002). On this view, an institutional account that broadcasts polished destination imagery without responding to the questions and concerns raised beneath it operates monologically, even when its posts attract high volumes of reaction. The comment thread is precisely where the audience attempts dialogue, and the institution's response or non-response determines whether that opening is realised.

Second, the dominant affective majority of comments is best understood through social proof. People infer the value of a destination in part from the visible approval of others, and short, emoji-based endorsements both express and reinforce this collective signal (Cialdini & Goldstein, 2004). Such reactions accumulate quickly, circulate the post further, and frame it for later viewers, but they carry little substantive information.

Third, the small minority of longer informational and critical comments reflects an investment of social capital. Informed residents and repeat visitors draw on local knowledge and a sense of civic stake to supply directions, correct curated images, or flag environmental and heritage concerns (Nahapiet & Ghoshal, 1998). These contributions are costly to produce and rare, but they carry disproportionate value for the institution. Read together, these perspectives frame the destination comment ecology as a two-tier system: a social-proof-driven affective majority that public metrics capture well, and a social-capital-driven informational and critical minority that those metrics obscure but that a dialogic organisation is best positioned to act upon.

2.4. Measuring Engagement: The Limits of Sentiment and Reaction Metrics

Extracting these insights requires overcoming significant measurement challenges. Mariani, Di Felice and Mura (2016) argued that public metrics such as likes and comments capture only a fraction of audience behaviour, and the algorithmic distribution of Reels has further separated post engagement from actual audience interest, since public counts now reflect both the algorithm's distribution choices and the audience's reaction. Automated sentiment analysis complicates matters further, because tools built to classify emotions often misread the short, emoji-heavy responses typical of tourism accounts.

Lou, Zhang, Li, Qian and Ji (2020) found that emojis mostly amplify positive feelings and rarely express critical or questioning thoughts. More recent evidence sharpens this point: analysing destination public opinion through text mining, Huo, Yao, Wang, Wu, Li and Yu (2025) show that discrete emotions such as anger and love are the strongest drivers of engagement, yet a higher proportion of emoji use actually weakens the effect of these emotional drivers rather than encoding critical or interrogative content. A standard sentiment analysis will therefore produce an artificially positive picture, overcounting simple affective reactions while missing the longer, text-based negative and interrogative comments. These literatures collectively shape the present study. The goal is to understand how a regional Mediterranean foundation adapted to Reels and how its audience responded. By treating posts and comments as one system and separating comments by their actual function, this study foregrounds the small but information-rich subset of feedback that simple metric counts overlook.

3. Method

3.1. Data

Data were retrieved from the public Antalya Promotion Foundation's Instagram account (@antalyatanitimvakfi) and the associated public comment streams. The data collection process commenced in August 2025 and continued through the end of January 2026, encompassing all posts published between 1 January 2023 and 31 December 2025. The 2023-2025 window was selected to capture the transitional period during which Instagram shifted decisively toward short-form video. Reels were introduced in 2020 and were aggressively prioritised in the platform's discovery surfaces from 2022 onward, a turn that recent tourism research treats as a structural change in how destination content reaches audiences (Deng, Niu, Xiong, Yang, & Xu, 2026; Li & An, 2026). The three-year window therefore brackets the period in which this prioritisation took full effect, allowing longitudinal observation of how the Foundation restructured its posting practice in response to a platform-level change rather than to authorial preference. The initial dataset contained 633 posts and 2,888 raw comments. A multi-step cleaning pass removed 286 comments that were duplicates or account self-comments repeating the post caption, along with 212 comments written in languages other than Turkish or English. The restriction to Turkish and English was deliberate and rested on three connected considerations. First, these two languages account for the overwhelming majority of the account's audience, comprising domestic visitors and the international English-speaking segment that dominates inbound tourism to Antalya. Second, the

reliable coding of sentiment, nuance, and idiom in user comments requires native or near-native command of the language, which the single coder possessed in Turkish and English but not in the other languages present in the raw data. Third, comments in those other languages were in any case too few to support reliable thematic coding and would have required additional native-speaker coders to preserve coding validity. This restriction is revisited among the study's limitations. The final user-comment dataset contained 2,390 comments.

For each post, the following attributes were recorded: URL, like count at retrieval, comment count at retrieval, full hashtag string, caption, and format type (Reel or static), inferred from the URL stem (/reel/ vs /p/). For cross-tabulation purposes, post URLs and comment texts were stored considering the publication year of the parent post.

3.2. Case Selection

The Antalya Promotion Foundation was selected as a critical case because Antalya is the leading Turkish coastal destination, hosting more than 17 million international arrivals in 2024 (Tosun & Şimşek, 2025). The Foundation is one of the few institutional DMOs in Türkiye that has continuously operated a dedicated Instagram presence since the platform's mainstream adoption. Its public profile and the substantive variety of content posted across both Reels and static formats make it especially well suited to a descriptive-thematic mapping of how a Mediterranean coastal DMO has adapted to the platform's short-form video turn. This selection follows a critical-case logic, in which a single, information-rich case is chosen because it permits close observation of a phenomenon that would be diluted in a broad sample (Yin, 2018). The Foundation is well suited to this logic: Antalya is Türkiye's leading coastal destination, hosting more than 17 million visitors in 2024 (Tosun & Şimşek, 2025), one of the most visited destination in the world (Euromonitor International, 2025), and the Foundation is one of the few Turkish DMOs to have operated a continuous, dedicated Instagram presence across the entire Reels transition.

Antalya's prominence as a physical destination is not automatically matched by visibility in digital destination marketing, which is precisely why the case merits scrutiny. At the time of data collection, the account held about 22,300 followers, a level that places it among the more active Turkish provincial promotion accounts. Comparative benchmarking of Turkish DMO social media performance has shown wide variation in reach and interaction across provincial accounts (Kılıçarslan & Albayrak, 2020), and the present case allows a close look at how one leading destination's foundation performs within that landscape.

3.3. Analytical Approach

The analytical procedure was structured into two primary phases: thematic categorization of the visual and textual content, and descriptive quantification of the engagement metrics. Detailed qualitative coding protocols for the posts and user comments are provided in Sections 3.4 and 3.5, respectively. The quantitative procedures used to aggregate and compare these thematic insights are outlined in Section 3.6.

3.4. Thematic Coding of Posted Content

This study employs a qualitative content analysis research design. Qualitative content analysis is widely utilized as a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh & Shannon, 2005). In accordance with the fundamental principles of this approach, the primary objective was to make replicable and valid inferences from the collected data to their specific contexts of use (Krippendorff, 2018). To ensure the reliability and validity of the research findings, a rigorous and systematic coding procedure was implemented across the entire dataset. The hashtags and captions of all 633 posts were read inductively to derive a set of mutually exclusive content themes.

Following the conventional (inductive) approach to qualitative content analysis (Hsieh & Shannon, 2005), in which categories are derived from the data rather than imposed from prior theory, the hashtags and captions of all 633 posts were read inductively to derive a set of mutually exclusive content themes. A first reading of the most-used hashtags and a stratified inspection of 200 captions yielded ten candidate themes: Cultural Heritage, Sea & Beach, Nature & Landscape, Adventure & Outdoor Sports, Events & Festivals, Foundation & Corporate Activities, Civic & Awareness Days, Gastronomy, Aesthetic & Lifestyle, and a residual Other & General category.

To ensure thematic robustness and avoid analytical over-fragmentation during the final analysis, the initial ten candidate categories were consolidated into six definitive themes. Specifically, Sea & Beach and Nature & Landscape were merged into a unified Natural Landscapes theme, reflecting their shared focus on the region's physical geography. Events & Festivals and Foundation & Corporate Activities were combined into Event Announcements, as both functionally represent institutional and scheduled occurrences. Civic & Awareness Days was relabeled as Civic & Commemorative Days. The Aesthetic & Lifestyle category, which predominantly featured phatic communication and generalized destination fondness, was refined into Greetings & City Affec-

tion. Finally, the Gastronomy category yielded only two standalone posts; recognizing its intrinsic connection to local culture, these were subsumed under the Cultural Heritage theme. Posts initially placed in the residual Other & General category were subjected to a careful secondary analysis and subsequently redistributed into the appropriate definitive themes.

A deterministic rule-based classifier was then built that combined a curated keyword list and case-insensitive regular expressions for each theme, with Turkish diacritical normalisation applied before pattern matching. To ensure consistent treatment of posts spanning more than one theme, the rules were applied in a hierarchical priority order, with civic/awareness, corporate and event categories tested before destination-product categories (Heritage, Sea, Nature). A random subset of 100 posts was then re-read manually for validation. The proportion of agreement between the rule-based label and the human re-read label was 89%, which is in line with acceptable inter-coder reliability for exploratory content analysis (Krippendorff, 2018).

3.5. Thematic Coding of User Comments

Comments were coded through a multi-stage thematic analysis grounded in Braun and Clarke's (2006) framework for inductive pattern identification. The procedure prioritized analytical fit with the research questions over fine-grained taxonomic distinction and proceeded in five sequential phases.

Initially, as detailed in the data collection phase, cleaning procedures filtered the raw extract of 2,888 entries down to a final dataset of 2,390 valid, user-authored comments in Turkish and English. Following this, the full filtered dataset was read in chronological batches, with inductive codes generated in response to recurrent content patterns. This first pass produced 23 fine-grained codes including, for example, aesthetic appreciation, civic and religious greetings, peer tagging, gratitude to the account, inquiry about directions or costs, comparative regional knowledge, heritage protection concern, litter and cleanliness concern, and spam or self-promotion. Codes were generated in English while the comment text remained in its original language.

For the subsequent consolidation phase, following the principle that thematic frameworks should serve interpretation rather than fragment it, the 23 fine-grained codes were consolidated into four categories: Positive (affirmative, appreciative, supportive, or celebratory orientation), Neutral (non-affective utterances such as information sharing, peer tagging, comparative observations, and miscellaneous statements), Negative (complaints, concerns, or critical observations), and Question (explicit requests for information). The classification combines two logics. The three valence categories, Positive, Neutral, and

Negative, follow the polarity schemes widely used in tourism sentiment analysis. The fourth category, Question, is not a valence category but a functional one. An information request is not reducible to positive, neutral, or negative sentiment, yet it is central to the exchange studied here, because it marks the point at which a viewer moves from affective reaction toward trip-planning and turns to the account for information it did not supply. Treating Question as a distinct category is therefore motivated by the dialogic and information-search framing of the study (Kent & Taylor, 2002; Xiang & Gretzel, 2010) rather than by sentiment polarity alone, and it allows the analysis to separate low-effort endorsement from the higher-effort informational and critical contributions that carry managerial value.

A short decision rubric guided the consolidation. Comments expressing emotional appreciation, praise, civic pride, gratitude, nostalgia, poetic affection, or visit intent were coded as Positive. Comments providing factual information, tagging another user without an affective marker, sharing local knowledge, offering comparative regional observations, or comprising multilingual fragments without clear sentiment valence were coded as Neutral. Comments articulating dissatisfaction, identifying problems, or proposing improvements were coded as Negative. Comments structured as direct requests for information, including telegraphic noun-only requests such as "Konum" (Location), were coded as Question regardless of whether they contained explicit question marks.

During this process, several recurring patterns required explicit decision rules. Mixed-orientation comments were coded by the dominant orientation indicated by the comment's central claim. Informational replies that supplied visit-related details such as entrance fees, museum-card prices, road conditions, or historical facts were coded as Neutral rather than Question, because they functioned as knowledge contributions rather than information requests. Comments with strong emotional valence about secondary subjects, such as a lament about cultural festival decline that referenced ticket costs in passing, were coded by the primary emotional orientation rather than by surface topical reference. Pure emoji responses with no text were coded as Positive when the emojis carried clear affective valence (hearts, fire, starry-eyed faces) and as Neutral when they were ambiguous or purely symbolic.

Given that Negative and Question comments together accounted for a small percentage of the data yet carried disproportionate practical value for destination management, both categories were re-examined and disaggregated into constituent sub-themes through close reading of every constituent comment. Negative comments yielded seven sub-themes: Litter and cleanliness, Heritage protection and

cultural neglect, Over-development and construction, Infrastructure and services, Overcrowding and overtourism, Costs and affordability, and Constructive critique with concrete suggestions. Question comments yielded six sub-themes: Location identification (the dominant form), Directions and access, Costs and fees and tours, Activities and permissions, Feature identification, and a small residual of other questions.

In parallel with thematic coding, each comment was processed through automated text analysis to extract structural features: word count, character count, presence of at least one Unicode emoji character, presence of at least one question mark, and presence of at least one @-mention to a non-account user. These features were used to characterize the formal properties of comments within each sentiment category and to compare the verbal investment and reactive register across categories.

Finally, regarding reliability and validation, coding was conducted by a single researcher with multiple validation passes over the dataset. Inter-rater reliability statistics were not calculated, consistent with the exploratory and descriptive orientation of the study. Thematic coherence was instead assessed through iterative refinement. When codes proved difficult to maintain as distinct, they were consolidated. When residual categories grew too heterogeneous, they were re-examined for finer structure. The final taxonomy was reached when additional reading produced no new sub-themes and existing categories accounted for all observed content. To ensure consistency over time, intra-rater reliability was maintained by recoding a random subset of 100 comments two weeks after the initial coding phase, which confirmed the stability of the thematic boundaries.

3.6. Analytical Procedures

Quantitative analyses were performed entirely in Microsoft Excel and were restricted to simple descriptive statistics. Counts and proportions were computed with standard spreadsheet functions. Cross-tabulations between year, format, and content theme were assembled as pivot-style matrices. All summary figures, including annual posting volume, mean and median engagement by format, and content-theme mix evolution, were generated from

these descriptive tables. No inferential test, parametric or non-parametric, was applied. Comparisons between formats, themes, and years are presented as differences in central tendency and proportion, and the strength of those differences is assessed by reading the engagement hierarchy rather than by hypothesis testing. The qualitative analysis carries the interpretive weight of the study. It organises both the posts and the audience's comments into themes and reads each theme against the others.

3.7. Ethical Considerations

All analysed content is publicly available on Instagram. No usernames or profile pictures were stored, illustrative comment quotations are de-identified and lightly paraphrased in translation, and no attempt is made to link comments to specific individuals. The account analysed is institutional rather than personal.

4. Findings

The findings are presented in two sections. The first section provides a descriptive overview of the account's posting activity, format, content, and audience behavior using basic statistics like frequencies, proportions, and measures of central tendency. The second section forms the interpretive core of the study. It details the thematic categorization of both the posts and the user comments, providing representative captions and quotes to illustrate each theme.

4.1. Posting Activity, Format Migration, and Engagement

Between 2023 and 2025, ATAV published 633 posts on Instagram. Annual distribution reveals declining post volume (2023: $n = 319$; 2024: $n = 219$; 2025: $n = 95$), reflecting either reduced content production capacity or strategic consolidation. Despite the decline in volume, mean likes per post rose steadily across the period, while mean comments peaked in 2024 and then eased in 2025. 2023 posts averaged 82.9 likes and 7.5 comments, compared with 214.4 likes and 17.3 comments in 2024, and 289.0 likes and 12.0 comments in 2025 (Table 1).

Table 1. Annual Descriptive Statistics for ATAV Instagram Posts

Year	Posts	Reels %	Mean Likes	Median Likes	Mean Comments	Mean Hashtags
2023	319	62.40%	82.9	0	7.5	10.8
2024	219	97.70%	214.4	184	17.3	12.4
2025	95	92.60%	289	146	12	4.7
Total	633	79.10%	159.3	46	11.5	10.4

The median of zero likes for static posts indicates a significant proportion received negligible engagement, likely attributable to Instagram's algorithmic deprioritization of non-Reels content. Mean hashtags per post rose slightly from 10.8 in 2023 to 12.4 in 2024, then fell sharply to 4.7 in 2025. The net movement across the period, and in particular the steep drop in the final year, is consistent with changing Instagram practice, as the platform's algorithm increasingly prioritises engagement metrics over hashtag-based discovery.

Table 2. Post Theme Distribution with Engagement Metrics

Theme	n	%	Mean Likes	Mean Comments
Natural Landscapes	265	41.9	174.3	14
Cultural Heritage	234	37	106.8	8.5
Greetings & City Affection	74	11.7	254.6	8.3
Adventure & Outdoor Sports	30	4.7	153.7	24.3
Civic & Commemorative Days	25	3.9	242.4	9.8
Event Announcements	5	0.8	28.6	1.8

Natural Landscapes (41.9%, n = 265) consolidated coastal scenes (beaches, coves, Mediterranean vistas), mountainous terrain, canyons, waterfalls, caves, and endemic flora and fauna. This category also incorporates sweeping overhead cinematography and broader scenic highlights. The breadth of this category reflects Antalya's geographical diversity beyond beach tourism stereotypes. Example captions included:

"Let's watch Delik Deniz, considered one of Türkiye's most interesting and mysterious coves"; "Good morning with Antalya's rebellious children, the Yılkı wild horses"; "Olympos Saffron, one of 250 endemic plant species found only in Antalya"; "Let the drone's wings dance in the sky, but never forget to respect nature's freedom".

Cultural Heritage (37.0%, n = 234) encompassed ancient cities (Olympos, Phaselis, Perge, Termessos), archaeological museums, historical landmarks, and heritage sites. This category emphasized Antalya's deep historical layering, positioning the destination as more than a coastal resort. Representative captions included:

"Historic Mermerli Beach is located in the heart of Antalya"; "About Tahtalı Mountain, Mount Solyma, and Olympos Cable Car"; "Apollo Temple, Side".

Greetings & City Affection (11.7%, n = 74) comprised posts expressing generalized destination fondness without specific content focus. These posts function as phatic communication, maintaining account presence and affective connection with followers. Examples:

4.2. Post Content Themes

Thematic categorization of post content identified six consolidated themes (Table 2). The two dominant categories were Natural Landscapes (41.9%, n = 265) and Cultural Heritage (37.0%, n = 234). Together, these accounted for 78.8% of all posts, establishing nature and heritage as the DMO's core representational pillars.

"Good morning"; "Is there anything more beautiful (shows a view of the city)"; "Fascinating city Antalya (shows a view of the city)"; "I hope... #VisitAntalya".

Adventure & Outdoor Sports (4.7%, n = 30) showed active engagement with nature through rafting, paragliding, hiking, diving, and cable car experiences. This theme generated the highest mean comment counts of any category. Examples:

"Gelidonya Lighthouse in the land of sage, located on the historic Lycian Way"; "Maden Cove, under the protection of Beydağları Coastal National Park Kemer District"; "I've never seen a more beautiful place, you absolutely must go"; "Olympos Teleferik 2365m, Kemer/Antalya".

Civic & Commemorative Days (3.9%, n = 25) marked national holidays, religious holidays, and seasonal greetings. These posts attracted high mean likes (242.4), reflecting audience response to shared symbolic occasions. Examples:

"Turkish Stars were watched with enthusiasm in Antalya"; "Happy April 23 National Sovereignty and Children's Day"; "Happy 100th anniversary of our Republic"; "We remember with respect and longing".

Event Announcements (0.8%, n = 5) covered organized cultural occasions, festivals, and foundation/institutional updates. Examples included:

"4th International Antalya Yörük Turkmen Festival"; "The Mediterranean Film Festival has begun"; "İlhan Koman's 'Toward the Mediterranean' Exhibition Opened at AKS".

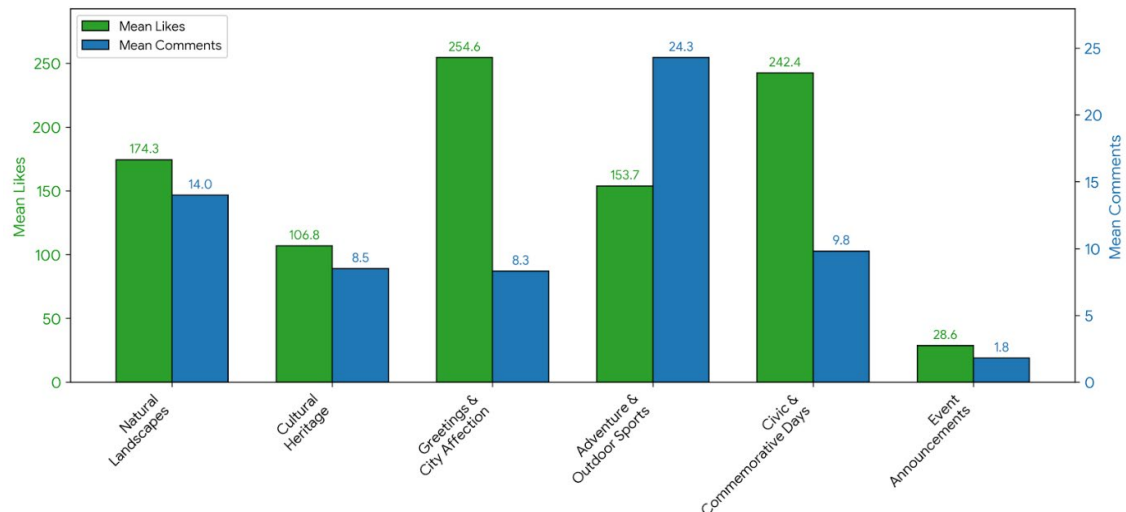


Figure 1. Mean Likes and Mean Comments Per Post by Consolidated Theme

Engagement patterns varied by theme (Figure 1). Adventure & Outdoor Sports posts achieved the highest mean comment count (24.3), suggesting this content prompted discussion or question-asking. Greetings & City Affection and Civic & Commemorative posts generated the highest mean likes (254.6 and 242.4 respectively), despite their lower posting frequency. Cultural Heritage, despite being the second largest category by volume, produced only moderate per-post engagement (mean 106.8 likes, 8.5 comments), potentially indicating audience saturation or the visual conventionality of archaeological content. In contrast, the largest category, Natural Landscapes, maintained robust engagement (mean 174.3 likes, 14.0 comments).

4.3. Comment Themes and Audience Interaction Patterns

Analysis of 2,390 user comments classified each contribution into one of four categories: Positive

(affirmative, appreciative, or supportive responses), Neutral (non-affective utterances including knowledge sharing, peer tagging, and miscellaneous statements), Negative (concerns, complaints, and critical observations), and Question (explicit requests for information). This four-category schema was applied consistently across the dataset and provides a structural view of how audiences engaged with ATAV's content during the Reels era.

The distribution was strongly skewed toward positive responses (Figure 2). Positive comments accounted for 1,780 of the 2,390 total (74.5%), Neutral for 493 (20.6%), Question for 76 (3.2%), and Negative for only 41 (1.7%). This pattern indicates that ATAV's comment threads functioned overwhelmingly as a space for affective endorsement of destination imagery rather than as a forum for deliberation, inquiry, or critique. Together, Positive and Neutral categories comprised 95.1% of all engagement, with Question and Negative responses appearing only as minor undercurrents.

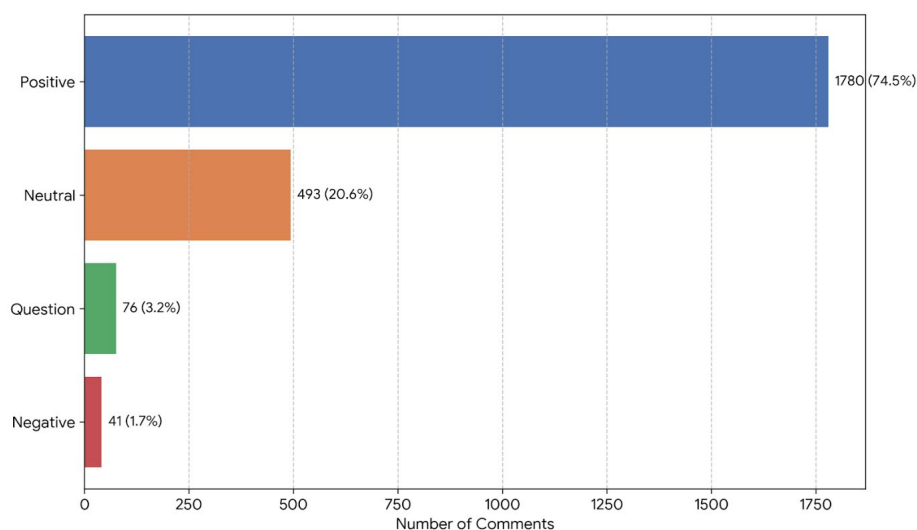


Figure 2. Sentiment Distribution of User Comments

Positive comments encompassed several behaviorally distinct expressions that share an affirmative orientation toward the destination: aesthetic appreciation (the dominant form, expressed through emoji and brief exclamations), gratitude directed at the account or its creators, civic pride statements during national or religious occasions, declarations of visit intent, and nostalgic or poetic affection. Typical Positive comments are short, emoji-heavy, and require minimal verbal investment. Pure positive emoji responses (sequences of heart, fire, or starry-eyed faces) accounted for the largest behavioral sub-pattern within this category. Examples include:

"Among the most beautiful photos I've seen in a long time, I want to frame it and hang it on the wall"; "My beloved hometown Antalya where I was born, fed, lived"; "After this reel I will definitely go see this place", and "Bless your efforts, glad you exist".

Neutral comments comprised a heterogeneous bundle of non-affective utterances. Peer tagging without sentiment ("@friend look at this"), knowledge-sharing replies that supply factual information about a depicted site, comparative observations placing Antalya's features within a broader Turkish geography, multilingual fragments, conversational exchanges between commenters, and spam or self-promotional posts all fell into this category. Neutral

comments tended to be longer and more deliberative than Positive comments, often serving an informational or relational rather than affective function. Representative examples are:

"The marble columns of the Apollo temple were erected in 1993-1994"; "We also have these flowers in our village"; "This year the entrance fee is 50 Turkish lira, but the museum card works", and "Antalya Museum was founded in 1922 by teacher Süleyman Fikri Erten".

Question comments were direct requests for information, most commonly about where a depicted site is located, how to reach it, and what it costs to visit. Negative comments articulated concerns or critique across several recurrent issues (heritage protection, environmental degradation, infrastructure deficits, overdevelopment, overcrowding, costs, and constructive suggestions). Because of their qualitative importance for destination management, both categories are examined in detail in the following section.

As Table 3 shows, the four categories differ sharply in form: Positive comments are the shortest and most emoji-saturated, Neutral comments are intermediate and carry the highest peer-mention rate, Question comments are short and rarely punctuated as questions, and Negative comments are by far the longest and least emoji-dependent.

Table 3. Structural Characteristics of Comments by Sentiment Category

Sentiment	n	%	Mean Words	Mean Chars	% with Emoji	% with ?	% with @ mention
Positive	1,780	74.5	3	20.8	85.4	0.7	0.5
Neutral	493	20.6	8.4	58.5	38.2	4.6	12.5
Question	76	3.2	4.8	32.7	7.9	23.7	0
Negative	41	1.7	21.3	149.7	22	9.8	4.9

These structural differences carry analytical implications. Like-and-emoji metrics capture the Positive category effectively but provide little signal about the small proportion of the audience engaging in deliberative interaction. Question and Negative comments, despite their small share of the total, represent the audience subset that invested meaningful cognitive and verbal effort in their engagement. They are also the categories most likely to carry actionable information for destination management.

4.4. Negative and Question Themes: Sub-Thematic Analysis

Although Negative and Question comments together accounted for only 4.9% of the total (n = 117), their qualitative content addresses precisely the

operational and informational domains that destination marketing organizations are best positioned to act upon. Each category was disaggregated into its constituent sub-themes through close reading of all constituent comments. Sub-themes are reported below with multiple representative examples.

4.4.1. Negative comments

Negative comments (n = 41) clustered into seven sub-themes spanning environmental, infrastructural, economic, and cultural concerns (Table 4). The largest sub-themes related to environmental and heritage conditions, while smaller sub-themes addressed development, infrastructure, crowding, and cost pressures.

Table 4. Negative Sub-Themes with Representative Comments

Sub-theme	n	%	Representative comments
Litter & cleanliness	12	29	"I went last year, everywhere was trash, even the water was impassable due to garbage and filth." ; "Very beautiful, but they threw everything on the ground, those animals." ; "Such a shame, the same place is full of garbage now."
Heritage protection & cultural neglect	9	22	"A very beautiful and historic place but unfortunately very neglected. We don't know the value of what we have." ; "I wish it were valued and brought to tourism." "Before being impoverished and before opera and ballet were dismissed, Aspendos festivals were held, free shuttles ran from the museum, we went so often, now there are no festivals and no values left."
Over-development & construction	8	20	"I hope you are not established to plunder the coasts like Muğev." ; "The last cove of the people that x hotel wanted to buy but could not." ; "They are pouring concrete on Phaselis, Antalyans, why aren't you there in protest?"
Infrastructure & services	4	9.8	"Don't bother hoping to camp or fish, the gendarmerie issues fines even to those who stop and look on the way past." ; "Has the vehicle road been fixed? It was very bad last summer."
Overcrowding & overtourism	4	9.8	"I was there last week, unfortunately overcrowded." ; "The peace and quiet you mention was ten years ago, now there's traffic, foreign crowds, and high cost of living."
Costs & affordability	2	4.9	"25% hike on electricity and natural gas." (general references to rising costs affecting tourism affordability)
Constructive critique / suggestions	2	4.9	"Why do you always show Side, there is another magnificent ancient city called Perge." ; "There are many more places to visit in Demre: Çayağzı port, the museum, Saint Nicholas church, the healing waters, Sülüklü beach, Taşdibi beach, and our Üçağzı coves."

Several patterns emerge from the negative sub-thematic distribution. First, environmental and physical-site concerns (Litter, Heritage Protection, Over-development) together comprised 70.7% of all negative comments (n = 29), pointing to a coherent stakeholder concern about the material condition and structural integrity of Antalya's tourism assets. Litter complaints typically referenced specific sites depicted in the post, indicating that commenters were drawing on lived experience to contradict the curated visual narrative. Heritage Protection comments lamented inadequate maintenance of archaeological sites and, in one case, the decline of major cultural events such as the Aspendos festivals. Over-development comments named specific construction projects (Phaselis concrete pouring, Rixos resort expansion) and even cited prior ministerial commitments, suggesting that informed local observers were monitoring coastal change in real time. Second, Infrastructure and Overcrowding sub-themes (n = 8 combined) reflect frictions in the visitor experience: restrictive enforcement, road conditions, traffic, and the felt loss of the tranquil Antalya of earlier decades. These comments are diagnostically distinct from heritage concerns because they refer to present-day visit conditions rather than long-term site management.

Third, Constructive Critique comments (n = 2), thou-

gh rare, represent the most directly actionable sub-theme. These commenters did not simply complain but proposed specific alternative content (other ancient cities such as Perge, less-shown coastal sites in Demre), implicitly positioning themselves as informed audience members invested in seeing Antalya's fuller tourism portfolio represented.

Negative comments also differed sharply from the rest of the data in form. Their mean length (21.3 words) is approximately seven times that of Positive comments, and they contained markedly fewer emojis (22.0% versus 85.4% for Positive). This points to a different communicative register: critics composed text, while supporters reacted with emojis. The implication is that any sentiment analysis relying on emoji density or short reaction patterns will systematically underweight the negative signal, which is encoded in longer, more deliberative prose.

4.4.2. Question comments

Question comments (n = 76) were disaggregated into six sub-themes (Table 5), reflecting the kinds of practical information that audiences sought from ATAV after being shown a destination image. The distribution was strongly skewed toward a single dominant request type: identification of where the depicted location is.

Table 5. Question Sub-Themes with Representative Comments

Sub-theme	n	%	Representative comments
Location identification	60	78.9	"Where is here?"; "Location please."; "Can I get the location?"; "Where exactly is this place?"; "Where in Antalya is this?"; "Location?"
Directions & access	8	10.5	"Good day, how can I get here?"; "Is the ancient city accessible by public transport?"; "Can you drive close to it?"; "How do we get there, is there a vehicle road?"; "How exactly do we get there, route directions?"
Costs, fees & tours	4	5.3	"For August, can I get price information for two nights, two adults?"; "How much is the entrance fee this year?"; "Hello, are there tours in Antalya for waterfalls or ancient cities?"
Activities & permissions	1	1.3	"Can you camp here?"
Feature identification	1	1.3	"Can you specify the names of the coves? Some sounded unfamiliar, it feels like I have missed some. Then again, there are so many coves, which ones do we even have time for?"
Other questions	2	2.6	"Where in Finike is this place, amazing."; "Where is this place exactly?"

Location identification dominated the Question category, accounting for 78.9% of all question comments (n = 60). The overwhelming majority of these were telegraphic in form, consisting of a single noun ('Location'), a short noun phrase ('Location please'), or a two-word interrogative ('Where here?'). This pattern is consistent with Instagram's Reels-era affordances, in which audiences scroll rapidly through visually compelling content without accompanying geographic metadata. When a Reel showcases an evocative cove, waterfall, or archaeological site without on-screen text or a tagged location, viewers default to the comments to recover this information. The fact that 60 such requests accumulated across the period indicates that ATAV's posts frequently failed to embed location information directly in the content itself.

Directions & access comments (n = 8) extended location-seeking into practical visit planning. Commenters asked whether sites could be reached by public transport, whether roads were drivable, and what route options existed. These comments often combined a location request with a logistical question, indicating that the visual prompt of the Reel had moved some viewers toward concrete trip-planning behavior.

Costs, fees & tours (n = 4) and Activities & permissions (n = 1) addressed the next tier of trip-planning concerns: entrance fees, accommodation rates, tour availability, and permissions for activities such as camping. Although small in number, these sub-themes represent the highest-intent audience segment, signaling readiness to convert visual interest into a visit. Feature identification (n = 1) and Other questions (n = 2) were residual categories with too few cases to support generalization.

Two structural features of Question comments warrant attention. First, only 23.7% contained an explicit question mark. This reflects a vernacular Instagram register in which noun-only requests substitute for

fully formed interrogatives. Automated systems that identify questions through punctuation alone would therefore miss approximately three quarters of audience information requests on this account. Second, peer mentions in Question comments were absent (0.0%), confirming that questions are directed at the account or the community at large rather than at named individuals.

5. Discussion

The three-year window analysed here captures the DMO during a period of pronounced platform and format change. The findings reported in Section 4 lend themselves to interrelated interpretations, which are developed below in dialogue with the destination-marketing literature and with recent work on short-form video and overtourism.

Between 2023 and 2025, the share of Reels in the Foundation's output rose from 62.4% to 92.6%, while mean engagement per post climbed from 82.9 likes in 2023 to 289.0 in 2025. Reels generated roughly 4.5 times the likes and three times the comments of static posts. This trajectory is consistent with the broader literature on short-form travel video, which finds that the vertical, music-driven format of Reels and TikTok cultivates higher levels of audience involvement, stronger affective destination images and, in turn, greater travel intention (Han, Zhang, Xu, Law, & Zhang, 2022). This case extends these consumer-side findings to the producer side. Recent international evidence corroborates this producer-side reading. Machine-learning analyses of large short-video corpora show that engagement is shaped jointly by content, social, and technical features of the video rather than by topic alone (Deng, Niu, Xiong, Yang, & Xu, 2026; Li & An, 2025; Zhang & Wang, 2026), which helps explain why a wholesale shift to the Reels format, rather than any single content choice, coincided with the Foundation's

rising per-post engagement. A regional, modestly-resourced foundation realigned almost its entire output around a single format within three years, suggesting that algorithmic privileging of Reels in the platform's discovery surfaces functions less as one option among many and more as a precondition for organic reach. This algorithmic advantage is particularly crucial for regional destination accounts, which frequently suffer from low follower counts and weak interaction rates when relying on unoptimized, static content structures (Çorman & Duman, 2025). The reading is reinforced by the collapse of static-post engagement to a median of zero, which mirrors the platform-level dynamics that Mariani, Di Felice and Mura (2016) identified for Facebook a decade earlier, when visual content and post length began to drive engagement in non-linear ways. Hashtag volume declined sharply in parallel, pointing to a wider reconfiguration of discovery logics on Instagram in which tag-based search has been demoted in favour of recommendation algorithms operating on engagement metrics. Although this study cannot causally attribute changes in the organization's metrics to platform-level decisions, the convergence of declining hashtag use, rising Reels share and improving per-post engagement is congruent with what Buhalis and Law (2008) anticipated that information and communication technologies would continue to reshape destination marketing in ways that subordinate institutional control to platform infrastructure.

Although Cultural Heritage was the second largest content category, its per-post engagement was the lowest of the substantive themes. By contrast, Greetings & City Affection and Civic & Commemorative Days generated the highest mean likes, and Adventure & Outdoor Sports generated the highest mean comment count. This volume-engagement decoupling has important implications. The visible result of an institutional Instagram strategy is, in effect, the product of two not necessarily aligned variables: how often the institution chooses to post a category, and how strongly the audience reacts to it. Cultural Heritage emphasis sustains visibility through repetition, but it does not capture peak engagement. However, this institutional persistence strongly aligns with broader national tourism strategies. Recent visual content analysis of Türkiye's top destinations on the official 'GoTürkiye' portal reveals that historical and cultural heritage consistently functions as a primary branding mechanism to project a culturally rich image rather than just a coastal one (Keleş, Ergün, & Taşpınar, 2024). Thus, while heritage content is plentiful to serve this archival mandate, the phatic and affective categories, such as greetings, civic days, and expressions of city affection, produce sharper interaction spikes. This pattern resonates with Iglesias-Sánchez et al.'s (2020) comparative case study of Algarve and Costa del Sol, which showed that Instagram functions as a co-creation

space in which the official account, hashtag streams and user-generated photography jointly assemble a destination's image. Where the Foundation's practice diverges is in the relative weight placed on cultural heritage content: while heritage content is plentiful, the audience's strongest reactions occur around brief, affective, often non-substantive posts. Hays, Page and Buhalis (2013) made the related observation that even when national tourism organisations recognised the strategic stakes of social media, their actual practice remained promotional rather than participatory. This case suggests that a sub-national organization displays the same asymmetry, with the partial exception of the Adventure & Outdoor Sports category, whose comparatively high comment count signals genuinely discussion-prompting content. The same pattern appears beyond the Turkish context. European DMOs analysed on Instagram likewise concentrated on culture, history and art, themes that project stability and depth, even as audience interaction clustered around more affective material (Mele, Filieri, & De Carlo, 2023). The volume-engagement decoupling observed here is therefore not idiosyncratic to Antalya but a recurring feature of how institutional accounts reconcile an archival branding mandate with the affective logic of the platform.

The structural characteristics of the four comment categories reveal an asymmetry that has direct methodological consequences. Positive comments were short, emoji-saturated and dominated the dataset. Negative comments were long, rarely contained emoji, and constituted only 1.7% of comments. Question comments were short and frequently stripped down to a single noun or phrase, with only 23.7% carrying an explicit question mark. In other words, affective endorsement is encoded reactively (a heart, a fire emoji, a two-word exclamation), whereas critique and inquiry require longer, text-based articulation. This has implications for the methodologies most often used to characterise audience engagement on tourism social media. Sentiment-analysis systems that rely on emoji density or short-token features are well-tuned to the Positive category but systematically underweight Negative and Question content, which is precisely where the value lies for destination managers. This limitation is now well documented: emoji-weighted pipelines over-read affective endorsement and under-read deliberative content, and a higher density of emoji can even mask the emotional and critical signal rather than reveal it (Huo et al., 2025; Lou, Zhang, Li, Qian, & Ji, 2020). Any audience-listening pipeline for a destination feed that weights short, reactive responses will produce a flattering but partial picture of the comment thread. Following Uşaklı, Koç and Sönmez (2017), the examined comment space appears to operate predominantly as a venue for affective endorsement and civic ritual, with only a small share

of comments doing more reflective work. The 4.9% of comments that articulated questions or concerns thus represent the audience subset whose contributions are most useful for action, and their numerical minority should not lead to interpretive neglect.

Within the Question category, location identification accounted for most comments. The overwhelmingly telegraphic register of these requests, including single nouns such as "Location" or short phrases like "Location please", indicates that viewers were defaulting to the comment thread to recover information that the post itself failed to embed. This is a measurable communication gap. Sixty discrete requests for location information imply that a non-trivial share of the Reels reached audiences who were interested enough to ask but were unable to identify the depicted site from the content. Xiang and Gretzel (2010) showed early on that audiences moving from inspiration to planning rely on social platforms as much as on search engines. The Reels-era affordances appear to have intensified this pattern. When an evocative cove or archaeological site is showcased in vertical video without an on-screen text overlay or a tagged geographic location, the comment thread becomes the *de facto* information channel. The DMO's feed frequently leaves viewers unable to convert visual interest into actionable trip-planning intent. This communicative gap extends to content omissions as well. For instance, the complete absence of gastronomy in the Foundation's feed overlooks a proven engagement driver. Analysis of the national 'GoTürkiye' account demonstrates that gastronomic posts generate significantly higher comment volumes and deeper user interaction compared to other visual categories (Ercan, 2021). To effectively manage recurring logistical inquiries and strategically enrich under-served themes like gastronomy without overwhelming small communication teams, regional foundations could increasingly leverage generative AI tools to optimize their text and visual content generation processes (Binbaşıoğlu, 2024).

Although Negative comments comprised a tiny fraction of the data, their qualitative content addresses precisely the operational and structural domains that destination marketing organisations are best positioned to act upon: litter, heritage protection, over-development, infrastructure, and overcrowding. Environmental and physical-site concerns together accounted for the majority of all Negative comments, indicating a coherent stakeholder concern about the material condition of Antalya's tourism assets. The substantive content of these comments aligns closely with documented overtourism dynamics in Mediterranean coastal destinations (Mihalic, 2020; Foronda-Robles, Galindo-Pérez-de-Azpillaga, & Armario-Pérez, 2025). Local commenters naming specific construction projects, specific environmental deteriorations, and institutional declines demonstrate the kind of informed stakeholder

monitoring that Mihalic and Kuščer (2022) describe as the latent capacity of resident publics to surface destination-management failures in real time. The methodological corollary is that small Negative-comment shares should not be read as indicators of audience satisfaction. They should be read as filtered samples of considered critique. The Negative-comment cluster reads less as noise than as a continuous, low-volume but high-information channel through which informed audiences communicate useful content back to the institution.

Taken together, these patterns invite a theoretical reading. Through the lens of dialogic communication theory, they amount to more than a set of missed information opportunities. The Foundation's practice is predominantly monologic: it broadcasts curated imagery and, on the evidence of the comment threads, leaves the audience's questions and concerns unanswered (Kent & Taylor, 2002). The sixty unanswered location requests are the clearest symptom of this, but the logic extends to the critical comments as well. Each is an opening for dialogue that the account does not take up. The theoretical contribution of the case is thus to specify what the comment ecology offers and what a monologic practice forgoes: the affective majority, driven by social proof, sustains visibility but tells the institution little it does not already know, whereas the social-capital-bearing minority offers exactly the directional and diagnostic information that two-way engagement is designed to capture. An account that listens to and replies to this minority would convert a broadcast feed into a relational one without abandoning its promotional remit.

The findings carry three managerial implications, which follow directly from the analysis rather than standing apart from it. The first concerns the information gap. The recurrent location requests show that geographic metadata is not reaching viewers at the moment of engagement. Embedding on-screen text that names the specific site and its district within Antalya, together with tagged Instagram locations, would close this gap at negligible cost and convert latent interest into trip-planning intent. A lightweight response protocol, even a templated reply that names the location and links to the foundation's own website, would extend this further and position the account as an information source rather than only an inspiration source, in line with Xiang and Gretzel's (2010) argument that the value of social media for tourism depends on how far institutional accounts integrate themselves into the audience's information search.

The second implication concerns the content mix. Heritage content carries the foundation's representational mandate and should not be reduced, but the volume-engagement decoupling suggests that a modestly larger share of the Adventure and Out-

door Sports content that drew the highest comment volume, and of brief affective content tied to civic and seasonal occasions, would compound visibility for the heritage and landscape categories that anchor the feed. The constructive-critique comments point the same way, calling for less repetition of well-known sites such as Side and Aspendos and more visibility for under-shown locations such as Perge and the Üçağız coves, which also aligns with the overtourism literature's emphasis on redistributing visitor flows away from saturated attractions (Mihalic, 2020; Mihalic & Kuščer, 2022).

The third implication concerns the critical minority. The negative comments name specific sites, projects, and institutional decisions, and if aggregated and routed to the relevant municipal and provincial counterparts they could function as a low-cost early-warning system for environmental and infrastructural concerns, moving the foundation toward the customer-service use of social media that Uşaklı, Koç and Sönmez (2017) found underdeveloped among European DMOs. Visible institutional engagement with cleanup, restoration, and conservation efforts would address this stakeholder critique without abandoning the promotional remit, reinforcing the foundation's legitimacy as a steward, and not only a promoter, of the destination's tourism assets.

6. Conclusion

This study examined the Instagram practice of the Antalya Promotion Foundation between January 2023 and December 2025, a window that coincides with Instagram's decisive shift toward Reels as its prioritised distribution format. Through descriptive and thematic analysis of 633 posts and 2,390 user comments, three findings stand out. First, ATAV's format mix migrated almost entirely to Reels, with engagement metrics rising in parallel and static-post engagement collapsing; format adaptation has been the dominant story of recent years for this regional foundation. Second, content emphasis on cultural heritage and natural landscapes sustains posting volume but does not capture the highest per-post engagement, which accrues to brief affective and civic content. Third, user comments are overwhelmingly positive and short, but a small share of question and negative comments carries disproportionate value for destination management, revealing both information gaps in the posts themselves (where is this place?) and operational concerns in the destination (litter, heritage neglect, over-development).

The contribution of this study encompasses empirical, theoretical, methodological, and practical dimensions. Empirically, the paper offers a rare three-year close reading of a regional promotion foundation's Instagram practice during the Reels transition, complementing the literature on national tourism organisations (Hays, Page, & Buhalis, 2013;

Uşaklı, Koç, & Sönmez, 2017) and regional DMOs operating on Facebook (Mariani, Di Felice, & Mura, 2016; Kılıçarslan & Albayrak, 2020) with evidence from a sub-national foundation working with modest resources.

Theoretically, this study advances the current body of knowledge by proposing the 'two-tier destination comment ecology' framework, which explicitly conceptualizes how audiences interact with short-form travel content. Fundamentally, this research extends Kent and Taylor's (2002) dialogic communication theory and Uşaklı, Koç, and Sönmez's (2017) observations on DMO social media usage by demonstrating that institutional monologism persists even within highly interactive, algorithmically driven platforms like Instagram Reels. It reveals that the audience's dialogic response is structurally bifurcated into a social-proof-driven affective majority (Cialdini & Goldstein, 2004) and a social-capital-bearing critical minority (Nahapiet & Ghoshal, 1998).

Building upon this structural bifurcation, the framework further complements the foundational electronic word-of-mouth (eWOM) literature (Litvin, Goldsmith, & Pan, 2008, 2018; Marine-Roig, 2019) by theoretically untangling genuine user-generated eWOM from top-down institutional broadcasts. By drawing a firm theoretical boundary between authentic, organic feedback generated by actual users and the broader category of corporate electronic information sources, the study positions the critical comment stream as an unsolicited, bottom-up diagnostic tool that continuously negotiates the curated promotional narrative.

From a methodological standpoint, the study demonstrates a transparent, replicable coding procedure designed to separate low-effort affective endorsement from high-information critical and interrogative feedback, effectively distinguishing substantive content themes from atmospheric content. In doing so, this qualitative framework directly challenges the prevailing reliance on automated sentiment analysis in destination marketing (Huo et al., 2025; Lou et al., 2020; Mariani, Di Felice, & Mura, 2016). Traditional sentiment algorithms typically force user feedback into rigid positive, negative, or neutral polarities. By deliberately isolating 'Question' comments as a distinct, functional category rather than a sentiment valence, this study introduces a crucial methodological refinement. The findings demonstrate that standard automated systems, which frequently rely on explicit punctuation or emotional keywords, systematically fail to capture the telegraphic, noun-only information requests that signal a viewer's transition from passive affective consumption to active trip-planning intent. Consequently, the research argues that true theoretical and operational value lies in the qualitative depth of this functionally separated, marginalized feedback, rather than the algorithmic volume of positive affect.

On a practical level, by systematically isolating and analyzing actual user critiques and information requests, the research provides a concrete, actionable framework for destination management organizations (DMOs). Rather than treating the comment section merely as a repository for algorithmic engagement, destination communicators can leverage this social-capital-bearing minority as a low-cost, real-time early-warning system. This approach enables practitioners to detect and monitor real-world operational deficits, including environmental degradation, heritage neglect, and infrastructural frictions, and subsequently route these critical insights to relevant municipal and provincial stakeholders. Furthermore, by uncovering the prevalence of unanswered logistical inquiries (e.g., location identification and access directions), the study highlights a critical failure to convert visual inspiration into actual trip-planning intent. To overcome the restrictive, visual-first constraints of short-form social media, DMOs can implement lightweight response protocols and proactively embed clear geographic metadata or on-screen text overlays, thereby transitioning their digital presence from a purely promotional broadcast channel into a responsive, customer-service-oriented informational hub.

More broadly, the case illustrates a tension that is likely to intensify for Mediterranean coastal destinations. The same algorithmic surfaces that reward visually saturated short-form video also amplify the destination images that drive further arrivals, while the small minority of comments that articulate environmental and infrastructural critique constitute the clearest early warning the audience offers. How destination foundations weigh these two signals, the affective majority and the critical minority, is likely to shape the credibility of regional promotion in destinations under overtourism pressure.

7. Limitations and Directions for Future Research

Several limitations frame these findings, each pointing to a direction for future work. First, the study examines a single platform and a single institutional account; mapping destination communication across multiple platforms and accounts would give a fuller picture of a destination's digital footprint. Second, the analysis treats institutional posts and the comment threads beneath them, not the wider field of user-generated content that circulates about Antalya. The findings therefore speak to managed-account communication rather than to the full participatory, presumption-driven ecology of the destination, and future research could pair account-level analysis with broader UGC and hashtag-stream data. Third, the account's predominantly one-way communication means the data capture audience attempts at dialogue but not the institution's responses; studies

designed to observe response behaviour directly would test how far two-way engagement changes outcomes. Fourth, coding was conducted by a single researcher with intra-rater validation but without inter-rater reliability statistics, consistent with the study's exploratory orientation; multi-coder designs would strengthen reliability. Fifth, the comments carry no demographic markers, so local stakeholder concern cannot be cleanly separated from international visitor feedback. Sixth, the analysis is descriptive and does not support causal claims about platform effects. Finally, the restriction to Turkish and English comments, and the absence of interviews with the Foundation's social media managers, both bound the findings; pairing content analysis with manager interviews would illuminate the strategic decisions behind format migration and content choice.

References

- Binbaşıoğlu, H. (2024). GoTürkiye ne paylaşıyor, ChatGPT ne öneriyor? Instagram gastronomi paylaşımları üzerine bir inceleme. *Journal of Tourism and Gastronomy Studies*, 12(3), 1588-1606. <https://doi.org/10.21325/jotags.2024.1452>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Buhalis, D., & Law, R. (2008). Progress in information technology and tourism management: 20 years on and 10 years after the Internet – The state of eTourism research. *Tourism Management*, 29(4), 609-623. <https://doi.org/10.1016/j.tourman.2008.01.005>
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55, 591-621. <https://doi.org/10.1146/annurev.psych.55.090902.142015>
- Cox, C., Burgess, S., Sellitto, C., & Buultjens, J. (2009). The role of user-generated content in tourists' travel planning behavior. *Journal of Hospitality Marketing & Management*, 18(8), 743-764. <https://doi.org/10.1080/19368620903235753>
- Çelik, M. N., & Çevirgen, A. (2024). Sustainable tourism policies and overtourism risk in destination management: The case of Alanya. *Journal of Tourism, Sustainability and Well-being*, 12(1), 48-64. <https://doi.org/10.34623/pzhg-jt72>
- Çorman, G., & Duman, H. (2025). Go Batman'ı Keşfet: Turizm Tanıtımında Instagram'ın Dokunuşu. *Turizm Akademik Dergisi*, 12(1), 17-34. <https://izlik.org/JA73UE97GN>
- Deng, N., Niu, Y., Xiong, T., Yang, J., & Xu, X. (2026). What makes tourism short video engaging? A machine learning perspective. *Journal of Hospitality & Tourism Research*, 50(6), 832-854. <https://doi.org/10.1177/10963480251385721>
- Du, X., Liechty, T., Santos, C. A., & Park, J. (2022). 'I want to record and share my wonderful journey': Chinese Millennials' production and sharing of short-form travel videos on TikTok or Douyin. *Current Issues in Tourism*, 25(21), 3412-3424. <https://doi.org/10.1080/13683500.2020.1810212>
- Ercan, F. (2021). Instagram'da destinasyon pazarlamasında kullanılan gastronomik ürünlerin incelenmesi: "Go Turkey" örneği [An examination of gastronomic products used in destination marketing on Instagram: The case of "Go Turkey"]. In C. Çobanoğlu et al. (Eds.), *Daha İyi Bir Dünya İçin Turizm* (pp. 21-34). University of South Florida (USF) M3 Publishing. <https://www.doi.org/10.5038/9781955833028>
- Euromonitor International. (2025). Euromonitor International unveils world's top 100 city destinations for 2025. Retrieved June 25, 2026, from <https://www.euromonitor.com/newsroom/press-releases/december-2025/euromonitor-international-unveils-worlds-top-100-city-destinations-for-2025>

- Foronda-Robles, C., Galindo-Pérez-de-Azpillaga, L., & Armario-Pérez, P. (2025). The sustainable management of overtourism via user content. *Annals of Tourism Research Empirical Insights*, 6(2), 100184. <https://doi.org/10.1016/j.annale.2025.100184>
- Gartner, W. C. (1994). Image formation process. *Journal of Travel & Tourism Marketing*, 2(2–3), 191–216. https://doi.org/10.1300/J073v02n02_12
- Han, J., Zhang, G., Xu, S., Law, R., & Zhang, M. (2022). Seeing destinations through short-form videos: Implications for leveraging audience involvement to increase travel intention. *Frontiers in Psychology*, 13, 1024286. <https://doi.org/10.3389/fpsyg.2022.1024286>
- Hays, S., Page, S. J., & Buhalis, D. (2013). Social media as a destination marketing tool: Its use by national tourism organisations. *Current Issues in Tourism*, 16(3), 211–239. <https://doi.org/10.1080/13683500.2012.662215>
- Hsieh, H. F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277–1288. <https://doi.org/10.1177/1049732305276687>
- Huo, H., Yao, J., Wang, C., Wu, R., Li, Q., & Yu, D. (2025). Emotions engines and emoji magic: Unlocking discrete emotional drivers and emoji moderation in destination public opinion through text mining. *Journal of Vacation Marketing. Advance online publication*. <https://doi.org/10.1177/13567667251382412>
- Iglesias-Sánchez, P. P., Correia, M. B., Jambrino-Maldonado, C., & de las Heras-Pedrosa, C. (2020). Instagram as a co-creation space for tourist destination image-building: Algarve and Costa del Sol case studies. *Sustainability*, 12(7), 2793. <https://doi.org/10.3390/su12072793>
- Kaplan, A. M., & Haenlein, M. (2010). Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons*, 53(1), 59–68. <https://doi.org/10.1016/j.bushor.2009.09.003>
- Keleş, H., Ergün, G. S., & Taşpınar, B. (2024). Visual destination image from online perspective: The case of "GoTürkiye". *Business & Management Studies: An International Journal (bmij)*, 12(4), 766–779. <https://doi.org/10.15295/bmij.v12i4.2435>
- Kent, M. L., & Taylor, M. (2002). Toward a dialogic theory of public relations. *Public Relations Review*, 28(1), 21–37. [https://doi.org/10.1016/S0363-8111\(02\)00108-X](https://doi.org/10.1016/S0363-8111(02)00108-X)
- Kılıçarslan, D., & Albayrak, T. (2020). Destinasyon pazarlama organizasyonlarının sosyal medya performansının kıyaslanması. *Anatolia: Turizm Araştırmaları Dergisi*, 31(2), 149–160. <https://doi.org/10.17123/atad.777530>
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology* (4th ed.), Thousand Oaks, CA: Sage.
- Leung, D., Law, R., Van Hoof, H., & Buhalis, D. (2013). Social media in tourism and hospitality: A literature review. *Journal of Travel & Tourism Marketing*, 30(1–2), 3–22. <https://doi.org/10.1080/10548408.2013.750919>
- Li, L., & An, H. (2025). Research on the influencing factors of user engagement in tourism short video from the perspective of configuration. *PLOS ONE*, 20(12), e0337406. <https://doi.org/10.1371/journal.pone.0337406>
- Litvin, S. W., Goldsmith, R. E., & Pan, B. (2008). Electronic word-of-mouth in hospitality and tourism management. *Tourism Management*, 29(3), 458–468. <https://doi.org/10.1016/j.tourman.2007.05.011>
- Litvin, S. W., Goldsmith, R. E., & Pan, B. (2018). A retrospective view of electronic word-of-mouth in hospitality and tourism management. *International Journal of Contemporary Hospitality Management*, 30(1), 313–325. <https://doi.org/10.1108/IJCHM-08-2016-0461>
- Lou, Y., Zhang, Y., Li, F., Qian, T., & Ji, D. (2020). Emoji-based sentiment analysis using attention networks. *ACM Transactions on Asian and Low-Resource Language Information Processing*, 19(5), Article 64. <https://doi.org/10.1145/3389035>
- Mariani, M. M., Di Felice, M., & Mura, M. (2016). Facebook as a destination marketing tool: Evidence from Italian regional Destination Management Organizations. *Tourism Management*, 54, 321–343. <https://doi.org/10.1016/j.tourman.2015.12.008>
- Marine-Roig, E. (2019). Destination image analytics through traveller-generated content. *Sustainability*, 11(12), 3392. <https://doi.org/10.3390/su11123392>
- Mele, E., Filieri, R., & De Carlo, M. (2023). Pictures of a crisis. Destination marketing organizations' Instagram communication before and during a global health crisis. *Journal of Business Research*, 163, 113931. <https://doi.org/10.1016/j.jbusres.2023.113931>
- Mihalic, T. (2020). Conceptualising overtourism: A sustainability approach. *Annals of Tourism Research*, 84, 103025. <https://doi.org/10.1016/j.annals.2020.103025>
- Mihalic, T., & Kuščer, K. (2022). Can overtourism be managed? Destination management factors affecting residents' irritation and quality of life. *Tourism Review*, 77(1), 16–34. <https://doi.org/10.1108/TR-04-2020-0186>
- Munar, A. M., & Jacobsen, J. K. S. (2014). Motivations for sharing tourism experiences through social media. *Tourism Management*, 43, 46–54. <https://doi.org/10.1016/j.tourman.2014.01.012>
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review*, 23(2), 242–266. <https://doi.org/10.5465/amr.1998.533225>
- Tosun, U., & Şimşek, H. (2025). Antalya 2024'te yaklaşık 17,3 milyon ziyaretçiyle tarihi rekor kırdı. Anadolu Agency. Retrieved May 03, 2026, from <https://www.aa.com.tr/tr/ekonomi/antalya-2024te-yaklasik-17-3-milyon-ziyaretciyle-tarihi-rekor-kirdi/3440837>
- Tussyadiah, I. P., & Fesenmaier, D. R. (2009). Mediating tourist experiences: Access to places via shared videos. *Annals of Tourism Research*, 36(1), 24–40. <https://doi.org/10.1016/j.annals.2008.10.001>
- Uşaklı, A., Koç, B., & Sönmez, S. (2017). How 'social' are destinations? Examining European DMO social media usage. *Journal of Destination Marketing & Management*, 6(2), 136–149. <https://doi.org/10.1016/j.jdmm.2017.02.001>
- Xiang, Z., & Gretzel, U. (2010). Role of social media in online travel information search. *Tourism Management*, 31(2), 179–188. <https://doi.org/10.1016/j.tourman.2009.02.016>
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.), Thousand Oaks, CA: Sage.
- Zhang, Y., & Wang, X. (2025). Why engagement? The role of tourism short video in driving customer engagement. *International Journal of Tourism Research*, 27(1), e70001. <https://doi.org/10.1002/jtr.70001>

Global Economic Policy Uncertainty and Bitcoin: A Transient Nexus

Ümit Yıldız / Assoc. Prof. Dr. 

Bayburt University, Faculty of Economics and Administrative Sciences, Department of Economics
umityildiz@bayburt.edu.tr

Abstract

Uncertainty plays a significant role in shaping investment decisions, both directly and indirectly. In an uncertain economic environment, investors' motivations for decision-making may vary. While some investors tend to seek safe-haven assets, others may engage in speculative behavior. Therefore, uncertainty can influence financial instruments through various mechanisms. One of these instruments is Bitcoin, which is often regarded as the "gold" of cryptocurrencies. Compared to traditional financial investment instruments, Bitcoin exhibits higher volatility and is among the primary assets that may be affected by uncertainty. However, an important question is whether this effect is temporary or permanent. By adopting a frequency-domain causality approach, this study seeks to investigate the causal linkages between Global Economic Policy Uncer-

tainty (GEPU) and Bitcoin price movements. In this context, the causal nexus between GEPU and BTC prices is examined for the entire period and for different frequencies. Although the study's findings show no causal nexus between the variables over the entire period, the analyses for the short, medium, and long run indicate a causal relationship from GEPU to BTC in the medium run. Accordingly, GEPU can be considered one of the factors affecting BTC price; however, its impact does not appear to be persistent.

Keywords: GEPU, Bitcoin, Frequency Domain Causality.

JEL Codes: C32, D80, G23

Citation: Yıldız, Ü. (2026). Global economic policy uncertainty and Bitcoin: A transient nexus. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

The world's monetary system has undergone various changes throughout history and the definition of money has changed accordingly. Today, money has moved to the virtual environment, and cryptocurrencies have taken their place in the mainstream financial system. Cryptocurrencies that emerged with Bitcoin, introduced by Nakamoto (2008), are popular investment tools today. In particular, cryptocurrencies are popular for their low transaction costs and the ability to trade in unregulated systems (Blau, 2017:493).

Investors often seek out safe havens in intense economic uncertainty and resort to hedging instruments. In such cases, some investors may turn to safer investments, such as gold, while others may turn to more volatile assets with higher risk, such as Bitcoin. Bitcoin shares certain hedging characteristics with gold and can be added to the range of tools market analysts use to mitigate market-specific risks (Dyhrberg, 2016). In his *Modern Portfolio Theory* (1952), Markowitz emphasises the importance of asset diversification in enabling investors to maximise expected returns within a given risk framework. Investors' search for safe havens or for hedging purposes, particularly in uncertain environments, combined with investor indecision and risk-diversification motivations stemming from economic policy uncertainty, is likely to create a transfer mechanism towards Bitcoin.

Cryptocurrencies can affect markets in various ways or be influenced by market changes. With this feature, they have become the focus of numerous studies, particularly in recent years. Among these studies, some examine cryptocurrencies in relation to economic policy uncertainty indices and whether they serve as hedges against economic and political uncertainty. Bouri et al. (2017) explore the potential of Bitcoin as a hedge against global economic policy uncertainty (GEPU). Their findings indicate that Bitcoin can effectively serve as a hedge against uncertainty. In another study, Conrad et al. (2018) analyze the causal connection between Bitcoin price (BCP) volatility and GEPU, discovering a strong association between Bitcoin volatility and global economic activity. Demir et al. (2018) argue that Bitcoin's daily return negatively correlates with the US economic policy uncertainty (EPU). Wu et al. (2019) say that Bitcoin cannot be a strong hedge against the US EPU. However, Matkovskyy et al. (2020) suggested that Bitcoin could serve as a hedge against uncertainty shocks. In another study examining the relationship between EPU and cryptocurrency prices on a country basis, Khan et al. (2021) investigate the connection between Bitcoin prices (BCP) and GEPU. The results

from the full-sample analysis indicate no evidence of causality between BCP and GEPU. However, causality is observed within specific subsample periods. Haq et al. (2021) argue that cryptocurrencies exhibit varying degrees of connectedness to national EPUs, leading to differences in the effectiveness of risk mitigation across countries. Cheng and Yen (2020) concluded that while the Chinese EPU predicts the monthly return of Bitcoin, the US EPU is unable to do so. Lucey et al. (2022), who examined the relationship at the country level, show a dynamic connection between EPU and cryptocurrencies. In another study, Oldani et al. (2024) investigated the link between EPU and the volume of the cryptocurrency market, concluding that investors increase their demand for cryptocurrencies when uncertainty rises. He et al. (2024) state that EPU has a minimal impact on the cryptocurrency market in the short term. They state that Bitcoin and Ethereum can be hedged in the short term, but this effect decreases in the long term. However, the study emphasizes that Tether is positively correlated with EPU in the long term. Studies do not provide a clear conclusion on whether cryptocurrencies serve as a hedge against economic policy uncertainty.

The literature suggests that economic policy uncertainty is a factor influencing the price of Bitcoin, which forms the basis of this study. However, the study does not seek to determine whether economic policy uncertainty is a definitive determinant of Bitcoin or the direction and intensity of its impact. Numerous studies in the literature have sought to answer these questions. This study aims to investigate whether economic policy uncertainty is a cause of Bitcoin price fluctuations and, if so, whether these effects are temporary or permanent. Therefore, the causal linkages between the variables are first examined for the entire period, then examined at different frequencies to determine whether a causal relationship exists and, if so, whether it is temporary or permanent. In this respect, the study distinguishes itself from others in the literature, carries originality, and provides a significant contribution to the field. Identifying temporary or permanent causality provides clues regarding the decisions that will be made in uncertain environments.

2. Data and Methodology

Utilizing monthly data spanning from 2016M06 to 2024M09, this study investigates the causal linkages between Global Economic Policy Uncertainty¹ (GEPU) and Bitcoin². The analytical framework first employs the Toda-Yamamoto (1995) causality test to assess the relationship over the entire sample pe-

¹ Data was obtained from https://www.policyuncertainty.com/global_monthly.html Access Date: 07.07.2026

² Data was obtained from <https://www.investing.com/crypto/bitcoin/historical-data> Access Date: 07.07.2026

riod; subsequently, it adopts the frequency domain approach introduced by Breitung & Candelon (2006) to decompose these causal effects across the short, medium, and long run.

Toda and Yamamoto (1995) developed a robust framework for examining Granger causality (1961) by estimating an augmented Vector Autoregression (VAR) model. This methodology uses a $(k + d_{\max})$ lag structure, where k is the optimal lag length determined by information criteria and $d_{\max}$ denotes the max order of integration among the variables. A key advantage of the Toda-Yamamoto procedure over the conventional Granger causality test (1969) is its capacity to bypass the prerequisites of stationarity

and cointegration testing, thereby mitigating the risks associated with pre-test biases.

The implementation of the Toda-Yamamoto procedure involves a three-stage estimation process. Initially, the maximum order of integration ($d_{\max}$) is established by evaluating the stationarity properties of the variables. Subsequently, an optimal lag length (k) is determined through the construction of a Vector Autoregressive (VAR) model. Finally, a VAR model with a lag length of $k + d_{\max}$ is estimated by incorporating the max order of integration into the optimal lag length.

The VAR model of the Toda - Yamamoto test is set up as follows (Dritsaki, 2017:123):

$$y_t = \mu_0 + \left\{ \sum_{i=1}^k a_{1t} y_{t-i} + \sum_{i=k+1}^{d_{\max}} a_{2t} y_{t-i} \right\} + \left\{ \sum_{i=1}^k \beta_{1t} x_{t-i} + \sum_{i=k+1}^{d_{\max}} \beta_{2t} x_{t-i} \right\} + \varepsilon_{1t}$$

$$x_t = \Phi_0 + \left\{ \sum_{i=1}^k \gamma_{1t} x_{t-i} + \sum_{i=k+1}^{d_{\max}} \gamma_{2t} x_{t-i} \right\} + \left\{ \sum_{i=1}^k \delta_{1t} y_{t-i} + \sum_{i=k+1}^{d_{\max}} \delta_{2t} y_{t-i} \right\} + \varepsilon_{2t}$$

Causal inferences within this framework are drawn by imposing parameter restrictions on the estimated model. Specifically, the null hypotheses, stating that Y does not Granger-cause X, and vice versa, are evaluated using a Wald test statistic that follows a chi-square distribution with k degrees of freedom. If the calculated Wald test statistic exceeds the critical threshold of the χ^2 distribution, the null hypothesis of no Granger causality is rejected. Consequently, this provides statistical evidence for the presence of a significant causal nexus between the variables under consideration.

Breitung & Candelon (2006) highlight in their research that the Granger causality test does not account for differences across various frequencies.

This limitation was also observed in Geweke's (1982) and Hosoya's (1991) studies. However, the Frequency Domain Causality test introduced by Breitung & Candelon (2006) enables the identification of causality relationships among variables over the long, medium, and short terms. This approach allows for distinguishing whether the identified causality is enduring or transient.

The method Breitung & Candelon (2006) proposed, which determines causality at specific frequencies by applying linear restrictions to the VAR model, is fundamentally rooted in the work of Geweke (1982). The causality measurement introduced by Geweke (1982) and Hosoya (1991) can be expressed as:

$$M_{X \rightarrow Y}(\omega) = \log \left[1 + \frac{|\psi_{12}(e^{-i\omega})|^2}{|\psi_{11}(e^{-i\omega})|^2} \right]$$

At $\psi_{12}(e^{-i\omega})=0$, $M_{X \rightarrow Y}(\omega) = 0$, it is stated that Y does not Granger-cause X at the specified frequency ω . In the framework proposed by Breitung & Candelon (2006), the null hypothesis of no Granger causality at frequency ω is evaluated by imposing a set of linear

restrictions on the model parameters. This hypothesis is formally tested using an F-distributed statistic under these linear constraints, allowing for the identification of causal relationships across specific frequency ranges.

$$\sum_{j=1}^p \theta_{12,j} \cos(j\omega) = 0$$

$$\sum_{j=1}^p \theta_{12,j} \sin(j\omega) = 0$$

The calculated F-statistic follows an F-distribution with $(2, T-2p)$ degrees of freedom for the frequency range $\omega \in (0, \pi)$. In this specification, 2 means the two linear restrictions, while T and p denote the total number of observations and the optimal VAR lag order, respectively.

3. Findings

In time series analysis, a graphical representation of the series is important to understand the series. Figure 1 shows the changes in the values of these two variables over time.

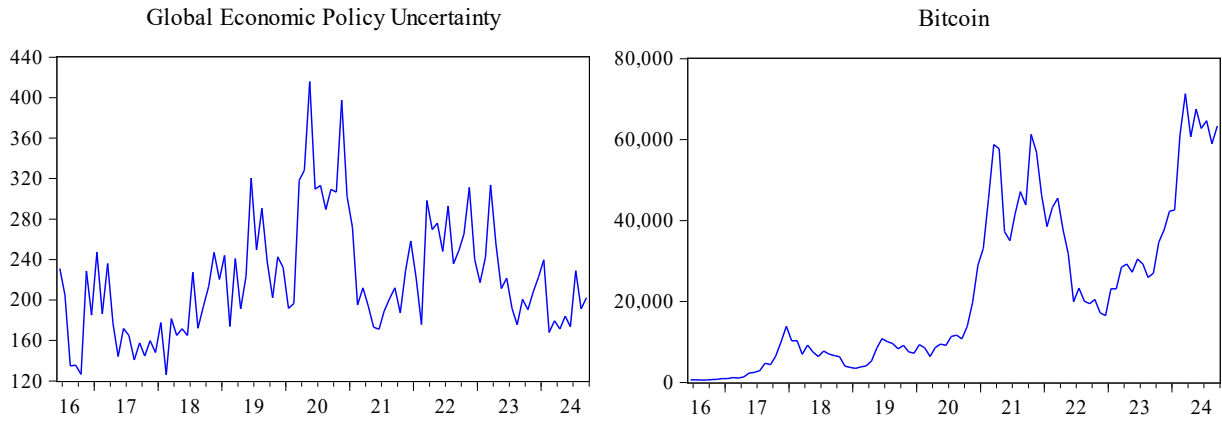


Figure 1. GEPU Index and Bitcoin Price

In the graphs, the horizontal axis represents the period, while the vertical axis shows the level values of the series. Both graphs provide clues that the series contains a trend. However, prior to the causa-

lity analysis, it is imperative to determine the stationary properties of the variables through unit root testing. To this end, the results of the Augmented Dickey-Fuller tests are summarized in Table 1.

Table 1. ADF Unit Root Tests Results

	GEPU	BTC
I(0)	ADF unit root test	-3.1007 (0.1120)
	Unit root test with a breakpoint	-2.756007 (0.8077)
	2018M06	2020M09
I(1)	ADF unit root test	-14.7460 (0.0000)
	Unit root test with a breakpoint	-8.6496 (0.0000)
	2021M02	2021M05

According to the ADF tests, the series are stationary at $I(1)$ in all models. This information is used in the Toda-Yamamoto (1995) & Breitung & Candelon (2006) tests.

Although the Toda-Yamamoto procedure is robust to non-stationarity and varying integration properties, identifying the maximum order of integration ($d_{\max}$) remains a methodological prerequisite. Based on the preliminary unit root analysis, $d_{\max}$ is determined to be 1 for the variables under consideration. After establishing the integration order, selecting

the optimal lag length (k) for the Vector Autoregressive (VAR) framework is critical for the valid execution of the causality test.

While the FPE and AIC criteria suggest an optimal lag length of 2, the SC and HQ criteria indicate a lag length of 1. The VAR(1) model suffers from both heteroskedasticity and autocorrelation issues. Therefore, a lag length of 2, as suggested by the FPE and AIC criteria, has been preferred as the optimal lag for the VAR model. Diagnostic tests indicate that the VAR(2) model is free from these econometric issues.

Table 2. Optimal Lag Order

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1541.306	NA	1.28e+12	33.55012	33.60494	33.57225
1	-1394.809	283.4390	5.76e+10	30.45237	30.61683*	30.51875*
2	-1388.963	11.05645	5.53e+10*	30.41224*	30.68635	30.52287
3	-1388.214	1.383930	5.94e+10	30.48291	30.86666	30.63780
4	-1384.747	6.255253	6.01e+10	30.49451	30.98790	30.69364
5	-1383.037	3.011806	6.33e+10	30.54428	31.14732	30.78767
6	-1380.977	3.536942	6.61e+10	30.58646	31.29914	30.87411
7	-1375.058	9.907893*	6.35e+10	30.54475	31.36707	30.87664
8	-1371.782	5.341454	6.47e+10	30.56048	31.49245	30.93663

Table 3. Autocorrelation and Heteroscedasticity Tests

VAR (1)			VAR (2)		
Autocorrelation LM Test					
Lags	LM stat.	Prob.	Lags	LM stat.	Prob.
1	10.93839	0.0273	1	1.762012	0.7794
2	7.087728	0.1313	2	1.504731	0.8258
3	5.215414	0.2659	3	5.073189	0.2799
White Heteroscedasticity Test					
Chi-sq	df	Prob.	Chi-sq	df	Prob.
36.26707	15	0.0016	49.55434	42	0.1973

On the other hand, the structural stability of the estimated VAR(2) model is evaluated by examining the inverse roots of the characteristic AR polynomial. As illustrated the AR roots graph, all inverse roots lie

strictly within the unit circle. These results confirm that the AR(2) specification satisfies the stability condition, ensuring the reliability of the subsequent causality analysis.

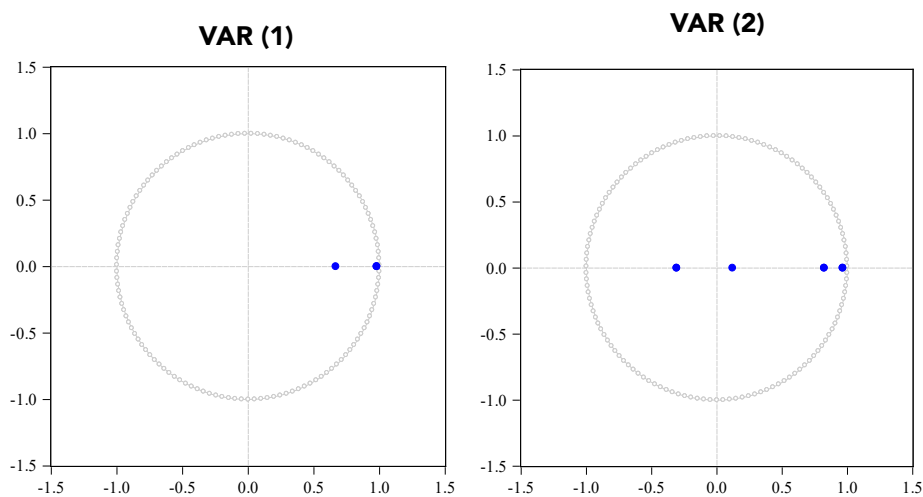


Figure 2. Inverse Roots of AR Characteristic Polynomial

The ADF unit root tests results already confirm that the max order of integration is $I(1)$. This implies that the $d_{\max}$ is 1. On the other hand, the optimal lag length is determined as 2. Therefore, the $(k+d_{\max})$ th or-

der is 3. So, the 3rd-order VAR needs to run in the Toda-Yamamoto procedure. The Toda-Yamamoto test results run with this information are shown in Table 4.

Table 4. Toda-Yamamoto Test Results

Toda-Yamamoto (1995)			
	Chi-sq	Lag	Prob.
GEPU → BTC	2.728559	3	0.4352
BTC → GEPU	0.600769	3	0.8963

According to the Toda-Yamamoto test results, there is no causal nexus between the variables at the 5% significance level for the entire period. Cryptocurrency markets can be quite volatile periodically. Therefore, even if there is no causal nexus between GEPU and Bitcoin prices in the relevant period, causal relationships can be seen between these variables in different time periods. For this reason, within the frequency domain causality approach framework developed by Breitung & Candelon (2006), the causal relationships between variables were examined

at different frequencies.

In the frequency domain approach, causal relationships are classified according to different time horizons. Frequencies range from 0 to 3.14. Lower frequencies represent long-run causality, whereas higher frequencies represent medium- and short-run causality (e.g., $\omega=0.01$ and $\omega=0.05$ denote the long-run; $\omega=1.00$ and $\omega=1.50$ the medium-run; and $\omega=2.00$ and $\omega=2.50$ the short-run). The causal relationship across all frequencies is illustrated in Figure 3.

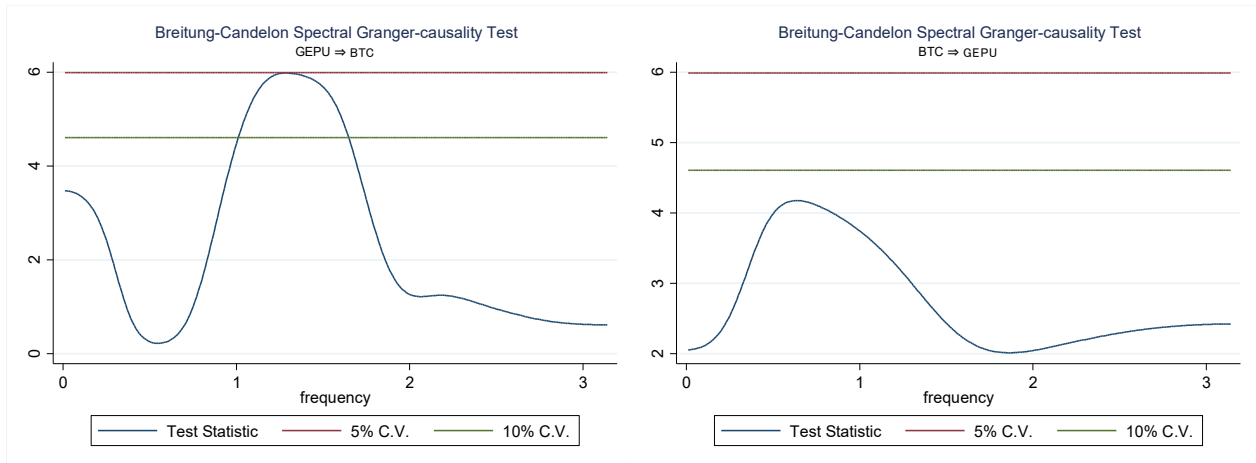


Figure 3. Breitung & Candelon Spectral Granger Causality Test

The left column of Figure 2 shows causality from GEPU to BTC, while the right column shows causality from BTC to GEPU. To be able to speak of causality, the calculated test statistics must be above the critical value at the 5% significance level. Upon examining the graphs, the empirical results reveal a statistically significant causal linkage running from GEPU to Bitcoin specifically within the medium-run frequency band (at $\omega=1.00$ to 1.50). Conversely, no causal relationship from BTC to GEPU was observed across the short, medium, or long run.

As demonstrated in Taştan's (2015: 1161) study, the duration of causal relationships can be calculated using the formula $2\pi/\omega$. Since this study utilizes monthly data, the duration of the causal relationship between GEPU and BTC is approximately 5 months when calculated using the aforementioned formula. This finding provides evidence that the identified causal link is not permanent, suggesting that the connection between these variables is transitory in nature. Causality at a low frequency level of 0.1 indicates permanent shocks (Ciner, 2011). Conversely, as

you observed in analysis of the GEPU-Bitcoin relationship, causality at higher frequencies suggests that the transmission of shocks is transitory and tends to wash out over time.

4. Conclusion

In this study, the causality relationship between GEPU and Bitcoin prices was examined for the period 2016M06-2024M09. While the Toda-Yamamoto (1995) causality test for the entire period revealed no significant link, the Breitung & Candelon (2006) frequency-domain test demonstrated a unidirectional causality from GEPU to BTC specifically in the medium run. This finding is significant, as it suggests that the influence of GEPU on Bitcoin is not a permanent, long-term determinant, but rather a transient effect.

The existence of this medium-term causality confirms that the market undergoes a transition process shaped by a specific transmission mechanism. Wit-

hin this mechanism, the 4-month period provides the necessary time for investors to interpret macroeconomic signals, revise their expectations, and rebalance their portfolios. In the long run, however, the global economy reaches a new equilibrium; the initial shock caused by GEPU eventually becomes the 'new normal,' and thus ceases to be a primary pricing criterion for investors.

While cryptocurrency markets are very volatile and can be affected by many macroeconomic and political factors, including global economic policy uncertainty, this causal relationship should not be seen as a final or main determinant. Instead, the evidence suggests that GEPU may be one of the factors that contributes to Bitcoin's price, but its effect is not permanent. This conclusion provides useful information for investors, especially in helping them avoid making quick decisions during times of high uncertainty.

These findings gain further context when considering Bitcoin's market position. Bitcoin holds significant dominance in the overall market thanks to its high market value and is often referred to as the 'gold' of the cryptocurrency world. Its characteristics make it less volatile and more resilient to political and economic shocks compared to other cryptocurrencies, where analysis might reveal more diverse causal links between policy uncertainty and asset prices. Ultimately, given that cryptocurrencies are known for substantial intraday fluctuations, the connections between political or economic factors and digital assets can produce varying outcomes across different frequencies, reinforcing the importance of a frequency-dependent analytical perspective.

Despite these findings, this study has some limitations that should be considered. First, the analysis focuses only on the causal relationship between Global Economic Policy Uncertainty and Bitcoin. Therefore, it does not examine the effects of other macroeconomic factors or include other cryptocurrencies such as altcoins. Future studies could expand this analysis by adding more macroeconomics and financial indicators and comparing different digital assets. This would provide a broader understanding of how various cryptocurrencies respond to global economic uncertainty and economic shocks

References

Blau, B. M. (2017). Price dynamics and speculative trading in bitcoin. *Research in International Business and Finance*, 41, 493–499.

Bouri, E., Gupta, R., Tiwari, A. & Roubaud, D. (2017). Does bitcoin hedge global uncertainty? Evidence from wavelet-based quantile-in-quantile regressions. *Finance Research Letters*, 23, 87–95.

Cheng, H. P. & Yen, K. C. (2020). The relationship between the economic policy uncertainty and the cryptocurrency market. *Finance Research Letters*, 35: 101308.

Ciner, C. (2011). Commodity prices and inflation: Testing in the

frequency domain. *Research in International Business and Finance*, 25(3), 229–237.

Conrad, C., Custovic, A. & Ghysels, E. (2018). Long- and short-term cryptocurrency volatility components: A GARCH-MIDAS analysis. *Journal of Risk and Financial Management*, 11, 1–12.

Demir, E., Gözgör, G. & Lau, C. K. M. & Vigne, S. A. (2018). Does economic policy uncertainty predict the Bitcoin returns? An empirical investigation. *Finance Research Letters*, 26, 145–149.

Dritsaki, C. (2017). Toda-Yamamoto causality test between inflation and nominal interest rates: evidence from three countries of Europe. *International Journal of Economics and Financial Issues*, 7(6), 120–129.

Dyhrberg, A. H. (2016). Hedging capabilities of bitcoin. Is it the virtual gold? *Finance Research Letters*, 16, 139–144.

Geweke, J. (1982). Measurement of linear dependence and feedback between multiple time series. *Journal of The American Statistical Association*, 77(378), 304–313.

Granger, C. W. J. (1969). Investigating Causal Relations By Econometric and Cross-Sectional Methods. *Econometrica*, 37(3), 424–438.

Haq, I. U., Maneengam, A., Chupradit, S., Suksatan, W. & Huo, C. (2021). Economic policy uncertainty and cryptocurrency market as a risk management avenue: A systematic review. *Risks*, 9(163), 1–24.

He, C., Li, Y., Wang, T. & Shah, S. A. (2024). Is cryptocurrency a hedging tool during economic policy uncertainty? An empirical investigation. *Humanities and Social Sciences Communications*, 11(1), 1–10.

Hosoya, Y. (1991). The decomposition and measurement of the interdependency between second-order stationary processes. *Probability Theory and Related Fields*, 88(4), 429–444.

Khan, K., Sun, J., Derindere Koseoglu, S. & Rehman, A. U. (2021). Revisiting bitcoin price behavior under global economic uncertainty. *Sage Open*, 11(3), 1–13.

Lucey, B. M., Vigne, S. A., Yarovaya, L. & Wang, Y. (2022). The cryptocurrency uncertainty index. *Finance Research Letters*, 45, 102147.

Markowitz, H. (1952). Portfolio Selection. *Journal of Finance*, 7(1), 77–91.

Matkovskyy, R., Jalan, A. & Dowling, M. (2020). Effects of economic policy uncertainty shocks on the interdependence between Bitcoin and traditional financial markets. *The Quarterly Review of Economics and Finance*, 77, 150–155.

Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System.

Oldani, C., Bruno, G. S. & Signorelli, M. (2024). Economic policy uncertainty and cryptocurrencies. *Eurasian Economic Review*, 14, 709–728.

Taştan, H. (2015). Testing for spectral Granger causality. *The Stata Journal*. 15(4), 1157–1166.

Toda, H. Y. & Yamamoto, T. (1995). Statistical Inference in Vector Autoregressions with Possibly Integrated Processes. *Journal of Econometrics*, 66, 225–250.

Wu, S., Tong, M., Yang, Z. & Derbali, A. (2019). Does gold or Bitcoin hedge economic policy uncertainty? *Finance Research Letters*, 31, 171–178.

Personal, Professional, and Organizational Values in Media Institutions: An Empirical Study of Media Professionals

Aysel Çetinkaya Kodal* / Assoc. Prof. Dr. 

Kocaeli University, Faculty of Communication, Department of Journalism
aysel.cetinkaya@kocaeli.edu.tr

Şemsi Kamile Canbay / Asst. Prof. Dr. 

Uskudar University, Faculty of Engineering and Natural Sciences, Department of Industrial Engineering
kamile.canbay@uskudar.edu.tr

*Corresponding Author

Abstract

This study examines journalists' personal values, the values they prioritize in their professional lives, and their perceptions of the values of the institutions they work for within a holistic framework in the Turkish media context. Journalism is traditionally built upon normative principles such as public service, accuracy, objectivity, and responsibility. However, journalists' individual value orientations may not always align with the priorities of the organizations they work for. Such alignment or tension can influence professional attitudes and decision-making processes. In this context, the study investigates whether journalists' value orientations differ by gender and professional experience and explores the relationships between personal values and perceptions of work and organizational values. The research was conducted within a quantitative framework, using a descriptive-relational survey model. Data were collected through a questionnaire administered to journalists working in newspapers across Türkiye. The sample consists of 162 journalists employed by 81 newspapers across

various regions of the country. The collected data were analyzed using descriptive statistics and the Chi-Square test of independence to identify potential differences and relationships among variables. The findings indicate that journalists' value orientations vary by gender and professional experience. In addition, meaningful relationships were identified between journalists' personal values and their perceptions of professional and organizational values. The results suggest that both individual characteristics and organizational contexts shape journalists' value systems. The study contributes to journalism research by providing empirical insights into the relationship between personal, professional, and organizational values in journalism.

Keywords: Journalism, Personal Values, Work Values, Organizational Values, Journalists.

JEL Codes: J24, J28, M12

Citation: Çetinkaya Kodal, A., & Canbay, K. Ş. (2026). Personal, professional, and organizational values in media institutions: An empirical study of media professionals. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

The concept of value is a dynamic and multidimensional phenomenon that underpins human life and social order, shaping individual behaviors, organizational processes, and social norms (Sağnak, 2004). Derived from the Latin word *valere* ("to be valuable/strong"), value is considered a system of criteria that shapes individuals' judgments about what is important and guides their actions (Bilgin, 2003). The Turkish Language Association defines value through meanings such as a measure of importance, worth, and the totality of a society's material and moral elements; philosophical approaches explain it as a disposition emerging when the subject attributes qualities to a phenomenon through their own goals, needs, and emotions (Cevizci, 2014: 199). In the academic literature, values are conceptualized as cognitive elements individuals desire within guiding goals and principles throughout their lives, and as relatively stable beliefs regulating attitudes and behaviors (Rokeach, 1973; Demirutku & Sümer, 2010; Schwartz, 1992; Ak, 2022). According to Schwartz, values are emotionally charged, motivate action, are abstract, serve as criteria for evaluation, and are hierarchically organized by importance, while also changing over time depending on social structures and individual attitudes (Schwartz, 2016).

The guiding function of values becomes even more critical in professions carrying public responsibility, such as journalism. Journalism is not merely the transmission of information; it is a field in which ethical decisions are continually made through selecting, framing, and interpreting social reality. Comparative studies across countries and platforms indicate that journalists adopt values such as public service, objectivity, autonomy, truthfulness, honesty, and responsibility as an ethical "backbone," with principles like factual accuracy, impartiality, and monitoring power receiving strong support (Deuze, 2005; Hanitzsch, Hanusch, Mellado, Anikina, Berganza, Cangoz et al., 2011; Kulakova, Oleinikov, Puyu, & Gromova, 2024). Deuze (2005) interprets this value set as a "professional ideology" conferring authority and social role on journalism. However, practices are not limited to ideal-level adoption of normative values; how these values are interpreted and implemented daily is often shaped by personal beliefs, organizational goals, and structural pressures. Interview-based studies show journalists rely on morally grounded values, such as minimizing harm, and competence-based values, including excellence and transparency, in daily decision-making, though conceptual ambiguities arise around autonomy and harm (Plaisance & Deppa, 2009). Similarly, complete independence and absolute objectivity are often seen as difficult ideals, with objectivity in practice reduced to maintaining "balance" (Syahri, 2020).

Organizational culture, meanwhile, provides a framework for learning, monitoring, and internalizing values. Strong newsroom cultures and professional institutions can support internalization of deontological ethics and ethical codes, though managerial goals, ownership structures, and editorial lines may systematically limit autonomy (Mubarok, Sarwono, & Angeliqa, 2024; Sjøvaag, 2013; Waldenström, Wiik, & Andersson, 2018). Values thus function not only as individual orientations or normative professional principles but also as critical determinants of organizational outcomes. Research shows cultures built on strong, shared values enhance performance, innovation, customer satisfaction, and competitive advantage (Gregory, Harris, Armenakis, & Shook, 2009; Metz, Ilieş, & Metz, 2018), while also strengthening employee motivation, satisfaction, and commitment, and improving talent attraction and retention (Bavardi, 2025). Value-oriented leadership further fosters organizational cultures supporting adaptation and sustainable transformation in changing environments (Gregory, Harris, Armenakis, & Shook, 2009). Within organizational management, values act as a guiding compass for decision-making and strategic direction, defining what is acceptable and shaping mission and vision (Grubert, Steuber, & Meynhardt, 2022). Consistent values contribute to leadership legitimacy by fostering trust and credibility (Herwanto & Hakim, 2022), while shaping employee behavior, belonging, and professional identity (Habib, Aslam, Hussain, Yasmeen, & Ibrahim, 2014).

However, the impact of values largely depends on the alignment between personal and organizational values. High congruence increases motivation, innovation, and adaptability to change, whereas misalignment may lead to resistance, low performance, and reduced commitment (Wu, Inoue, Filo, & Sato, 2022). Inconsistencies between espoused values and actual practices further weaken trust and engagement (Gregory, Harris, Armenakis, & Shook, 2009). Commercialization, metricization, and time pressure generate tensions between professional and organizational values; journalists' perceived autonomy decreases when organizational economic goals conflict with professional goals and time pressure increases, and ideological mismatch or commercial tasks such as advertising and PR further reduce autonomy (Skovsgaard, 2014; Kim & Jin, 2022). The integration of editorial and commercial units also redefines norms, seen by some as a necessary business mindset and by others as a threat to independence (Cornia, Sehl, & Nielsen, 2018). Values in journalism therefore raise not only the question of what is believed in, but what is possible under specific conditions. Examining how certain values are weighted more heavily than others offers direct insight into the motivations behind journalists' decision-making (Plaisance & Deppa, 2009).

Despite this growing body of research, three gaps remain insufficiently addressed. First, studies on journalistic values (e.g., Deuze, 2005; Hanitzsch, Hanusch, Mellado, Anikina, Berganza, Cangoz et al., 2011; Plaisance & Deppa, 2009) have predominantly relied on qualitative or cross-national survey designs capturing normative professional ideologies, but rarely examine how journalists' personal values, understood as concrete, everyday orientations such as honesty, family, and respect (Rokeach, 1973), relate systematically to their organizational environment within a unified empirical design. Second, research on value congruence and its organizational outcomes (Wu, Inoue, Filo, & Sato, 2022; Gregory, Harris, Armenakis, & Shook, 2009; Yeh & Huang, 2025) has largely been conducted in general management and business contexts, leaving the dynamics of value alignment within media organizations, where professional autonomy and commercial pressures coexist acutely (Skovsgaard, 2014; Cornia, Sehl, & Nielsen, 2018), comparatively underexplored. Third, although the relationship between journalists' personal values and their perceptions of organizational values has been theoretically discussed, it remains largely undocumented through systematic, quantitative measurement, particularly outside Western media systems and within the Turkish context specifically.

This study addresses these gaps by drawing on the broader literature on journalistic and organizational values, including classical conceptualizations of values as concrete, everyday orientations such as honesty, family, trust, and respect (Rokeach, 1973), alongside professional value frameworks specific to journalism (Deuze, 2005; Hanitzsch, Hanusch, Mellado, Anikina, Berganza, Cangoz et al., 2011) and organizational value perspectives (Sjøvaag, 2013; Waldenström, Wiik, & Andersson, 2018), to quantitatively examine personal values, work values, and organizational value perceptions among journalists in Türkiye. By testing whether these value orientations differ according to gender and professional experience, and by directly assessing alignment between personal and organizational values, this study extends prior qualitative and Western-centric accounts of journalistic value systems into an underexamined national context, offering an empirically grounded basis for understanding how individual and institutional values interact in contemporary journalism practice.

2. Theoretical Framework

2.1. Value Approaches: The Micro–Macro Dimension

Values constitute a set of frameworks that enable individuals to make sense of themselves and the society in which they live, and that guide their attitudes

and behaviors (Güngör, 1998). For this reason, values are addressed at both the micro (individual preferences and behaviors) and macro (social norms, cultural continuity, and integration) levels (Sağnak, 2004; Şahin, 2022). It is suggested that values may vary across societies and within the same society depending on temporal and demographic differences, and that they are shaped by cultural and psychosocial factors (Dönmezer, 1994; Yapıcı & Zengin, 2003; Şahin, 2022; Ak, 2022; Gülaç & Camgöz, 2024). This characteristic makes values analytically important in fields such as journalism, which are grounded in both institutional norms and individual decision-making processes. While journalists refer to the profession's normative values, they also act within the framework of their personal value priorities and organizational constraints. Kulakova et al. (2024) state that “the value system of journalism is grounded in the principles of humanity, truthfulness, honesty, and responsibility, which constitute the ideological and ethical basis of journalistic practice. These values function as normative guidelines shaping journalists’ consciousness and behavior, orienting the profession toward truth, service to society, and the affirmation of humanistic ideals, thereby establishing journalism as a socially responsible field of media communication.”

At this point, the interaction between two levels becomes decisive: (i) the journalist's individual/human values and (ii) the organizational culture and expectations of the institution where news production takes place. Interview-based studies reveal that journalists rely on morally grounded values, such as “minimizing harm,” and competence-based values, including “excellence” and “transparency,” in their daily decision-making; however, conceptual ambiguities may arise regarding issues such as autonomy and harm (Plaisance & Deppa, 2009).

Building on this perspective, value theory provides a critical analytical lens for understanding journalistic ethics. Values are not merely abstract ideals but function as cognitive and normative frameworks that guide decision-making processes and help resolve ethical dilemmas. In this sense, values act as criteria for judgment and action, shaping how journalists interpret ethical situations and prioritize competing principles. Accordingly, journalism ethics can be understood not as a fixed set of universal rules but as a dynamic process in which multiple values are continuously negotiated, prioritized, and applied in context-specific situations.

This perspective highlights that ethical decision-making in journalism emerges from the interaction of value systems rather than from adherence to rigid normative codes. Therefore, examining journalists’ personal values alongside professional norms and organizational expectations enables a more comprehensive understanding of how ethical judgments are formed and enacted in practice.

2.2. Conceptualizing Personal Values: From Abstract Typologies to Concrete Value Orientations

Although the multidimensional nature of the value concept has produced various classifications, one of the most widely cited frameworks with cross-cultural validity is Schwartz's Theory of Values. Schwartz (1992, 1994) defines values as desirable transsituational goals, varying in importance, that serve as guiding principles in the life of a person or social entity, and identifies ten basic motivational value types, power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security, organized along two broader dimensions: openness to change versus conservation, and self-transcendence versus self-enhancement (Schwartz 1992; 1994; 2006). This model has been particularly influential because it conceptualizes values not as isolated categories but as a circular structure of compatibility and conflict, allowing researchers to examine how abstract motivational priorities relate to one another within a coherent system.

While Schwartz's typology offers a powerful framework for cross-cultural comparison at a high level of abstraction, several scholars have noted that occupational and organizational value research often benefits from a complementary, more concrete approach, one that captures values as spontaneously articulated by individuals in everyday and professional life, rather than as predefined abstract types (Super, 1970; Ros, Schwartz, & Surkiss, 1999). Notably, Ros, Schwartz, and Surkiss (1999) themselves argue, within the Schwartzian tradition, that work-related values are more appropriately operationalized through concrete, occupation-specific items than through direct application of the ten basic value types. Rokeach's (1973) classical distinction between terminal values, desirable end-states such as family security, self-respect, and true friendship, and instrumental values, preferable modes of conduct such as honesty, responsibility, and respect, provides such a framework. This tradition has been particularly influential in occupational contexts because it allows personal values to be assessed in the concrete, often relational and ethical terms individuals themselves use to describe what matters to them, rather than requiring prior categorization into abstract motivational dimensions (Rokeach, 1973; Demirutku & Sümer, 2010).

The present study adopts this concrete orientation across all three value dimensions examined. Journalists' personal values are assessed as they emerge directly from participants' own priority rankings (e.g., honesty, family, respect, trust), rather than being mapped onto Schwartz's ten predefined types. Work values are similarly assessed through participants' own articulations of what they prioritize in professional practice (e.g., discipline, quality, self-

development), consistent with classical work values measurement traditions (Super, 1970; Ros, Schwartz, & Surkiss, 1999). Organizational value perceptions are likewise assessed through concrete, person-organization fit categories rather than abstract cultural-dimension scores, in line with established approaches to measuring organizational values in applied settings (O'Reilly, Chatman, & Caldwell, 1991; Cameron & Quinn, 1999). This approach is considered more appropriate for the exploratory aims of the present research, which seeks to capture how journalists themselves articulate what they value, personally, professionally, and organizationally, before relating these orientations to one another. Nonetheless, Schwartz's broader insight that values are hierarchically organized, motivationally grounded, and prone to tension between competing priorities remains a useful interpretive lens for understanding why certain value categories, such as ethical/relational versus performance-oriented values, may stand in tension in the findings that follow.

2.3. Professional Values and Organizational Constraints in Journalism

The journalism literature emphasizes that the profession possesses a universalized set of ethical values and that this set functions as a professional ideology that provides occupational legitimacy (Deuze 2005; Hanitzsch, Hanusch, Mellado, Anikina, Berganza, Cangoz et. al., 2011; Cam, Pereira, & Ruellan, 2019; Blokhin, 2023; Kulakova, Oleinikov, Puyu & Gromova, 2024). In the contemporary landscape of global communication, journalism plays a pivotal role in shaping public perception, influencing societal values, and fostering informed discourse (Serik, Tatyana, Kazmukhanov, Maya & Byerdimurat, 2023).

However, in practice, the application of values may occur within a field of "conditioned" autonomy due to institutional managerial structures, ownership relations, editorial lines, and market pressures (Sjøvaag, 2013; Waldenström, Wiik, & Andersson 2019). It has been shown that organizational goals and management structures systematically limit journalists' scope of action from news selection to framing, and that managerialism and business ideals can narrow the space for professional judgment (Waldenström, Wiik, & Andersson, 2019; Porcu, Hermans, & Broersma, 2025). This situation raises not only the question of "which values journalists hold," but also "under what conditions they are able to put these values into practice." In this context, the pursuit of professionalism, an important value for journalists in a competitive media industry, can be burdensome (Kim & Buzzelli, 2026).

In terms of autonomy, it has been reported that conflicts between organizational economic goals and professional goals, as well as time pressure,

can reduce perceptions of autonomy (Skovsgaard, 2014); ideological mismatch and commercial/PR-type work decrease autonomy (Kim & Jin, 2022); and the convergence of editorial and commercial units leads to the redefinition of norms (Cornia, Sehl & Nielsen, 2018). Furthermore, it is argued that tensions between normative values and actual practices recur across contexts, and that political-economic crises may erode journalistic communities and professional values (Lauk & Harro-Loi, 2017; Reich & Hanitzsch, 2013). This body of literature indicates that a mismatch between personal and organizational values may affect ethical decision-making and the experience of professional identity in journalism.

By bringing this theoretical discussion into the Turkish context, this study aims to quantitatively reveal the relationships between journalists' personal value orientations (Schwartz, 2006), their work value priorities, and their perceptions of organizational values. In doing so, it becomes possible to discuss how journalists perceive the relationship between the normative value set of journalism (public service, truthfulness, objectivity, autonomy, etc.) and organizations' value and performance expectations (metrics, speed, commercial pressures, etc.), and how these perceptions vary according to demographic and professional variables.

3. Objectives

The primary objective of this study is to examine journalists' personal values, the values they prioritize in their professional practices, and their perceptions of organizational values within media institutions in Türkiye. By descriptively analyzing these three dimensions of values, the study aims to explore how journalists' personal ethics, professional norms, and perceived organizational priorities are distributed and how they align or diverge in the contemporary media environment. In addition, the research seeks to determine whether journalists' value orientations differ according to demographic and professional characteristics, particularly gender and professional experience. Understanding these differences may provide insight into how value systems are shaped by individual and institutional factors within journalism.

Based on these objectives, the study addresses the following research questions:

RQ1: What are the most prominent personal values among journalists working in Türkiye?

RQ2: What values do journalists prioritize in their professional practices, and how do the relative distributions of these values descriptively compare with the organizational values they perceive within their institutions?

RQ3: Do journalists' personal and perceived organizational values differ according to gender and professional experience?

4. Methodology

4.1. Research Model

This study is a descriptive, relational survey research study designed within a quantitative research framework to examine journalists' perceptions of their personal, work, and organizational values in Türkiye. The survey model is a widely used method for describing population characteristics and analyzing relationships between variables (Neuman, 2020). In this study, the questionnaire method was used to collect data. Through this method, journalists' value orientations were systematically and comparatively analyzed.

The research model was designed to examine whether journalists' value orientations differ across demographic and professional characteristics. In this context, journalists' gender and professional experience were considered as independent variables, while journalists' personal values, the values they consider important in their professional lives, and their perceptions of the values of the institutions they work for were treated as dependent variables. The model assumes that individuals' personal values may influence their professional attitudes and perceptions of their institutions. At the same time, it is assumed that journalists' professional experiences and demographic characteristics may play a determining role in shaping their value priorities.

Accordingly, the research model aims to reveal the differences and relationships between journalists' value orientations and variables such as gender and professional experience. The model also allows for the analysis of the alignment and differences between journalists' individual values and the values they perceive in their institutions. In this respect, the research model offers the opportunity to evaluate both journalists' individual and organizational value systems holistically.

4.2. Population, Sample, and Data Collection Process

The population of this research comprises journalists working in national and local media organizations in Türkiye. According to information obtained by the Presidency of Communications (İletişim Başkanlığı) through a CİMER application, as reported by media ombudsman Faruk Bildirici (2026), the total number of press card holders in Türkiye was 25,384 as of February 13, 2026, of whom 8,408 held a permanent-press card. Since a permanent-press card is

granted specifically to individuals continuously and actively practicing journalism as their profession, this figure (N = 8,408) was taken as the accessible population for the present study, consistent with the research's criterion that participants be actively practicing journalists.

Due to the large number of journalists in Türkiye and the difficulties of reaching the entire population in terms of time, cost, and accessibility, achieving statistical representativeness was not feasible. Therefore, this study employed a purposive sampling method guided by a maximum variation strategy, allowing access to participants with characteristics relevant to the research's purpose while capturing diversity across key dimensions of the profession (Büyüköztürk, Çakmak, Akgün, Karadeniz, & Demirel, 2020). The study sample consists of 162 journalists working at 81 newspapers across various regions of Türkiye. The main sampling criterion was active practice of the profession; efforts were made to reach journalists in various organizational roles (managers, editors, reporters, technical staff, etc.) so the sample would reflect the hierarchical and functional diversity of newsroom structures rather than a single occupational perspective.

The participating journalists were distributed across 24 provinces spanning all seven geographic regions of Türkiye, including major metropolitan centers (İstanbul, n=62; Ankara, n=6; İzmir, n=8; Bursa, n=4; Kocaeli, n=28) as well as smaller provincial cities (Sakarya, n=12; Sivas, n=4; Konya, n=4; Mersin, n=4; Manisa, n=2; Kayseri, n=2; Malatya, n=2; Adana, n=2; Çorum, n=2; Edirne, n=2; Kahramanmaraş, n=2; Erzurum, n=2; Batman, n=2; Balıkesir, n=2; Yalova, n=2; Yozgat, n=2; Çanakkale, n=2; Ordu, n=2; Samsun, n=2). This broad regional spread was deliberately pursued to avoid the İstanbul/Ankara-centric bias common in Turkish media research and to ensure the sample reflects journalism practiced both in major media hubs and in peripheral, regional press organizations. The participants' work across different media fields (print, audiovisual, digital) further contributes to representing different areas of the media sector, while their varying levels of experience and professional positions allow for a more comprehensive examination of journalists' value perceptions.

To evaluate the adequacy of the sample size relative to the accessible population, Yamane's (1967) formula for finite populations, $n = N / (1 + Ne^2)$, was applied using N = 8,408 (permanent press card holders). A sample of 162 corresponds to a margin of error of approximately 7.8% at the 95% confidence level. While this exceeds the conventional 5% margin typically sought in probability-based designs, it falls within an acceptable range for exploratory, purposive-sampling research of this kind, where the principal aim is not statistical generalization but an

in-depth, diversity-informed account of value perceptions across a deliberately heterogeneous subset of the profession, varied in geographic origin, organizational role, and media field. It should therefore be acknowledged that, consistent with the nature of purposive sampling, the findings are not statistically generalizable to the entire population of journalists in Türkiye; rather, they offer a structurally informed and diversity-sensitive understanding of how value perceptions are configured among practicing journalists in the country.

4.3. Data Collection Instruments and Measurement

In the research, a questionnaire technique was used as the data collection instrument. The questionnaire aimed to determine journalists' personal values, the values they consider important in their professional lives, and their perceptions of the values of the institutions they work for. The data collection process used an online survey. The questionnaire, consisting of 15 questions across four sections, was delivered electronically to participants and completed voluntarily.

Personal Values: Participants' personal value orientations were assessed through an open-ended question ("What do you value most in your life?"), in which respondents freely listed, in their own words, their first-, second-, and third-priority values. Responses were subsequently grouped into categories through inductive content coding (e.g., honesty, family, respect, trust), consistent with classical approaches to value assessment that capture values as they are spontaneously articulated by individuals rather than through predefined abstract typologies (Rokeach, 1973).

Work Values: To determine the values journalists prioritize in work-related matters, participants were asked, "What do you value in work-related matters?" and instructed to select up to four items from a list of 18 researcher-compiled categories: sincerity, discipline and order, punctuality, keeping up with current events and self-development through learning, effort/dedication, good planning, knowing the process in detail, learning different ideas, doing work well and with quality, economic benefit, good relationships with coworkers, being appreciated, competitiveness, belonging, mutual respect, independence, creativity, achievement, and security. This item pool was compiled by the researchers based on the work values literature, which has long distinguished between intrinsic work values (e.g., self-development, creativity, quality of work; Super, 1970), extrinsic/instrumental work values (e.g., economic benefit, security, punctuality; Elizur, 1984), and social/relational work values (e.g., good relationships with coworkers, belonging, mutual respect; Ros,

Schwartz, & Surkiss, 1999). This closed-list, multiple-selection format was chosen over Schwartz's ten abstract value types because it allows work-related priorities to be captured in concrete, occupation-relevant terms more directly applicable to journalists' daily professional practice.

Organizational Value Perceptions: To measure participants' perceptions of the value priorities of the institutions they work for, participants were asked, "What does your organization value most?" and instructed to identify up to five items from a list of 13 researcher-compiled categories: belonging, respect, discipline, performance, sincerity, reliability, collaboration, honesty, ethics/morality, justice, order, punctuality, and achievement. This item pool draws on the organizational values and culture literature, which similarly identifies ethical/relational values (e.g., honesty, justice, respect; O'Reilly, Chatman, & Caldwell, 1991), performance-oriented values (e.g., performance, achievement, discipline; Cameron & Quinn, 1999), and collaborative/structural values (e.g., collaboration, order, punctuality) as recurring dimensions of perceived organizational culture.

It should be noted that, unlike the personal values question, the work values and organizational values items were not derived from an existing, previously validated psychometric scale; rather, they were compiled by the researchers based on a review of the relevant work values and organizational culture literature cited above, and presented to participants as closed-list, multiple-selection items rather than Likert-type rating scales. This distinction is addressed further as a methodological limitation in Section 4.5.

4.4. Data Analysis

The data obtained within the scope of the research were analyzed using SPSS 26.0. During the analysis, the dataset was first examined and missing and erroneous data were identified and corrected to be suitable for analysis. In this context, incomplete or invalid questionnaire forms were excluded, and analyses were conducted using data from 162 participants.

Responses to the open-ended personal values question were independently coded into categories (e.g., honesty, family, respect) by two members of the research team through an inductive content analysis procedure; discrepancies in coding were resolved through discussion until full agreement was reached. For the work values and organizational values items, each item selected from the closed lists (see Section 4.3) was treated as a binary variable (selected/not selected), enabling frequency-based analysis and subsequent comparisons across demographic groups.

In the first stage of the study, descriptive statistics, frequency and percentage analyses, were used to determine the participants' demographic char-

acteristics and to identify the personal, work, and organizational values most frequently prioritized by journalists. In the second stage of the research, the Chi-Square test of independence was applied to these binary and categorical variables to determine whether journalists' value orientations differed according to gender and professional experience. The Chi-Square test is a non-parametric statistical method appropriate for examining relationships and differences between categorical variables. Through this analysis, the relationships between journalists' personal values, work values, and perceptions of organizational values, on the one hand, and gender and professional experience, on the other, were tested.

4.5. Limitations of the Research

Although this study aims to reveal journalists' perceptions of their personal, work, and organizational values, it has certain limitations. First, the research is limited to 162 journalists working in 81 newspapers, selected purposively from those operating in Türkiye. Because this is a non-probability sampling method, the sample was not selected to be statistically representative of the broader population of journalists in Türkiye; rather, it was designed to capture diversity in professional role, regional distribution, and media field.

A further methodological limitation concerns the measurement instruments used in the study. The structural validity and dimensional reliability of the Personal Values, Work Values, and Organizational Value Perception scales were tested solely within this study's sample ($N = 162$). Although the reliability coefficients obtained were within acceptable ranges for this sample, these psychometric properties have not been confirmed across other samples or contexts; accordingly, the generalizability of the scales' factor structure and reliability to different journalist populations or cultural settings remains to be established through future validation studies.

In the study, journalists' value perceptions were examined in relation to gender and professional experience. In future studies, including additional variables such as age, education level, type of media organization, institutional size, and organizational structure may enable a broader evaluation of journalists' value orientations. Future research could also adopt probability-based sampling designs and re-test the scales used here across larger, more diverse samples to strengthen both the generalizability of the findings and the robustness of the measurement instruments.

A related limitation concerns the distribution of participants across professional positions. Although the revised classification indicates that reporters constitute 30.9% of the sample -addressing earlier concer-

ns about reporter underrepresentation- managerial-level participants (56.2%) still constitute more than half of the sample, while editors account for only 13.0%. Accordingly, caution should still be exercised when generalizing the findings to "Turkish journalists" as a whole; the results are more accurately interpreted as reflecting value orientations within a sample in which senior editorial decision-makers are more strongly represented than field-level reporting staff. Future research employing quota-based or stratified sampling by professional position would allow for a more balanced comparison across hierarchical levels within the newsroom.

5. Findings

This section presents the findings from the analysis of data collected for the study. First, descriptive statistics on the participants' demographic characteristics are presented. Subsequently, journalists' personal value priorities, the values they consider important in their professional practices, and their perceptions of organizational values are analyzed. Finally, the results of the Chi-square tests examining whether journalists' value orientations differ by gender and professional experience are presented in the following tables.

Table 1. Demographic Characteristics of the Participants (N = 162)

Variable	Category	n	%
Age	19–25	26	16.0
	26–35	42	25.9
	36–45	31	19.1
	46–55	44	27.2
	56 and above	19	11.7
Gender	Female	73	45.1
	Male	89	54.9
Education Level	High school	30	18.5
	Associate degree	6	3.7
	Bachelor's degree	95	58.6
	Master's degree	27	16.7
	Doctorate	2	1.2
	Other	2	1.2
Position	Editor	21	13.0
	Reporter	50	30.9
	Manager (Editor-in-Chief, Managing Editor, Owner/Publisher)	91	56.2
Media Sector	Internet / social media	46	28.4
	Multiple media sectors	35	21.6
	Print + Internet media	30	18.5
	Audiovisual media	27	16.7
	Audiovisual + print media	11	6.8
	Print media	10	6.2
	Other combinations	3	1.9

Source: Own processing.

As shown in Table 1, the age distribution of the 162 participating journalists is concentrated in the 46–55 age group (27.2%), followed by the 26–35 age group (25.9%). The fact that many participants (72%) are aged 26 or older suggests that the sample largely

consists of experienced, professionally established journalists, which may indicate that their value perceptions are shaped by accumulated professional experience rather than early-career impressions. Regarding gender, male participants (54.9%) slight-

ly outnumber female participants (45.1%), a ratio broadly consistent with the general employment structure of the Turkish media sector, suggesting a reasonably balanced sample in this respect. The education level findings are noteworthy: 58.6% of participants hold a bachelor's degree, and 16.7% hold a master's degree, meaning that 76.5% have at least an undergraduate degree. This reflects the increasingly higher-education-oriented profile of journalism as a profession in Türkiye and indicates that the sample's educational composition aligns with current sectoral trends. In terms of position, the fact that managerial-level participants (56.2%)

constitute more than half of the sample may initially appear disproportionate. This pattern, however, is consistent with the study's purposive sampling strategy, which deliberately sought to capture value perceptions not only from field-level staff but also from individuals shaping editorial and institutional decision-making. Nonetheless, this concentration should be acknowledged as a limitation: the comparatively lower representation of field reporting experience (30.9% reporters, 13% editors) suggests that the findings may be weighted toward a more managerial/institutional perspective on professional values.

Table 2. Journalists' Personal Value Priorities (Top Three Ranked Values)

	What I value most	Priority values in %			Total
		1.priority	2.priority	3.priority	
1	My family, my loved ones	19,9%	13,7%	8,1%	41,6%
2	Honesty and truthfulness; acting honestly, being sincere in relationships and speech	20,5%	12,4%	5,6%	38,5%
3	Respect; being respectful, showing respect and courtesy to one another	12,4%	8,7%	5,6%	26,7%
4	Myself	6,2%	4,3%	4,3%	14,9%
5	My job, my profession	2,5%	7,5%	5,0%	14,9%
6	Trust, reliability	5,0%	5,0%	3,7%	13,7%
7	Morals and values; having moral values and living by them, being moral, being ethical	4,3%	3,7%	3,1%	11,2%
8	Justice	5,0%	2,5%	3,1%	10,6%
9	Health	3,7%	3,1%	3,7%	10,6%
10	Economic income, a good salary, money	2,5%	1,2%	3,1%	6,8%
11	My hobbies; reading, writing, traveling, sleep, my quality of life	0,6%	1,9%	4,3%	6,8%
12	My country, my homeland	1,2%	3,1%	2,5%	6,8%
13	Efficiency, productivity	0,0%	3,1%	3,7%	6,8%
14	Peace	1,9%	1,9%	2,5%	6,2%
15	Discipline	1,9%	1,9%	1,9%	5,6%
16	Freedom	0,6%	1,2%	3,7%	5,6%
17	Love	0,6%	0,0%	3,7%	4,3%
18	Success	0,0%	1,9%	1,9%	3,7%
19	Nature and animals, protecting nature	0,0%	2,5%	0,6%	3,1%
20	Impartiality, objectivity	0,0%	3,1%	0,0%	3,1%
21	Responsibility	1,2%	1,2%	0,0%	2,5%
22	Loyalty	0,0%	0,0%	1,9%	1,9%
23	My religious life	0,6%	0,0%	1,2%	1,9%
24	Stability	1,2%	0,0%	0,0%	1,2%
25	Knowledge	0,0%	1,2%	0,0%	1,2%

26	Style	0,0%	1,2%	0,0%	1,2%
27	Working in a planned manner	0,0%	1,2%	0,0%	1,2%
28	Merit	0,0%	0,0%	1,2%	1,2%
29	Self-sacrifice	0,0%	0,0%	1,2%	1,2%
30	Transparency	0,0%	0,0%	1,2%	1,2%
31	Goodwill	0,0%	0,0%	1,2%	1,2%
32	Humility, modesty	0,0%	0,0%	1,2%	1,2%
33	Other values	8,1%	12,4%	20,5%	8,1%

Source: Own processing.

Table 2 presents journalists' priority personal values based on their first-, second-, and third-choice responses. The findings reveal that ethical and relational values were the most prominent among participants, while values tied to journalism's normative professional ideology were comparatively rare. Family and loved ones emerged as the value with the highest overall priority rate (41.6%), although it was not the most frequently selected first-priority value; rather, it maintained a consistently strong presence across the second (13.7%) and third (8.1%) priority ranks, suggesting that family functions as a stable, recurring reference point in journalists' value systems rather than the single most immediate association. Honesty and truthfulness, by contrast, were the most frequently selected first-priority value (20.5%) and ranked second overall (38.5%), indicating that it is the value most immediately associated with journalists' sense of self. Respect ranked third overall (26.7%) but became relatively more prominent at the third-priority level (5.6%, equal to family and honesty), suggesting it may be a more relationally derived value, one that becomes salient upon further reflection rather than an immediate first association. At a more moderate level, self-oriented and professional identity values, namely myself (14.9%) and my job/profession (14.9%), appeared with identical overall totals but inverse patterns: self-related responses were more frequently a priority (6.2%), while job/profession-related responses were more frequently a second priority (7.5%). This suggests journalists tend to anchor their value identity first in personal selfhood, with professional identity emerging as a

closely related but secondary layer. Trust and reliability (13.7%) and moral/ethical values (11.2%) also featured prominently and are conceptually related to honesty; combined with honesty and truthfulness, this broader "ethical cluster" accounts for a substantial share of journalists' overall value priorities, reinforcing the centrality of integrity-related values in this profession. A notable finding concerns the limited presence of values tied to journalism's normative professional ideology. Impartiality/objectivity (3.1%), responsibility (2.5%), and transparency (1.2%) were rarely identified as personal priorities, and impartiality/objectivity was never selected as a priority. This points to a potential gap between journalism's normative discourse, which foregrounds objectivity, responsibility, and transparency as defining occupational values (Deuze, 2005; Hanitzsch et al., 2011), and journalists' internalized personal value systems, in which relational and character-based values such as family, honesty, and respect appear considerably more salient than role-specific professional norms. Material- and achievement-oriented values such as economic income (6.8%), success (3.7%), and efficiency/productivity (6.8%) were also ranked comparatively low, indicating that journalists' personal values are shaped neither primarily by professional-normative ideals nor by material or performance-based concerns, but by relational and ethical orientations centered on family, honesty, and respect. The "other values" category displayed a distinct pattern: relatively infrequent as a priority (8.1%) but among the most frequently selected categories at the third-priority level (20.5%).

Table 3. Journalists' Work Value Priorities

What do you value in work-related matters? (Business Value"")	Number	%
Discipline and order	100	62%
Sincerity	80	50%
Doing work well and with quality	65	40%
Keeping up with current events	63	39%
Developing oneself through learning	63	39%

Mutual respect	52	32%
Effort	49	30%
Dedication	42	26%
Money and material things - Economic benefit	38	24%
Punctuality	33	20%
Success	32	20%
Good planning	31	19%
Good relationships with coworkers and people in general	30	19%
Learning different ideas	30	19%
Belonging	28	17%
Knowing the process details completely	26	16%
Being fully informed	26	16%
Being appreciated	18	11%

Source: Own processing.

Table 3 presents journalists' work-related value priorities. The findings indicate that professional discipline, ethical conduct, and self-development were the most highly valued aspects of work, while material and externally validated rewards occupied a comparatively peripheral position. Discipline and order emerged as the most frequently reported work-related value (62%), a finding that, while unexpected at first glance, is consistent with the time-pressured, fast-paced nature of news production described in the literature (Skovsgaard, 2014); under such conditions, disciplined and orderly working habits may function as a practical necessity rather than an abstract ideal. Sincerity ranked second (50%), aligning closely with the prominence of honesty and truthfulness observed among personal values (Table 2), suggesting that integrity-related values extend consistently into journalists' professional identity and daily conduct. A cluster of intrinsic, knowledge-oriented values also featured prominently: doing work well and with quality (40%), keeping up with current events (39%), and developing oneself through learning (39%), followed by learning different ideas (19%) and knowing the process details completely (16%). Together, these findings indicate that journalists' work values are strongly oriented toward continuous learning, professional competence, and information-seeking, consistent with journalism's identity as a knowledge-intensive profession (Super, 1970). Social and relational values, including mutual respect (32%), good relationships with coworkers (19%), and belonging (17%), occupied a more moderate position,

mirroring the comparatively stable but secondary role of respect among personal values (Table 2). In contrast, material and extrinsic values were consistently ranked lower. Money and material benefits (24%), punctuality (20%), success (20%), and being appreciated (11%) appeared toward the bottom of the hierarchy, paralleling the relatively low emphasis placed on economic income and success among personal values (Table 2). Notably, success (20%) was reported more frequently than being appreciated (11%), suggesting that journalists may derive professional accomplishment from the intrinsic value of their work rather than from external recognition, an interpretation consistent with journalism's frequent characterization as a profession in which the visible product typically overshadows the individual contributor. Overall, the hierarchy observed in Table 3, with discipline and ethical/relational values at the top, knowledge-oriented values in the middle, and material or recognition-based values at the bottom, closely parallels the value structure identified among journalists' personal values (Table 2). This convergence reinforces the internal consistency of the findings and suggests that journalists' professional value orientations are, to a considerable extent, an extension of their broader personal value systems. To provide a synthesized overview of the three value dimensions examined in this study, Figure 1 presents the six value categories common to the personal, work, and organizational value measures, allowing for a direct visual comparison of their relative emphasis across contexts.

Table 4. Differences in Personal Values by Gender

Personal Value	Male (%)	Female (%)	Total (%)	χ^2	df	P	Result
Family and loved ones	44.9	37.5	41.6	0.91	1	.341	Not significant
Honesty and decency	39.3	37.5	38.5	0.06	1	.813	Not significant
Respect and courtesy	20.2	34.7	26.7	4.27	1	.039	Significant
Self and hobbies	18.0	26.4	21.7	2.79	1	.095	Not significant
Job, profession, productivity	16.9	27.8	21.7	2.79	1	.095	Not significant

Note. χ^2 = Chi-Square test. $p < .05$ indicates statistical significance. $N = 161$ (89 male, 72 female). Although the gender item was mandatory and binary for all 162 participants, one female participant's response to the open-ended personal values question could not be reliably classified into the categories examined below. Because the chi-square procedure requires non-missing data on both variables, this participant was excluded from this specific analysis through listwise deletion; she remains included in the overall demographic count reported in Table 1 ($N = 162$).

Source: Own processing.

A chi-square test of independence was conducted to examine whether intrinsic personal values differed by gender. Among the five value categories examined, respect and courtesy were the only personal values showing a statistically significant gender difference, $\chi^2(1, N = 161) = 4.27, p = .039$. Female journalists were considerably more likely than male journalists to identify respect as a core personal value (34.7% vs. 20.2%) - a gap of nearly 15 percentage points, the largest observed in this table. This finding is consistent with the broader pattern noted in Table 2, where respect emerged as a relationally derived value that becomes more salient upon further reflection; the present result suggests that this relational salience may be particularly pronounced among female journalists. In addition to the statistically significant finding, two further patterns approached significance and merit cautious attention. Self and hobbies (18.0% male vs. 26.4% female) and job, profession, and productivity (16.9% male vs. 27.8% female) both yielded identical chi-square values, $\chi^2(1, N = 161) = 2.79, p = .095$, with female journalists reporting consistently higher percentages on both. Although these differences did not reach conventional significance thresholds, their consistent direction - female journalists more frequently prioritizing

self-oriented and professional-identity values- suggests a borderline pattern that may warrant further investigation with a larger sample, rather than being dismissed outright as a null finding. By contrast, family and loved ones (44.9% male vs. 37.5% female; $\chi^2 = 0.91, p = .341$) and honesty and decency (39.3% male vs. 37.5% female; $\chi^2 = 0.06, p = .813$) showed minimal gender variation, indicating that these two values function as shared, gender-invariant priorities among journalists regardless of gender. This is a notable finding in its own right: while respect appears to be a gendered relational value, honesty - the value most central to journalists' personal identity overall (see Table 2) - is evidently embraced with equal strength by male and female journalists alike, reinforcing its status as a near-universal professional and personal anchor within this sample. The findings indicate that gender differences in intrinsic personal values were limited in number but meaningful in direction: where differences did emerge (respect and the borderline patterns for self/hobbies and job/profession), they consistently favored stronger endorsement among female journalists, while the two most universally endorsed values (family, honesty) showed no meaningful gender variation.

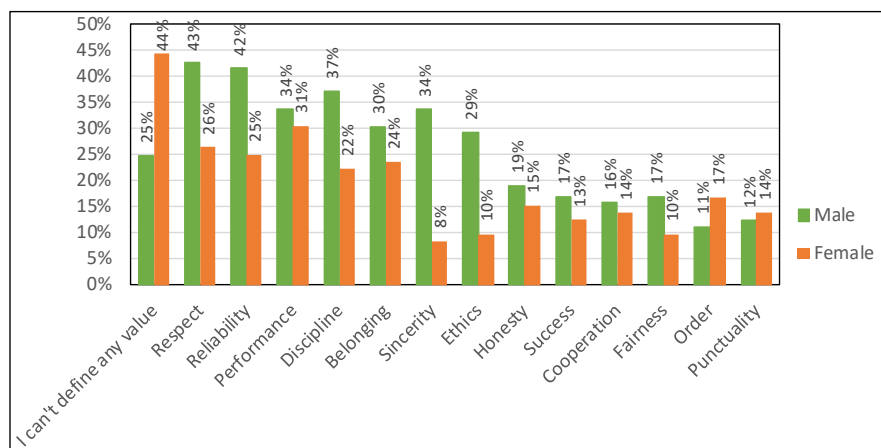


Figure 1. Descriptive Distribution of Perceived Organizational Values by Gender

Source: Own processing.

Figure 2 presents the complete descriptive distribution of responses to the organizational values question, broken down by gender, providing the full response pattern underlying the statistically significant differences reported in Table 5. The most striking finding is that nearly half of female journalists (44%) reported being unable to identify any organizational value, compared to one-quarter of male journalists (25%) -the largest gender gap observed across all categories. This pattern, consistent with the significant chi-square result reported in Table 5, suggests a considerable disparity in how clearly male and female journalists perceive or articulate their organizations' value priorities, potentially pointing to differences in organizational communication, inclusion, or cultural integration that women experience in Turkish newsrooms. Among journalists who did identify organizational values, male respondents reported respect (43%) and reliability (42%) as the most prominent perceived values, followed by discipline (37%), sincerity (34%), and belonging (30%). Female respondents, by contrast, most frequently identified performance (31%), respect (26%), and reliability (25%) as defining organizational priorities. Notably, sincerity showed the largest gender gap among substantively endorsed values, identified by 34% of male journalists but only 8% of female journalists -a 26-point difference that stands out even more

sharply than the gap observed for respect (43% vs. 26%) or reliability (42% vs. 25%). This suggests that male and female journalists may be having qualitatively different experiences of their organizations' relational and ethical climate, with male journalists considerably more likely to perceive their organizations as emphasizing interpersonal sincerity. A reverse pattern emerges for a small number of categories: order was reported more frequently by female journalists (17%) than male journalists (11%), and punctuality showed a similarly modest female-leaning gap (14% vs. 12%). While these differences are smaller in magnitude, they may suggest that female journalists are somewhat more likely to associate their organizations with procedural or administrative values rather than relational ones. The distribution suggests that male journalists more frequently perceive their organizations through a relational and ethical lens (respect, reliability, sincerity, belonging), whereas female journalists' perceptions are comparatively more fragmented marked by a high rate of non-identification, a stronger orientation toward performance, and lower endorsement of relational values such as sincerity and belonging. This pattern reinforces the gender-based disparities identified in Table 5 and suggests that the perceived organizational value climate in Turkish media institutions may not be experienced uniformly across genders.

Table 5. Differences in Perceived Organizational Values by Gender (Chi-Square Results)

Organizational Value	Male (%)	Female (%)	Total (%)	χ^2	df	p	Result
Could not define any value	24.7	44.4	33.5	6.95	1	.008	Significant
Respect	42.7	26.4	35.4	4.63	1	.031	Significant
Reliability and truthfulness	50.6	34.7	43.5	4.06	1	.044	Significant*
Performance and success	37.1	36.1	36.6	0.02	1	.899	Not significant

Note. χ^2 = Pearson Chi-Square test. df = degrees of freedom. $p < .05$ indicates statistical significance. Reliability was significant according to Pearson Chi-Square; Fisher's Exact Test showed marginal significance. $N = 161$ (89 male, 72 female). "Reliability and truthfulness" combines responses identifying either "reliability" or "honesty" (see Figure 2 for individual item breakdowns); "performance and success" similarly combines "performance" and "success." As composite categories, these percentages reflect the proportion of respondents selecting at least one of the constituent items and are therefore not directly comparable to the single-item percentages reported in Figure 2.

Source: Own processing.

A chi-square test of independence was conducted to examine whether journalists' perceptions of organizational values differed by gender. Three of the four categories examined showed statistically significant gender differences, indicating that men and women experience the organizational value climate quite differently. The most pronounced finding concerns the inability to define any organizational value, $\chi^2(1, N = 161) = 6.95$, $p = .008$, the strongest effect observed in this table. Nearly half of female journalists (44.4%) reported being unable to identify any value their organization prioritizes, compared to roughly a quarter of male journalists (24.7%), a gap of nearly 20 percentage points. As this category captures a failu-

re of value communication or internalization rather than the endorsement of a specific value, this finding carries more weight than the comparisons that follow and is addressed further in the Discussion. Among journalists who did identify organizational values, respect showed a significant gender difference in a direction that runs counter to the personal-value pattern observed in Table 4: male journalists were more likely to perceive respect as an organizational value than female journalists (42.7% vs. 26.4%), $\chi^2(1, N = 161) = 4.63$, $p = .031$. Given that female journalists were significantly more likely to hold respect as a personal value (Table 4), this divergence points to a potential "respect gap": female journalists appear

to value respect more strongly themselves yet are less likely to perceive their organizations as embodying it. Reliability and truthfulness, a composite category combining respondents who identified either reliability or honesty as an organizational value, also showed a significant gender difference, $\chi^2(1, N = 161) = 4.06, p = .044$, again favoring male journalists (50.6% vs. 34.7%). Because this category aggregates two related items, its higher percentages (relative to the individual "reliability" and "honesty" figures in Figure 2) are expected; the gender gap remains meaningful and consistent with the finding above. It should be noted that while the Pearson chi-square reached significance, Fisher's Exact Test, more appropriate given the cell sizes, yielded only marginal significance, so this result should be interpreted with some caution. By contrast, performance and success, a composite category combining performance

and success responses, showed virtually no gender difference (37.1% male vs. 36.1% female), $\chi^2(1, N = 161) = 0.02, p = .899$. This null result suggests that, despite gender disparities in respect and reliability/truthfulness, male and female journalists perceive their organizations as similarly performance-oriented. Taken together, these findings suggest that gender differences in perceived organizational values are considerably more pronounced than those observed in personal values (Table 4). Female journalists are markedly more likely to report being unable to define their organization's values at all, and less likely than male journalists to perceive respect and reliability as organizational priorities, even though respect, specifically, is a value they personally hold in higher regard. Performance-related perceptions, however, appear to be experienced uniformly across genders.

Table 6. Differences in Personal Values by Professional Experience

Personal Value	1-5 years (%)	6-10 years (%)	11-15 years (%)	15+ years (%)	Total (%)	χ^2	df	p	Result
Family and loved ones	37.3	56.0	52.6	36.4	41.6	4.23	3	.238	Not significant
Honesty and decency	19.6	32.0	42.1	54.5	38.5	15.41	3	.001	Significant
Respect and courtesy	33.3	28.0	10.5	25.8	26.7	3.74	3	.291	Not significant
Self and hobbies	35.3	32.0	10.5	10.6	21.7	13.27	3	.004	Significant
Job, profession, productivity	19.6	16.0	21.1	25.8	21.7	1.25	3	.741	Not significant

Note. χ^2 = Pearson Chi-Square. $p < .05$ indicates statistical significance.

Source: Own processing.

A chi-square test of independence was conducted to examine whether journalists' intrinsic personal values differed by professional experience level. Two of the five value categories showed statistically significant differences across experience groups, revealing a clear developmental pattern in how journalists' personal values shift over the course of their careers. The most striking finding concerns honesty and decency, $\chi^2(3, N = 161) = 15.41, p = .001$, which represents the strongest effect observed in this table. The proportion of journalists identifying honesty as a core personal value rises steadily with experience, increasing from 19.6% among those with 1-5 years of experience to 32.0% among those with 6-10 years, 42.1% among those with 11-15 years, and 54.5% among journalists with more than 15 years of experience. This nearly threefold increase suggests that honesty is not simply a value journalists hold from the beginning of their careers. Rather, it appears to become progressively internalized through accumulated professional experience. This pattern may reflect repeated exposure to ethical

challenges, greater awareness of the consequences of dishonesty, or the gradual development of a professional identity grounded in credibility. A complementary pattern emerges for self and hobbies, $\chi^2(3, N = 161) = 13.27, p = .004$, although in the opposite direction. This value is most prevalent among early-career journalists, accounting for 35.3% of those with 1-5 years of experience and 32.0% of those with 6-10 years. Its prevalence then declines sharply to 10.5% among journalists with 11-15 years of experience and 10.6% among those with more than 15 years of experience. This represents an approximately threefold decrease. Considered together with the findings for honesty, these results indicate a broader developmental trajectory in which self-oriented personal values gradually give way to ethically grounded professional values as journalists advance in their careers. Early-career journalists may place greater emphasis on personal time, hobbies, and individual interests, reflecting either a less developed professional identity or a stronger separation between work and personal life. With increasing profes-

sional experience, this orientation appears to be replaced by a stronger ethical commitment to the profession itself. By contrast, three value categories did not differ significantly according to professional experience. These were family and loved ones, $\chi^2(3, N = 161) = 4.23, p = .238$; respect and courtesy, $\chi^2(3, N = 161) = 3.74, p = .291$; and job, profession, and productivity, $\chi^2(3, N = 161) = 1.25, p = .741$. Family and loved ones remained relatively stable and highly endorsed across all experience groups, with percentages ranging from 36.4% to 56.0%. This finding reinforces the results presented in Table 2 by suggesting that family functions as a stable personal value regardless of career stage. Unlike honesty,

which appears to strengthen through professional experience, family remains a consistent anchor in journalists' personal value systems throughout their careers. These findings indicate that professional experience plays a selective but meaningful role in shaping journalists' value orientations. Rather than influencing all personal values equally, professional experience appears to encourage a shift away from self-oriented priorities toward an ethically grounded professional identity centered on honesty, while values such as family, respect, and professional productivity remain comparatively stable across different career stages.

Table 7. Differences in Perceived Organizational Values by Professional Experience

Organizational Value	1-5 years (%)	6-10 years (%)	11-15 years (%)	15+ years (%)	Total (%)	χ^2	df	p	Result
Could not define any value	35.3	44.0	31.6	28.8	33.5	2.00	3	.573	Not significant
Respect	31.4	36.0	42.1	36.4	35.4	0.77	3	.858	Not significant
Reliability and truthfulness	37.3	40.0	42.1	50.0	43.5	2.08	3	.555	Not significant
Performance and success	43.1	32.0	10.5	40.9	36.6	7.26	3	.064	Marginal

Note. χ^2 = Pearson Chi-Square test. $p < .05$ indicates statistical significance.

Source: Own processing.

A chi-square test of independence was conducted to examine whether journalists' perceptions of organizational values differed by professional experience level. In contrast to the pattern observed for personal values (Table 6), where experience was associated with clear and significant shifts in two value categories, none of the four organizational value categories reached conventional statistical significance across experience groups, although one category approached significance. Performance and success showed the strongest, albeit only marginally significant, association with professional experience, $\chi^2(3, N = 161) = 7.26, p = .064$. The observed pattern is notably non-linear. Journalists with 1-5 years of experience (43.1%) and those with more than 15 years of experience (40.9%) identified performance and success as an organizational value at similarly high rates, whereas journalists with 11-15 years of experience reported this value much less frequently (10.5%). This U-shaped distribution differs from the steady increase or decrease observed for some personal values. Although statistically tentative, this finding is substantively meaningful. It may indicate that perceptions of organizational performance pressure are particularly salient during the initial stages of a journalist's career, when adaptation demands and professional expectations are high, and again

during later career stages, when seniority, accountability, and organizational responsibilities become more prominent. By contrast, journalists in the mid-career stage may experience a comparatively more stable period in which performance concerns are less salient. Because this association falls just short of the conventional significance threshold, these interpretations should be considered suggestive rather than conclusive and warrant further examination using larger samples. The remaining three organizational value categories showed no significant variation across professional experience groups. The proportion of journalists who could not define any organizational value remained relatively stable, ranging from 28.8% to 44.0%, $\chi^2(3, N = 161) = 2.00, p = .573$. This finding indicates that difficulties in identifying organizational values are not confined to early-career journalists, as might be expected if they primarily reflected limited organizational tenure or insufficient onboarding. Instead, the inability to articulate organizational values appears to be a more widespread issue affecting journalists throughout different stages of their careers. Similarly, respect did not vary significantly across experience groups, with percentages ranging from 31.4% to 42.1%, $\chi^2(3, N = 161) = 0.77, p = .858$. Reliability and truthfulness also showed no statistically significant association

with professional experience, $\chi^2(3, N = 161) = 2.08, p = .555$, despite a modest numerical increase across experience groups. Although this upward trend may suggest that more experienced journalists perceive reliability and truthfulness somewhat more frequently as organizational values, the observed differences are insufficient to support a statistically reliable conclusion. The findings presented in Table 7 differ markedly from those reported in Table 6. Whereas journalists' personal values change meaningfully with professional experience, particularly through the increasing importance of honesty and the declining emphasis on self-oriented values, perceptions of organizational values remain comparatively stable across career stages. Only performance and success displayed a tentative, non-linear pattern that approached statistical significance. This asymmetry suggests that the development of journalists' personal ethical orientations may occur relatively independently of their perceptions of organizational values. Rather than being shaped primarily by career progression, organizational value perceptions appear to be influenced more strongly by characteristics of the organization itself and, as demonstrated in Table 5, by gender.

6. Results and Discussions

The alignment among personal, work, and organizational values is important for journalists' overall satisfaction and sectoral commitment. In this study, values were examined across three dimensions (personal, work, and perceived organizational values), and their relative distributions were descriptively compared; the chi-square test was then used to examine whether these orientations differed by gender and professional experience. Because no formal statistical test of association (e.g., correlation or profile-matching analysis) was conducted between personal and organizational value perceptions at the individual level, the patterns discussed below should be understood as descriptive discrepancies in emphasis rather than as evidence of a formally tested value incongruence (see Section 4.5).

RQ1 asked which personal values Turkish journalists prioritize most. The most important personal values were the ethical cluster combining honesty and truthfulness with trust and reliability (52.2%), family and loved ones (41.6%), and respect and courtesy (38.5%), indicating that relational and emotional values are highly significant and reinforcing the view that journalism remains deeply connected to moral responsibility and social trust. The most predominant work value was discipline and order (62%), followed closely by sincerity (50%), reinforcing the same ethical orientation at the work-related level. These patterns broadly support Schwartz's value theory: honesty, trust, and respect correspond to self-transcendence, whereas the comparatively

weak emphasis on success and economic benefit reflects self-enhancement, indicating that journalists primarily prioritize socially oriented rather than self-serving values. The values most strongly endorsed, honesty, family, and respect, are conceptually closest to self-transcendence, while the least emphasized categories, such as success and economic benefit, align more closely with self-enhancement, a pattern consistent with Schwartz's (1992, 2006) prediction that these two poles are generally incompatible within an individual's value priorities. A related tension appears in the experience-based findings: early-career journalists' stronger orientation toward self and hobbies, conceptually closer to openness to change, gives way, with increasing experience, to a stronger emphasis on honesty, associated with self-transcendence. These should be understood as theoretical readings of concrete, researcher-compiled categories rather than direct empirical tests of Schwartz's ten-type structure, but they suggest that Schwartz's broader dimensional framework retains explanatory value even when values are operationalized in occupation-specific terms.

RQ2 compared journalists' work values with their perceptions of organizational values. Perceived organizational values presented a somewhat distinct pattern: the most predominant were the reliability/honesty cluster (43.5%), respect (35.4%), and performance and success (36.6%). Although journalists themselves place strong emphasis on discipline, quality, and self-development as work values, performance and success were perceived as an organizational priority by little more than a third of participants, suggesting that journalists' own professional standards may exceed what they perceive their organizations to formally prioritize. This discrepancy is visually evident in Figure 1, where the work-value curve rises sharply to 62.0%, far exceeding the corresponding personal (21.7%) and organizational (32.3%) values, indicating that journalists hold themselves to a considerably higher standard of work-related discipline than they perceive either as a personal priority or an organizational expectation. Because no formal person-organization fit analysis was conducted, this pattern should be read as a descriptive rather than statistically verified gap; nevertheless, it supports research suggesting that journalists distinguish between their own professional values and those embedded in organizational culture.

RQ3 examined whether personal and perceived organizational values differ by gender and professional experience. Value perceptions differed more strongly by gender than by experience. The chi-square results revealed a "respect gap": female journalists were significantly more likely to identify respect as a personal value (34.7% vs. 20.2% for men), yet male journalists were significantly more likely to perceive respect (42.7% vs. 26.4%) and reliability/truthfulness (50.6% vs. 34.7%) as organizational values, sugges-

ting a disconnect between female journalists' own relational expectations and what they perceive their organizations to provide. Most notably, 44.4% of female journalists could not identify any organizational value at all, compared to 24.7% of male journalists, the largest gender gap observed in this study, pointing to a possible internal communication or cultural integration issue in which women feel comparatively more disconnected from their organization's institutional identity. This pattern is consistent with research describing journalism as historically shaped by male-dominated newsroom structures, in which women continually negotiate their position within an androcentric institutional culture (Alankuş, 2024), and with the reality that women occupy relatively few senior editorial positions in Turkish media despite constituting nearly half of the workforce (Sahinkaya & Yorur, 2024). The present finding, that women value respect more strongly themselves yet are less likely to perceive their organizations as embodying it, may thus reflect a structurally conditioned gap between women's expectations and their lived organizational experience rather than a difference in personal values.

Professional experience showed a different pattern. More experienced journalists placed significantly greater importance on honesty as a personal value, rising from 19.6% among those with 1 to 5 years of experience to 54.5% among those with more than 15 years, while less experienced journalists were significantly more likely to prioritize self-oriented values such as personal time and hobbies. Perceived organizational values, by contrast, showed no significant variation by experience level, except for a marginally significant, non-linear pattern for performance and success, suggesting that ethical development may proceed somewhat independently of how journalists perceive their organizations' priorities, with organizational value perceptions shaped more strongly by gender than by career stage. This strengthening of honesty with experience is consistent with the broader literature on journalistic professional socialization, which characterizes journalism as an occupation whose ethical sensibility is cultivated through sustained practice rather than acquired at career entry (Sanders, 2003; Deuze & Witschge, 2018), suggesting a gradual process of professional identity formation in which repeated exposure to ethical dilemmas progressively reinforces commitment to truthfulness as a core value.

Taken together, these findings highlight a complex relationship between journalists' personal values, work-related priorities, and perceived organizational structures in contemporary Turkish media. While journalists strongly emphasize ethical and relational values at the personal and work-related levels, these values do not always correspond, in descriptive terms, with the priorities they perceive within their organizations. Theoretically, the study contributes

by integrating personal, work, and organizational values within a single framework grounded in a concrete, Rokeach-derived approach (see Section 2.2) rather than direct application of Schwartz's ten predefined types, while showing that Schwartz's broader dimensional framework retains explanatory value in this more concrete operationalization. The results also reinforce research suggesting that journalistic practice is shaped not only by normative professional values but also by organizational structures and institutional priorities (Sjøvaag, 2013; Waldenström, Wiik, & Andersson, 2019; Mubarak, Sarwono, & Angeliqa, 2024).

Practically, media organizations should communicate organizational values more clearly and work to reduce perceived value gaps, particularly given that gender-based differences in this study indicate that value perceptions within newsrooms are not experienced equally by all journalists; creating more inclusive environments, especially for women journalists, and strengthening mentoring and ethics training for early-career journalists may help support the transition from individual-oriented to ethically grounded professional values over time. Future research may build on these findings by employing person-organization fit methodologies (e.g., O'Reilly, Chatman, & Caldwell, 1991) to formally test value congruence at the individual level and to examine how such alignment influences journalists' professional identity and long-term commitment to the profession. Complementing the present quantitative, categorical approach with qualitative or mixed-methods designs could further illuminate how journalists actively negotiate tensions among personal, work, and organizational values in daily practice, for instance through strategies such as deep acting, surface acting, reformulation, and the formulation of conditions, as identified in interview-based research on Austrian journalists (Leonhardt, 2025). Such designs could help clarify not only which values are prioritized, but how the descriptive discrepancies documented here across personal, work, and organizational levels (Tables 2–5) are reconciled, contested, or rationalized by journalists themselves.

Financing

This research did or did not receive external funding.

Acknowledgments

This research received no external funding.

Conflict of interest

The author declares no conflict of interest.

References

- Ak, S. (2022). Schwartz değerler ölçeği bağlamında Camdaki Kız dizisinin içerik analizi. *ODÜ Sosyal Bilimler Araştırmaları Dergisi*, 12(1), 339–356. <https://doi.org/10.48146/odusbadiad.1054713>
- Alankuş, S. (2024). "Bargaining with patriarchy": Newsroom experiences of women journalists in Turkey and Greece. *International Journal of Communication*, 18, 2780–2798.
- Bavardi, A. Q. (2025). Values-based leadership: The role of organizational culture in business success. *International Journal of Social Science Research and Review*, 1(2), 1–7. <https://doi.org/10.47814/ijssr.v8i7.2682>
- Bildirici, F. (2026, 16 Mart). Basın kartlı sayısındaki müthiş artış! 24 Saat Gazetesi. <https://www.24saatgazetesi.com/basin-kartli-sayisindaki-muthis-artis>
- Bilgin, N. (2003). Sosyal psikoloji sözlüğü: Kavramlar yaklaşımlar. İstanbul: Bağlam Yayınları.
- Blokhin, I. N. (2023). Parameters of identification and evaluation of the professional ideology of journalism. *Theoretical and Practical Issues of Journalism*, 12(2), 183–198. <https://doi.org/10.17150/2308-6203>
- Büyüköztürk, Ş., Çakmak, E. K., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2020). Eğitimde bilimsel araştırma yöntemleri (29. baskı). Ankara: Pegem Akademi.
- Cam, F., Pereira, F., & Ruellan, D. (2019). Professional identity of journalists. In *International Encyclopedia of Journalism Studies*, 1–7. <https://doi.org/10.1002/9781118841570.iejs0241>
- Cameron, K. S., & Quinn, R. E. (1999). Diagnosing and changing organizational culture: Based on the competing values framework. Upper Saddle River, NJ: Prentice Hall Series.
- Cevizci, A. (2014). Etik: Ahlâk felsefesi. İstanbul: Say Yayınları.
- Cornia, A., Sehl, A., & Nielsen, R. K. (2018). "We no longer live in a time of separation": A comparative analysis of how editorial and commercial integration became a norm. *Journalism*, 21(2), 172–190. <https://doi.org/10.1177/1464884918779919>
- Demirutku, K., & Sümer, N. (2010). Temel değerlerin ölçümü: Portre değerler anketinin Türkçe uyarlaması. *Türk Psikoloji Yazıları*, 13(25), 17–25.
- Deuze, M., & Witschge, T. (2018). Beyond journalism: Theorizing the transformation of journalism. *Journalism*, 19(2), 165–181.
- Deuze, M. (2005). What is journalism? *Journalism*, 6(4), 442–464. <https://doi.org/10.1177/1464884905056815>
- Dönmezer, S. (1994). Toplumbilim. İstanbul: Beta Yayınları.
- Elizur, D. (1984). Facets of work values: A structural analysis of work outcomes. *Journal of Applied Psychology*, 69(3), 379–389. <https://doi.org/10.1037/0021-9010.69.3.379>
- Gregory, B. T., Harris, S. G., Armenakis, A. A., & Shook, C. L. (2009). Organizational culture and effectiveness: A study of values, attitudes, and organizational outcomes. *Journal of Business Research*, 62 (7), 673–679. <https://doi.org/10.1016/j.jbusres.2008.05.021>
- Grubert, T., Steuber, J., & Meynhardt, T. (2022). Engagement at a higher level: The effects of public value on employee engagement, the organization, and society. *Current Psychology*, 42, 20948–20966. <https://doi.org/10.1007/s12144-022-03076-0>
- Gülaç, M., & Camgöz, M. (2024). Schwartz değer kuramına göre kişilerin değer tipleri e-ticaret tüketici davranışlarını etkilemekte midir? *Ekonomi İşletme Maliye Araştırmaları Dergisi*, 6(1), 42–63. <https://doi.org/10.38009/ekimad.1403524>
- Güngör, E. (1998). Değerlerin psikolojisi üzerine araştırmalar. İstanbul: Ötüken Yayınları.
- Habib, S., Aslam, S., Hussain, A., Yasmeen, S., & Ibrahim, M. (2014). The impact of organizational culture on job satisfaction, employees' commitment and turnover intention. *Advances in Economics and Business*, 2 (6), 215–222. <https://doi.org/10.13189/aeb.2014.020601>
- Hanitzsch, T., Hanusch, F., Mellado, C., Anikina, M., Berganza, R., Cangoz, I., et al. (2011). Mapping journalism cultures across nations. *Journalism Studies*, 12(3), 273–293. <https://doi.org/10.1080/1461670X.2010.512502>
- Herwanto, A., & Hakim, A. (2022). The effect of organizational justice and spiritual value on employee engagement and turnover intention. *e-Academia Journal*, 11(1), 91–104.
- Kim, B., & Buzzelli, N. R. (2026). "I feel burnout as a journalist": Testing two interaction models on burnout in a hyper-connected society. *Journalism Practice*, 20(3), 823–842. <https://doi.org/10.1080/17512786.2024.2393675>
- Kim, B., & Jin, B. (2022). Ideological and economic influences on journalistic autonomy and cynicism: A moderating role of digital adaptation of news organizations. *Journalism*, 24(9), 2076–2094. <https://doi.org/10.1177/14648849221095334>
- Kim, K.H. (2006). Obstacles to the success of female journalists in Korea. *Media, Culture & Society*, 28(1), 123–141. <https://doi.org/10.1177/0163443706059578>
- Kulakova, D., Oleinikov, S., Puyu, A., & Gromova, L. (2024). Axiological foundations of a journalist's professional activity. *Litera*, 6, 149–157. <https://doi.org/10.25136/2409-8698.2024.6.71023>
- Lauk, E., & Harro-Loi, H. (2017). Journalistic autonomy as a professional value and element of journalism culture: The European perspective. *International Journal of Communication*, 11, 1–19.
- Leonhardt, B. (2025). Between principle and practice: Value patterns and negotiation strategies among journalists. *Journalism & Mass Communication Quarterly*, 1–25 <https://doi.org/10.1177/10776990251369022>
- Metz, D., Ilieş, L., & Metz, M. (2018). The role of the organizational culture in ensuring the effectiveness of the management system. *International Management Conference*, 12(1), 748–754.
- Mubarak, M., Sarwono, B. K., & Angeliqa, F. (2023). Strengthening the ethics of the deontology of local media journalists in the disruption era. *Jurnal The Messenger*, 15(2), 84–102. <https://doi.org/10.26623/themessenger.v15i2.5204>
- Neuman, W. L. (2020). Toplumsal araştırma yöntemleri: Nicel ve nitel yaklaşımlar. İstanbul: Siyasal Kitabevi.
- O'Reilly, C. A., Chatman, J., & Caldwell, D. F. (1991). People and organizational culture: A profile comparison approach to assessing person-organization fit. *Academy of Management Journal*, 34(3), 487–516.
- Plaisance, P. L., & Deppa, J. A. (2009). Perceptions and manifestations of autonomy, transparency and harm among U.S. newspaper journalists. *Journalism & Mass Communication Monographs*, 10(4), 327–386. <https://doi.org/10.1177/152263790901000402>
- Porcu, O., Hermans, L., & Broersma, M. (2025). Creative autonomy in the newsroom: How hierarchy impacts innovative behaviour. *Journalism Practice*, 19(11), 2634–2653. <https://doi.org/10.1080/17512786.2024.2310056>
- Reich, Z., & Hanitzsch, T. (2013). Determinants of journalists' professional autonomy: Individual and national level factors matter more than organizational ones. *Mass Communication and Society*, 16(1), 133–156. <https://doi.org/10.1080/15205436.2012.669002>
- Rokeach, M. (1973). The nature of human values. New York: Free Press.
- Ros, M., Schwartz, S. H., & Surkiss, S. (1999). Basic individual values, work values, and the meaning of work. *Applied Psychology: An International Review*, 48(1), 49–71.
- Sağnak, M. (2004). Kişi-örgüt değer uyumunu ölçme çalışmaları ve kullanılan yöntemlerin karşılaştırılması. *Değerler Eğitimi Dergisi*, 2(5), 101–124.
- Sanders, K. (2003). Ethics and journalism. London: Sage Publications.
- Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 25, pp. 1–65. Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60281-6](https://doi.org/10.1016/S0065-2601(08)60281-6)

- Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values? *Journal of Social Issues*, 50(4), 19–45. <https://doi.org/10.1111/j.1540-4560.1994.tb01196.x>
- Schwartz, S. H. (2006). Les valeurs de base de la personne. *Revue Française de Sociologie*, 47(4), 929–968.
- Schwartz, S. H. (2016). Basic individual values: Sources and consequences. In T. Brosch & D. Sander (Eds.), *Handbook of value: Perspectives from economics, neuroscience, philosophy, psychology and sociology* (pp. 63–84). Oxford: Oxford University Press.
- Serik, N., Tatyana, L., Kazmukhanov, R., Maya, T., & Byerdimurat, D. (2023). The specifics of digitalization of traditional religions in modern Kazakhstan, *Pharos Journal of Theology*, 104(5). <https://doi.org/10.46222/pharosjot.104.516>
- Sjøvaag, H. (2013). Journalistic autonomy: Between structure, agency and institution. *Nordicom Review*, 34(s1), 155–166. <https://doi.org/10.2478/nor-2013-0111>
- Skovsgaard, M. (2014). Watchdogs on a leash? The impact of organisational constraints on journalists' perceived professional autonomy and their relationship with superiors. *Journalism*, 15(3), 344–363. <https://doi.org/10.1177/1464884913483494>
- Super, D. E. (1970). *Manual: Work Values Inventory*. Boston: Houghton Mifflin.
- Syahri, M. (2020). Journalism ethics in local newspaper. *Masyarakat, Kebudayaan dan Politik*, 33(1), 1–14. <https://doi.org/10.20473/mkp.v33i12020>.
- Şahin, M. (2022). Gündelik hayatın içinde değerler ve değerlerin toplumsal boyutları. *Düşünce Dünyasında Türkiz*, 13(63), 51–81.
- Sahinkaya, E., Yorum, F. VOA News. (2024). Research shows gender gap in Turkey's media management. Voice of America. <https://www.voanews.com/a/research-shows-gender-gap-in-turkey-s-media-management/7436443.html>
- Waldenström, A., Wiik, J., & Andersson, U. (2019). Conditional autonomy. *Journalism Practice*, 13(4), 493–508. <https://doi.org/10.1080/17512786.2018.1485510>
- Wu, J., Inoue, Y., Filo, K., & Sato, M. (2022). Creating shared value and sport employees' job performance: The mediating effect of work engagement. *European Sport Management Quarterly*, 22(2), 272–291. <https://doi.org/10.1080/16184742.2020.1779327>
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). New York: Harper and Row.
- Yapıcı, A., & Zengin, Z. S. (2003). İlahiyat fakültesi öğrencilerinin değer tercih sıralamaları üzerine psikolojik bir araştırma: Çukurova Üniversitesi örneği. *Değerler Eğitimi Dergisi*, 1(4), 173–206.
- Yeh, S., & Huang, K. (2025). The impact of organizational commitment and work motivation on retention intention. *Healthcare*, 13(22), 2832, 2–24. <https://doi.org/10.3390/healthcare13222832>

The Uncanny Valley in Digital Journalism: Analyzing Audience Reactions to AI News Anchors on YouTube

Zehra Özkeçeci * / Assoc. Prof. Dr. 

Necmettin Erbakan University, Faculty of Fine Arts and Architecture, Department of Radio, Television and Cinema

zehra_ozkececi@yahoo.de

Duygu Dumanlı Kürkçü / Assoc. Prof. Dr. 

Istanbul Arel University, Faculty of Communication, Department of Journalism

duygu__dumanli@hotmail.com

Ceren İnan / Res. Asst. 

Istanbul Arel University, Faculty of Communication, Department of Journalism

cereninan@arel.edu.tr

*Corresponding Author

Abstract

This study aims to investigate audience reactions toward artificial intelligence news anchors. In the research, which utilizes a combination of quantitative and qualitative methods, 418 user comments on artificial intelligence news videos on the YouTube platforms of New China TV, CBS Boston, and India Today were analyzed. The obtained data were divided into four main categories: expression of neutral views, showing negative reactions, showing support, and hate speech. The research results indicate that instead of directly accepting AI news anchors, audiences develop a psychological resistance against the design of these digital figures. Viewers question the authenticity of the figure rather than its flawless technological communication; the strong resemblance of AI news presenters to human nature creates an "Uncanny Valley" effect on the audience, causing cognitive discomfort rather than building a sense of trust. This phenomenon can be explained by the

Uncanny Valley hypothesis proposed by Japanese roboticist Masahiro Mori in 1970. According to the hypothesis, as the human-likeness of an entity increases, the sense of affinity and sympathy felt by the audience rises to a critical threshold; however, when this resemblance fails to reach a complete sense of reality, the reaction suddenly plunges into disgust, anxiety, and avoidance. This situation becomes particularly evident in AI-supported visual and speaking entities; digital figures that exceed humanoid design but cannot offer complete human naturalness create both cognitive dissonance and emotional discomfort in the audience.

Keywords: Artificial Intelligence, AI News Anchors, Digital Journalism, Uncanny Valley, Audience Perception.

JEL Codes: O33, L82, L86, D12

Citation: Özkeçeci, Z., Dumanlı Kürkçü, D., & İnan, C. (2026). The uncanny valley in digital journalism: Analyzing audience reactions to AI news anchors on YouTube. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Journalism practices have undergone profound changes, from the graffiti of centuries past to today's touchscreens. Digital media has changed both the speed and form of information dissemination (Sultan & Amir, 2024). The one-way structure of traditional media has gradually given way to a two-stage flow that is constantly updated and allows readers to actively participate in the process. This digital transition did not just change the platforms where news is published; it also reshaped the work routines of journalists, the structure of the media industry, and the nature of the relationship with the target audience (Okay, 2021). This two-way flow of information between media producers and their target audience has rewritten the rules of traditional journalism and eliminated the one-sided power balance between the two sides (Özkeçeci, 2019).

Human-centered journalism based on traditional field observation is slowly being replaced by a new media model that processes large data sets and is powered by algorithms. Artificial intelligence technologies that largely overcome time and space limitations, reduce costs, and can quickly transform massive amounts of data into meaningful narratives without any human intervention have gradually become an indispensable part of newsrooms (Rinehart & Kung, 2022). At first, these systems were only assistants or search engine algorithms that collected background data. Over time, they became more and more integrated into the media ecosystem, becoming independent actors capable of producing content, constructing narratives, and making decisions on their own. With traditional journalism being replaced by data-driven production, many international media organizations such as the Los Angeles Times and ProPublica now use artificial intelligence-based automation systems to analyze large data sets and turn them into news stories (Dumanlı Kürkçü, 2018).

Among the most recent reflections of artificial intelligence in journalism applications are AI-powered news anchors that have recently begun to gain visibility on screens. In traditional television and journalistic practice, the "news anchor" is not just someone who reads the script but a figure who builds trust with the viewers, can convey emotions, and skillfully uses the subtleties of language (Kars, 2012). Although AI news anchors who are now taking over news broadcasts present a flawless outward appearance, this perfection creates a void in the human communication aspect of journalism. No matter how advanced the technological infrastructure becomes and how human-like the AI news anchors on screen may appear, audiences can still distinguish the fine line between the virtual and the real, which often creates a sense of "discomfort" in the audience. According to (Mori et al., 2012), this discomfort is the eerie sensation people experience when a non-human entity

closely resembles a human in appearance but fails to feel fully real — a response he described as a sudden loss of affinity, where the familiar becomes unsettling rather than trustworthy. This phenomenon is known as the Uncanny Valley.

Focusing on the YouTube platform, this study examines audience reactions to AI-powered news anchors, a new concept in journalism. Using a combination of quantitative and qualitative research methods, this study statistically measured and content analyzed user comments on artificial intelligence news videos from several international media organizations. Based on the obtained findings, audience reactions to AI news anchors and their gender are evaluated and classified into four main categories: neutral opinion, negative reaction, support, and hate speech.

2. Conceptual Framework / Theory

2.1 The Digital Transformation of Journalism

There have been many changes in the historical evolution of journalism, both in the content of news and in its target audience and distribution channels. These changes have been constantly transforming the structure of the media field. One of the most important milestones in this process may be the developments in communication technologies in the 21st century and the increasing popularity of the internet in mass communication. The paradigm shift that has taken place has led to the permanent addition of a completely new type of journalism called "electronic journalism" or "internet journalism" alongside conventional (traditional) newspapers in the transmission of cultural heritage across generations, the collection of historical data and its transmission to the next generation, and the formation of public opinion (Gezgin, 2002). Furthermore, media play a decisive role in determining socially relevant decisions and shaping public opinion, acting as the 'fourth estate' whose concentration of power significantly impacts democratic principles (Özkeçeci, 2018).

After the industrialization process that started in the Western world, the technological transformation that gained momentum in the second half of the 20th century opened the doors to the transition to the information society. During this period, the development of computer networks in particular paved the way for the emergence of online journalism, now at the center of news consumption. The widespread use of online journalism has created a shift in the media industry and has given rise to a whole new competitive arena against traditional media (Çetinkaya, 2017).

One of the most important contributions of new communication technologies to online journalism is speed, interactivity, and low cost. The point tech-

nology had reached and the appeal of using multimedia features had placed online journalism in an immensely powerful position against traditional media. As a result, traditional media habits that had persisted for many years were quickly overcome, and the audience adapted to the new pace of technology (Alp & Turan, 2018). The consequences of this fast shift in audience habits toward traditional media have been inevitable. As audiences began to prefer online newspapers over print newspapers for accessing news, print newspapers experienced a significant decline in their daily circulation figures and advertising revenues. As a result of this economic shift, print newspapers have been forced to share their current news online, while also accelerating the establishment of "digital native newspapers" within the journalism ecosystem (Karahana, 2021).

The redefinition of audience habits and broadcasting practices has inevitably reached the center of the newsroom and started to change the practices of journalism. Pavlik, who places the effects of technological change on journalism within a structural framework, states that the new era has created radical results in four main areas of the profession: how journalists do their jobs, the content of the news, the structure of the news industry, and the forms of relationship between news organizations and audiences/public opinion (Pavlik, 2000). More than two decades later, this transformation has accelerated further: digital transformation has caused rapid and significant changes in the media industry, generating content saturation and alterations in consumption patterns, while journalism now faces not only technical challenges but also ethical and social dilemmas that redefine its essence as a profession (Londoño-Proañó & Buele, 2025). Yet the institutional and ethical dimensions of this transformation cannot be fully understood without examining the psychological mechanisms that govern audience responses to artificial figures. If audiences perceive AI anchors as fundamentally unsettling, the practical benefits of automation become moot regardless of their editorial potential.

Instead of the traditional journalist profile, which used to focus only on the next day's news and preparing it after the newspaper went to press, the digital era has seen the emergence of a dynamic journalist who "produces news to update the newspaper's website at any moment" (Karahana, 2021). Such drastic changes in journalistic practices like production speeds, and structural frameworks demonstrate the inadequacy of traditional concepts used in the literature to define the profession and point to the rise of new journalism paradigms. Anderson et al. (2012) address this conceptual limitation, arguing that journalism has moved away from being a more or less consistent single industry and has transitioned into a spectrum of highly diverse and varied practices. According to the authors' assessment, "the journalism

industry in the traditional sense is dead, but journalism continues to live in many different places".

This structural vulnerability has deepened in the AI era: Spyridou and Ioannou (2025) describe a severe sustainability crisis of journalism rooted in growing pressure from platforms and major corporate competitors, changing news consumption habits, and the growing technologization of news media, which they characterize as a "shiny things syndrome" referring to the obsessive pursuit of technology in the absence of clear and research-informed strategies.

The digital transformation described above has reached a new phase with the rise of generative artificial intelligence, which marks a pivotal shift in the institutional coherence of journalism. Unlike previous technological disruptions, generative AI is considered a transformative force that directly intervenes in the core creative processes of journalism, challenging traditional norms of authorship and professional identity (Lewis et al., 2025). This new era necessitates a reconceptualization of how information is filtered, as the news flow is increasingly governed by a hybrid human-AI process known as algorithmic gatekeeping (Voinea, 2025). However, the pursuit of productivity through such technologies carries the risk of introducing an alien intelligence that remains agnostic to the core normative values of journalism (Spyridou & Ioannou, 2025). Consequently, artificial intelligence is best understood as a complementary tool that should enhance journalistic creativity and analytical depth rather than acting as a complete substitute for human editorial judgment (Londoño-Proañó & Buele, 2025).

2.2. Neurocognitive and Emotional Foundations of the Uncanny Valley

The Uncanny Valley (UV) effect is frequently cited as a barrier to audience acceptance of AI news anchors, yet the theoretical literature on its neurocognitive mechanisms, emotional dynamics, and relationship to media credibility remains underexplored. Vaitonytė et al.'s scoping review of neuroimaging studies reveals that the brain's face-processing network is finely tuned to detect subtle deviations from naturalistic human appearance: "agents that are not fully humanlike tend to elicit reduced neural responses in the face-selective brain areas, such as the fusiform gyrus/fusiform face area" (Vaitonytė et al., 2022, p. 12). This reduced activation suggests that the uncanny valley is rooted in the automatic operations of the perceptual system, not merely in subjective preference.

Fitzpatrick et al. (2025) demonstrated that this processing occurs in stages: the brain first detects a visual mismatch at an early perceptual level, and subsequently engages higher-order cognitive processes to evaluate the stimulus. As the authors note,

"the early time window likely reflects rapid processing of low-level visual features whereas the later time window may involve higher-level cognitive processes, such as evaluating emotional content or judging authenticity" (Fitzpatrick et al., 2025, p. 6). The uncanny valley is thus not a single "gut reaction" but a layered process in which perception and cognition interact to produce the characteristic feeling of unease.

Diel and colleagues' meta-analysis of 72 studies confirms that the UV effect is a robust phenomenon, particularly when stimuli involve facial distortion or highly realistic renderings. Theoretically crucial is that the UV is not a simple function of increasing realism; rather, "realism increases the perceiver's sensitivity to human features" (Diel et al., 2021, p. 22), meaning that small imperfections become more salient as a stimulus approaches human likeness.

Higgins et al. (2023) found that visual realism alone did not significantly influence uncanny valley metrics such as appeal, eeriness, or familiarity. Emotional valence was the primary driver: "Emotion had the greatest influence on empathic responses to virtual characters at both levels of realism" (Higgins et al., 2023, p. 4). A technically proficient but emotionally flat virtual anchor may therefore be perceived as more unsettling than a less realistic but emotionally expressive one.

Ratajczyk's (2022) analysis of over 220,000 YouTube comments on real robots provides ecological validation: "people use words relating to the concept of eeriness to describe very humanlike robots" (Ratajczyk, 2022, p. 12), with "scary" and "creepy" emerging as the most frequent descriptors for the most humanlike entities. This pattern demonstrates that the uncanny valley is not merely a laboratory artifact but a culturally resonant experience, visible in the spontaneous language of ordinary viewers.

Cihodaru-Ştefanache and Podina's (2025) systematic review reveals that "assigning mental abilities to such agents, such as emotions or decision-making, can exacerbate the risk of the uncanny valley effect, as users tend to become less willing to interact with them when their cognitive and emotional expectations are unmet" (Cihodaru-Ştefanache & Podina, 2025, p. 3). The user comments analyzed in this study, including descriptions such as "soulless" and "creepy," reflect this dynamic: audiences do not merely evaluate visual fidelity but expect emotional authenticity from the figures that deliver their news.

Baake et al., (2025) further demonstrate that while higher realism can enhance trustworthiness in expertise-oriented contexts, "the use of AI avatars has considerable potential to impart knowledge efficiently" yet "may also harbor the risk of arousing mistrust due to the synthetic nature of the avatars" (Baake et al., 2025, p. 3). In news journalism, where trust is built on perceived authenticity and ethical

judgment, visual realism alone is insufficient to establish credibility.

Chen, Zeng and Qiu (2025) demonstrate that audience trust in digital anchors is mediated by psychological distance: human anchors are perceived as closer and more trustworthy, while digital anchors with low anthropomorphism create a wider gap. As the authors conclude, "only through professional cultivation of knowledge dissemination, emotional interaction, and value expression can digital hosts better showcase the unique personality and value of this new communication entity" (Chen et al., 2025, p. 13). Audiences evaluate AI anchors not on visual fidelity alone, but on whether the figure meets their expectations of a credible, emotionally engaged journalist.

Parasocial relationship theory, originally formulated by Horton and Wohl (1956), describes the one-sided emotional bonds that audiences form with media figures. Omeish et al. (2025) demonstrate that these bonds can form even with non-human agents: "AI influencers can foster meaningful emotional connections with followers under certain conditions" through "repeated exposure, perceived intimacy, and responsiveness" (Omeish et al., 2025, p. 17). However, the uncanny valley effect suggests that when the AI anchor falls short of human expectations in appearance or emotional expression, the parasocial bond may be disrupted or never established, producing discomfort rather than connection. Together, these perspectives reveal that audience response to AI news anchors is shaped by an interplay of neuro-cognitive processing, emotional evaluation, audience expectations, and social-cognitive reasoning. Understanding these psychological foundations clarifies why certain AI-driven journalistic innovations succeed in gaining public trust while others fail. The following section traces how artificial intelligence has been progressively integrated into newsrooms, from early algorithmic tools to the virtual anchors that now occupy screens worldwide.

3. Artificial Intelligence in Journalism

Artificial intelligence's conceptual foundations are mostly based on John McCarthy's work in the 1950s. McCarthy defined artificial intelligence in 1955 as "the science and engineering of making intelligent machines" and presented the idea of machines simulating human intelligence at the 1956 Dartmouth Conference (Xue et al., 2022). Originally seen as just a sub-branch of computer science, this field has become a multidisciplinary one over time, turning into a socio-cultural communication technology (Thiraviyam, 2018).

The superior performance of artificial intelligence in fields such as information production, problem-solving, and content creation has reached a level that

rivals human capacity, evoking deep admiration and astonishment in society (Çağal & Aslantaş, 2025). Technology has reached a level that blurs the boundaries between scientific reality and fiction, making artificial intelligence more apparent at the very center of the media industry (Chuan et al., 2019). Artificial intelligence's integration into every aspect of human communication through smart algorithms and its profound transformation of consumer relations have paved the way for this technological power to be directly integrated into the newsroom, namely "robot journalism" (Latar, 2018).

Behind the news, these automated systems that function without human intervention are mostly discussed in the literature under the concept of "robot journalism". Robot journalism is described as algorithmic processes that transform raw data into narrative newspaper articles without any human intervention (Carlson, 2015). The technological revolution is being experienced in two distinct dimensions in the field of journalism. On the one hand, algorithmic systems operating in the virtual world with software that scans big data, and on the other hand, robot machine technologies that correspond to physical life are making their presence increasingly felt in the journalism sector (Işık et al., 2022). However, the terminology surrounding AI in journalism lacks consistent definition, which hinders both scholarly discussion and practical implementation. Oh and Jung (2025), in their meta-analysis of 59 empirical studies, note that "the discourse on AI in newsrooms is predominantly divided into optimism and pessimism," while the specific forms AI takes in journalistic practice, ranging from automated news generation to data analysis and content recommendation, remain conceptually blurred. The authors argue that "there is little consensus among news organizations about integrating AI technology with journalistic values," and that journalists "conditionally assessed whether AI would enhance or undermine journalistic values based on specific conditions" rather than treating AI as a monolithic technology. This conceptual ambiguity is significant because different forms of AI, such as fully automated robot journalism, algorithmic content curation, and AI-assisted journalistic tools, carry fundamentally different implications for editorial autonomy, professional identity, and audience trust. Sánchez-García et al. (2023) note that terms such as automated journalism and robot journalism are often used interchangeably in the literature, all referring to the automatic writing of news via a computer with minimal or no human input. However, they emphasize that the application of artificial intelligence in journalism is not limited to news production; it encompasses all stages of the journalistic process, including the gathering and documentation of information, the automated production of content, and the distribution of information and audience relations. Despite the growing availability of AI to-

ols across these stages, their study finds that media adoption remains uneven, with companies reporting "slowness", "distrust" and "lack of knowledge" as key barriers to implementation.

The current layered nature of this structure has been achieved through certain historical breaking points. The first steps in the field of robot journalism were taken in the form of "virtual assistants" (robot agents) that acted as intermediaries between data sets and journalists. The "News On Demand" (NOD) service developed by Lee and Kim (1998), which collects daily news information and provides users with integrated news feeds, is considered one of the leading examples in this context (Lee & Kim, 1998). However, the real leap in this field occurred with the launch of Google News in 2002. By scanning thousands of news sites without human intervention and collating the content of their homepages, this algorithm officially launched the human-machine rivalry, with Google's manager at the time claiming that no human editorial team could compete with robots working 24/7 (Kurtz, 2002).

This process has not been confined to digital algorithms but has also been extended to the real world through artificial intelligence-powered journalism. Matsumoto and his team's wheeled 3D physical robot journalist, which was developed in Japan in 2007, moved the boundaries of journalism much further with its ability to blend into crowds and make autonomous discoveries, take photographs, and produce news articles by calculating the strangeness/relevance level of the data it collected (Matsumoto et al., 2007). Another important milestone proving the competence of software in news production was the "Quakebot" software, which turned the March 17, 2014, Los Angeles earthquake into news in just three minutes with zero human input. This event is considered one of the starting points of artificial intelligence-powered journalism (Carlson, 2015).

First used in sports and finance, these technologies have now become widespread in almost every stage of journalism, turning into a major "human-machine" conflict in the literature in terms of opportunities and threats for the journalism industry. Latar (2018) focuses on the professional advantages of artificial intelligence, arguing that these systems, supported by IoT (Internet of Things) sensors, provide significant savings in labor costs, hardly ever miss facts, never get tired, and can produce completely unbiased content when programmed objectively (Latar, 2014).

In contrast, Işık et al. (2022) provide a different perspective on this situation, highlighting that professional traditions and values are under serious threat. The gradual decline of "human-centered" (shoe-leather) traditional journalism, based on on-site observation and reporting, and its replacement by an algorithm/data-based structure are negatively affe-

cting media professionalism, social representation, and journalism ethics (Işık et al., 2022). Even though software developers declare that their real intention is not to replace journalists but only to assist them, there is a growing concern in the industry that people will be pushed into the background (Latar, 2018).

At a time when machines perform tasks much faster and better than humans, the prediction that machines will take the leading role in nearly every field is one of the most discussed topics in the current literature (Guanah et al., 2020). In fact, Latar (2018) predicts that as a result of this shift, a significant number of news articles will be written directly by robots within the next 5 to 10 years. Dumanlı Kürkçü and Mengü (2025) emphasize that this transformation brings opportunities alongside risks such as fake news, deepfakes, and ethical violations, and argue that "the effective use of artificial intelligence requires a careful approach centred on human control" (p. 58).

Beyond the opportunity-threat binary, the arrival of generative AI has introduced a deeper ethical tension into this debate. Liu (2025) argues that "the mechanized production model may result in a loss of in-depth thinking and value judgment in news reporting, and could even lead to the creation of false or misleading content in the pursuit of traffic benefits." The author identifies three core contradictions: first, "the probabilistic nature of algorithm-generated content conflicts with the fundamental requirement for news accuracy, as the phenomenon of hallucination in language models may present fabricated information as fact"; second, "the ambiguity in assigning responsibility in human-machine collaboration makes it difficult to trace accountability when misinformation spreads"; and third, media organizations face "a transparency paradox, where the covert use of AI tools not only undermines the public's right to know but also exacerbates the trust crisis." These findings suggest that the debate can no longer be framed simply as machines replacing or assisting humans, but must account for the structural transformation of editorial responsibility itself. This huge technological pressure is shaking both the practical and philosophical foundations of the profession. As scientists and philosophers discuss whether a machine brain can truly mimic human creativity, the question of "whether artificial intelligence can develop independent cognition beyond algorithms" has become one of the most fundamental questions the journalism industry is seeking to answer (Latar, 2018).

Beyond these philosophical debates, the integration of AI into newsrooms raises concrete ethical concerns that affect journalistic practice. Al-Zoubi et al. (2024), based on in-depth interviews with journalists, identify three main ethical challenges: data bias, privacy violations, and the absence of legislation and international regulations regarding the

use of AI in journalism. Their findings indicate that journalists are aware of these risks and approach AI adoption critically, guided by principles of social responsibility. Lamprou et al. (2025), through a systematic review of 44 sources, further identify recurring tensions between automation and authenticity, and between efficiency and editorial integrity. To capture the hybrid nature of modern news production, they introduce the Human-AI Co-Creation Continuum as a conceptual model for understanding how human and machine agency interact in narrative production. These perspectives suggest that the challenge of AI in journalism is not solely technological but also ethical and institutional.

Recent empirical research from Turkish newsrooms provides concrete evidence for this transformation: Demir and Kılıçgedik (2025), in their interviews with 26 journalists, found that while GenAI tools save considerable time on tasks such as translation, summarization, and fact-checking, they "have not significantly reduced journalists' overall workload" because management demands have increased proportionally. Moreover, journalists consistently emphasized that GenAI is "failing to replace the essential human qualities of emotion, empathy, and contextual understanding that journalists bring to their work," and that these human capacities "remain foundational to practices of meaning-making, credibility-building, and public trust in journalism."

As a result of all this algorithmic production and philosophical discussion, artificial intelligence is no longer just an invisible pile of code working in the background of newsrooms. Artificial intelligence's journey in journalism has not been just limited to robot writers or big data algorithms; it has entered a new phase with virtual reality (VR) applications and 'artificial intelligence news anchors' who meet viewers directly on screen (de-Lima-Santos & Ceron, 2022).

3.1. AI Anchors

Another change brought about by digitalization in the communication field is the active role that artificial figures with human voices and faces now play in the media. In today's media industry, artificial intelligence is no longer just a technical tool; it has become an "active actor" that plays a direct role in content production (Özçelik and Batur, 2025). This active role has also caused a structural break in journalism practices. Artificial intelligence anchors have created new narrative models in human-machine interaction and produced a new media paradigm of "naturalizing the unnatural" through the type of relationship they establish with their audience (Toptaş, 2024). These innovations are fundamentally transforming the conventional understanding of anchoring in technical, representational, and perceptual con-

texts (Eke and Genç, 2023). Furthermore, the impact of realism on trust appears to be highly context-dependent.

Even though AI news anchors create a new media aesthetic as visual and auditory symbols, there is a clear contrast between the human characteristics that are expected from the traditional character presenting the news and the current capacity of machines. The concept of "news anchor" in traditional television is defined not only as a news presenter but also as a professional term recognized both within and outside the industry and an accepted "identity marker" on screen. This identity inherently necessitates a human connection with the audience and strong screen interaction (Kumar et al., 2024). However, AI anchors created with today's technology are still far from fully meeting these human expectations required by the screen. AI anchors used in today's technology have disadvantages such as an inability to express and convey emotions, an inability to make eye contact, and a flat, monotonous tone when reading the news (Sepetci, 2025).

Even though current technology has some gaps in basic human communication aspects like conveying emotions, it offers unique visual flexibility because it can be designed entirely in a digital environment; but this visual flexibility hits unexpected psychological barriers on the audience's side. These psychological barriers are often linked to the violation of user expectations regarding how digital entities should think, feel, or act. This situation is discussed in the literature from two different perspectives. While technical flexibility in digital design is often highlighted as a professional advantage, recent systematic research underscores a persistent "empathy gap" in human-AI interaction. Guo et al. (2025) argue that despite technological progress in synthetic media, this gap maintains restricted audience approval rates, as viewers increasingly resist synthetic presenters in news settings and demand higher authenticity and transparency. Chhipa & Dixit (2024) view the ability of virtual characters to successfully simulate the appearance of real humans and the fact that companies don't need to invest in elements such as hair, clothing, and makeup in the digital environment as a major economic advantage. Moreover, the assumption that increased visual realism in AI anchors automatically enhances their communicative effectiveness has been empirically challenged. Simfa et al. (2025), using qualitative comparative analysis across 45 empirical studies, found that human-likeness does not function as a universal driver of effectiveness; instead, its influence is context-dependent. They argue that "the appearance of effectiveness may reflect familiarity, politeness, or entertainment value" and that "anthropomorphism functions as a heuristic that may distort evaluations if not carefully contextualized." This suggests that the ongoing pursuit of visual realism in AI news anchors

may be guided more by assumed audience preferences than by evidence of actual communicative success.

On the other hand, Yang (2025) disagrees with this optimistic perspective, offering a different view from the perspective of the audience. According to Yang (2025), although virtual characters can closely resemble real people and have natural expressions with current technology, audiences can still tell the difference between the virtual and the real. This creates a feeling of "discomfort" and even "fear" (the uncanny valley effect) in viewers, significantly reducing the appeal and believability of virtual characters.

The uncanny valley theory claims that as a robot's resemblance to a real human increases, people's sense of closeness to it also increases. However, just before this resemblance reaches a point of perfection, that sense of closeness suddenly drops and is replaced by a feeling of unease (Mori et al., 2012). When we look at how this theory relates to AI-powered, human-like robots and news anchors, we see that it has two different effects on the audience. When social media comments about human-like robots were analyzed, it was found that negative attitudes reflecting the uncanny valley effect, such as "fear, fright, and unease," were quite common among the audience (Saç, 2024).

However, several empirical studies challenge the predominance of negative audience reactions and suggest a more nuanced picture of AI news anchor reception. Huang and Yu (2023), in a survey of 598 participants, found that "the ratio of users who hold a positive attitude and a negative attitude is about 6:4, which suggests an overall positive continuance intention for AI news anchors". Similarly, Li and Yang (2023) reported that "anchors powered by AI routinely exhibited superior levels of accuracy and decreased the incidence of errors and omissions" compared to human-generated content. Gerlich (2023) further demonstrated through a sample of 357 respondents that "virtual influencers are perceived as more trustworthy, credible, and relevant to customers' preferences". Moreover, Chen et al. (2025), based on three online experiments with 839 participants, found that "a high degree of anthropomorphism can narrow the gap between the psychological distance of digital and human anchors". These findings indicate that while the uncanny valley effect is a real phenomenon, positive audience reactions can emerge when AI anchors are designed with high anthropomorphism, strong credibility endorsements, and proven informational accuracy.

4. Purpose of the Study

In this study, user comments on news presentations made by AI-powered anchors on YouTube, which

is seen as an alternative news medium and actively preferred for news tracking, are collected using MAXQDA 2020 software. The data obtained within the scope of the study are analyzed using quantitative research methods for statistical measurement purposes. Additionally, data obtained within the scope of the study to measure the trends in users' reactions to AI-powered news anchors are classified into four categories—neutral opinion, negative reaction, support, and hate speech—and analyzed. The emergence of AI-powered news anchors and the use of artificial intelligence in journalism as a new phenomenon, and the fact that news followers experience a news presentation they are not accustomed to, make this research important. The study of user comments on AI-assisted journalism is important in measuring opinions on the use of AI tools in journalism without the influence of AI-assisted robot news anchors.

5. Methodology and Scope

The research universe consists of all news videos presented by AI-powered news anchors on the YouTube platform. This research, which employs a mixed-methods design combining qualitative and quantitative approaches, determined the sample with the aim of assessing the size of the population and conducting an in-depth examination of the research topic; searches were conducted on the YouTube platform using the keywords "AI Anchors," "AI Journalism," and "AI-powered journalism" in both Turkish and English, and news videos featuring female and male AI news anchors—selected according to the criterion sampling method—were analyzed within the scope of this study. Criteria sampling is defined as the analysis of all cases that meet a set of criteria listed in advance by the researcher. In criteria sampling, the time variable or any situation related to the research topic can be established as a criteria sampling criterion (Baltacı, 2018, p. 254). Critical cases identified by the researcher to explain the phenomenon under study are used for criterion sampling. In this study, a search was conducted on the YouTube platform using the keywords "AI Anchor," "AI Journalism," and "AI-Supported Journalism," and videos meeting the following criteria determined by the researcher were included in the study:

1. The news videos to be analyzed must be presented directly by AI news anchors,
2. User comments under the news videos to be analyzed must be visible,
3. User comments on the news videos must be sufficient to conduct content analysis,
4. The news videos must provide data on the media systems of different countries in the global media landscape,

5. The news videos must allow for the examination of comments directed at both female and male AI news anchors.

The four videos identified based on this list of criteria are considered critical examples representing the global development of AI news anchors. The news videos published by New China TV were included in the study because they feature the world's first male and first female AI news anchors and offer an opportunity to examine the impact of the gender variable on user comments. In the history of global AI journalism, this video is significant because it marks the beginning of AI news anchors. The video published by CBS Boston was included in the sample because it serves as an example of the use of AI news anchors in media systems outside of China and provides an opportunity to examine the reflections of AI journalism in Western media systems and the interactions Western audiences have with this form of journalism. The video published by India Today was included in the study because it demonstrates the level of development of AI news anchors in South Asian media systems and represents the current stage of maturity of AI news anchors. The interactive exchange between India Today's AI anchor, Sana, and a real actor (Shahrukh Khan) is significant because it offers the opportunity to analyze current user expectations and reactions in the context of "human-machine interaction." Therefore, the study provides an opportunity to conduct a comparative analysis of user feedback on AI news anchor applications implemented by news organizations across different regions, media systems, and time periods.

Within the universe, searches are conducted on the YouTube platform in Turkish and English using the keywords "AI Anchors," "AI Journalism," and "Artificial intelligence-supported journalism," and the news videos of female and male news anchors with the most user comments and views are analyzed within the scope of the study. Within the scope of the study, a total of four videos belonging to New China TV, CBS Boston, and India Today are analyzed using quantitative and qualitative research methods. Within the scope of the study, a total of 447 user comments on news presentations made by artificial intelligence news anchors on the YouTube platform are obtained using MAXQDA 2020 software. Within the scope of the study, user comments related to artificial intelligence news anchors that consisted of meaningless words and emoji expressions, as well as users' unrelated conversations among themselves, were excluded from the study. Thus, a total of 418 user comments on the four news videos analyzed within the scope of the study were analyzed using SPSS and Excel software packages.

Additionally, within the scope of the study, content analysis, one of the data analysis methods used in qualitative research, is conducted on user com-

ments received by AI news anchors to obtain more explanatory results from the data obtained on the topics of AI use in journalism, the use of AI news anchors in news presentation, and gender differences among AI news anchors. To uncover relationships that are not immediately apparent in the dataset obtained within the scope of the research but emerge through conceptual coding and classification, the content analysis method should be used (Saruhan & Özdemirci, 2013). As part of this study, a categorical coding guide was developed using a deductive approach, in line with the research problem and hypotheses, to classify the 418 user comments collected using the MAXQDA 2020 software. The coding guide was tested by two researchers before the coding process began, and any ambiguities were resolved. In this context, data obtained to measure the trends in users' reactions to AI news anchors and to obtain explanatory findings are classified into four categories: expressing neutral opinions, giving negative reactions, showing support, and hate speech, and content analysis is performed. The coding process is carried out by two independent coders who have received a detailed briefing on the study's hypotheses and the coding guide. During the coding phase, all 418 comments are coded independently by the two coders. Comments are coded text-based using MAXQDA 2020 software; if a single comment is assigned to more than one category (for example, comments that contain both a negative reaction and hate speech), the dominant category is used as the basis. To test the agreement between coders, Cohen's Kappa coefficient was calculated for 100 randomly selected comments (23.9%). The calculation

resulted in a Kappa value of $\kappa = 0.86$. This value falls within the range of 0.81–0.99, corresponding to a level of “near-perfect agreement” (Landis & Koch, 1977).

5.1 Research Hypotheses

Based on the research problem, the hypotheses of the study are formulated as follows:

H1. Among user comments regarding the use of artificial intelligence in journalism, the percentage of neutral opinions exceeds the percentage of negative reactions.

H2. In news broadcasts, the percentage of user comments expressing neutral opinions about AI news anchors is higher than the percentage of those expressing negative reactions.

H3. The proportion of hate speech in user comments regarding AI news anchors' news presentation is lower than the proportions of the other categories.

H4. User comments directed at female AI news anchors exhibit a lower rate of negative reactions compared to those directed at male AI news anchors.

Research Findings

Within the scope of the study, the video profile is analyzed based on information related to the four news videos analyzed, including metadata such as the video title, video web address, video upload date, number of views, number of likes received from users, and number of user comments received.

Table 1. Profile of the News Video Titled “World's First AI News Anchor Makes China Debut

Title	World's first AI news anchor makes China debut
URL	https://www.youtube.com/watch?v=h_OetRQI2s0
Duration	30 seconds
Upload Date	Thursday, November 8, 2018
Publisher / Channel	New China TV
View Count	248.171
Like Count	440
Comment Count	122

The news video titled “World's First AI News Anchor Makes China Debut” belongs to the first male artificial intelligence news anchor used by Xinhua News Agency on New China TV (Table 1). Among the news videos analyzed in the study, it is the first video uploaded to the YouTube platform in terms of upload date. Xinhua News Agency broadcast the related

news video as “The World's First Artificial Intelligence News Anchor” on New China TV on November 8, 2018. Just three months later, on February 20, 2019, Xinhua broadcast the video presented in Table 2, introducing the “World's First Female Artificial Intelligence News Anchor.”

Table 2. Profile of the News Video Titled "Xinhua Unveils World's First Female AI News Anchor"

Title	Xinhua unveils world's first female AI news anchor
URL	https://www.youtube.com/watch?v=5iZuffHPDAw
Duration	30 seconds
Upload Date	Wednesday, February 20, 2019
Publisher / Channel	New China TV
View Count	672,173
Like Count	1200
Comment Count	271

The news video titled "Xinhua Unveils World's First Female AI News Anchor" belongs to the first female artificial intelligence news anchor used by the China News Agency Xinhua on New China TV (Table 2). Although the videos of female and male artificial intelligence news anchors are exactly the same length, there is a noticeable gender-based difference in user comments. When compared to the profile informa-

tion of the first male AI news anchor broadcast on New China TV (Table 1), the video of the first female AI news anchors (Table 2) received more views, likes, and comments. In this context, it is possible to say that female AI news anchors receive more attention, likes, and support from users compared to male AI news anchors.

Table 3. Profile of the News Video Titled "Artificial News Anchor Debuts in South Korea"

Title	Artificial News Anchor Debuts In South Korea
URL	https://www.youtube.com/watch?v=y1qwdFP3GUo
Duration	44 seconds
Upload Date	Thursday, December 3, 2020
Publisher / Channel	CBS Boston
View Count	12,502
Like Count	48
Comment Count	20

The United States, specifically the CBS television network based in Boston, Massachusetts, aired a news video titled "Artificial News Anchor Debuts In South Korea," featuring female artificial intelligence news anchors (Table 3). Approximately two years after China's Xinhua News Agency brought videos of the world's first male and female AI news anchors to users, on December 3, 2020, CBS Boston in the US

aired a video of AI news anchors in South Korea. It can be seen that videos featuring AI news anchors (Table 1 and Table 2) were uploaded to the platform earlier. In this context, it is observed that the videos first uploaded to the platform on this topic (Table 1 and Table 2) received more views, likes, and comments.

Table 4. Profile of the News Video Titled "Ai Sana & Shahrukh Khan Interaction Promo: AI Anchor Sana Exclusive Conversation with Shah Rukh Khan"

Title	AI Sana & Shahrukh Khan Interaction PROMO: AI Anchor Sana Exclusive Conversation With Shah Rukh Khan
URL	https://www.youtube.com/watch?v=5K-zlaBMXMw
Duration	1 minute 12 seconds
Upload Date	Tuesday, September 5, 2023
Publisher / Channel	India Today

View Count	117,449
Like Count	791
Comment Count	35

The news video titled "Ai Sana & Shahrukh Khan Interaction Promo: Ai Anchor Sana Exclusive Conversation With Shah Rukh Khan," presented by female AI news anchor Sana, aired on India Today, India's leading English-language news channel, on September 5, 2023 (Table 4). Although five years have passed since the video presented by the first male AI news anchors used by Xinhua, the news video

presented by Sana, broadcast in India, has also achieved a significant number of views and likes.

Comments made by users on the four news videos presented by AI news anchors were classified into four categories: neutral opinion, negative reaction, support, and hate speech, and their frequency distributions are shown (Table 5).

Table 5. User Comments on the News Video Titled "World's First AI News Anchor Makes China Debut"

VideoTitle	Neutral Opinion		Negative Reaction		Support		Hate Speech	
	(N)	F (%)	(N)	F (%)	(N)	F (%)	(N)	F (%)
World's First AI News Anchor Makes China Debut	38	35.19%	36	33.33%	24	22.22%	10	9.26%

The news video presented by the world's first male artificial intelligence news anchor (Table 5) received a total of 108 user comments. Although 35.19% of these comments expressed neutral opinions, it is

noteworthy that 33.33% of users reacted negatively. However, the news video and the world's first male artificial intelligence news anchor are supported by approximately a quarter of users.

Table 6. User Comments on the News Video Titled "Xinhua Unveils World's First Female AI News Anchor"

VideoTitle	Neutral Opinion		Negative Reaction		Support		Hate Speech	
	(N)	F (%)	(N)	F (%)	(N)	F (%)	(N)	F (%)
Xinhua Unveils World's First Female AI News Anchor	88	33.08%	69	25.94%	60	22.56%	49	18.42%

The news video presented by the world's first female AI news anchor (Table 6) received a total of 266 user comments. Thirty-three point zero eight percent of user comments tended to express neutral opinions. However, it is noteworthy that the percentage of negative comments (25.94%) and supportive comments (22.56%) were close to each other. In this context, it can be observed that the vast majority of users did not have a clear stance on the female AI news anchor and remained neutral.

When compared to the user comments received by the world's first male AI news anchor (Table 5), it is noteworthy that the world's first female AI news anchor (Table 6) received fewer negative reactions but more user comments containing hate speech (18.42%). In the following sections of the study, content analysis is performed to derive explanatory results from the data obtained regarding gender differences.

Table 7. User Comments on the News Video Titled "Artificial News Anchor Debuts in South Korea"

VideoTitle	Neutral Opinion		Negative Reaction		Support		Hate Speech	
	(N)	F (%)	(N)	F (%)	(N)	F (%)	(N)	F (%)
Artificial News Anchor Debuts In South Korea	5	29.41%	5	29.41%	6	35.29%	1	5.88%

A total of 17 user comments were received on the news video (Table 7) about the first AI news anchor to begin work in South Korea. It was observed that 35.29% of user comments supported the AI news anchor. However, it is noteworthy that user comments

expressing neutral opinions (29.41%) and negative reactions (29.41%) were equally distributed. In the following section of the study, content analysis is conducted to derive explanatory results from user comments, which are examined in detail.

Table 8. User Comments on the News Video Titled "Ai Sana & Shahrukh Khan Interaction Promo: Ai Anchor Sana Exclusive Conversation With Shah Rukh Khan"

VideoTitle	Neutral Opinion		Negative Reaction		Support		Hate Speech	
	(N)	F (%)	(N)	F (%)	(N)	F (%)	(N)	F (%)
Ai Sana & Shahrukh Khan Interaction Promo: Ai Anchor Sana Exclusive Conversation With Shah Rukh Khan	21	77.78%	3	11.11%	1	3.70%	2	7.41%

India Today, India's leading English-language news channel received a total of 27 user comments on the news video presented by Sana, the female AI news anchor (Table 8). It was observed that the vast majority of user comments, 77.78%, expressed neutral opinions. On the other hand, it is noteworthy that

although 3.70% of users supported the news video presented by Sana, approximately 18% expressed reactions and hate speech. Another noteworthy factor is that among the news videos analyzed in the study, the news video presented by Sana received the least support from users.

Table 9. Test Results for the Hypotheses

Hypothesis	Test	Test Statistic ($\chi^2/t/F/r$)	p-Value	Decision
H1	One-Sample Z-Test	Z = 2,90	0,0019	Confirmed
H2	One-Sample Z-Test	Z = 2,90	0,0019	Confirmed
H3	Chi-Square + Residual Analysis	$\chi^2 = 41,313$	<0,001	Confirmed
H4	Two-Proportion Z-Test + Fisher's Exact Test	Z = 1,44	0,075	Rejected

Upon examining the results of the statistical tests applied to the hypotheses analyzed in this study, it was found that the One-Proportion Z-Test was applied to hypotheses H1 and H2, yielding values of Z = 2.90 and p = 0.0019 (p < 0.01). The proportion of neutral comments among user reviews (36.36%) is statistically significantly higher than the proportion of negative comments (27.03%). Therefore, hypotheses H1 and H2 have been confirmed.

A Chi-Square Goodness-of-Fit Test and Residual Analysis were applied to Hypothesis H3. The Chi-Square (χ^2) value was determined to be $\chi^2 = 41.313$, and the p-value was <0.001. The results of the residual analysis revealed that the hate speech category was significantly lower (z = -4.16; p < 0.001) than the expected value (104.5) under the assumption of equal distribution. Thus, Hypothesis H3 has been confirmed.

The Two-Proportion Z-Test and Fisher's Exact Test were applied to Hypothesis H4. The Two-Proportion Z-Test yielded a Z-value of 1.44 and a p-value of 0.075. In Fisher's Exact Test, the p-value was determined to be 0.076. In this context, although the male

AI news anchor's negative reaction rate (33.33%) was higher than that of the female AI news anchor (25.94%) in terms of frequency, this difference did not reach statistical significance (p = 0.075 > 0.05). Based on these findings, it cannot be concluded that the female AI news anchor received significantly fewer negative reactions than the male AI news anchor. Therefore, H4 has been rejected.

6. Findings Related to the Content Analysis

Within the scope of the study, user comments posted on YouTube in response to news presentations delivered by AI news anchors from New China TV, CBS Boston, and India Today we're classified into four categories—neutral expression of opinion, negative reaction, support, and hate speech—and analyzed through content analysis.

Comments highlighted by users in the neutral opinion category regarding AI news anchors in the news video titled "World's First AI News Anchor Makes China Debut" (Table 5) are as follows:

- "More body language and facial expressions are needed."
- "Oh my God."

The comments that stand out in the negative reaction category for the relevant video (Table 5) are as follows:

- "Now news anchors are out of work! I'm starting to wonder which jobs are safe from automation."
- "A scary slippery slope..."
- "A bit creepy lol."
- "A soulless broadcast..."
- "More work is needed to make the tone of voice more compelling. It's still boring."

The comments that stand out in the supportive category for the relevant video (Table 5) are as follows:

- "This AI answered the first question that came to my mind in its second sentence. Very interesting!"
- "Reading the news without bias, without love or hate in your heart, right? That's very much like God."
- "HA! Good for Xinhua; now they won't have to deal with human news anchors who occasionally have nervous breakdowns and can't tell lies. China isn't a completely dystopian society, folks."

The comments that stand out in the hate speech category of the relevant video (Table 5) are as follows:

- "There are even more reasons for you to cut your cables."
- "You can be sure that everyone (who is rational and lives in a free country) already despises this because it is an extremely inhumane situation."
- "I think this is complete nonsense; he is a real person, and the artificial intelligence part is just propaganda."

"World's First AI News Anchor Makes China Debut"

When analyzing user comments on the news video titled (Table 5), comments in the neutral opinion category express surprise and comment on the body and facial movements of AI anchors, while comments in the negative reaction category emphasize that AI anchors are scary and soulless and will cause employment problems for human news anchors. On the other hand, in the support category, it is emphasized that news presented by AI anchors will be unbiased, truthful, and impartial. On the other hand, in the hate speech category, it is noteworthy that news presented by AI anchors is seen as nonsense and perceived as inhumane.

Comments made by users in the neutral opinion category regarding AI news anchors in the news video titled "Xinhua Unveils World's First Female AI News Anchor" (Table 6) are as follows:

"Constructive criticism: When she opens her mouth,

her upper lip is not synchronized with the movement of her teeth. The nose could also move; we sometimes talk about the nostrils widening when breathing. She could move her head more freely from side to side, and her earrings could sway a little more naturally."

- "It's not perfect, especially in terms of mouth movements, but there is progress."
- "The use of such applications is only beneficial when there is a real need, such as during a pandemic, or when human resources are unavailable due to a disaster."
- The following are the comments that stand out in the negative reaction category of the relevant video (Table 6):
- "The facial muscles need to be more sensitive to resemble real people."
- "The male presenter was a good AI copy and one of the most realistic I've seen, but it looks and moves too much like a real person; all the arms move, the facial expressions are very realistic, so I don't believe it. If they could make such a good female presenter, wouldn't they have made the male presenter just as good? The Chinese government tends to exaggerate almost everything when it's not busy maliciously stealing and copying other countries' technologies."

The comments that stand out in the support category for the relevant video (Table 6) are as follows:

- "Wow, this is incredible. China is really far ahead in artificial intelligence. Congratulations."
- "The small details in the eyes and facial expressions are enough, that's it!"
- "I like this! No comments. No deviation from the topic. No slip of the tongue. No deviation from the party line. Better yet, it will have a perfect social score. And because it's artificial intelligence, it will evolve to be smarter than any human in that position. Compared to this, organic life forms will remain ignorant and incompetent."

The following are the comments that stand out in the hate speech category of the relevant video (Table 6):

- "This is very strange... it seems literally inhuman and like an attempt to further control the message."
- "Even thinking that AI clones are a good thing is madness!!"
- "This is scary."
- "Am I the only one freaked out by this development?"
- "Am I the only one freaked out by this development? This is really scary. Soon we'll see robots instead of people on TV, which is truly frightening. They mimic us, but they are not us."

- “Embarrassing”
- “At some point, you should never believe what you hear because it’s propaganda and doesn’t come from a real person or journalist.”

When user comments on the news video titled “Xinhua Unveils World’s First Female AI News Anchor” (Table 6) were analyzed, comments in the neutral opinion category stated that AI news anchors have made progress, although their mouth movements are not perfect. While in the reaction category, it is emphasized that mouth movements need to be more sensitive to resemble humans and that the similarity of male and female news anchors’ faces and mouth movements to humans is highlighted. In the support category, it is stated that AI news anchors are considered incredible and that their eye and facial expressions are sufficient. On the other hand, hate speech comments emphasize that AI news anchors are seen as frightening and embarrassing and that seeing robots instead of humans on television is disturbing.

Comments from users in the neutral opinion category regarding AI news anchors in the news video titled “Artificial News Anchor Debuts In South Korea” (Table 7) are as follows:

- “Even though I don’t understand English, the channel, which has always been innovative, has become a leading channel in the 21st century. MBM, have you become a leading channel in the 21st century? Thank you, inspector.”
- “Virtual entity. Not a robot.”

The following are the comments that stand out in the negative reaction category of the relevant video (Table 7);

- “Yes, if we don’t think for ourselves and just follow our masters’ scripts and instructions, we are no different from artificial intelligence. When we think for ourselves, we truly become human. We don’t bow down.”
- “Robots are really taking over.”

The comments that stand out in the supportive category for the relevant video (Table 7) are as follows:

- “This thing is incredibly realistic, why aren’t they more impressed??”
- “Nice video and good news.”
- “Good news”

The following are the prominent comments in the hate speech category for the related video (Table 7):

- “The beginning of the end”

When analyzing user comments on the news video titled “Artificial News Anchor Debuts In South Korea” (Table 7), it is noteworthy that comments in the neutral opinion category emphasize the virtual nature of the anchor, while comments in the reaction category emphasize the freedom of thought characteristic of humans and express concern about

robots taking control. In the support category, it is emphasized that AI news anchors are incredibly realistic and that the news presented is of good quality. Furthermore, there is only one hate speech comment related to the news video in question, and it is noteworthy that this comment perceives the news presentation by AI news anchors as the beginning of the end.

Comments from users in the neutral opinion category regarding AI news anchors in the news video titled “Ai Sana & Shahrukh Khan Interaction Promo: Ai Anchor Sana Exclusive Conversation With Shah Rukh Khan” (Table 8) are as follows:

- “It looks like Alexa.”
- “Is this a robot, news anchor?”

The following comments stand out in the negative reaction category for the relevant video (Table 8):

- “Couldn’t you find a live girl to be the anchor?”
- “I think news should only be delivered by humans, not artificial intelligence.”
- “Indian news channels don’t take anything seriously; they’re making fun of artificial intelligence.”

The comments that stand out in the support category for the relevant video (Table 8) are as follows:

- “She’s the best artificial intelligence anchor so far.”

The following are the comments that stand out in the hate speech category of the related video (Table 8):

- “What a stupid joke made in the name of artificial intelligence.”
- “The embarrassing moments button is here.”

“Ai Sana & Shahrukh Khan Interaction Promo: Ai Anchor Sana Exclusive Conversation With Shah Rukh Khan” When analyzing user comments on the news video titled (Table 8), comments in the neutral opinion category emphasize the similarity of AI news anchors to Alexa, while comments in the reaction category emphasize the necessity of human news anchors presenting the news. It is noteworthy that Indian news channels’ use of AI anchors to present the news is perceived as a lack of seriousness. In the support category, India Today highlights that its AI news anchor, Sana, is the best AI presenter. On the other hand, in the category of hate speech, it is noteworthy that the AI news anchor is seen as an embarrassing joke.

7. Conclusion

Traditional journalism is going through a transformation process with the introduction of digitalization and artificial intelligence technologies. This transformation is reshaping the public’s perceptions of the media. Although the use of artificial intelligence as

an actor in news delivery provides media companies with advantages such as speed and low cost, it also raises many questions on the part of the audience regarding credibility and trust.

Therefore, it is important to understand how artificial intelligence news anchors, who are becoming increasingly visible in the new media ecosystem, are perceived by target audiences in order to anticipate the future and limitations of this technology in journalism. With their high level of interaction, social media platforms provide the ideal research ground for expressing attitudes and expectations towards technological innovations without censorship. In this study, viewers' perceptions of AI news anchors were examined through user comments on news presentations on the digital video platform YouTube.

Within the scope of this research, the study analyzes a total of four videos from New China TV, CBS Boston, and India Today using both quantitative and qualitative research methods. There are a total of 447 user comments on news presentations made by artificial intelligence news anchors on the YouTube platform within the scope of the study. Comments consisting of meaningless words and emoji expressions and users' irrelevant conversations among themselves were excluded from the evaluation, so a total of 418 user comments were analyzed using the SPSS package program within the scope of the study.

The user comments on the news presentations made by the AI news anchors in the four videos analyzed within the scope of the study were categorized into four groups: neutral opinions, negative reactions, support, and hate speech, and content analysis was performed. Of the total user comments received on the four videos analyzed in the study regarding the news presentations made by AI news anchors, 36.36% were neutral opinions, 27.03% were negative reactions, 21.77% were supportive, and 14.83% were hate speech.

The findings obtained from the statistical tests (One-Proportion Z-Test, Chi-Square Goodness-of-Fit Test, Residual Analysis, and Fisher's Exact Test) conducted on the four main hypotheses proposed in this study indicate that users have a cautious perception regarding the use of artificial intelligence in news presentation. It was determined that the proportion of neutral opinions in user comments regarding the use of AI anchors in journalism processes (H1) or news presentation (H2) was statistically significantly higher than the proportion of negative reactions ($Z = 2.90$; $p = 0.0019 < 0.01$), and both hypotheses were confirmed. In this context, it appears that the vast majority of users have not yet formed a definitive judgment regarding AI technology in news production and news presentation processes, but are attempting to make sense of and observe the process. Furthermore, an analysis of the study's

qualitative data reveals that neutral comments largely consist of constructive criticism focused on the technical shortcomings in AI anchors' body language, facial expressions, lip-syncing, and gestures, as well as their development processes.

Hypothesis H3—that the proportion of hate speech in user comments regarding AI anchors' news presentations would be the lowest compared to other categories—has been confirmed. The Chi-Square Goodness-of-Fit Test yielded $\chi^2 = 41.313$, with a p-value of <0.001 , and the results of the Residual Analysis ($z = -4.16$; $p < 0.001$) indicated that the hate speech category was significantly lower than the expected value under the assumption of equal distribution. In this case, Hypothesis H3 has been confirmed. This confirms that, rather than radical hostility toward AI news anchors, users' comments are primarily characterized by more cautious and concern-based criticism.

Hypothesis H4 posits that user comments directed at female AI news anchors contain fewer negative reactions compared to those directed at male AI news anchors. The two-proportion Z-test yielded a Z-value of 1.44 and a p-value of 0.075. In Fisher's Exact Test, the p-value was determined to be 0.076. Based on these findings, it is evident that female AI news anchors do not receive significantly fewer negative reactions than male AI news anchors. Therefore, H4 has been rejected.

When examined holistically, the findings of this study reveal that, based on user comments regarding news presentations by AI news anchors, negative reactions and hate speech account for 41.86 percent. This data confirms that AI news anchor technology faces significant resistance and negative perceptions from users rather than direct support (21.77%). In this context, it is evident that user comments regarding news presentations by AI news anchors today reflect a negative perception rather than support for this technological advancement.

The data obtained indicates that viewers are not only neutral in their acceptance of AI news anchors, but they also develop psychological resistance and discomfort towards the design of these digital characters and the process of automation. The human element inherent in journalism, the process of conveying emotion, has not yet been fully addressed. Indeed, rather than evaluating AI news delivery as a perfect technological transmission, audiences intensely question the authenticity of the figure presenting the news.

In addition to the theoretical and empirical contributions of this study, and based on its limitations, future research could include social media platforms such as TikTok, Instagram Reels, or X (Twitter), where AI-generated content is heavily consumed, in the analysis, given their distinct algorithms and user demographics. Furthermore, this study employed

a criterion-based sampling limited to Turkish and English keywords. It is believed that future research expanding linguistic diversity to include media systems in the Far East, Europe, and the Middle East, where AI journalism is heavily produced, would significantly enrich the literature.

This high level of negative perception and rejection behavior among viewers can be easily explained by the “Uncanny Valley” theory. According to the Uncanny Valley hypothesis, the more a non-human entity resembles a human in physical appearance or behavior, the more it creates a sense of eeriness and repulsion in viewers, which increases significantly beyond a certain threshold. Despite being so close to human nature, AI news anchors are creating discomfort rather than building trust in the viewer. To conclude, for AI-powered journalism to gain greater acceptance in the social context in the future, the goal should not be limited to technical visual perfection. Elements that break the uncanny valley effect and convey authenticity and emotional consistency should also be incorporated into the news presentation process.

References

- Al-Zoubi, O., Ahmad, N., & Abdul Hamid, N. (2024). Artificial intelligence in newsrooms: Ethical challenges facing journalists. *Studies in Media and Communication*, 12(1), 1–14. <https://doi.org/10.11114/smc.v12i1.6587>
- Alp, H., & Turan, E. (2018). Gelenekselden dijital medyanın dönüşümü çerçevesinde CNN Türk ve NTV internet sitelerinin karşılaştırmalı analizi. *Turkish Studies*, 13(29), 1–18. <https://doi.org/10.7827/TurkishStudies.14221>
- Anderson, C. W., Bell, E., & Shirky, C. (2012). Post-industrial journalism: Adapting to the present. Tow Center for Digital Journalism, Columbia Journalism School. <http://towcenter.org/research/post-industrial-journalism/>
- Baake, J., Schmitt, J. B., & Metag, J. (2025). Balancing realism and trust: AI avatars in science communication. *Journal of Science Communication*, 24(2), A03. <https://doi.org/10.22323/2.24020203>
- Baltacı, A. (2018). Nitel araştırmalarda örnekleme yöntemleri ve örnek hacmi sorunsalı üzerine kavramsal bir inceleme. *Bitlis Eren Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 7(1), 231–274. <https://izlik.org/JA98FN96XR>
- Carlson, M. (2015). The robotic reporter: Automated journalism and the redefinition of labor, compositional forms, and journalistic authority. *Digital Journalism*, 3(3), 416–431. <https://doi.org/10.1080/21670811.2014.976412>
- Chen, J., Zeng, Y., & Qiu, X. (2025). Digital anchors vs. human anchors: A study of the effects of credibility endorsement and psychological distance on policy adoption intention. *Frontiers in Psychology*, 16, 1650691. <https://doi.org/10.3389/fpsyg.2025.1650691>
- Chhipa, B., & Dixit, P. (2024). Opportunities and challenges of using AI news anchors from the perspectives of Indian journalists. 24th International Conference on Knowledge Engineering and Knowledge Management (EKAW 2024).
- Chuan, C. H., Tsai, W. H. S., & Cho, S. Y. (2019). Framing artificial intelligence in American newspapers. *Proceedings of the 2019 AAAI/ACM Conference on AI, Ethics, and Society* (ss. 339–344). <https://doi.org/10.1145/3306618.3314285>
- Cihodaru-Ştefanache, Ş., & Podină, I. R. (2025). The uncanny valley effect in embodied conversational agents: A critical systematic review of attractiveness, anthropomorphism, and uncanniness. *Frontiers in Psychology*, 16, 1625984. <https://doi.org/10.3389/fpsyg.2025.1625984>
- Çağal, M. T., & Aslantaş, M. (2025). Türkiye'deki televizyon ana haber bültenlerinde yapay zekâ (YZ) söylemi. 13th International May 19 Innovative Scientific Approaches Congress (ss. 228–243).
- Çetinkaya, A. (2017). Çevrimiçi gazetecilikte fikri mülkiyet hakları sorunu. *AJIT-e: Academic Journal of Information Technology*, 8(30), 71–90. <https://doi.org/10.5824/1309-1581.2017.5.004.x>
- de-Lima-Santos, M.-F., & Ceron, W. (2022). Artificial intelligence in news media: Current perceptions and future outlook. *Journalism and Media*, 3(1), 13–26. <https://doi.org/10.3390/journalmedia3010002>
- Demir, G., & Kılıçgedik, M. (2025). Use of generative AI in news production in Türkiye: 'A threat or an opportunity?' *Connectist: Istanbul University Journal of Communication Sciences*, 68, 36–53. <https://doi.org/10.26650/CONNECTIST2025-1650211>
- Diel, A., Weigelt, S., & MacDorman, K. F. (2021). A meta-analysis of the uncanny valley's independent and dependent variables. *ACM Transactions on Human-Robot Interaction*, 11(1), 1–33. <https://doi.org/10.1145/3470742>
- Dumanlı Kürkçü, D. (2018). Veri gazeteciliği: Gazeteciliğin ve gazetecilerin geleceği. *Kurgu*, 26(3), 101–116. <https://izlik.org/JA-46AN59SF>
- Dumanlı Kürkçü, D., & Mengü, M. M. (2025). Artificial intelligence-supported journalism and approaches to journalism. B. Ayhan & Z. Özkeçeci (Ed.), *Reshaping journalism and communications with AI* (ss. 41–61) içinde. IGI Global Scientific Publishing.
- Eke, N. P., & Genç, M. (2023). Hakikati inşa etmek: Fotoğraf, yapay zekâ, kimlik ve mekân ilişkisi. *İletişim ve Toplum Araştırmaları Dergisi*, 3(2), 358–377. <https://doi.org/10.59534/jcss.1354692>
- Emiroğlu Karahan, S. (2021). Dönüşen iletişim teknolojilerinin haber üretim süreci ve gazetecilik mesleğine etkileri. *Akademik Açık*, 1(2), 5–43. <https://izlik.org/JA22JB63LM>
- Erdoğan Sepetci, N. (2025). Viewer perceptions on AI-supported digital newscasters: A qualitative analysis in the context of parasocial interaction theory. *Etkileşim*, 16, 284–306. <https://doi.org/10.32739/etkilesim.2025.8.16.314>
- Fitzpatrick, A., Byrne, A. K., Headley, A., Sanders, J. G., Petrie, H., Jenkins, R., & Baker, D. H. (2025). Neural correlates of the uncanny valley effect for robots and hyper-realistic masks. *PLOS ONE*, 20(4), e0311714. <https://doi.org/10.1371/journal.pone.0311714>
- Gerlich, M. (2023). The power of virtual influencers: Impact on consumer behaviour and attitudes in the age of AI. *Administrative Sciences*, 13(8), 178. <https://doi.org/10.3390/admsci13080178>
- Gezgin, S. (2002). Geleneksel basın ve internet gazeteciliği. S. Yedig & H. Akman (Ed.), *İnternet çağında gazetecilik içinde*. Metis Yayınları.
- Guanah, J. S., Agbanu, V. N., & Obi, I. (2020). Artificial intelligence and journalism practice in Nigeria: Perception of journalists in Benin City, Edo State. *International Review of Humanities Studies*, 5(2). <https://doi.org/10.7454/irhs.v0i0.268>
- Guo, Q., Rungsisawat, S., & Liu, C. (2025). The future of talk shows: AI-driven virtual hosts and their impact on media communication: A systematic literature review. *Journal of Advances in Humanities Research*, 4(2), 306. <https://doi.org/10.56868/jadur.v4i2.306>
- Higgins, D., Zhan, Y., Cowan, B. R., & McDonnell, R. (2023). Investigating the effect of visual realism on empathic responses to emotionally expressive virtual humans. *Proceedings of the ACM Symposium on Applied Perception 2023* (ss. 1–8). <https://doi.org/10.1145/3605495.3605799>
- Horton, D., & Wohl, R. R. (1956). Mass communication and para-social interaction: Observations on intimacy at a distance. *Psychiatry*, 19(3), 215–229. <https://doi.org/10.1080/00332747.1956.11023049>
- Huang, Y., & Yu, Z. (2023). Understanding the continuance intention for artificial intelligence news anchor: Based on the expectation confirmation theory. *Systems*, 11(9), 438. <https://doi.org/10.3390/systems11090438>

- Işık, U., Ölçekçi, H., & Koz, K. A. (2022). Yapay zeka ve algoritma ekseninde gazeteciliğin geleceği ve toplum için anlamı. *Gümüşhane Üniversitesi İletişim Fakültesi Elektronik Dergisi*, 10(2), 1248–1275. <https://doi.org/10.19145/e-gifder.1129929>
- Kars, N. (2012). Televizyon haberciliğinde kişiler ve görevleri. *İstanbul Üniversitesi İletişim Fakültesi Dergisi*, 15. <https://doi.org/10.17064/iüifhd.07279>
- Kumar, S., Kumar, R., Raj, A., & Genesis, B. C. W. (2024). A study on news anchors' biases in prime-time debate and its effect on the credibility of TV news channels. *Journal of the Asiatic Society of Mumbai*, 98(1), 1171–1189.
- Kurtz, H. (2002, 18 Ekim). Robotic journalism: Google introduces human-less news. *Washington Post*.
- Lamprou, S., Dekoulou, P., & Kalliris, G. (2025). The critical impact and socio-ethical implications of AI on content generation practices in media organizations. *Societies*, 15(8), 214. <https://doi.org/10.3390/soc15080214>
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33(1), 159–174. <https://doi.org/10.2307/2529310>
- Latar, N. L. (2014). The robot journalist in the age of social physics: The end of human journalism? G. Einav (Ed.), *The new world of transitioned media: Digital realignment and industry transformation içinde*. Springer International Publishing.
- Latar, N. L. (2018). *Robot journalism: Can human journalism survive?* World Scientific Publishing.
- Lee, S. M., & Kim, T. Y. (1998). A news on demand service system based on robot agent. *Proceedings of the 1998 International Conference on Parallel and Distributed Systems* (ss. 528–532). <https://doi.org/10.1109/ICPADS.1998.741128>
- Lewis, S. C., Guzman, A. L., Schmidt, T. R., & Lin, B. (2025). Generative AI and its disruptive challenge to journalism: An institutional analysis. *Communication and Change*, 1, Madde 9. <https://doi.org/10.1007/s44382-025-00008-x>
- Li, X., & Yang, L. (2023). Intelligence unleashed: The fusion of artificial intelligence and news anchoring. *International Journal of Scientific and Management Research*, 6(7), 124–140. <https://doi.org/10.37502/IJSMR.2023.6708>
- Liu, Q. (2025). Generative AI and journalism ethics: Controversies over ChatGPT. *Journal of Information Technology and Policy*. <https://doi.org/10.62836/jitp.2025.346>
- Londoño-Proano, C., & Buele, J. (2025). Can artificial intelligence replace journalists? A theoretical approach. *Frontiers in Communication*, 10, 1537146. <https://doi.org/10.3389/fcomm.2025.1537146>
- Matsumoto, R., Nakayama, H., Harada, T., & Kuniyoshi, Y. (2007). Journalist robot: Robot system making news articles from real world. 2007 IEEE/RSJ International Conference on Intelligent Robots and Systems. <https://doi.org/10.1109/IROS.2007.4399598>
- McCarthy, J., Minsky, M. L., Rochester, N., & Shannon, C. E. (2006). A proposal for the Dartmouth summer research project on artificial intelligence, August 31, 1955. *AI Magazine*, 27(4), 12.
- Mori, M., MacDorman, K. F., & Kageki, N. (2012). The uncanny valley [From the field]. *IEEE Robotics & Automation Magazine*, 19(2), 98–100. <https://doi.org/10.1109/MRA.2012.2192811>
- Oh, S., & Jung, J. (2025). Harmonizing traditional journalistic values with emerging AI technologies: A systematic review of journalists' perception. *Media and Communication*, 13, Madde 9495. <https://doi.org/10.17645/mac.9495>
- Okay, A. S. (2021). *Gelenekselden dijital içeriğin üretimi ve dönüşümü: Dijital habercilik bağlamında bir araştırma* [Yayımlanmamış Doktora Tezi]. İstanbul Üniversitesi.
- Omeish, F., Shaheen, A., Alharthi, S., & Alfaiza, A. (2025). Between human and AI influencers: Parasocial relationships, credibility, and social capital formation in a collectivist market. *Discover Sustainability*, 6(116), 1–22. <https://doi.org/10.1007/s43621-025-00891-w>
- Özçelik, N., & Batur, M. (2025). ALARA örneğinde yapay zekâ spikerinin dijital kimliği: Kullanıcı yorumları üzerine nitel bir analiz. *İnönü Üniversitesi İletişim Fakültesi Elektronik Dergisi*, 10(2), 685–707. <https://doi.org/10.47107/inifedergi.1737905>
- Özkeçeci, Z. (2018). The perspectives of Turkish journalism: A balancing act between limited freedom of the press and limited alternatives. *SWS-Rundschau*, 58(3), 349–371.
- Özkeçeci, Z. (2019). Citizen journalism: Opportunities and challenges. *Asya Studies*, 2(8), 33–39. <https://doi.org/10.31455/asya.565973>
- Pavlik, J. (2000). The impact of technology on journalism. *Journalism Studies*, 1(2), 229–237. <https://doi.org/10.1080/14616700050028226>
- Ratajczyk, P. (2022). Shape of the uncanny valley and emotional attitude toward robots assessed by an analysis of YouTube comments. *International Journal of Social Robotics*, 14, 1787–1803. <https://doi.org/10.1007/s12369-022-00897-6>
- Rinehart, A., & Kung, E. (2022). Artificial intelligence in local news: A survey of US newsrooms' AI readiness. *The Associated Press*.
- Saç, H. (2024). İnsanı robotlara yönelik negatif algı ve tekinsiz vadi etkisi: YouTube kullanıcı yorumları üzerine bir inceleme. *Beykoz Akademi Dergisi*, 12(Sınırsız: Dünya Yapmak ve Ötesi), 1–23. <https://doi.org/10.14514/beykozad.1365281>
- Sánchez-García, P., Merayo-Álvarez, N., Calvo-Barbero, C., & Díez-Gracia, A. (2023). Spanish technological development of artificial intelligence applied to journalism: Companies and tools for documentation, production and distribution of information. *Profesional de la Información*, 32(2). <https://doi.org/10.3145/epi.2023.mar.08>
- Saruhan, Ş. C., & Özdemirci, A. (2013). *Bilim, felsefe ve metodoloji*. Beta.
- Simfa, E., Sprogis, D. K., & Melbardis, M. (2025). The role of human-like AI in effective human-machine communication. *Discover Artificial Intelligence*, 5, 341. <https://doi.org/10.1007/s44163-025-00559-4>
- Spyridou, P., & Ioannou, M. (2025). Exploring AI amid the hype: A critical reflection around the applications and implications of AI in journalism. *Societies*, 15(2), 23. <https://doi.org/10.3390/soc15020023>
- Sultan, M., & Amir, A. S. (2025). The evolution of journalism in the digital age: Analyzing the impact of social media on news process and information integrity. *MediaKom: Jurnal Ilmiah Komunikasi*, 14(2). <https://doi.org/10.22441/mediakom.v14i2.30605>
- Thiraviyam, T. (2018). Artificial intelligence marketing. *International Journal of Recent Research Aspects*, 449–452.
- Toptaş, S. (2024). Geleneksel radyodan yapay zekâ radyo yayıncılığına; 2. dalga podcastler ve alternatif yayıncılık. *Akdeniz Üniversitesi İletişim Fakültesi Dergisi*, 46, 133–152. <https://doi.org/10.31123/akil.1537647>
- Vaitonyté, J., Barakova, E. I., Roesch, E. B., & Lourens, T. (2022). A scoping review of the neural evidence on the uncanny valley. *Neuroscience & Biobehavioral Reviews*, 143, 435–455. <https://doi.org/10.1016/j.neubiorev.2022.10.006>
- Voinea, D. V. (2025). Reconceptualizing gatekeeping in the age of artificial intelligence: A theoretical exploration of artificial intelligence-driven news curation and automated journalism. *Journalism and Media*, 6(2), 68. <https://doi.org/10.3390/journalmedia6020068>
- Xue, K., Li, Y., & Jin, H. (2022). What do you think of AI? Research on the influence of AI news anchor image on watching intention. *Behavioral Sciences*, 12(11), 465. <https://doi.org/10.3390/bs12110465>
- Yang, B. (2025). Could AI anchors replace real anchors in news reporting? *Transactions on Computer Science and Intelligent Systems Research*, 9, 569–578. <https://doi.org/10.62051/hsjafy94>

The Mediating Role of Organizational Belonging in the Effect of Hospital Food on Employee Motivation

Hakkı Çilginoğlu / Assoc. Prof. Dr. 

Kastamonu University, Faculty of Tourism, Department of Gastronomy and Culinary Arts
hcilginoglu@kastamonu.edu.tr

Abstract

The aim of this study is to determine the effect of public and private healthcare professionals' perceptions of hospital food on their motivation and to identify the mediating effect of organizational belonging in this relationship. The sample of the study consists of 503 public and private healthcare professionals reached through simple random sampling. The study first examined the literature and the relationships among the variables; subsequently, normality, validity and reliability tests were carried out to assess the suitability of the collected data for analysis. A correlation test was then conducted through the SPSS program to examine the relationships among the variables, and structural equation modeling was performed through the AMOS program to test the research hypotheses. When the analyses conducted within the scope of the research are examined, it has been determined that healthcare professionals' perception of hospital food has a significant positive ef-

fect on employee motivation, that hospital food has a significant positive effect on organizational belonging, and that organizational belonging has a significant positive effect on employee motivation. The results of the structural equation modeling carried out for the primary aim of the research revealed that organizational belonging mediates the relationship between the perception of hospital food and employee motivation; however, it has been seen that this mediating effect is "partial." The partial mediating effect of organizational belonging demonstrates that it indirectly increases healthcare professionals' perception of hospital food and their motivation and serves as a catalyst within this dual process.

Keywords: Hospital, Food, Motivation, Organizational Belonging, Structural Equation Modeling.

JEL Codes: D23, I11, M54

Citation: Çilginoğlu, H. (2026). The mediating role of organizational belonging in the effect of hospital food on employee motivation. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Health complexes, by virtue of their structure, are among the leading organizations that involve dynamic processes and that, owing to the nature of the service they provide, must be managed through strategic processes in which human resources are of the utmost importance. The high level of labor, productivity and focus of healthcare professionals directly shapes the quality of the health services provided as well as patient and public health. It is therefore possible to mention that the identification and development of the factors shaping the motivation of the individuals who carry out workflow processes in the working environment constitute a current field of research in the management, health, gastronomy and organizational behavior literature. Employee motivation involves not only macro factors such as financial, material and career opportunities but also micro factors such as the order, quality and comfort of the working environment (Yanık & Yılmaz, 2011). At this point, the food services that support healthcare professionals and help sustain their energy throughout the day are assumed to be one of the most concrete examples of these micro factors.

The quality, variety and hygiene of the food services offered in health complexes are among the leading factors that make the individual carrying out workflow processes feel valued. The increase in the motivation level of an employee who receives quality food services also develops, over time, their commitment and belonging to their institution. As a concept, organizational belonging is the employee's internalization of the aims and goals of the organization and their perception of themselves as a part of that group (Dönmez & Çılgınoğlu, 2022). In this context, alongside the direct effects of hospital food on employee motivation, the bridging role assumed by organizational belonging in the background of this relationship will make an in-depth contribution to the health management, organizational behavior and gastronomy literature and to this multidisciplinary field of study.

Proceeding from this, the following research questions will be addressed within the scope of the study:

- (1) Does the perception of hospital food affect employee motivation?
- (2) Does the perception of hospital food affect organizational belonging?
- (3) Does organizational belonging affect employee motivation?
- (4) Is there a mediating effect of organizational belonging in the relationship between the perception of hospital food and employee motivation?

In the first section of the study, the relevant literature concerning the concepts of the perception of hospital food, employee motivation and organizational belonging examined within the scope of the re-

search has been reviewed. In addition, the theoretical background concerning the relationships among the research variables has been examined, and the research hypotheses have been formulated in this context.

The second section of the study presents information such as the method preferred in the research, the research model, why and how the sample group was selected, the scales used to collect data, and the demographic outputs of the participants.

The third section of the study presents the findings and interpretations concerning the analysis of the data set obtained from the participants. In this context, skewness, kurtosis, mean and standard deviation values are given in order to determine whether the collected data conform to a normal distribution. Cronbach's Alpha, KMO, Bartlett's test of sphericity and Confirmatory Factor Analysis (CFA) results are given in order to test the reliability and validity of the scales used in the research. In the final part of the third section, path analysis results are presented for the testing of the hypotheses established within the scope of the research, and the acceptance/rejection results of the hypotheses are given.

2. Literature Review and Hypothesis Development

2.1. The Concepts of Perception of Hospital Food, Employee Motivation and Organizational Belonging

2.1.1. The relationship between the perception of hospital food and employee motivation

In today's management approach, which may be characterized as postmodern, motivation comes at the forefront of the fundamental factors affecting the productivity and performance level of human resources. In the health sector, which contains factors such as high labor, intense work tempo, uncertainties and stress, making motivation sustainable is a very important point for both individual and public health. When the motivation processes of healthcare professionals are examined today, it is understood that not only traditional approaches such as wages, promotions and rewards but also elements that strengthen and support the workflow processes and the working environment have a determining effect. Specific to the health sector, one of these strengthening and supporting elements is the food services offered within the hospital.

Hospital food constitutes one of the most important sources of motivation and energy for healthcare professionals in the work environment. Indeed, a study in the literature has determined that a connection exists between the satisfaction healthcare workers

derive from staff food services and their perceptions of and motivational approaches toward the institution (Dönmez & Çılgınoğlu, 2022, p. 1472). It has similarly been observed that, in health complexes procuring food services through outsourcing, the staff's perception of food services is associated with their perception of comfort and motivation in the working environment (Yanık & Yılmaz, 2011, p. 132).

The attitude of healthcare professionals toward the food services offered in the hospital environment directly affects their performance levels. When the employees' perception of the food services and the surrounding environment offered in the hospital setting is examined systematically in the literature, it is revealed that the quality of the food offered and the physical conditions of the dining environment represent a transformative power over employees' motivation, work quality, job satisfaction and institutional perceptions (McSweeney et al., 2025, p. 14). Proceeding from this, the correct analysis of phenomena such as taste, hygiene, atmosphere, food variety and service quality, which constitute the quality of food services in health complexes, involves a strategic process for the sake of managing the motivation processes of healthcare professionals (Akbaş, 2019, p. 78).

When the food-and-beverage and gastronomy literature is examined in addition to the health and organizational behavior literature, it is seen that studies support the motivational effect of presentation and service standards on the individual. Research on the motivation of kitchen staff in open-kitchen-concept gastronomy enterprises shows that a transparent working environment directly increases intrinsic motivation (Mutlu & Seçim, 2025, p. 1715). Addressing the motivational processes of consumers or human resources regarding food processes constitutes a basis for determining how individuals' level of happiness and satisfaction with the service offered to them shapes their perceptions of work processes and their institutions (Semerci & Akbaba, 2018, p. 48).

The food services offered in health complexes are not merely an operational continuity process but also a strategic output reflecting institutional quality and sustainability. The food services offered in complexes assume a critical role in the quality of the food, hygiene standards and the prevention of malnutrition (Akbulut & Yılmaz, 2016, p. 35). In light of all these data, it is possible to mention that the perception of the food services offered in health complexes is a phenomenon that regulates and activates the motivation sources of healthcare professionals. In light of this literature, the first hypothesis of the research has been formulated:

H1: A favorable perception of hospital food has a positive effect on employee motivation.

2.1.2. The relationship between the perception of hospital food and organizational belonging

In today's working life, there are many environmental factors that determine the levels of organizational outcomes such as organizational identification, workplace happiness, organizational commitment, belonging and loyalty of the individuals who carry out workflow processes. Organizational belonging, one of these, enables employees to see themselves as an important member and part of the institution or organization in which they are located; the formation and shaping of this feeling is directly related to the quality of the supportive material and moral services offered in the workflow processes and the workplace environment. When the relationships among service quality, satisfaction, contentment and commitment mechanisms specific to the health sector are examined, it is seen that service quality is directly related to the individual's belonging and commitment to their institution. In this context, the quality of the food service offered to healthcare professionals in health complexes is regarded as a "value" given to employees by the institution and is envisaged as a strategic approach that strengthens institutional bonds (Özeltürkay & Orel, 2016, p. 62).

The food service offered in health complexes and the positive approach of the individuals who sustain workflow processes toward these services constitute a fundamental step in the construction of a sense of belonging by increasing satisfaction and contentment in the working environment. Studies in the literature (Yanık & Yılmaz, 2011; Dönmez & Çılgınoğlu, 2022) show that the food services offered in the hospital environment are directly related to organizational belonging. One of the most important dimensions through which a positive perception of hospital food increases organizational belonging is the social integration, community and social networks that mealtimes bring with them. The communal eating together of all healthcare professionals in the hospital environment (physicians, nurses, technical units, administrative units, cleaning service units, etc.) builds an "institutional community" and an "organizational culture" (Masood et al., 2026, p. 8). While the phenomenon of eating together strengthens the social interaction and capital among individuals within the organization, it also allows for the presence of a collective sense of belonging to the institution. As a result, the "togetherness-bringing" state of hospital food is a critical managerial leverage that constitutes healthcare professionals' adoption of their institution and their organizational commitment.

Accordingly, the second hypothesis of the research has been formulated:

H2: A favorable perception of hospital food has a positive effect on organizational belonging.

2.1.3. The relationship between organizational belonging and employee motivation

In today's employee-management approach, the phenomenon of motivation has become an inseparable part of organizational belonging (Tanrıverdi & Oktay, 2001). In the relevant literature, belonging and motivation come at the forefront of the strategic concepts that affect the performance of individuals carrying out workflow processes through their perceptions of their work. The concept of organizational belonging can be defined as the individual's psychological internalization of the organization or community in which they are located; motivation, in turn, can be defined as the driving force that transforms this belonging into action. Research shows that individuals' belonging to the organization in which they are located positively affects their motivation (Demir, 2019; Basır, 2025).

The sustainability of the phenomenon of organizational belonging involves a dynamic process management that activates the motivation processes of the individuals operating in the organization. In the health sector, organizational belonging expresses a strategic importance in work processes that require high productivity, performance and coordination. A healthcare professional with a high sense of belonging participates in workflow processes with stronger motivation (Türkeli, 2024, p. 403).

Studies examining the effect of motivational phenomena on organizational commitment in organizational life show that work motivation is one of the most important antecedents of positive psychological outcomes such as organizational belonging, dedication, satisfaction and happiness (Salleh et al., 2016, p. 141).

The individual's acceptance by the group or organization in which they are located and their feeling of belonging are inevitable for the sustainability of the phenomenon of motivation in today's work processes. Organizations that can realize the phenomena of diversity and justice take into account that, when they provide their employees with a sense of belonging to the organization, work motivation toward institutional goals also rises (Brown et al., 2025). In summary, organizational belonging and employee motivation express a symbiotic relationship that mutually nourishes one another and are critical components that enable the individual to internalize organizational goals and that form the basis of organizational effectiveness. As a result, when the domestic and foreign literature is examined, it is seen that belonging to the institution and employee motivation affect one another. In light of the literature, the third hypothesis of the research has been formulated:

H3: *Organizational belonging has a positive effect on employee motivation.*

2.2. The Mediating Role of Organizational Belonging

In the organizational behavior and modern organizational management literature, the role of mediating variables is frequently examined when the physical and environmental variables present in the working environment explain the psychological outcomes of individuals. Organizational belonging (the feeling of commitment), in turn, constitutes a bridge between the structural supports in the working environment and work outcomes. While research in service enterprises examines the effects of intrinsic factors on performance, it demonstrates the significant mediating effect of the phenomenon of organizational belonging on this process, alongside the direct relationship among the variables (Seyhan, 2021, p. 421).

The mediating effect of the phenomenon of organizational belonging expresses a central position in shaping and directing the organizational attitudes and approaches of employees. Some studies emphasize that the sense of belonging is a key mediating function and transforms institutional perceptions into positive outcomes (Chummar, 2024, p. 45). In addition, it is seen that the phenomenon of organizational belonging also mediates the relationship between psychological empowerment and the intention to share knowledge (Seo, 2023, p. 387). In particular, when the organizational commitment of young individuals newly participating in working life is examined, it is thought that instilling a sense of organizational belonging is a carrying mediating effect in the relationship between individual performance and organizational goals (Botezat et al., 2020, p. 78).

The services and support provided to staff in health complexes are not only a fundamental element affecting patient care and hospital quality but also a dynamic that shapes the organizational processes and productivity of employees. Indeed, satisfaction studies on hospital food services in the literature directly and positively affect the satisfaction perceptions of both the service recipients and the individuals within the institution (Dall'Oglio et al., 2015, p. 572). The food services healthcare professionals receive in the hospital environment express an important meaning that shapes psychological outcomes beyond a simple physiological need. The food service offered to healthcare professionals in health complexes thus serves as a bridge with respect to the level of integration the employee feels toward institutional culture. When all this information is examined, it is possible to mention that hospital food serves as a fundamental leverage that activates the motivation levels of healthcare workers, increases job satisfaction and contentment, binds them to the institution and develops the sense of belonging. Accordingly, the main hypothesis within the scope of the research has been formulated:

H4: *There is a mediating effect of organizational belonging in the relationship between the perception of hospital food and employee motivation.*

The basis of this research established regarding the mediating effect of organizational belonging in the relationship between hospital food and employee motivation is explained through Belonging Theory. As a concept, Belonging Theory is a theory that explains the importance of belonging in organizations and the individual's being accepted and valued within a group, community or social network (Mumcu, 2024). Groups or organizations are structures in which the individuals operating within them are satisfied not only with material resources but also with moral resources, namely social and psychological needs. A concrete input such as hospital food services is regarded as a direct indicator of the value given to healthcare professionals and the care shown to them. In the employee who feels that they are valued by the institution and that their basic physiological needs are cared for, organizational identification, commitment and sense of belonging to the institution increase positively. This positive perception creates a strong sense of organizational belonging in the individual, and as a result of this perception it serves as a motivator that raises motivation levels.

In other words, the quality and nature of the physical opportunities offered evolve into a psychological trust and ownership formed in the employee's mind, and this feeling in turn brings about productivity, performance and motivation regarding work. Therefore, in the context of Belonging Theory, it is possible to mention that belonging to the institution expresses an integrative and performance-increasing triggering mediating effect.

3. Method

This section of the study presents the method of the research, its model, the population and sample, the scales used for data collection, and the statistical methods used in the analysis of the data.

3.1. Research Model

As a result of the review of the relevant literature, the research model formulated to determine the mediating effect of organizational belonging in the relationship between the perception of hospital food and employee motivation is given in Figure 1 below.

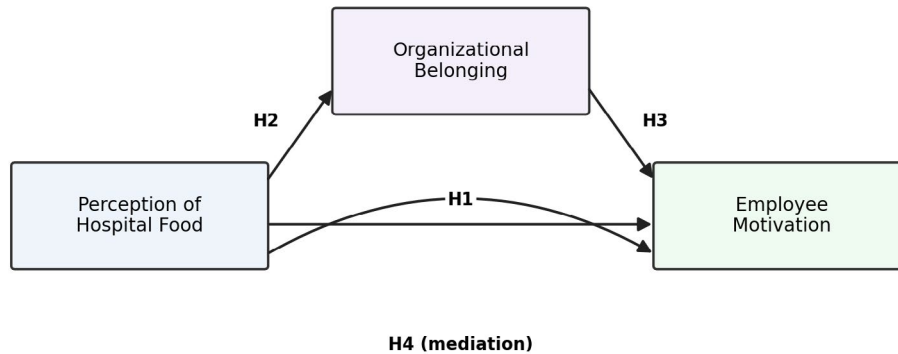


Figure 1. Research Model

3.2. Population and Sample of the Research

The research covers the private and public healthcare workers operating in health complexes in the province of İstanbul. The research was initiated with the "Ethics Committee Approval Document" of the Kastamonu University Scientific Research and Publication Ethics Committee. The main reason for selecting the boundaries of İstanbul province as the population within the scope of the research is that it represents the center with the highest healthcare-personnel employment in Türkiye, its accessibility, the presence of public-private sectoral diversity, and its being more reliable in terms of the sample's representation of the population. Simple random sampling was used in the research. In the research, participants were reached through face-to-face surveys and Google Forms, and a total of 550 survey

forms were distributed. After removing surveys that were deemed to be flawed, biased, or incomplete, 503 survey forms were considered correct and valid, and the analysis began.

According to the data, it has been reported that healthcare workers operating throughout Türkiye number 878,373 in the public sector and 1,436,000 when private institutions are included. The province of İstanbul constitutes almost 30% of this total, and it is known that the total number of public-private employees is over 200,000 (Republic of Türkiye Ministry of Health, 2024). Therefore, within the scope of the research, this number was taken as the basis for determining the minimum number of questionnaires required by the research, and the following formulation was used (Özer, 2004):

$$n = (N \cdot Z^2 \cdot p \cdot q) / [(N - 1) \cdot d^2 + Z^2 \cdot p \cdot q]$$

In structural equation modeling in the field of social sciences, in cases where the population is not exactly known, with Cochran's (1977) "infinite population" formula, a 95% confidence interval and a 5% margin of error, the sample size value is accepted as 384.16 (384 or 385). This sample size is generally accepted in the literature as the "gold standard," and it is assumed that the representational capacity of the research is thereby ensured (Westland, 2010). Therefore, within the scope of the research, it is assumed that population-sample compatibility is ensured (Cohen et al., 2013).

Of those operating in health institutions who participated in the research, 303 are women and 200 are men. Of the participants, 120 are in the 18–29 age range, 118 in the 30–39 age range, 115 in the 40–49 age range, and the remaining 150 participants are in the 50-and-over segment. In terms of marital status, 346 of the participants are married and 157 are single. Only 58 of the participants are high school graduates, while the rest hold associate, undergraduate and graduate education levels.

3.3. Scales of the Research

The statements on the questionnaire were determined with a 5-point Likert-type scale. In the first section of the questionnaire, questions concerning

demographic variables were asked; in the second section, the scale items derived by Bıyıklı (2018) in a doctoral dissertation were used in order to measure healthcare workers' perceptions of hospital food. The reliability of the scale was found to be 0.92 in the dissertation study.

In the third section of the questionnaire formulated within the scope of the research, the "work motivation" scale developed by Blais et al. (1993) and validated by Yılmaz (2012) was used in order to measure the motivation of healthcare workers. The reliability found by the researchers is 0.81.

In the fourth section of the research, the "organizational belonging sub-dimension" of the "organizational belonging perception scale" developed by Tatar and Uzun (2023) was used in order to measure healthcare workers' levels of belonging to the institution. The reliability of the "organizational belonging" scale was found to be 0.92 by the researchers.

4. Analysis and Findings

For the testing of the data collected within the scope of the research, first the analyses and findings concerning the normality test of the data (minimum, maximum, skewness, kurtosis) were examined, their suitability was verified, and the relevant results are given in Table 1 below.

Table 1. Skewness and Kurtosis Values

	N	Minimum	Maximum	Skewness	Kurtosis
Perception of Hospital Food	503	1.00	4.52	-.016	-.160
Employee Motivation	503	1.00	5.00	-.078	-.761
Organizational Belonging	503	1.00	4.71	-.065	1.97

As seen in Table 1, the skewness/kurtosis coefficients of the scales used in the research are given. According to a view used in the literature, skewness/kurtosis being between [-2 and +2] indicates that it is within acceptable limits and conforms to the assumption of normal distribution (Lewis-Beck et al., 2003). The values concerning the perception of hospital food, employee motivation and organizational

belonging show conformity to a normal distribution. A correlation analysis was conducted within the scope of the research in order to determine the relationship among the variables and to ascertain its direction. The findings concerning the descriptive statistics and correlation analysis are given in Table 2 below.

Table 2. Descriptive Statistics and Correlation Coefficients

	M	SD	1	2	3
1. Perception of Hospital Food	2.648	0.630	(.892)		
2. Employee Motivation	2.980	0.799	.243**	(.812)	
3. Organizational Belonging	2.729	0.480	.483**	.378**	(.765)

** p < .001. Values in parentheses are Cronbach's Alpha coefficients.

As seen in Table 2, the variable with the highest mean within the scope of the research is employee motivation. The standard deviation values being close to one another shows that the general distribution of the responses is stable and balanced. When the correlation relationships among the variables are examined, it is seen that all variables are positive and statistically significant ($p < .001$). The perception of hospital food and employee motivation ($r = .243$) represent a positive but low-level relationship, while the perception of hospital food and organizational belonging ($r = .483$) represent a moderate positive relationship. Organizational belonging and employee motivation ($r = .378$) show the presence of a moderate positive relationship. The correlation values among the variables being moderate, and the values not rising to very high levels ($r < .90$), shows that there is no multicollinearity problem and that the variables measure different concepts from one another (Tabachnick & Fidell, 2013).

Correlation analysis fundamentally reveals only whether the relationships among variables show co-variation, or the relationship of movement, and does not indicate any cause-and-effect relationship. In order to determine the cause-and-effect relationship in question, regression and path analysis are generally needed (Cohen et al., 2013).

In studies designed by preferring structural equation modeling, the statistical validity and reliability of the

established model constitute the basis for proving the values of the measurement tools used. The two values that constitute this basis in the SEM model are the Composite Reliability (CR) and Average Variance Extracted (AVE) calculations. In the literature, the CR value being greater than 0.70 and the AVE value being greater than 0.50 reveals the representational power of the values (Hair et al., 2019). The calculation formulas are given below:

$$CR = (\sum \lambda_i)^2 / [(\sum \lambda_i)^2 + \sum (1 - \lambda_i^2)]$$

$$AVE = \sum \lambda_i^2 / [\sum \lambda_i^2 + \sum (1 - \lambda_i^2)]$$

In addition, in order to check the reliability of the measurement tools used in the research, the Cronbach's alpha coefficient, the Kaiser–Meyer–Olkin (KMO) and Bartlett's Sphericity (BS) were examined. It is known that a Cronbach's Alpha value of 0.70 is the lower limit of acceptability (Nunnally & Bernstein, 1994). It is emphasized that a KMO value above .70 is at a "good" level for the sample size (Field, 2018). Furthermore, the significance of the Bartlett test values also shows that the sample is suitable for analysis (Bartlett, 1950).

The findings concerning the Cronbach's Alpha, CR and AVE values and the KMO and Bartlett's Sphericity tests are given in Table 3 below.

Table 3. Cronbach's Alpha Coefficients and CR–AVE Validities

Scale	No. of Items	KMO	Bartlett	Cronbach's Alpha	CR	AVE
Perception of Hospital Food	25	.950	8478.328 ($p = .000$)	.89	0.812	0.578
Employee Motivation	27	.917	6309.851 ($p = .000$)	.76	0.738	0.596
Organizational Belonging	7	.924	2640.399 ($p = .000$)	.81	0.804	0.622

The findings obtained in Table 3 above show that the measurement tools used in the research are reliable and valid.

Confirmatory Factor Analysis (CFA) was conducted in order to test the construct validity of the model and measurement tools established within the scope of the research, as well as the fit of the model with the collected data. Confirmatory factor analysis aims to measure the fit of the relationship between predefined observed variables and latent variables. This method, one of the fundamental building blocks of the structural equation model, statistically evaluates the fit between the model and the data through goodness-of-fit values such as Chi-square, AGFI, IFI, CFI and TLI (Gürbüz & Şahin, 2014; Brown, 2015).

The CFA results conducted in order to test the construct validity of the measurement tools and the measurement model used within the scope of the research are given in Table 4. As a result of the analysis, no item was removed from the perception-of-hospital-food and organizational-belonging scales; in the employee-motivation scale, "Item 3" was removed from the model because it remained below the 0.50 threshold value. After the removal of this item due to low factor loading, the convergent validity of the scale increased in the subsequent analyses, and an increase was observed in the goodness-of-fit statistics (Hair et al., 2019).

Table 4. Goodness-of-Fit Statistics of the Scales

Goodness-of-Fit Values	CMIN/DF	AGFI	IFI	CFI	TLI	RMSEA
Perception of Hospital Food	3.118	.904	.898	.908	.902	.074
Employee Motivation	2.996	.912	.924	.910	.916	.066
Organizational Belonging	1.996	.946	.944	.952	.948	.048
Measurement Model	2.992	.914	.918	.932	.930	.058

As a result of the analyses conducted in order to determine the goodness-of-fit levels of the model established within the scope of the research, it has been seen that the fit indices of the model are generally at an acceptable level. The comparative fit indices and the RMSEA value being within acceptable limits according to the literature shows that the model is in harmony with the data (Hu & Bentler, 1999). It has been observed that there is an incremental fit index (IFI = .898) in the model; however,

when evaluated together with the other fit indices, it has been determined that this situation is acceptable and does not harm the overall fit values of the model (Marsh et al., 2004).

4.1. SEM Model Results

The results concerning the findings obtained regarding the path analysis formulated for the research are presented in Figure 2.

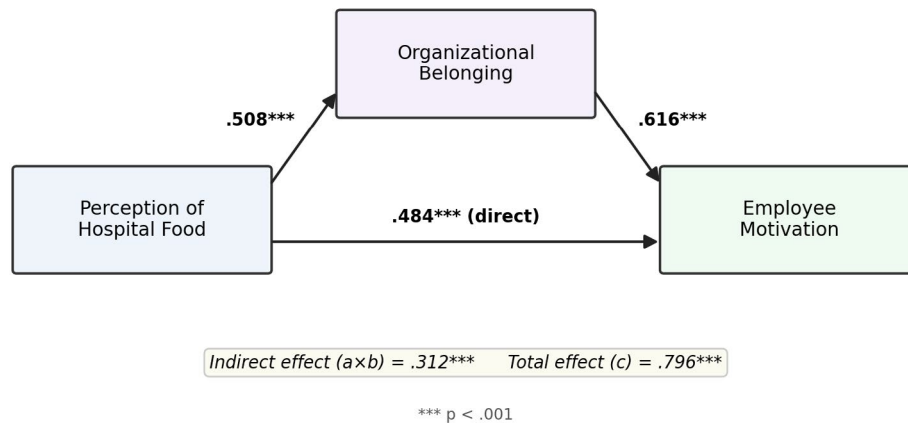


Figure 2. Structural Equation Model Results

The figure above shows the standardized regression coefficients. The H1, H2, H3 and H4 hypotheses concerning the model established within the scope of the research were tested, and their results are presented in Table 5 below.

In order to determine the relationships among the research variables, the direct, indirect and total effects were examined. While the direct effect examines the effect of the independent variable on the dependent variable (c'), the indirect effect examines

the effect of the independent variable on the mediator and the effect of the mediator variable on the dependent variable ($a \times b$). The total effect, in turn, is composed of the direct and indirect effect ($c = c' + a \times b$) (Hayes, 2017). In order to test the reliability of the indirect effect, the "bootstrapping" method, which is assumed to be more current in the literature and to contain strong results, was used (MacKinnon et al., 2004).

Table 5. SEM Analysis Results

Tested Path	β	SE	95% CI (Upper)	95% CI (Lower)
Perception of Hospital Food → Employee Motivation	.484	.042	.65	.24
Perception of Hospital Food → Organizational Belonging	.508	.064	.78	.38
Organizational Belonging → Employee Motivation	.616	.032	.82	.48

Total Effect (c)	.796*	.028	.96	.60
Direct Effect (c')	.484*	.044	.65	.36
Indirect Effect (a×b)	.312*	.036	.40	.22

* $p < .001$.

As a result of the analysis conducted using structural equation modeling, it is seen that the perception of hospital food has a significant and positive effect on employee motivation ($\beta = .484$, $p < .001$), that the perception of hospital food has a positive effect on organizational belonging ($\beta = .508$, $p < .001$), and that organizational belonging has a positive effect on employee motivation ($\beta = .616$, $p < .001$). According to these results, the H1, H2 and H3 hypotheses of the research have been accepted.

In order to be able to speak of a mediating relationship among the research variables, the VAF (Variance Accounted For) value needs to be calculated (Kara et al., 2023). Within the scope of the research, the VAF value (Indirect Effect / [Indirect Effect + Direct Effect]) was calculated in order to show the portion of the indirect effect within the total effect. As a result of the analysis, the VAF value was calculated as $0.312 / (0.312 + 0.484) = 0.391$. According to the classification made, the VAF value being greater than 0.20 indicates a partial mediating effect (if $VAF > 0.80$, full mediation; if $0.20 \leq VAF \leq 0.80$, partial mediation; if $VAF < 0.20$, no mediating effect) (Nitzl et al., 2016). Therefore, a partial mediating effect of organizational belonging was determined in the relationship between the perception of hospital food and employee motivation, and the H4 hypothesis has been accepted.

5. Conclusion

This research was conducted in order to reveal the relationship among healthcare professionals' perception of hospital food, employee motivation and organizational belonging and, in addition, to determine the mediating effect of organizational belonging. When the relevant literature is examined, it is seen that the variables of hospital food, employee motivation and organizational belonging have been researched as separate variables on different sample groups. It is seen that studies concerning the variables of the perception of hospital food, employee motivation and organizational belonging in health complexes, which directly concern individual and public health, are few, and that there is no study in which these three variables have been examined together. In this context, this research conducted on 503 healthcare professionals operating in the province of İstanbul stands at an important point, since it fills this gap seen in the literature and is an original study directed toward healthcare professionals.

Some analyses were conducted in order to test the structural validity and reliability of the scales used within the scope of the research. The Cronbach's Alpha coefficients were found to be .892 for the perception of hospital food, .812 for employee motivation and .765 for organizational belonging. It is known that these values are within acceptable limits (Nunnally & Bernstein, 1994). The results of the KMO and Bartlett's Sphericity tests, which are the other tests conducted for reliability and applied to the scales, are also seen to be reliable, as shown in Table 3. When the confirmatory factor analyses are examined, it has also been seen that the research scales and the measurement model are within good and acceptable limits. The goodness-of-fit statistics of the scales used and the research model established within the scope of the research are given in Table 4.

The results of the path model established within the framework of structural equation modeling (SEM) show that hospital food has a significant and positive effect on employee motivation ($\beta = .484$, $p < .001$), that hospital food has a positive effect on organizational belonging ($\beta = .508$, $p < .001$), and that organizational belonging has a positive effect on employee motivation ($\beta = .616$, $p < .001$). Therefore, the hypotheses established within the scope of the research (H1, H2, H3) are supported. As a result of the mediation analysis, the VAF value was calculated as $0.312 / (0.312 + 0.484) = 0.391$ (Kara et al., 2023). According to the classification made, the VAF value being greater than 0.20 (if $VAF > 0.80$, full mediation; if $0.20 \leq VAF \leq 0.80$, partial mediation; if $VAF < 0.20$, no mediating effect) shows that there is a partial mediating effect (Nitzl et al., 2016). Therefore, the H4 established regarding the mediating effect within the scope of the research has been accepted.

In this research, it was investigated whether healthcare professionals' perceptions of hospital food have an effect on employee motivation and whether there is a mediating effect of organizational belonging within this relationship. Within the scope of this research, examined empirically in the context of organizational belonging theory, the findings obtained have revealed results indicating that hospital food services are not only a physical need but also shape the sense of organizational belonging and employee motivation.

When the effect of food services on employee perception is addressed, the findings obtained show similarity with existing research in the literature. McSweeney et al. (2025) emphasize that the food

environment and services formed in health complexes have an effect on healthcare professionals' perceptions and that this effect is an integral component of the workplace experience. The research conducted by Dönmez and Çilginoğlu (2022), on the other hand, emphasized that the quality of the food services offered is a very critical factor in terms of employee satisfaction. Therefore, it is possible to mention that a positive perception of hospital food is a direct factor affecting the motivation factors and belonging of healthcare professionals.

The mediation analysis, which constitutes the most fundamental aim of the research, is explained through organizational belonging theory. Belonging Theory holds that the individual's feeling of being a part of the organization in which they operate directly affects their behavioral and psychological positive outcomes (Mumcu, 2024). Demir (2019), who examines the factors affecting organizational belonging, emphasizes that the concept of organizational belonging is composed not of a single dimension but of multiple processes, and that the physical and social factors in the organizational environment trigger the sense of belonging. The "partial mediation" effect obtained within the scope of the research, in turn, shows that hospital food increases organizational belonging by triggering healthcare professionals' feeling of being valued by the institution, and that increased belonging gives a strong impetus to motivation. As a result, the food services offered in health complexes positively affect healthcare professionals' belonging to the institution, and organizational belonging, in turn, successfully realizes the model established within the scope of the research by increasing employees' motivation.

As in every research, the study conducted in order to determine the mediating effect of organizational belonging in the relationship between hospital food and employee motivation has limitations to be developed in future research. Since the data collected within the scope of the research were collected within a certain time frame and include only healthcare professionals working in health complexes, this constitutes a limitation on the geographical and institutional generalizability of the results. Another limitation is that the structural differences of the food services offered in health complexes were not taken into account (being carried out with hospital resources or through outsourcing, etc.), and they were evaluated only through a single service structure.

At this point, some suggestions can be made for both practitioners and future researchers in line with the empirical results obtained and these limitations. From the perspective of health-complex managers and practitioners, it is important that, in order to increase the motivation levels of healthcare professionals, a focus be placed not only on medical and administrative processes but also on the physical,

social and sensory quality of the hospital food environment, in which the necessary investments should be made. It is recommended to measure staff satisfaction with food services at regular intervals and to produce quick and constructive solutions for the disruptions detected. In addition, it is thought that it is necessary not to overlook the fact that food services are a strategic tool that nourishes the perception of "being valued by the institution" among employees and thereby triggers organizational belonging.

The following suggestions can be offered for future studies. In future research, comparative analyses can be conducted between health complexes that provide food services within their own structure and health complexes that use outsourcing, in terms of employees' levels of belonging and motivation. Furthermore, in order to increase the explanatory power of the empirical model, the mediating role of organizational belonging can be retested within a broader framework by adding different organizational behavior dimensions such as satisfaction, commitment and workplace happiness, or the general well-being of healthcare workers, to the model alongside the existing variables.

Ethical Approval

Ethics committee approval was received from Kastamonu University (dated 02.07.2026 and numbered 2600079711).

Funding Acknowledgement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Competing Interests

The authors declare no competing interests.

References

- Akbaş, E. (2019). Hastane çalışanlarının yemek kalitesi algısını etkileyen faktörler [Master's thesis, Dokuz Eylül University].
- Akbulut, G., & Yılmaz, B. (2016). Hastane malnütrisyonunun önlenmesinde yemek hizmetlerinin rolü. *Türkiye Klinikleri J Nutr Diet-Special Topics*, 2(3), 33–39.
- Bartlett, M.S. (1950). Tests of significance in factor analysis. *British Journal of Statistical Psychology*, 3: 77-85. <https://doi.org/10.1111/j.2044-8317.1950.tb00285.x>
- Basır, N. (2025). Okul yöneticilerinin kurumsal aidiyeti ve işyeri ruhsallığı ile iş motivasyonu arasındaki ilişki: Örgütsel sinerjinin aracılık rolü [Doctoral dissertation].
- Biyyıklı, A. E. (2018). Yatan hastaların beslenme hizmetlerinden memnuniyet ölçeğinin geliştirilmesi ve uygulanması [Doctoral dissertation, Gazi University, Institute of Health Sciences].
- Biyyıklı, A. E., & Bilici, S. (2022). Development and validation of food services satisfaction scale for inpatients. *Progress in Nutrition*, 23(4), e2021189. <https://doi.org/10.23751/pn.v23i4.11330>

- Blais, M. R., Lachance, L., Vallerand, R. J., Brière, N. M., & Riddle, A. (1993). Échelle de motivation au travail (ÉMT-31). *Revue Québécoise de Psychologie*, 14(3), 185–215.
- Botezat, E., Fotea, S. L., Marici, M., & Fotea, I. S. (2020). Fostering the mediating role of the feeling of belonging to an organization among Romanian members of Generation Z. *Studia Universitatis „Vasile Goldiș” Arad – Economics Series*, 30(4), 69–91. <https://doi.org/10.2478/sues-2020-0025>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). The Guilford Press.
- Brown, E. R., Phills, C. E., Kahn, J., & Mukundan, S. (2025). Feeling a sense of belonging is associated with more motivation within organizations that value diversity and equity. *Scientific Reports*, 15(1), 23201. <https://doi.org/10.1038/s41598-025-04456-9>
- Byrne, B. M. (2013). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Routledge.
- Chummar, S. A. (2024). How organizational diversity cues affect career-related outcomes: The mediating role of belonging.
- Cochran, W. G., & Cochran, W. G. (1977). *Sampling techniques* (Vol. 3, No. 4, pp. 2584–1807). New York: Wiley.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2013). *Applied multiple regression/correlation analysis for the behavioral sciences*. Routledge. <https://doi.org/10.4324/9780203774441>
- Dall'Oglio, I., Nicolò, R., Di Ciommo, V., Bianchi, N., Ciliento, G., Gawronski, O., ... Raponi, M. (2015). A systematic review of hospital foodservice patient satisfaction studies. *Journal of the Academy of Nutrition and Dietetics*, 115(4), 567–584. <https://doi.org/10.1016/j.jand.2014.11.013>
- Demir, İ. (2019). Kurumsal aidiyet düzeyine etki eden faktörler: Manisa Celal Bayar Üniversitesi örneği [Master's thesis, Balıkesir University].
- Dönmez, Ö. Ç., & Çilginoğlu, H. (2022). Sağlık çalışanlarının personel yemek hizmetleri memnuniyet düzeyleri: Kastamonu Eğitim ve Araştırma Hastanesi örneği. *Journal of Tourism & Gastronomy Studies*, 10(2), 1464–1480. <https://doi.org/10.21325/jotags.2022.1052>
- Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Gürbüz, S., & Şahin, F. (2014). *Sosyal bilimlerde araştırma yöntemleri: Felsefe – yöntem – analiz*. Seçkin Yayıncılık.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31–36.
- Kara, E., Akbaba, M., Yakut, E., Çetinel, M. H., & Paslı, M. M. (2023). The mediating effect of green human resources management on the relationship between organizational sustainability and innovative behavior: An application in Turkey. *Sustainability*, 15(3), 2068. <https://doi.org/10.3390/su15032068>
- Lewis-Beck, M., Bryman, A. E., & Liao, T. F. (2004). *The Sage encyclopedia of social science research methods* (Vol. 1). Sage.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39(1), 99–128. https://doi.org/10.1207/s15327906mbr3901_4
- Marsh, H. W., Hau, K. T., & Wen, Z. (2004). In search of golden rules: Comment on hypothesis-testing approaches to setting cutoff values for fit indexes and dangers in overgeneralizing Hu and Bentler's (1999) findings. *Structural Equation Modeling*, 11(3), 320–341. https://doi.org/10.1207/s15328007sem1103_2
- Masood, Z., Capelli, I., Neri, J., Schug, S., & Weisberg, L. S. (2026). Commensality as community rebuilding: A qualitative study of physician shared meals in a hospital setting. *Journal of Hospital Medicine*. <https://doi.org/10.1002/jhm.70341>
- McSweeney, L., Buczkowska, M., Denning, L., Elcock, M., & Spence, S. (2025). Healthcare staff perceptions of the hospital food environment: A narrative systematic review. *Public Health Nutrition*, 1–27. <https://doi.org/10.1017/S136898002500031X>
- Mumcu, A. Y. (2024). A study on belonging theory and the importance of belonging in businesses. *Finans Ekonomi ve Sosyal Araştırmalar Dergisi*, 9(3), 300–316. <https://doi.org/10.29106/fesa.1489351>
- Mutlu, O., & Seçim, Y. (2025). Açık mutfak konseptli yiyecek-içecek işletmelerinde çalışan mutfak personelinin çalışma motivasyonu üzerine nitel bir araştırma. *Nevşehir Hacı Bektaş Veli Üniversitesi SBE Dergisi*, 15(3), 1707–1727. <https://doi.org/10.30783/nevsosbil.1622542>
- Nitzl, C., Roldán, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modeling: Helping researchers discuss more sophisticated models. *Industrial Management & Data Systems*, 116(9), 1849–1864. <https://doi.org/10.1108/IMDS-07-2015-0302>
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory*, 3rd ed., McGraw-Hill, New York, NY.
- Özeltürkay, E. Y., & Orel, F. D. (2016). Sağlık sektöründe hizmet kalitesi, müşteri memnuniyeti ve bağlılık ilişkisi: Devlet, özel ve üniversite hastaneleri karşılaştırması. *Çağ Üniversitesi Sosyal Bilimler Dergisi*, 13(2), 46–76.
- Özer, H. (2004). Nitel değişkenli ekonometrik modeller: Teori ve bir uygulama. Nobel Yayınevi.
- Salleh, S. M., Zahari, A. S. M., Said, N. S. M., & Ali, S. R. O. (2016). The influence of work motivation on organizational commitment in the workplace. *Journal of Applied Environmental and Biological Sciences*, 6(58), 139–143.
- Seo, J. (2023). Why does the impact of psychological empowerment increase employees' knowledge-sharing intention? A moderated mediation model of belonging and perceived organizational support. *Behavioral Sciences*, 13(5), 387. <https://doi.org/10.3390/bs13050387>
- Semerci, H., & Akbaba, A. (2018). Bodrum'a gelen uluslararası ziyaretçilerin yerel yemek tüketimindeki motivasyon faktörlerinin değerlendirilmesi. *Uluslararası Güncel Turizm Araştırmaları Dergisi*, 2(1), 41–57. <https://doi.org/10.30625/ijctr.433081>
- Seyhan, M. (2021). İç hizmet kalitesinin işgören performansı üzerindeki etkisinde kurumsal aidiyetin aracı rolü. *Akademik Araştırmalar ve Çalışmalar Dergisi (AKAD)*, 13(25), 413–428. <https://doi.org/10.20990/kilisibfakademik.963227>
- Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.
- Tanrıverdi, H., & Oktay, K. (2001). Otel işletmelerinde işgören motivasyonuna yönelik bir araştırma. *Turizm Akademik*, 1(2), 33–41.
- Tatar, O. F., & Uzun, N. B. (2023). Örgütsel aidiyet algısı ölçeği (ÖAAÖ): Geçerlik ve güvenilirlik çalışması. *Batı Anadolu Eğitim Bilimleri Dergisi*, 14(2), 758–780.
- T.C. Sağlık Bakanlığı. (2024). 2024 yılı faaliyet raporu. Strateji Geliştirme Başkanlığı. sgb.saglik.gov.tr
- Türkeli, S. P. S. (2023). Sağlık yönetiminde çalışanların kurumsal aidiyet süreç yönetimi. *Sağlık Yönetiminde Süreç Yönetimi (SYSY)*, 403.
- Westland, J. C. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications*, 9(6), 476–487.
- Yanık, A., & Yılmaz, E. (2011). Dışarıdan yemek hizmeti alınan bir eğitim ve araştırma hastanesinde personelin yemek hizmetlerinin değerlendirilmesi. *Ejovoc (Electronic Journal of Vocational Colleges)*, 1(1), 126–139.

Hakkı ılğınoglu

Yılmaz, B. (2012). The validity and reliability study of work motivation scale for Turkish population. *Energy Education Science and Technology Part B*, 4, 197–204.

The Methodological and Conceptual Practice of Walking in Contemporary Art Production

Emre Çalış* / Res. Asst. Dr. 

Afyon Kocatepe University, Faculty of Fine Arts, Department of Painting
emrecals@gmail.com

Yasemin Kaplan Çalış / Res. Asst. Dr. 

Afyon Kocatepe University, Faculty of Fine Arts, Department of Painting
yaseminnkaplan@gmail.com

*Corresponding Author

Abstract

The act of walking, which appears as an ordinary bodily movement in everyday life, is transformed into a multilayered practice of production in contemporary art. Moving beyond its function as a means of displacement, this act acquires the character of witnessing, questioning borders, and reconfiguring the meaning of space. In this study, walking is examined as a conceptual method that renders the artist's bodily relationship with public space visible and transforms the viewer into one of the constitutive elements of the artwork. In this regard, walking-based art practices have been analyzed through document analysis method. The study revealed that walking cannot be reduced to a singular and fixed function within

contemporary art. As a critical practice, walking produces different layers of meaning through political intervention, memory, borders, and relations with urban space. In this context, the study demonstrates that walking reconstitutes the relationship between the body and the space in contemporary art production. Thus, it treats the artistic experience as an expanding practice in the context of participation and knowledge production.

Keywords: Walking, Contemporary Art, Social Memory, Performance Art.

JEL Codes: Z11, Z10, Z13

Citation: Çalış, E., & Kaplan Çalış, Y. (2026). The methodological and conceptual practice of walking in contemporary art production. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

Walking is an apparently ordinary act that nevertheless carries profound meanings. Rather than being limited to movement from one place to another, it also constitutes a field of thought, observation, and temporal experience. From this perspective, walking is not a passive observation directed towards the external world but an act of active participation and trace-making. Modern thinkers have approached walking as more than a bodily activity, regarding it as a means of perceiving space, developing thought, turning inward, and engaging with social structures. Frédéric Gros argues that walking removes the individual from the pace of everyday life and brings them into direct contact with reality, while the body encounters the resistance of the earth with every step (Gros, 2023: 88). Artists have likewise placed walking at the centre of their practices, adopting it as a mode of inquiry, a language of expression, and a method of production with both everyday and political dimensions. For the artist, walking becomes a creative practice that situates the body within temporal flow, establishes an experiential connection with space, and makes visible the encounters that emerge throughout the process.

A shared characteristic of many approaches that incorporate walking into artistic practice is the openness and uncertainty inherent in the act. Walking prioritises process over outcome and places experience rather than a completed product at its centre. Walks that begin according to a plan may be shaped by unexpected encounters, change direction, or be interrupted. Walking therefore differs from the mere bodily execution of a predetermined idea. Artistic meaning develops throughout the process through the body's encounters with its surroundings, the rhythm of movement, changes in direction, and chance events.

The historical relationship between walking and art can be traced through the transformation of movement from a visually represented subject into a direct method of artistic production. In nineteenth-century art, the walking figure became an important indicator of changing urban life and everyday experience. With the avant-garde movements of the twentieth century, however, walking ceased to be merely represented within the artwork and became an action in itself. While Dada excursions into ordinary areas of the city suspended the necessity of producing an art object, Surrealist walks foregrounded chance, aimless wandering, and unexpected relations with space. Within the Situationist International, Guy Debord's concept of the *dérive* transformed walking into a critical practice of movement based on experiencing the effects of the urban environment on emotions and behaviour (Arapoğlu, 2016: 5). Within Land Art, walking became part of artistic production through the relationship established between the

body and nature, the temporary traces left on the land, and the documentation of this experience through photographs, maps, and texts (Kedik, 2010). Over time, walking moved beyond the context of nature and began to be used as an aesthetic and political instrument in urban space. Walking through, observing, mapping, and redefining the city acquired the character of a critical practice that transformed the artist's relationship with public space.

The body is a determining element in walking-based artistic practices. Over time, the walking body inscribes itself into space and transforms the path into a trace. This trace may be directly visible or may be followed through photographs, videos, written texts, maps, sounds, or narratives. Although the walk itself is temporary, the transfer of the traces it produces into different media opens the relationship between permanence and transience to discussion. Space, moreover, is not a neutral surface across which the artist moves. By influencing the body's direction, rhythm, senses, and encounters, it becomes an active element within the production process.

The multilayered nature of walking has been addressed from different theoretical perspectives within psychogeography, mobility studies, performance theory, critical geography, and walking studies. Psychogeography considers walking a practice that interrupts habitual urban routes, defamiliarises familiar spaces, and opens environmental effects to experience. While Debord's concept of the *dérive* proposes moving beyond planned routes and questioning the everyday organisation of the city through bodily movement, Michel de Certeau regards walking as an everyday practice through which the body selects routes from among the possibilities offered by the urban plan and transforms space into a lived domain (Certeau, 1988: 96). The *flâneur*-centred approach, however, remains limited in its ability to explain the physical act of walking and the diversity of pedestrian experiences because it primarily interprets walking through the perspective of a mobile gaze (Forgione, 2005: 665).

Mobility studies and critical geography address this limitation by focusing on the social and material conditions of movement. Within the new mobilities paradigm developed by Sheller and Urry, movement is not regarded as a neutral form of displacement that merely enables travel from one point to another. Rather, it takes place through relationships among people, objects, technologies, and infrastructures. Borders, transport systems, and technical infrastructures make movement possible while simultaneously regulating who can move, where they can move, and how they can do so, thereby producing unequal forms of mobility (Sheller & Urry, 2006). Critical geography, in turn, makes visible the relationship of these arrangements to power, inequality, surveillance, and access. Nevertheless, research in

mobility studies and critical geography has largely concentrated on everyday transport, urban sociology, and ethnographic fieldwork, while addressing the conceptual and performative operation of walking in contemporary art only to a limited extent.

Performance theory foregrounds the transformation of the walking body from a vehicle that carries the artwork into an active participant in the production of meaning. The duration, rhythm, repetition, pauses, and environmental encounters of walking become decisive in shaping the work. While this approach explains the embodied and processual character of walking, it does not always examine the role of technical infrastructures, political boundaries, or systems of documentation in artistic production to the same extent. Walking studies, by contrast, treats walking not only as an object of research but also as an embodied and sensory means through which research is conducted. The transmaterial approach to walking methodologies understands walking as a research-creation process that develops through relations among human bodies, objects, sounds, technologies, geographical spaces, and networks of power. Within this framework, walking ceases to be a tool for confirming previously established knowledge and becomes a methodology through which new relations and concepts emerge in motion (Springgay & Truman, 2017).

Art history foregrounds the transformation of walking from representation into action, psychogeography emphasises urban drift, mobility studies examines the ways movement is organised, critical geography focuses on boundaries and relations of power, performance theory highlights the role of the body within process, and walking studies considers walking as a research method. Nevertheless, the ways in which walking carries memory into public space, renders political boundaries visible, directs the participant's perception, and makes digital infrastructures legible have not been sufficiently compared within a shared analytical framework. Addressing this gap, the present study considers walking as a methodological device that establishes relationships with memory, political space, participatory experience, and technical infrastructure across different artistic practices. These relationships enable walking to acquire a distinct function and produce different forms of knowledge in each case. The study therefore examines how walking becomes a method in different artistic practices and how it transforms the meaning of the artwork.

2. Method

This study adopts a qualitative and comparative research design to examine the different methodological and conceptual functions that walking has

acquired in contemporary art. Its primary aim is to reveal how walking produces meaning through its relationships with the body, space, memory, political boundaries, participation, and technical infrastructure. Rather than being treated as a single and fixed artistic category, walking is considered a method whose function varies according to the conceptual concerns, spatial context, and participatory structure of each artwork.

The sample was constructed through criterion-based purposive sampling. Within this framework, the artistic practices of Regina José Galindo, Francis Alÿs, Janet Cardiff and George Bures Miller, and Ingrid Burrington were examined. A set of shared criteria guided the selection of the artists and artworks. One of the primary criteria was that walking should not merely appear as a represented subject but should function as a fundamental structural element through which the work is produced or experienced. The selection process also considered whether the works took place in public or urban space, intervened in such spaces, or rendered them visible in different ways. In addition, attention was paid to the use of walking for distinct yet comparable purposes, including embodied testimony, political and spatial intervention, guided participation, and the investigation of technical infrastructures. The availability of sufficient written, visual, auditory, and digital documentation was also included among the sampling criteria to enable a detailed examination of the works. Accordingly, the selected cases are not claimed to represent all walking-based artistic practices. Instead, they are regarded as analytically productive examples through which the different functions of walking in varying contexts can be made visible.

Document analysis was used as the primary method of data collection. The research data were obtained from academic publications on the selected artists and artworks, exhibition catalogues, artists' statements, institutional and online archives, photographs, maps, video recordings, websites, audio-walk materials, and participant guides. Since some of the works examined are temporary, site-specific, performative, or experienced through digital media, these documents were not treated solely as secondary records. Materials such as photographs, maps, videos, audio recordings, and guides were also included in the analysis as elements that preserve, transmit, and facilitate the re-experiencing of the works after their original presentation.

The collected data were evaluated through descriptive analysis, comparative visual analysis, conceptual analysis, and interpretive analysis. In the first stage, descriptive analysis was used to identify the historical, political, and artistic context in which each work was produced. Comparative visual analysis focused on the relationships established by the walking body

with routes, spaces, traces, maps, photographs, sounds, technical objects, and forms of documentation. This stage examined how these elements organised movement, directed the participant's attention, and determined what became visible or perceptible during the walk.

Conceptual analysis focused on the function assigned to walking in each artwork. Accordingly, the analysis examined how walking operated as a form of embodied testimony, a spatial intervention that questioned political boundaries, a structure that organised the participant's experience, or a method for investigating invisible technical infrastructures. Interpretive analysis was employed to understand how these arrangements shaped the position of the viewer or participant and what forms of spatial, political, sensory, or technical knowledge they produced.

The themes used in the study were developed through a combined deductive and inductive process. Body, space, memory, boundary, participation, guidance, and infrastructure were initially identified as analytical categories on the basis of the research question and the theoretical literature. These categories were subsequently reassessed through repeated readings of the documents related to the artworks and close examination of the visual materials. Relationships involving trace, route, visibility, mediation, materiality, and embodied experience that emerged during the analysis were also incorporated into the analytical framework.

The works were compared according to a set of shared analytical criteria, including the function of walking, the position of the body, the organisation of space and route, the structure of participation, the forms of guidance and mediation employed, the political or conceptual issue addressed by the work, and the type of experience or knowledge produced. This comparative approach prevented the artists from being presented merely as a sequence of individual cases and enabled the similarities and differences among the selected practices to be evaluated within a thematic framework. The study does not claim that the four cases represent the entirety of walking-based art. Rather, it aims to demonstrate comparatively how walking is reconfigured under different artistic, political, spatial, and technological conditions.

3. The Meaning-Making of Walking

The meanings that walking acquires as a form of artistic expression are particularly centred on the relationship between the individual body and public space. Through walking, artists establish a field of action that extends beyond bodily movement. While rendering memory and testimony visible, this field also stages forms of resistance. Walking may therefore function either as a silent act of protest or as a strategy for revealing the erased layers of collective memory. In walking-based art, meaning does not derive solely from an idea predetermined by the artist. The orientation of the body, the rhythm of movement, the route followed, and the spatial conditions encountered collectively contribute to the formation of the work. Walking can therefore be understood not as the representation of a fixed idea but as a relational process in which meaning emerges through bodily movement and the relationship established with the surrounding environment (Triggs et al., 2014).

This section examines this process through two inter-related practices that nevertheless assign different functions to walking: walking as an act of witnessing memory and walking as a means of rendering political boundaries visible. The first of these functions becomes evident in the practice of Regina José Galindo, in which walking transforms the body into a bearer of historical memory. By placing her body at the centre of the walk, Galindo renders it not merely a vehicle but also a witness, a reminder, and a subject of resistance. Her 2003 performance *Who Can Erase the Traces?* (Figure 1) is a powerful artwork that addresses the representation of memory in public space, the political potential of walking, and the use of the body as a means of resistance.

Galindo constructs a controlled performative structure through a predetermined route and the repeated act of bringing her feet into contact with blood. Beginning at the Constitutional Court (Corte de Constitucionalidad), she walks towards the National Palace of Guatemala (Palacio Nacional de Guatemala). Before setting out, she immerses her feet in a basin filled with human blood and leaves wet, bloodstained footprints on the ground, thereby forming a blood-marked line of connection between these two state institutions (Eccles, 2023: 9).

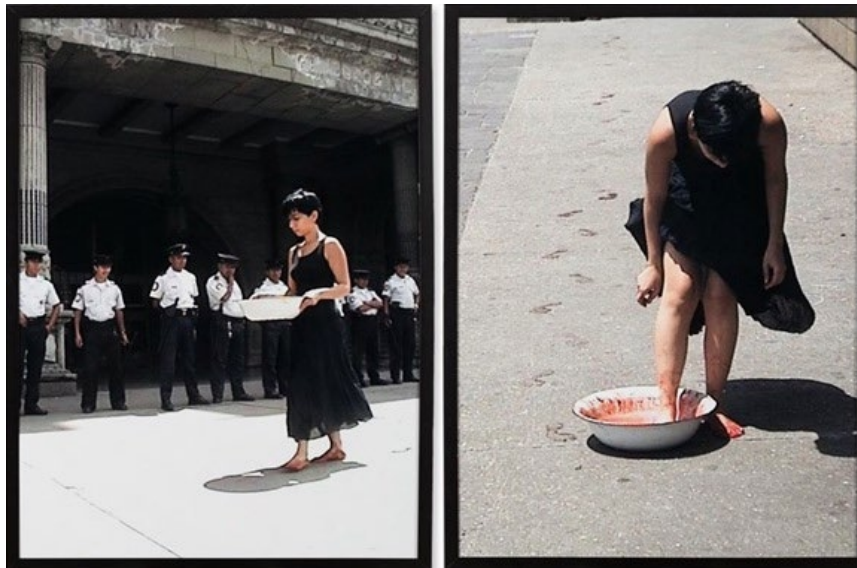


Figure 1. Regina José Galindo, 2003. Who Can Erase the Traces? /Quién puede borrar las huellas? performance, Guatemala
Source: https://www.artnet.fr/artistes/regina-jos%C3%A9-galindo/quien-puede-borrar-las-huellas-2-h559fAb3Bdi6y1a1_2OCQA2

Galindo's performance, in which she walks barefoot through the streets of Guatemala City after immersing her feet in a basin filled with human blood and leaving bloodstained footprints behind her, constitutes both a political response and a silent outcry. The performance emerged as a protest against the approval of former Guatemalan dictator Efraín Ríos Montt's renewed presidential candidacy and functions as an act of remembrance directed against attempts to erase the traces of state violence. Galindo describes the emotional rupture and internal impulse behind the action as follows:

It emerged from rage and fear. When it was announced that Efraín Ríos Montt had managed to win acceptance as a presidential candidate, I was in my room, and I suffered an attack of panic and depression. I cried out, I kicked and stomped my feet, I cursed the system that rules us. How was it possible that a character as dark as this would have such power with which to bend everything to his will? I decided then and there that I would take to the streets with my shout and amplify it. I had to do it (Galindo & Goldman, 2006: 40).

Here, walking moves beyond an ordinary action and becomes a form of silent rebellion. Galindo does not speak, chant slogans, or offer any explanation during the walk. She simply walks (Figure 2). Yet every step she takes and every bloodstained footprint she

leaves behind reminds the viewer of lives that have been lost. Walking thus becomes political both as an action in itself and through the traces it produces. In *Who Can Erase the Traces?* each step becomes a mark of memory, a political objection, and a means of rendering visible a past that has been subjected to erasure. Galindo's walk consequently creates a space of both individual and collective memory. It reveals how art can develop into a form of resistance in the face of social injustice.

The transmaterial approach to walking methodologies does not regard the body as a closed subject that exists independently of its environment and produces meaning on its own. Instead, it argues that the body is constituted through its relationships with geographical spaces, material elements, and broader networks of power (Springgay & Truman, 2017: 28). From this perspective, the bare feet, human blood, street surface, chosen route, and state institutions in Galindo's performance are not merely symbolic elements. Through their combined operation, they transform historical violence into an embodied and spatial encounter. The bloodstained footprints do more than represent past losses. By becoming physically inscribed upon the everyday surfaces of institutional space, they re-establish the presence of suppressed history within the public sphere.



Figure 2. Regina José Galindo, 2003. Who Can Erase the Traces? / Quién puede borrar las huellas? performance, Guatemala
Source: <https://teaching.ellenmuller.com/walking/2021/05/23/regina-jose-galindo-who-can-erase-the-traces-2003/>

The performance brings the collective trauma produced by Guatemala's prolonged civil war and period of military dictatorship into public space through a route connecting two state institutions. In this way, an individual response becomes an embodied line of counter-memory directed against collective forgetting. In Galindo's own words, the action is not merely an individual reaction but also a struggle against social amnesia:

I say that these efforts were necessary because Guatemala is a country without memory. People with very limited access to education can easily be deceived by the promises and small gifts offered by politicians during election campaigns. The official party to which Ríos Montt belonged, and with which he remained affiliated, made a considerable effort and possessed all the necessary power to reach minority communities in Guatemala. These communities found it difficult to associate Ríos Montt, the presidential candidate, with the former dictator responsible for the most serious crimes against their own people. For this reason, every effort and every form of assistance was necessary (Galindo & Goldman, 2006: 40).

At this point, an important issue requires attention from the position of the viewer or reader. Galindo does not present a conventional process of recollection intended to restore a historical narrative. Instead, she initiates a series of interventions that disrupt the flow of information at the symbolic level of representation. In doing so, she opens a rupture within the classificatory logic of the existing order. This process functions as an act of critical reconsideration that questions the dynamics of a systematic programme of forgetting. It is achieved through the artist's direct engagement with violence and with the attempts to erase that violence from collective memory (Eccles, 2023).

The artist's description of Guatemala as "a country without memory" points to a social structure in which historical traumas are suppressed through institutional and political mechanisms. Limited access to education creates conditions in which voters can be more easily manipulated, allowing figures responsible for serious human rights violations in the past to re-enter the political sphere. In Galindo's practice, the body is neither merely a surface of representation nor a passive bearer of the past. By moving through public space, it becomes an active agent that intervenes in the continuing effects of historical violence. The tension between the vulnerability of bare feet and the determination of each step transforms bodily defencelessness into political action. Walking therefore functions not as a performance that narrates memory but as a method of bearing embodied witness to it. Within this framework, Galindo's practice may be described as walking that produces testimony.

The political significance that walking acquires in contemporary art is not limited to the body's transmission of traumatic memory. Some artists use walking as a means of rendering historically constructed boundaries, invisible political lines in public space, and geographical divisions visible once again. In this context, Francis Alÿs's walking-based performances may be understood as interventions that redefine the relationship between the body and space and produce meaning through that relationship. While Galindo's walk carries the traces of suppressed memory and state violence into public space, Alÿs transforms a historically drawn boundary into an embodied route and a visual mark. In both practices, walking becomes an action that transforms public space, renders political meaning visible, and leaves a trace.

Although the two works share an emphasis on trace-making, the material character and function of these traces differ. Galindo's bloodstained footprints are directly connected to the body and bear witness to lives that have been lost. Alj's line, by contrast, temporarily recreates the abstract presence of a historical boundary on the surface of the city. In the first example, the trace functions as an embodied record that carries past violence into the present. In the second, it operates as a cartographic intervention that questions how political geography is constructed.

Alj's artistic encounter with Jerusalem took place on 4 and 5 June 2004, and the performance was titled *The Green Line: Sometimes Doing Something Poetic Can Become Political, and Sometimes Doing Something Political Can Become Poetic* (Figure 3). Also described as a walk through Jerusalem, the performance involved Alj walking through what he regarded as an archetypal city of conflict while carrying a perforated can of green paint, thereby creating a line that marked the route he followed. His route traced the section of the armistice boundary in Jerusalem that separated Israeli and Palestinian communities following the end of the 1948 Arab–Israeli War. Internationally recognised under United Nations supervision in 1949, the line became known as the 1949 Armistice Line. It nevertheless remains a contested boundary, having lost its official border status in 1967 (Gieskes, 2014: 33).

The first point to emphasise regarding the artist's practice is that, for Alj, walking constitutes a technique of production. It is a conceptual practice that generates meaning through bodily contact with urban space. This practice is shaped through actions such as collecting, changing direction, establishing passages, and rendering boundaries visible (Medina, 1997: 39). Walking-based urban research demonstrates that the moving body can establish

close contact with space and reveal relationships obscured by aerial perspectives and abstract data. Conducting research on foot situates the researcher within the social and spatial dynamics of the city. This embodied positioning also changes the nature of the knowledge produced (Kohler, 2014: 151).

This point is particularly important because Alj's walking practice should not be interpreted as the bodily execution of a previously established idea. Walking begins, instead, as a sensory encounter. The body is exposed to pavements, objects, rhythms, slopes, crowds, and chance events. Conceptualisation follows this encounter. The body does not merely traverse space but becomes a performative instrument through which critical meaning is inscribed into it. Alj's walks should therefore be understood as open-ended processes in which meaning emerges from embodied encounters rather than as performances that stage a predetermined meaning. In this performance, walking becomes both an extremely simple and an intensely political act. Alj merely walks. Yet the trail of green paint he leaves behind reproduces the visibility of a boundary burdened by historical conflict. The action therefore assumes the character of a poetic intervention rather than a spectacular protest. One of the work's continuing points of significance lies in the distinction it establishes between a wall and a line. Alj's line is a temporary, horizontal, and permeable trace. Security walls, by contrast, are permanent, vertical, and authoritarian structures. This opposition extends the performance beyond the specific context of the 1949 Armistice Line and makes it relevant as a broader critique of spatial control. The strength of the work lies not only in its reference to a particular geopolitical event but also in its capacity to render the material and symbolic violence of borders visible through a minimal gesture.



Figure 3. Francis Alj, *The Green Line*, Jerusalem, Israel, 2004

Source: <https://www.davidzwirner.com/artworks/francis-alj-the-green-line-cbd27>

It is necessary to consider how a political boundary, defined as an abstract line on a map, produces material, social, and lived consequences within actual urban space. A map reduces the boundary to a straight, measurable, manageable line viewed from above. Lived space, by contrast, encompasses neighbourhoods, roads, vacant areas, crossing points, everyday routines, and bodily movements. Alj's walk makes visible the distance between these two spatial registers. The distinction between observing the city by walking at ground level and understanding it from above through abstraction is also regarded as an important methodological divide in urban research. Walking renders visible the everyday practices, sensory encounters, and spatial differences that maps and totalising models of the city tend to leave in the background. Alj's performance transfers this distinction into a political context. A boundary that appears singular and uninterrupted on a map is divided, in the experience of the walking body into changing surfaces, checkpoints, neighbourhoods, and restrictions on movement.

From this perspective, the line drawn by Moshe Dayan on a map with a green pencil (Gieskes, 2014: 33) represents the abstract, reductive, and authoritative character of political decision-making. The line appears clear on the map, yet it does not exist with the same clarity in the actual city. Within the urban fabric

of Jerusalem, the boundary becomes discontinuous and ambiguous while continuing to exert material effects. Alj's reveals the complex and conflict-ridden ways in which the spatial order produced by political authority through cartography is manifested in everyday life. The map thus ceases to function merely as a representational device and becomes a technique of power that organises, divides, and controls space. Walking has been described as a practice capable of bringing embodied experience and critical reflection together, thereby revealing previously unnoticed connections and ruptures within the city (Pauknerová & Gibas, 2014: 187). The route followed by Alj's similarly exposes the rupture between the cartographic representation of the boundary and its lived consequences within urban space.

Rather than producing a permanent monument, the walk generates a temporary yet intense form of awareness. Alj's also states that The Green Line was not limited to retracing a symbolic boundary but constituted an experience that tested the body's physical and emotional endurance within political space. He explains that, in order to cross the municipal boundary of Jerusalem, he had to maintain the pace of the walk over two days and develop various tactics for passing through checkpoints (Alj's & Faesler, 2011: 70).



Figure 4. Francis Alj's, *The Green Line*, Jerusalem, Israel, 2004

Source: <https://www.avilafilm.be/en/film/green-line>

At this point, the acts of "walking along the line" and "drawing the line" should be considered together. The line functions as an instrument that defines both the boundary itself and the territories located on either side of it. It operates as a mechanism that separates "home" from the "foreign." At the same time, through the laws that legitimise and regulate it, the line becomes a practical means of determining who is or is not regarded as "equal," who is granted rights, and from whom those rights are withheld (Fisher, 2011: 16).

The paint poured by the artist (Figure 4) does not produce a permanent or fixed boundary on the ground. Through its contact with the surface, it leaves a temporary trace that gradually fades, disperses, and disappears. This transience, however, strengthens rather than weakens the conceptual impact of the performance. The erasable trace left by the artist suggests that the boundaries underlying Israel's practices of occupation, segregation, restriction, and spatial control over Palestine are neither natural nor immutable. Boundaries can be reproduced and

transformed under changing historical and political conditions. In this context, *The Green Line* may be interpreted as a work that renders the operation of this border regime visible through a temporary intervention and opens it to renewed consideration within the contemporary political context. In this respect, the work demonstrates how walking functions as a practice of trace-making in artistic production.

When the works of Galindo and Alj's are considered together, the political meaning of walking cannot be reduced to a single function. Galindo's bloodstained traces produce an embodied form of testimony that carries suppressed historical violence into public space. Alj's's green line, by contrast, constitutes a temporary spatial intervention that reveals the boundary as neither natural nor unchangeable. In both works, the walking body activates political space, although it does so through different means. In Galindo's practice, walking becomes a form of counter-memory that carries the past into the present. In Alj's's work, it becomes a method for questioning abstract geographical order within lived space. This comparison demonstrates that walking acquires different functions according to context and contributes in distinct ways to the conceptual construction of the artwork.

4. Walking Practices as a Participant

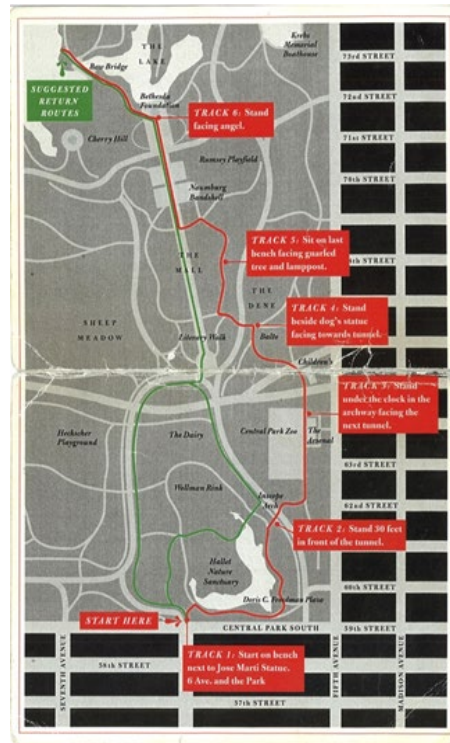
In contemporary art, walking should not be understood solely as an action performed by the artist in space. In some works, it becomes an experiential structure constructed through the participant's bodily orientation, perception, and movement. Participatory walking refers to a performative arrangement shaped less by the artist's own action than by the participant's embodied experience. Within this framework, the viewer moves away from the position of an observer standing before the work and becomes one of its constitutive elements through movement, perception, and engagement with space. Walking thus ceases to be merely an act of following a route and acquires meaning as an experiential construction that places the body in circulation among sound, memory, time, and space. Studies of walking art de-

monstrate that perception is not exclusively a mental or visual process but is shaped through bodily movement, posture, and interaction with the environment. Participation therefore involves more than simply observing the artwork. It entails establishing perceptual and spatial relationships through the body in motion (Triggs et al., 2014: 23). This section examines participatory walking through two distinct practices: an experience in which perception is guided by sounds and images, and a research practice based on reading urban infrastructure. In this context, the audio walks of Janet Cardiff and George Bures Miller¹ provide significant examples of this participatory structure.

Cardiff and Miller have been developing audio and video walks since 1991. These walks are recorded using binaural audio technology to produce a three-dimensional reproduction of sound. This recording system employs two small microphones positioned in the ears of a dummy head, allowing sound to be captured in a manner that approximates ordinary human hearing (Nedelkopoulou, 2011: 117). Through prerecorded sounds, narrative, and systems of guidance, Cardiff and Miller transform walking into a performative apparatus that shapes the participant's experience. The routes they construct therefore do not reduce walking to an act of displacement. Instead, the participant enters an experience that circulates among sound, memory, and space.

The transmaterial approach to walking methodologies emphasises that, in audio walks, the body does not move independently of its environment. Sound, technological devices, spatial surfaces, and bodily orientation operate together in the formation of experience. Within this framework, sound is not merely a medium for transmitting a prerecorded narrative. It functions as an active element that organises the participant's movement, directs attention, and shapes the relationship established with the surrounding environment (Springgay & Truman, 2017). In the works of Cardiff and Miller, headphones, recorded sound, walking routes, photographs, and the physical environment are interconnected within a single experiential structure.

¹Throughout this article, the collaborative works of Janet Cardiff and George Bures Miller are referred to as "Cardiff and Miller" following the first full mention of their names, for the sake of concision and consistency.

Figure 5. Janet Cardiff and George Bures Miller, 2004, *Her Long Black Hair Map*

Source: https://www.publicartfund.org/exhibitions/view/her-long-black-hair/#section_1&gid=1&pid=1

One of the clearest examples of this approach is *Her Long Black Hair*. Presented in a semi-narrative mode, the work constitutes a complex sensory inquiry into sound, space, and time. Stream-of-consciousness observations are interwoven with fiction, local history, opera music, and other atmospheric and cultural elements. The walk makes use of photographs in order to reflect on the relationship between images and the concepts of possession, loss, history, and beauty. In the audio recording, Cardiff's voice guides listeners through the park and occasionally instructs them to take out and examine one of the photographs. These images connect the speaker and the listener within the shared physical environment of Central Park (Cardiff & Miller, n.d.).

The map used in *Her Long Black Hair* (Figure 5) demonstrates that the walk is a performative route structured through predesigned directions. The red route marking specific points in Central Park indicates the main path to be followed by the participant as well as the listening stops. Instructions marked by "track" numbers, such as stopping, sitting, or looking in a particular direction, transform the walk into an experiential score in which bodily movement and auditory commands are combined. The green return route shown on the map does not entirely control the participant's orientation within the park; rather, it points to a spatial construction that guides movement within a certain order. As the participant physically follows the route, they enter into the precomposed score of the work. Yet because of the incidental sounds, people, and changing conditions encountered in the environment, no two

walks unfold in exactly the same way. Thus, although the structure of the work is predetermined, the experience is reconstituted through the participant's movement.

Each participant is provided with a CD player and a set of photographs. Cardiff's voice on the audio track guides participants through the park and frequently asks them to take out the photographs and look at older images of the same surroundings (Figure 6). These photographs establish a visual comparison between the present landscape and past images associated with the mysterious black-haired woman. The audiovisual materials of the performance connect the narrator and the participant within the shared physical environment of Central Park. In this way, the experience moves back and forth between the present, the recent past represented by the time of the recordings, and a more distant past shaped by Cardiff's narration and its references to the historical landmarks of Central Park (Nedelkopoulou, 2011: 117).

At this point, Cardiff's use of binaural sound becomes particularly significant. In this arrangement, sound ceases to function merely as a vehicle of information and instead operates as a spatial construction that transforms the participant's sense of hearing the environment and being present within it. The sensation that sound is moving immediately beside the ear, behind the listener, or a few steps ahead causes the body to continually readjust its orientation and attention. In this way, the walk becomes a practice of bodily attunement, positioned in accordance with the call of sound.



Figure 6. Janet Cardiff, 2004, *Her Long Black Hair*

Source: <https://cardiffmiller.com/walks/her-long-black-hair/>

Sensory inquiry in walking research enables the environment to be understood not only through visual recognition but also through sound, rhythm, movement, and bodily orientation (Altop & Güler, 2024). In Cardiff's work, the participant does not perceive the environment as an unmediated reality. Instead, they continually compare the recorded sound with what they hear at that moment, the image held in their hand with the landscape before them, and the narrated past with the present they inhabit. The conceptual logic of Cardiff's practice becomes evident at precisely this point. Space is not a fixed or neutral ground in itself. It is an experiential field reorganised through sound, photography, memory, and narrative and activated bodily by the participant. In *Her Long Black Hair*, Central Park is constructed as a multilayered surface upon which the present and the past, the physical environment and recorded sound, and the existing landscape and the historical photograph held by the participant overlap. The photographs given to the participant connect the present-day landscape with images from the past while simultaneously evoking feelings associated with visual possession, loss, and memory. Walking thereby becomes a sensory passage between different temporal layers.

The participant appears to move freely along the route, yet enters the work by following the sound, directions, visual cues, and designated stopping points. This structure requires the concept of participation in Cardiff's practice to be reconsidered. Participation here means completing the work through bodily experience. The work comes into being only when the participant walks, stops, looks, and listens. Participation, however, does not imply unlimited freedom of movement or interpretation. The recorded narrative largely determines when the participant should stop, where they should look, and which ima-

ge they should examine. Nevertheless, the sounds of the live environment, the participant's memories, and the unexpected encounters that occur along the route transform this arrangement into a personal experience. The participant is therefore neither a passive viewer who merely follows instructions nor an autonomous subject who shapes the work with complete freedom. Rather, they occupy the position of a co-producer who completes a predetermined structure through embodied experience.

This approach, which transforms the participant's body into a constitutive element that engages with and produces meaning in space, continues in the practices of other artists through different tools and methods. Ingrid Burrington is an artist and writer whose work investigates internet infrastructure, digital networks, and their manifestations in urban space. Burrington approaches walking as a participatory form of inquiry based on reading the traces of digital infrastructure dispersed across the urban surface. Her work *Networks of New York: An Illustrated Field Guide to Urban Internet Infrastructure* functions as an art object that encourages participants to walk through the city, observe their surroundings, and follow infrastructural signs. Like Cardiff's map, the work is designed as a portable guide that participants carry and consult while moving through space (Figure 7). Here, however, guidance is provided not through an audio recording or a prerecorded narrative but through manhole covers, excavation markings, antennas, cable traces, and other indicators of infrastructure found in the street. In Burrington's work, participatory walking therefore shifts from sensory immersion towards infrastructural reading. Through walking, the participant ceases to be a passive recipient of the work and becomes an active subject who renders the material layers of urban networks visible.

In both Cardiff's and Burrington's works, the device carried by the participant constitutes a shared element that determines how the walk unfolds. In Cardiff's work, the map, photographs, and audio recording place the participant within a particular narrative, whereas Burrington's field guide directs attention towards identifying technical signs in the

surrounding environment. In the first example, participation is structured through a sensory and temporal experience. In the second, it is organised through observation, comparison, and research. This distinction demonstrates that participatory walking cannot be reduced to a single mode of experience.

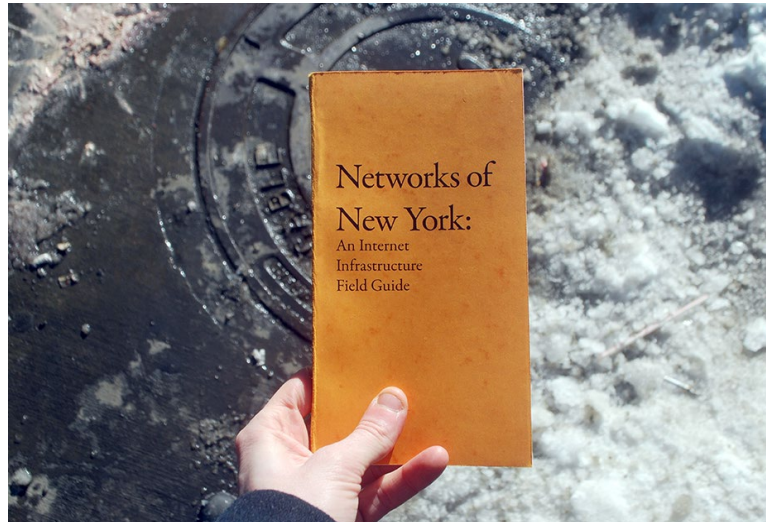


Figure 7. Ingrid Burrington, 2016, *Networks of New York: An Illustrated Field Guide to Urban Internet Infrastructure*
Source: <https://pioneerworks.org/residency/ingrid-burrington>

Burrington's approach is based on moving beyond an understanding of the digital network as an abstract system and examining it through identifiable objects and legible traces of infrastructure. During the walk, participants begin to understand the internet by noticing technical indicators embedded in the urban surface (Shipwright, 2016). As Burrington emphasises, the issue is not "technical expertise or access to secret rooms" but "learning what to look for and how to look" (Burrington, 2016: 14). Walking-based urban research enables a degree of close engagement with the city that other forms of movement cannot provide. The researcher's physical presence and movement within space directly affect what can be observed and how knowledge is produced. Walking is therefore not merely a means of reaching the research site but a methodological component of urban knowledge production (Shortell & Brown, 2014). In Burrington's work, the participant ceases to be a viewer who encounters ready-made information outside the field and instead becomes a researcher who produces knowledge through direct encounters with relevant technical objects.

Burrington's guide does not direct the participant towards a single point in the city or prescribe a fixed route. Instead, it encourages movement through a multilayered urban environment in which the traces of internet infrastructure are dispersed. This network walk begins with signs associated with the underground. Manhole covers, underground tunnels, fibre-optic cables, excavation markings, and

handholes direct the participant's attention towards the invisible infrastructure beneath the city's surface, where the material networks of the internet are often concealed. The guide then leads the participant towards street-level junction boxes, open telecommunications manholes, traffic systems, public Wi-Fi access points, and wireless networks within the subway system. Rather than functioning as an ordinary route plan that takes the participant from one location to another in New York, Burrington's guide transforms the city into a participatory network walk that traverses underground, street-level, and rooftop layers while teaching the participant how to read the material traces of digital networks.

The participant proceeds by establishing relationships between the pages of the guide and the infrastructural elements encountered in the surrounding environment. Walking consequently ceases to be merely an act of displacement and becomes a learning practice involving observation, comparison, and recognition. In this sense, the guide also moves beyond the status of a static book. It becomes a portable instrument of reading and orientation that accompanies the walking body.

From a transmaterial perspective, manhole covers, cables, antennas, markings, and network systems can be understood not as passive objects remaining in the background of human action but as material elements that participate in the production of meaning and knowledge through their relationship with the walking body. By directing the participant's at-

tention and movement, these elements allow digital infrastructure to be understood not as an abstract network but as a material system embedded within urban space (Springgay & Truman, 2017: 28). The gu-

ide therefore does more than identify which objects should be observed. It produces a form of critical visual literacy that teaches the participant to read the urban surface through a different mode of attention.



Figure 8. Ingrid Burrington, *Networks of New York* inner page view (Subway Wireless Networks)

Source: <https://weburbanist.com/2015/02/12/networks-of-new-york-field-guide-to-internet-infrastructure/>

The image showing the *Subway Wireless Networks* page opened on a subway platform (Figure 8) further clarifies this pedagogical structure. The participant encounters information about internet infrastructure within the very space in which that infrastructure operates. Knowledge and experience are therefore produced simultaneously. Burrington describes the work as “a guide to practising the everyday magic of seeing the internet as part of a city’s landscape and daily life” (Burrington, 2016: 11).

Burrington’s work also extends participatory walking into the political realm. *Networks* are not treated merely as technical arrangements but as structures shaped by inequality, surveillance, and access. Burrington explains that the hopeful promise associated with the expanding internet depends on equal access. Yet, as the examples in the field guide demonstrate, access to networks is not distributed equally. Since the internet is largely owned by private companies, there is little financial incentive to recognise it as a public right. The increasing presence and complexity of urban surveillance systems further indicate that network technologies can restrict freedom as much as they enable it. In cities such as New York, these systems are particularly inclined to monitor and target minority communities (Burrington, 2016).

The walk proposed by Burrington therefore extends beyond a simple exploratory activity intended to identify technical objects in the city. As participants move through the streets, they begin to recognise not only the material traces of internet infrastructure but also the social and political order on which

that infrastructure depends. Walking thus becomes a critical practice of reading that renders relations of power visible through technical indicators dispersed across the everyday surfaces of urban space.

When the works of Cardiff and Burrington are considered together, participatory walking can be seen to generate different forms of knowledge. Her *Long Black Hair* organises the participant’s movement through sound, photography, and narrative, thereby transforming both the perception of the environment and the experience of time. *Networks of New York*, by contrast, turns walking into an investigative mode of reading that deciphers technical signs embedded in the urban surface. In Cardiff’s work, the participant uses embodied experience to complete the perceptual gaps between recorded narrative and the live environment. In Burrington’s work, the participant connects material indicators in the surroundings in order to understand how otherwise invisible networks operate.

The first work produces sensory and temporal knowledge, whereas the second generates infrastructural and political knowledge. In both cases, the artwork remains incomplete independently of the participant’s movement. However, walking serves different functions in each work. In one, it constructs perceptual experience; in the other, it renders urban systems legible. This comparison demonstrates that participation through walking in contemporary art is not a uniform mode of experience but a methodological and conceptual practice that varies according to the problem addressed by each artwork.

5. Conclusion

The examples examined throughout this study demonstrate that walking cannot be reduced to a fixed artistic category. Rather, it is an open-ended practice that acquires different functions in different contexts. In some cases, it emerges as a direct political intervention or a conceptual gesture; in others, it operates as a performative structure that organises participatory experience or as an investigative method that renders invisible infrastructures legible. Walking in contemporary art is therefore not merely a theme or an instrument. It constitutes a formative ground that transforms the logic of artistic production, the relationship established with the viewer, and the ways in which space is understood. From this perspective, the first conclusion to be drawn is that walking functions as a conceptual practice and expands the meaning of the artwork through embodied experience.

In the works of Galindo and Alÿs, walking produces political meaning by leaving traces in public space. However, the character and function of these traces differ. Galindo's bloodstained footprints form an embodied record that carries suppressed violence into the present, whereas Alÿs's painted line constitutes a temporary spatial intervention that suggests that borders are neither natural nor immutable. In the works of Cardiff and Miller and Burrington, walking is constructed through the participant's movement. In the first case, the participant establishes perceptual connections between recorded sound and the live environment, past and present, and photography and the existing landscape. In the second, the participant begins to read the material structure of invisible networks by comparing technical indicators encountered in the surroundings. These comparisons demonstrate that walking does not produce meaning in a single, uniform manner in contemporary art.

This perspective requires walking to be reconsidered within artistic practice. Walking is neither merely the movement of the body from one point to another nor simply a tool through which an artist realises a preconceived idea. It is a methodological practice in which meaning is produced through movement and develops through the artist's or participant's encounters with space. The surface of the route, the rhythm of movement, the people, sounds, and objects encountered, systems of guidance, and spatial restrictions are not incidental details external to the production process. They participate in the formation of the conceptual structure of the artwork. Walking therefore enables the establishment of new relationships and the production of embodied and situated forms of knowledge rather than merely representing a previously established idea. In this respect, walking should be understood through the relationships it establishes and the experience it

produces in motion, rather than solely through the content it represents.

Another conclusion of the study is that space does not constitute a neutral ground that merely accompanies walking. In the examples examined, public space emerges as a structure interwoven with traces of the past, political boundaries, systems of guidance, forms of surveillance, and technical networks. Walking makes these layers experientially accessible and open to discussion through the body. The city consequently ceases to appear as a unified structure understood from above and instead becomes visible as a field that unfolds through walking, acquires meaning through encounters among different relationships, and is continuously shaped by power. The critical character of artistic walking becomes particularly evident through this process of rendering spatial relations visible.

Participatory walks also transform the relationship between the viewer and the artwork. The participant is not an observer positioned outside the work but becomes an active subject who walks, stops, listens, compares, and interprets signs within the surrounding environment. Participation, however, should not be understood as an entirely free and unrestricted experience. Devices such as routes, sounds, maps, photographs, and guides direct the participant's movement to varying degrees. The artwork is formed through the relationship between this pre-established structure, the participant's personal experience, and the changing conditions of the live environment. In this sense, participation does not involve freely shaping the work but activating an organised structure through embodied experience. This finding requires approaches that directly equate participation with freedom to be reconsidered. The participant's agency emerges through negotiation between the arrangement constructed by the artist and individual experience.

The temporary nature of walking also reintroduces the question of how an artwork continues to exist. Once a walk has ended, photographs, maps, audio recordings, written accounts, or temporary traces may remain. These documents, however, are not entirely identical to the experience of walking itself. This distinction opens the relationships between artwork and document, experience and representation, and trace and erasure to critical discussion. The transience of walking does not diminish its artistic impact. On the contrary, it connects the persistence of the artwork less to a permanent object than to processes of remembering, re-experiencing, and interpretation.

Future research may focus more closely on how walking is experienced by different bodies. Examining how freedom of movement is shaped by social position, safety, physical ability, and economic conditions could further develop the critical dimensions

of artistic walking. The guidance of participants, the collection of personal data, digital tracking technologies, and surveillance systems may also be investigated in relation to the ethical implications of walking-based artistic practices. In addition, the relationships that walking establishes with ecological environments, non-human beings, soundscapes, and changing technological infrastructures open new areas of inquiry. Comparative studies of walking practices conducted in different geographical contexts could reveal cultural differences in the relationships among movement, local history, collective memory, and public space. The functions identified in this study may also be examined through a broader range of artists, geographical settings, and participant groups in order to discuss how walking is reconfigured according to context. Such research would make visible not only the methodological role of walking in artistic production but also its ethical, social, and technological limits.

In conclusion, walking in contemporary art is not tied to a single aesthetic language or function. In each example, walking establishes different relationships between the artwork, spatial experience, and the viewer, reconfiguring both the meaning of the work and the viewer's position within it. The principal contribution of this study lies in demonstrating this diversity through the methodological and conceptual functions that walking acquires according to context. This perspective makes it possible to understand walking not merely as a subject of art but as a critical mode of production through which historical, political, perceptual, and technical relationships are investigated by the body in motion.

References

- Altıpar, B. U. & Güler, A. (2024). Yürüme Araştırmalarında Sezgisel ve Duyusal Farkındalık, İnsan Sanat Tasarım ve Mimarlık Araştırmaları Dergisi, 4(1): 386-413.
- Alıys, F. & Faesler, C. (2011). Francis Alıys, BOMB, 116: 64-71.
- Arapoğlu, F. (2016). Temsilden Eyleme: Dadaizm ve Sürrealizm'de Bir Karşı-Sanat Formu Olarak Yürüme Eylemi, Aydın Sanat, 2(4): 1-7.
- Burrington, I. (2016). Networks of New York: An Illustrated Field Guide to Urban Internet Infrastructure, Brooklyn: Melville House.
- Cardiff, J. & Miller, G. B. (n.d.). Her Long Black Hair, Janet Cardiff and George Bures Miller. <https://cardiffmiller.com/walks/her-long-black-hair/> [Accessed: 10.05.2026]
- Certeau, M. D. (1988). The practice of everyday life. University of California Press.
- Eccles, M. (2023). Regina José Galindo: Politics of Memory and Affect, Palabra Clave, 26(1): e2615. <https://doi.org/10.5294/pacla.2023.26.1.5>
- Fisher, T. (2011). Aesthetics and the Political: An Essay on Francis Alıys's Green Line. Cultural Critique, 78, 1-26. <https://doi.org/10.5749/culturalcritique.78.2011.0001>
- Forgione, N. (2005). Everyday Life in Motion: The Art of Walking in Late-Nineteenth-Century Paris, The Art Bulletin, 87(4): 664-687. <https://doi.org/10.1080/00043079.2005.10786265>
- Galindo, R. J. & Goldman, F. (2006). Regina José Galindo, BOMB, 94: 38-44.
- Gieskes, M. (2014). The Green Line: Potency, Absurdity, and Disruption of Dichotomy in Francis Alıys's Intervention in Jerusalem. In J. Goudeau, M. Verhoeven & W. Weijers (Eds.), The Imagined and Real Jerusalem in Art and Architecture, Leiden: Brill, p. 33-58.
- Gros, F. (2023). A philosophy of walking. Verso Books.
- Kedik, A. S. (2010). Richard Long: Bir Yürüyüşün İma Ettikleri, Sanat ve Tasarım Dergisi, 1(5): 107-120. <https://izlik.org/JA36AA23US>
- Kohler, M., Shortell, T., & Brown, E. (2014). Walking through in tead of flying over—A way to see the flux of urbanization in Istanbul and other places. Shortell, T. & Brown, E. (Eds.), Walking the Euro-pean City: Quotidian Mobility and Urban Ethnography. Farnham: Ashgate Publishing, p. 129-152.
- Medina, C. (1997). Francis Alıys: Tu Subrealismo/Your Subrealism, Third Text, 11(38): 39-54.
- Nedelkopoulou, E. (2011). Walking Out on Our Bodies: Participation as Ecstasis in Janet Cardiff's Walks, Performance Research, 16(4): 117-123. <https://doi.org/10.1080/13528165.2011.606058>
- Pauknerova, K., & Gibas, P. (2014). Walking the stream: Prague cityscape and the research guided by the water. Shortell, T. & Brown, E. (Eds.), Walking in the European City: Quotidian mobility and urban ethnography. Farnham: Ashgate Publishing, p. 173-187.
- Sheller, M. & Urry, J. (2006). The New Mobilities Paradigm, Environment and Planning A, 38(2): 207-226. <https://doi.org/10.1068/a37268>
- Shipwright, F. (2016). Artist Profile: Ingrid Burrington, Rhizome. <https://rhizome.org/editorial/2016/oct/13/artist-profile-ingridburrington/> [Accessed: 15.05.2026]
- Shortell, T. & Brown, E. (2014). Introduction: Walking in the European City, Shortell, T. & Brown, E. (Eds.), Walking in the European City: Quotidian Mobility and Urban Ethnography, Farnham: Ashgate, p. 1-18.
- Springgay, S. & Truman, S. E. (2017). A Transmaterial Approach to Walking Methodologies: Embodiment, Affect, and a Sonic Art Performance, Body & Society, 23(4): 27-58. <https://doi.org/10.1177/1357034X17732626>
- Triggs, V., Irwin, R. L. & Leggo, C. (2014). Walking Art: Sustaining Ourselves as Arts Educators, Visual Inquiry: Learning & Teaching Art, 3(1): 21-34. https://doi.org/10.1386/vi.3.1.21_1

Impact of AI-Generated Images on Social Media Trust Across Generations

Tarik Doğan / Ph.D. 

Selçuk University, Faculty of Communication, Department of Advertising
tdogan@selcuk.edu.tr

Abstract

This study investigates the impact of AI-generated images circulating on social media on users' perceived trust in visual content, with a focus on generational differences. The rapid development of generative artificial intelligence technologies and the proliferation of hyper-realistic synthetic visuals have intensified debates surrounding reality, credibility, and verification in digital media environments. The study is theoretically grounded in Baudrillard's theory of hyperreality, Manovich's approach to digital media, and debates on algorithmic authority. A quantitative method and quasi-experimental design were employed. Real photographs and AI-generated visuals were presented through an asymmetric block design (2-2-1-2-2-1) developed to minimize learning effects. The final analytic sample consisted of 399 voluntary online participants classified into Generations X, Y, and Z, with responses screened using an attention-check criterion. Data were analyzed using paired-samples t-tests, one-way ANOVA, and post-hoc analyses. Findings showed

that participants rated AI-generated visuals as significantly more trustworthy than real photographs. The highest individual trust score was recorded for an AI-generated landscape image, while the strongest pairwise effect was observed in the portrait category. Significant generational differences were also identified: Generation X showed lower trust in AI-generated visuals, whereas Generations Y and Z expressed greater confidence in synthetic content. No statistically significant differences were found by gender or education level. Overall, the findings suggest a reconfiguration of perceived visual trust in this experimental context. However, the results are specific to the present sample and ten-image stimulus set and should not be interpreted as evidence of a society-wide shift in trust.

Keywords: AI-Generated Images, Hyperreality, Digital Trust, Social Media, Generational Differences

JEL Codes: L82, D83, D91, C83, L86

Citation: Doğan, T. (2026). Impact of AI-generated images on social media trust across generations. *Researches on Multidisciplinary Approaches (ROMAYA Journal)*, 2026(2).

1. Introduction

With the development of digital media technologies, visual production processes have undergone a radical transformation; in particular, Generative Artificial Intelligence (GenAI) systems have reopened debates on the concept of visual reality. The widespread use of artificial intelligence models capable of generating images and videos from text has sparked significant discussion about the accuracy, reliability, and potential for content manipulation circulating on social media platforms (Aziz et al., 2024). As AI-supported images become increasingly realistic, it becomes more difficult for users to distinguish between real photographs and synthetic content; consequently, the concept of “visual evidence” is being transformed within the digital media environment (Karakaya & Dayı, 2024). In this context, generative artificial intelligence has become not merely a technical innovation but also a sociocultural phenomenon that affects social trust, media literacy, and information verification processes. Generative adversarial networks (GANs), developed by Goodfellow et al. (2014), constitute a significant turning point in the development of generative artificial intelligence technologies. Through GAN- and diffusion-based models, people, objects, and events that have never existed in the physical world can be produced in hyper-realistic forms. Today, systems such as Midjourney, DALL-E, and Stable Diffusion transform digital visual culture by generating synthetic images with high aesthetic quality (Arielli, 2024). This transformation affects not only modes of visual production but also representational practices in fields such as art, media, advertising, and political communication (Manovich, 2001). Baudrillard’s theory of simulation offers an important theoretical framework for explaining the new regime of reality created by AI-generated images. According to Baudrillard, in contemporary society, simulation replaces reality, producing a new order called “hyperreality” (Baudrillard, 2018). Images generated by artificial intelligence also reinforce the order of simulacra by creating a sense of reality without necessarily referring to the physical world. Synthetic content circulating especially on social media platforms weakens users’ visual verification reflexes and reshapes trust in visual media (Gül Ünlü & Küçükşabanoğlu, 2023).

Experimental studies have shown that users often fail to distinguish AI-generated faces with a high level of photorealism from photographs of real people. This technical perfection turns synthetic images into not only an aesthetic form of production but also an instrument for manipulating trust (Nightingale & Farid, 2022). Similarly, Osińska et al. (2025) state that users have difficulty distinguishing certain AI-generated images from real photographs and those high-resolution human faces, in particular, generate a sense of trust. Göring et al. (2023) further demonstrate that the aesthetic appeal of AI-generated images direct-

ly affects users’ perception of reality. This indicates that the technical perfection of AI-generated content facilitates perceptual manipulation in social media environments. The interaction-oriented structure of social media algorithms increases the visibility of AI-generated content and deepens the risk of disinformation (Doğan, 2024). Castells (2008) argues that, in the network society, information now circulates through digital networks and that new power relations are established through algorithms. Pasquale (2015) states that algorithmic systems have become black boxes, and that users consume digital platforms without knowing how or why certain content is prioritized. This situation particularly facilitates the use of hyper-realistic synthetic images for manipulative purposes on social media. Fake content produced through deepfake technologies is increasingly an effective tool in propaganda, disinformation, and perception management (Zan & Zan, 2025).

Although studies focusing on technical realism, aesthetic qualities, and perceptual effects of AI-generated images have increased in the literature, empirical research examining how such content transforms user trust in social media across generations remains limited. In particular, the generational differences in trust perceptions toward synthetic content are noteworthy. While Prensky (2001) defines individuals born in the digital age as “digital natives,” Buckingham (2003) emphasizes that familiarity with digital technologies alone does not necessarily indicate critical media literacy. Generation Z, which has high levels of social media use, encounters AI-generated content more frequently and consumes it as a natural part of their everyday digital experience. Gürel’s (2023) study shows that young users are not fully certain about the accuracy of online content and experience concerns about information security in the digital media environment. Similarly, Hobbs (2017) notes that digital literacy requires not only technical skills of use, but also the capacity for content verification and critical evaluation. However, the effect of AI-generated content on user perception is not limited to trust alone. Some studies show that highly realistic images that do not appear entirely natural create an “uncanny valley” effect, generating feelings of discomfort and distrust in users (Kishnani, 2025). This demonstrates that AI-generated images are associated not only with technical quality but also with cognitive, psychological, and cultural processes of perception. Therefore, synthetic media content constitutes a multilayered field of digital experience that transforms users’ perception of reality.

This study aims to examine the effect of AI-generated images circulating in social media environments on user trust. Within the scope of the research, real photographs and AI-generated images are compared through a controlled experimental design, and users’ levels of trust are analyzed. In particular, through an asymmetric block structure in which ima-

ges are presented in specific sequences, the study seeks to measure participants' tendencies to distinguish synthetic content and their perceptions of trust. In this respect, the study aims to make an empirical contribution to the literature on visual reality, digital trust, and media literacy in the age of generative artificial intelligence.

2. Theoretical Framework

Images generated by artificial intelligence represent a logical evolution of digital media algorithms. According to Manovich (2024), the technical infrastructure of this process is based on the algorithmic decomposition of shape, light, and motion in the digital construction of objects, as well as on the computer-based simulation of traditional artistic effects through graphic software such as Photoshop in the 1990s. However, this process is not merely a technical advancement; it also constitutes a sociotechnical rupture in which decision-making mechanisms turn into a non-transparent "black box" (Pasquale, 2015). This structure of digital media, built through the interaction between databases and algorithms (Manovich, 2001), has today become a fundamental force shaping the everyday practices of "born-digital" generations who use technology as if it were their native language (Palfrey & Gasser, 2008). Today, this process of simulation and data processing has reached the stage of "cinematic algorithms," in which traditional concepts of creativity are surpassed. According to Hutson and Smith (2025), in this new stage, production has evolved not into a fully automated process but into forms of "hybrid creation," in which the artist becomes a curator who directs and refines machine outputs. Ultimately, this technological ecosystem points to a new phase of "artificial aesthetics," in which machines measure and rank aesthetic value, while human creativity is pushed toward adapting to machine judgments through "aesthetic alignment" (Arielli, 2024).

2.1. Generative Artificial Intelligence Technologies and the Proliferation of Visual Content Production

Generative artificial intelligence (GenAI) technologies are radically transforming visual production practices, particularly through diffusion models that enable text-to-image generation (Aziz et al., 2024). Generative adversarial networks (GANs), developed by Goodfellow et al. (2014), and the zero-shot learning capability introduced by Ramesh et al. (2021) constitute the technical foundation of this transformation. Advances in infrastructure are no longer limited to still images but extend to sophisticated architectures capable of generating realistic video scenes with high visual coherence from textual

prompts (Sanchez-Acedo et al., 2026). The capacity of these systems has reached such a massive scale that more than 15 billion synthetic images generated by artificial intelligence in 2023 alone have been found to surpass the volume of production achieved by traditional photography over 150 years (Aziz et al., 2024). These technological possibilities have created a field of "democratization" in production processes by enabling visual content production to spread to broader user groups without requiring technical knowledge or specialized expertise (Rapp et al., 2025; Yıldız, 2025). However, these automated processes sever the physical referential relationship between the digital image and the objective world, thereby producing an ontological ambiguity (Karakaya & Dayı, 2024).

The dimension of this transformation, described as "cultural automation," presents a new structure that standardizes aesthetic judgment and transfers human creativity onto an algorithmic plane (Manovich & Arielli, 2024). This situation undermines the traditional status of photography as "evidence of reality" and reinforces the era of simulation and "hyperreality," in which computer-based representations without a referent are perceived as more real than the original (Baudrillard, 2018; Sontag, 2008; İpek & İpek, 2025). In this universe of synthetic reality, where the boundaries between the virtual and physical worlds become blurred, the fact that highly realistic deepfake content and hyper-realistic synthetic images have become almost impossible to distinguish with the human eye lays the groundwork for an epistemological crisis at the societal level (Osińska et al., 2025; Sanchez-Acedo et al., 2026). Indeed, the approximately 900% annual increase in deepfake videos worldwide clearly reveals the manipulative power and mass impact of this technology (Zan & Zan, 2025). When this environment of perceptual risk is combined with the target-audience segmentation and microtargeting algorithms of digital platforms, it enables disinformation to spread much faster, more personalized, and more persuasively (Gül Ünlü & Küçükşabanoğlu, 2023). It has been observed that AI-generated depictions of events that never occurred, such as fabricated images of political leaders or synthetic explosion scenes, can receive millions of interactions in a short period and cause fluctuations in global markets or public confusion (Karakaya & Dayı, 2024). The ability of algorithms to control information flows and create echo chambers provides an environment in which false information can be reproduced without sufficient oversight (Arslan, 2026). As a result, visual disinformation and the accompanying crisis of trust are legitimized by the flawless technical quality of synthetic images and transformed into a systemic problem that threatens information security, individual privacy, and democratic foundations (Gül Ünlü & Küçükşabanoğlu, 2023; Zan & Zan, 2025).

2.2. Theories of Visual Perception and the Uncanny Valley: Ontological Ambiguity

As the level of human likeness in visual perception increases, the “uncanny valley” effect emerges when the resemblance of an artificial figure to a human being reaches an “almost perfect” threshold (Mori, 2012). This effect is triggered not only in physical robotic systems but also by the viewer’s subconscious recognition of subtle artifacts in AI-generated images with mid-range realism, such as asymmetrical facial features, inconsistent lighting, and unrealistic skin textures (Kishnani, 2025). Indeed, uncanniness is also defined as a profound sense of “estrangement” arising from the presence of an extremely foreign and irrational element within a familiar form (Rapp et al., 2025). Contemporary systems attempt to overcome this valley through opaque data architectures and algorithms that prioritize fictional aesthetics (Hutson & Smith, 2025; Pasquale, 2015).

The increase in photorealism erases the ontological distinction between real photographs and synthetic images, thereby neutralizing cognitive skepticism (Karakaya & Dayı, 2024; Osińska et al., 2025). Indeed, empirical reception studies have shown that, beyond being indistinguishable from real faces, perfected synthetic faces are perceived as more authentic and more trustworthy than real human faces (Nightingale & Farid, 2022; Miller et al., 2023). The automation of “average aesthetics” by artificial intelligence dulls the human tendency to search for imperfections and manipulates perceptual defense mechanisms (Arielli, 2024). This is because the smooth images synthesized by generative models trained on massive datasets exploit existing expectations and biases in human cognition, thereby completely dissolving ontological boundaries (van Hees et al., 2025). Structural elements in the grammar of visual design, such as lighting and texture, construct a reality effect that carries the synthetic into the realm of truth (Kress & Van Leeuwen, 2020). This resulting hyper-realistic structure does not merely create an aesthetic illusion; it also gives rise to a complex crisis environment in which visual manipulation becomes legitimized on digital platforms, individuals are drawn into epistemological blindness, and social trust in the accuracy of information is undermined (Gül Ünlü & Küçükşabanoğlu, 2023; İpek & İpek, 2025).

2.3. Generational Theories and Digital Skepticism: The X, Y, and Z Paradox

Generation Z, referred to as digital natives, possesses a high level of operational self-confidence due to its “native language”-like relationship with technology (Prensky, 2001). However, technical proficiency does not always correspond to the level of critical literacy required to decode media messages (Buckingham, 2003). Digital literacy is not merely a technical competence but a critical evaluation process

that questions the ontological status of the image (Kellner & Share, 2007; Sezgin, 2025).

Generation Y, described in the literature as a bridge between Generation X and newer digital generations, stands out as a group born into an analog world, witnessing the digital revolution during adulthood, and positioned between these two worlds as “digital hybrids” (Yıldız, 2012, as cited in Canbolat, 2022). Generation Y displays a hybrid attitude by combining its ability to adapt to the technological speed of the succeeding Generation Z (Boztunç, 2014) with the traditional security and skepticism reflexes of the preceding Generation X (Canbolat, 2022). Although this generation integrates advanced digital tools into professional and everyday life at a high level, it tends to use the knowledge and experience it acquires in the most efficient way by subjecting them to a rational filtering process (Seymen, 2017).

Therefore, Generation Y’s approach to content in the digital ecosystem is characterized by cautious acceptance, balancing technological inclination and traditional skepticism regarding data privacy (Canbolat, 2022). By contrast, Generation X preserves its traditional information-seeking reflexes and “analog skepticism” (Prensky, 2001). This generation develops a structural skepticism toward digital content and subjects messages to a more rational filtering process (Hobbs, 2017). In particular, older age groups, especially those aged 60 and above, exhibit resistance to digital disinformation by verifying the information they encounter through strategies such as cross-checking multiple sources and consulting expert opinions (Arslan, 2026).

2.4. Algorithmic Authority and Trust: Collective Trust in Social Media Content

Algorithmic systems have become fundamental mechanisms of authority that structure individuals’ perception of reality and aesthetic judgments in the network society. This new social morphology redefines power relations and social hierarchies through algorithms that control the flow of information (Castells, 2008). In this context, algorithms function directly as objects of surveillance and domination from the perspective of panoptic power (Foucault, 1992), since what is considered “real,” “true,” or “visible” is no longer determined by central authorities, but by non-transparent data architectures described as “black boxes” (Pasquale, 2015). Faced with the complex and uncontrollable nature of these systems, users tend to exhibit a collective form of “algorithmic surrender” rather than developing rational skepticism, falling under the illusion that algorithmic outputs are objective, neutral, and error-free (Hashmi et al., 2024).

This process of surrender takes place within the ecosystem defined as “surveillance capitalism,” in which individual experiences are transformed into

behavioral data and commodified (Zuboff, 2019). Social media platforms reinforce a constructed and idealized perception of reality, referred to as “cinematic algorithms,” by prioritizing highly interactive content, including synthetic images (Hutson & Smith, 2025). In AI-generated content, the balance between “aesthetic quality” and “text-image alignment” disables the user’s cognitive filter (Aziz et al., 2024), while the visual fidelity created by synthetic images manipulates social trust by making the ontological distinction between them and real photographs nearly impossible (Osińska et al., 2025). This situation is characterized as a form of domination over the perception of reality, in which content-based and visual reading take precedence over technical reading (Karakaya & Dayı, 2024). Moreover, algorithms reproduce structural biases, thereby undermining the myth of systemic neutrality (Noble, 2018). Nevertheless, metrics such as likes, shares, and engagement on social networks construct an unshakable form of “social proof,” regardless of the accuracy of the content (Metzger & Flanagin, 2013). As a result, users tend to accept algorithmic filters as absolute truth rather than subjecting images to analytical scrutiny. Overcoming this epistemological crisis depends on establishing algorithmic accountability and independent auditing mechanisms (Diakopoulos, 2016).

3. Methodology

3.1. Research Design: Quantitative Analysis and Cross-Sectional Survey

This research employed a quasi-experimental design to examine causal relationships between variables using controlled stimuli and standardized measurement instruments. The study is based entirely on quantitative data collection and analysis and is structured within the cross-sectional survey framework, which aims to describe the attitudes, perceptions, and behavioral tendencies of large populations through numerical data (Creswell, 2014; Saunders et al., 2019). In accordance with the basic axioms of the quantitative research tradition, analyses of variance (ANOVA) and post-hoc tests were integrated into the research model in order to preserve the structural integrity of the data and identify meaningful intergenerational differences among Generations X, Y, and Z (Büyüköztürk et al., 2017; Pandey & Pandey, 2015).

The main element ensuring the methodological originality of the study and the internal validity of the data is the architecture of the Asymmetric Block Design, specifically constructed by the researcher for the presentation of synthetic (AI-generated) and real images (Kluger et al., 2025). To prevent participants’ tendency to form a mental template and make predictions through pattern recognition in visual perception tests and repeated-measures designs, the

stimuli were asymmetrically blocked in a 2-2-1-2-2-1 sequence. Creswell (2014) emphasizes that, in such experimental interventions, systematic errors such as order bias and the learning effect, in which participants alter their responses as they become familiar with the stimuli, may compromise the purity of the data. This asymmetric architecture requires participants to evaluate each image as an independent “ontological reality test,” thereby minimizing cognitive transfer and attention competition among survey items (Kluger et al., 2025; Saunders et al., 2019).

In addition, the analysis of these complex and unbalanced datasets was based on the logic of the Social Relations Model (SRM), which enables the decomposition of variance components arising from the interaction between the participant as actor and the image as partner. This advanced modeling approach makes it possible to isolate individual perceptual differences from “measurement error” and to reveal the pure statistical projection of trust in AI-generated images (Kluger et al., 2025; Singh, 2007).

3.2. Data Collection Instrument

In this study, a five-point Likert-type scale was used as the data-collection instrument to measure participants’ perceptions of synthetic and real images in digital environments in a psychometrically objective manner (Gürel, 2023). Likert scales, which constitute the foundation of attitude and perception measurement in the social sciences, convert participants’ tendencies toward variables into standardized numerical values, thereby optimizing construct validity and internal consistency coefficients (Creswell, 2014; Singh, 2007). The scale design was structured to sensitively differentiate the intensity and direction of individuals’ trust in AI-generated images and to transfer participants’ attitudes, ranging from “I completely trust” to “I do not trust at all,” into numerical data on a linear continuum (Singh, 2007). In this context, the scale’s sensitivity was based on a psychometric balance that translates participants’ cognitive thresholds into statistically meaningful variance (Pandey & Pandey, 2015). In this study, “trust” is operationalized narrowly as the perceived credibility and reliability assigned to the presented visual stimulus as a source of visual information; it does not refer to generalized interpersonal, institutional, or societal trust.

To filter out participant inattention, which is frequently encountered in online quantitative measurement designs and threatens the structural integrity of the data, a directed query/attention-check item was included in the measurement instrument as a methodological necessity. Participants who marked responses at random without focusing on all survey items, or who displayed careless-responding tendencies that disrupted the dataset’s statistical normality, were identified through this structured filtering mechanism and excluded from the analysis

(Creswell, 2014). Designed within the framework of the reliability criteria for data collection instruments emphasized by Pandey and Pandey (2015), this procedure filters out measurement errors in the dataset by requiring participants to focus solely on the concept intended to be measured; it thereby directly increases the statistical power of the research and the external reliability of the findings (Singh, 2007).

The ten images constituting the core component of the measurement instrument, five real photographs and five AI-generated images, were subjected to strict standardization as visual stimuli within the research design. To evaluate the ontological distinction between synthetic images and real photographs independently of external variables, the resolution, lighting balance, and color saturation of the images

were brought into perceptual equivalence (Aziz et al., 2024). Presenting the stimuli using a standardized protocol that controls their technical characteristics, such as size and background, eliminates attentional competition that may arise during visual perception (Qin et al., 2020). This perceptual standardization architecture, which prevents external variables from turning into confounding effects, preserves the purity of the experimental manipulation and maximizes the methodological internal validity of the research (Creswell, 2014; Pandey & Pandey, 2015). In this way, the measurement instrument goes beyond merely being a technical data-collection form and becomes a scientific instrument that tests the ontological boundaries of artificial aesthetics (Singh, 2007).



Figure 1. Real Photographs Used as Stimuli.



Figure 2. AI-Generated Images Used as Stimuli

3.3. Participants and Sampling Procedure

A non-probability online volunteer sampling approach was used. The final analytic sample comprised 399 participants who could be classified into one of the three predefined generational groups used in the study (Generation X, Generation Y/Millennials, or Generation Z) according to the birth-year boundaries reported in Table 1. Participation was voluntary. Responses were retained for analysis when participants completed the visual evaluation task and met the attention-check criterion described above; responses indicating random or careless responding were excluded. Because recruitment was online and voluntary rather than probability-based, the sample should be interpreted as an experimental sample rather than as a population-representative sample.

3.4. Principles of Visual Pairing: Paired Design

In this study, the selection and presentation of visual stimuli were based on a “paired design” protocol to control for external factors and ensure methodological rigor. In quantitative designs, maximizing internal validity, which refers to the accuracy of causal relationships, requires the structural control of confounding variables that may manipulate the dependent variable (Creswell, 2014). Including synthetic and authentic images in the experiment as non-random paired sets minimizes confounding effects from participants’ individual differences in judgment, thereby providing a statistical layer of protection for the reliability of the research data (Singh, 2007).

The core of the paired design is the principle of “stimulus equivalence.” In accordance with the principles of measurement sensitivity emphasized by Pandey and Pandey (2015), each AI-generated image used in the study was content-wise paired with a real photograph from the same category, such as a nature landscape paired with a nature landscape. Equalizing the structural characteristics of the images, including technical elements such as perspective depth, object positions, and lighting conditions, at a perceptual standard prevents the “noise” created by external variables and enables only the ontological difference, whether synthetic or real, to be isolated and measured (Aziz et al., 2024). This method eliminates threats to internal validity by ensuring that the intended effect is measured solely by the stimulus itself (Creswell, 2014). To disrupt the guessing strategies and cognitive templates that participants may develop during repeated-measurement processes, the images were presented in an asymmetric sequence specific to the study, following a 2-2-1-2-2-1 format. This presentation strategy was constructed in accordance with the logic of the Asymmetric Block Design, which enables the modeling of asymmetric data structures obtained from the dyadic interactions of two different categories, namely artificial and real images (Kluger et al., 2025). Combining the paired design with the asymmetric presentation architecture prevents participants from forming a pattern in their minds and requires them to evaluate each stimulus as an independent “partner” (Kluger et al., 2025). This integrated methodological structure filters individual perceptual differences from measurement error and allows the trust

threshold created by synthetic media to be identified in its purest form (Singh, 2007).

4. Findings

In this section, the findings obtained from the data collected within the framework of the quasi-experimental design are presented in line with the pre-determined theoretical framework, namely Baudrillard’s (1994) theory of simulation, Manovich’s (2024) model of algorithmic decomposition, and Kluger et al.’s (2025) Asymmetric Block Design protocol. The order of reporting follows the study’s hypothesis hierarchy, beginning with descriptive statistics and proceeding to increasingly complex inferential analyses. The significance threshold was set at $\alpha = .05$, and effect sizes were reported through Cohen’s d and eta-squared (η^2), respectively.

4.1. Sample Profile

The study sample consisted of 399 voluntary participants recruited online. The sample exhibited marked heterogeneity in generational distribution: the majority of participants were Generation Y ($n = 231$, 57.9%), followed by Generation Z ($n = 98$, 24.6%) and Generation X ($n = 70$, 17.5%). Although the sample was unbalanced by gender, this variable was included in the analysis: 68.7% of participants were female ($n = 274$), while 31.3% were male ($n = 125$). In terms of educational level, the majority of participants had an undergraduate education (65.9%, $n = 263$), while a substantial proportion had a postgraduate education (28.3%, $n = 113$). The sample profile is presented in detail in Table 1.

Table 1. Sample Profile: Distribution by Generation, Gender and Education Variables and Confidence Score Averages

Variable / Category		n	%	AI Trust M	Real Trust M	SD (AI)
Generation	Generation X (1965–1980)	70	17.5	15.50	12.41	2.93
	Millennials (1981–1996)	231	57.9	16.79	13.35	3.11
	Generation Z (1997–2012)	98	24.6	17.47	13.71	3.54
Gender	Women	274	68.7	16.64	13.36	3.01
	Male	125	31.3	16.94	13.08	3.72
Education Status	High school and below	23	5.8	16.09	—	3.91
	Undergraduate	263	65.9	16.87	—	3.34
	Graduate	113	28.3	16.53	—	2.87
Total		399	100.0	16.73	13.27	3.25

Note. AI Trust M = Average total confidence score of artificial intelligence images (5 items, 5–25 score range). Actual Trust M = Average total confidence score of real images. SS = Standard deviation. The small sample size ($n = 23$) in the high school and below group should be considered in the comments.

The first notable pattern in Table 1 is that the mean level of trust in AI-generated images is systematically higher than that in real images across all su-

bgroups. This structural asymmetry will be examined in depth in the following sections.

4.2. General Trust Comparison: Real And AI-Generated Images

4.2.1. Ontological paradox: the hyperreality effect

The study's primary hypothesis predicted that participants' trust scores for AI-generated images would

differ significantly from those for real images. The results of the paired-samples t-test confirmed this hypothesis with an extremely strong effect size (see Table 2): $t(398) = -21.12$, $p < .001$, $d = -1.058$. The absolute value of Cohen's d clearly exceeds the threshold of 0.80, which indicates a large effect size; this ratio suggests that approximately 47% of the variance is explained by group membership.

Table 2. The Difference Between Trust in Real and AI Images: Matched Sample t-Test Results

Image Type	n	M	SD	t	p	d
Real Images (5 items total)	399	13.27	3.25	-21.12	<.001	-1.058
Artificial Intelligence Images (5 items total)	399	16.73	3.25			
Difference (AI – Reality)	—	+3.46	—			

Note. Likert scale: 1 = I don't trust at all, 5 = I trust completely. Both total scores represent a 5-item composite measurement (range 5–25). d = Cohen's d effect size. The analysis was conducted on 399 participants with complete data for both variables.

The total mean trust score for real images was $M = 13.27$ ($SD = 3.25$), whereas the mean score for AI-generated images was $M = 16.73$ ($SD = 3.25$). The 3.46-point difference between the means corresponds to approximately 17.3% of the theoretical scale range (5–25), indicating not only a statistical but also a substantive divergence.

This finding directly resonates with Baudrillard's (2018) concept of simulacra. Baudrillard argues that, in the postmodern visual regime, simulation no longer merely represents reality but surpasses it, and that hyperreality—that is, the model appearing more real than the reality it represents—has become a normative perceptual condition. The present findings bring this proposition onto an empirical plane; participants' attribution of higher trust to AI-generated images than to real photographs can be interpreted as a measurable manifestation of the Baudrillardian hyperreality effect in the context of social media. In Manovich's (2024) terms, "algorithmic image generation automatically produces a stronger signal of credibility when human percep-

tion is left without a stable point of reference"; the present results are consistent with this mechanism among participants in the current sample, without establishing population-level generalizability.

4.3. Intergenerational Variance: ANOVA and Gender / Education Analyses

4.3.1. One-way ANOVA: generation × trust in ai-generated images

A one-way analysis of variance (ANOVA) was conducted to test whether the total trust score for AI-generated images (AI_Total, ranging from 5 to 25) differed by generation. The results indicated that the main effect of generation was statistically significant: $F(2, 396) = 7.869$, $p < .001$, $\eta^2 = .038$. The eta-squared value indicates that 3.8% of the variance is attributable to the generation variable; according to Cohen's (1988) criteria, this corresponds to a small-to-medium effect size.

Table 3. Generational Effect on Total Trust in AI Visuals: One-Way ANOVA and Tukey HSD Post-Hoc Test Results

Source of Variance	SS	df	MS	F	p	η^2
Intergroup (Generation)	146.96	2	73.48	7.869	<.001	.038
Within Groups (Error)	3704.37	396	9.35			
Total	3851.33	398				

Note. SS = Sum of squares. df = Degrees of freedom. MS = Mean of squares. η^2 = Eta-square effect size. Since no violation of the assumption of the Levene's homogeneity test was detected, standard ANOVA was applied.

Impact of AI-Generated Images on Social Media Trust Across Generations

Table 3b. Tukey HSD Post-Hoc Comparisons

Comparison	M _i	M _j	MD (i – j)	q	p	η ²
Generation X vs Millennials	15.50	16.79	–1.288	4.183	.009	.038
Generation X vs Generation Z	15.50	17.47	–1.969	5.577	< .001	
Millennials vs Gen Z	16.79	17.47	–0.682	2.505	.181 ns	

Note. M = Average of the total confidence score of artificial intelligence. MD = Mean difference. q = Studentized interval statistic. p < .01. p < .001. ns = Not statistically significant.

The Tukey HSD post-hoc test provides a more detailed explanation of the significant ANOVA finding: Generation X exhibited significantly lower AI trust scores than both Generation Y (MD = –1.288, q = 4.183, p = .009) and Generation Z (MD = –1.969, q = 5.577, p < .001). The difference between Generations Y and Z, however, did not reach the statistical significance threshold (MD = –0.682, p = .181).

This pattern reflects a mechanism conceptualized as analog skepticism. Generation X grew up in a cognitive environment shaped before the widespread adoption of digital photography and internalized the visual verification practices of the analog media era. During this period, manipulating a photograph involved both high technical and economic thresholds. By contrast, Generation Y, which emerged in the middle of the digital age, and Generation Z,

which encountered generative artificial intelligence technologies at earlier ages, approach visual media through a different epistemic framework. Paradoxically, although Generation Z is the generation most closely associated with technology, it displayed the highest mean level of trust in AI-generated images (M = 17.47). This finding indicates that digital competence does not automatically translate into visual critical capacity.

4.3.2. The effect of gender and educational levels on trust perception

In addition to the generation effect, the possible influence of gender and educational level variables on trust perception was examined. The findings are summarized in Table 3c.

Table 3c. Perception of Trust by Gender and Education Level Variables: Independent Sample t-Test and One-Way ANOVA Results

Independent Variable / Group	n	M (AI)	M (Real)	t	p
Gender: Female	274	16.64	13.36	–0.859	.391 ns
Gender: Male	125	16.94	13.08		
Education ANOVA (3 groups)	399	—	—	F = 0.911	.403 ns
High school and below	23	16.09	—		
Undergraduate	263	16.87	—		
Graduate	113	16.53	—		

Note. AI M = Average total trust in AI images. Actual M = Average total confidence in real images. For the training variable, only the AI confidence score was subjected to ANOVA. η² (training) = .005. d = Not statistically significant. In terms of gender, the independent-samples t-test revealed no significant difference in AI confidence score between female (M = 16.64, SD = 3.01) and male (M = 16.94, SD = 3.72) participants: t(397) = –0.859, p = .391. Along the same lines, actual visual confidence scores did not differ significantly according to gender: t(397) = 0.803, p = .423. The one-way ANOVA conducted for the education level also did not reveal a significant effect: F(2, 396) = 0.911, p = .403, η² = .005.

These findings indicate that individual differences in visual reality perception are not shaped by gender or education level, but primarily by generational identity and accompanying media socialization experiences. The pattern in question supports Kluger et al.'s (2025) discussion of the "observer component" within the framework of the Social Relations Model (SRM); they argue that the generation is the strongest observer variable representing the individual's systematic tendency towards visual stimuli.

4.4. Paired Image Analysis: Set-Level Comparison

4.4.1. Set-based findings and the uncanny valley effect

The five image sets within the scope of the Paired Design protocol are arranged to enable a real-artificial intelligence comparison. Paired sample t-test was applied for each set; mean difference (MD), t statistic, and Cohen's d effect size are reported in Table 4.

Table 4. Confidence Score Comparison Based on Paired Image Sets: Set-Level t-Test Results

Set/Category	n	Real M	G_SS	AI M	AI_SD	MD	t	d
Set 1 — Portrait (G1 / Y1)	397	2.18	0.91	3.53	0.93	−1.35	−21.53	−1.080
Set 2 — Landscape (G2 / Y2)	395	2.53	1.07	3.39	0.92	−0.86	−13.37	−0.673
Set 3 — Architecture (G3 / Y3)	394	2.47	1.06	3.32	1.03	−0.85	−13.17	−0.664
Set 4 — Portrait (G4 / Y4)	396	3.05	1.05	2.94	0.99	+0.11	1.625 ns	0.082
Set 5 — Landscape (G5 / Y5)	392	3.13	0.95	3.66	0.84	−0.53	−10.29	−0.520

Note. G = Real photo, Y = AI-generated image. MD = Mean difference (True − AI). d = Cohen's d. $p < .001$. ns = Not significant. Category assignments are based on researcher classification.

The most striking pattern in Table 4 is reflected in the heterogeneity among the five sets. In four of the sets—Set 1 ($d = -1.080$), Set 2 ($d = -0.673$), Set 3 ($d = -0.664$), and Set 5 ($d = -0.520$) AI-generated images received significantly higher trust scores than real photographs. By contrast, Set 4 (Portrait: G4 / Y4) was the only exception to this general tendency: $t(395) = 1.625$, $p = .105$, $d = 0.082$; this value did not reach statistical significance.

The fact that Set 1 (Portrait) showed the strongest effect, with $d = -1.080$, is a theoretically instructive finding, although it does not align with Mori's (2012) Uncanny Valley theory. Mori argues that humanoid faces evoke an intense feeling of discomfort and uncanniness when they approach a certain threshold of resemblance. According to this model, AI-generated portraits would be expected to receive lower trust scores than real faces. However, Set 1 displays precisely the opposite pattern: the AI-generated portrait (Y1, $M = 3.53$) received a trust score that was 1.35 points higher than that of the real portrait (G1, $M = 2.18$). This finding may be interpreted either as an Inverted Uncanny Valley or as an indication that generative artificial intelligence has now completely surpassed the threshold of visual perfection. Contemporary diffusion models are known to over-refine facial asymmetries, pore texture, and lighting gradients in human faces; this process effectively inc-

reases perceived realism while paradoxically reversing the uncanniness threshold described by Mori. By contrast, Set 4 (G4 / Y4) reveals the boundary of this Uncanny Valley inversion. The non-significant difference between G4 ($M = 3.05$) and Y4 ($M = 2.94$) ($p = .105$) likely reflects detectable AI artifacts in Y4, such as anatomical inconsistencies, lighting errors, or background collapse, and suggests that participants may still retain the capacity for detection when a visual falls below a certain level of quality.

4.5. Asymmetric Block Design Analysis and the SRM Perspective

4.5.1. Control of the learning effect

Kluger et al.'s (2025) Asymmetric Block Design proposes that visual presentations should be ordered according to a specific algorithm to control the practice and carryover effects, both of which are frequently encountered in repeated-measures studies. The 2-2-1-2-2-1 sequence applied in this research limits the number of consecutive images of the same type within each block, thereby preventing participants from developing a systematic expectation regarding the real/AI distinction. Table 5 presents the mean trust scores according to block and pivot positions.

Table 5. Confidence Score Distribution by Block and Pivot Positions within the Scope of Asymmetric Block Design (2-2-1-2-2-1)

Blocks / Positions	n	Image(s)	Type	M (trust)	SD
Block 1 (Positions 1–2)	795	G1, G2	Fact	2.35	1.01
Block 2 (Positions 3–4)	793	Y1, Y2	AI	3.46	0.93
Pivot 1 (Position 5)	396	G3	Fact	2.47	1.06
Block 3 (Positions 6–7)	793	Y3, G4	Mixed	3.19	1.05
Block 4 (Positions 8–9)	791	G5, Y4	Mixed	3.04	0.97
Pivot 2 (Position 10)	396	Y5	AI	3.66	0.84

Note. Intra-block averages represent the combined mean across all items in the relevant block. The pivot positions (Positions 5 and 10) contain only one image; the other blocks contain two images each. Mixed blocks (3 and 4) contain both real and artificial intelligence images.

The block design analysis reveals several critical patterns. First, the 1.11-point difference between Block 1, which consisted only of real images ($M = 2.35$), and Block 2, which consisted only of AI-generated images ($M = 3.46$), replicates the overall real–AI divergence even at the early stages of the experiment. This weakens the hypothesis that the difference was artificially produced by a learning effect. Second, G3 in the Pivot 1 position ($M = 2.47$) and Y5 in the Pivot 2 position ($M = 3.66$) indicate that placing a single image in the middle of the blocks was effective. The isolated AI-generated image (Y5) received the highest mean trust score among all images, suggesting that AI-generated images may be perceived as even more convincing in the absence of a block context. Evaluated through the terminology of Kluger et al.'s (2025) Social Relations Model (SRM), two main components can be distinguished. The partner effect refers to the systematic response produced by the visual stimulus across all participants, regardless of its

type; the fact that Y5 received the highest score across all generations provides strong evidence for this component. The observer effect, on the other hand, reflects the individual participant's general tendency toward all images. The generation-based ANOVA findings indicate that Generation X's systematically lower trust attribution represents an observer effect, showing that this tendency persists consistently and independently of stimulus type. These two effects overlap to produce the structural trust asymmetry that constitutes the study's central finding.

4.6. Image-Based Descriptive Statistics

Table 6 presents the descriptive statistics of the trust scores for each of the 10 visual stimuli used in the study, in accordance with the order of set pairing. This table describes the image-level variance and provides a micro-level reference framework for the inferential analyses presented above.

Table 6. Confidence Score Descriptive Statistics for All Visual Stimuli (Question B, $N = 394$ – 398)

Image	Category (Couple)	Type	N	M	SD	Min	Max
G1	Set 1 — Portrait	Fact	397	2.18	0.91	1	5
G2	Set 2 — Landscape	Fact	398	2.53	1.07	1	5
Y1	Set 1 — Portrait	AI	398	3.53	0.93	1	5
Y2	Set 2 — Landscape	AI	395	3.39	0.92	1	5
G3	Set 3 — Architecture	Fact	396	2.47	1.06	1	5
Y3	Set 3 — Architecture	AI	396	3.32	1.03	1	5
G4	Set 4 — Portrait	Fact	397	3.05	1.05	1	5
G5	Set 5 — Landscape	Fact	394	3.13	0.95	1	5
Y4	Set 4 — Portrait	AI	397	2.94	0.99	1	5
Y5	Set 5 — Landscape	AI	396	3.66	0.84	1	5

Note. G = Real photo; Y = Artificial intelligence-generated image. Scale: 1 = I don't trust at all, 5 = I trust completely. Set matching was carried out according to the Asymmetric Block Design protocol. The rate of missing data remains at most 1.3% per image.

When the descriptive statistics at the image level are examined, a notable pattern emerges among the real images: G1 ($M = 2.18$) and G2 ($M = 2.53$) on the one hand, and G4 ($M = 3.05$) and G5 ($M = 3.13$) on the other. This difference indicates that the real images positioned in the early block received lower trust scores and supports the hypothesis that block position plays a contextual role in the perception of trust. Among the AI-generated images, Y5 ($M = 3.66$) stands out with the highest mean, whereas Y4 ($M = 2.94$) has the lowest mean. This divergence suggests that participants were partially able to perceive quality variance among generative AI outputs; however, this perception did not translate into a systematic ability to differentiate between them.

4.7. General Evaluation: Theoretical Integration of the Findings

The findings presented in this section can be synthesized within the framework of three complementary theoretical layers. At the first layer, Baudrillard's (2018) thesis of hyperreality finds a limited empirical correspondence: within the tested stimuli, AI-generated images received higher average trust ratings than real photographs. Rather than documenting a society-wide displacement of reality, this pattern can be interpreted as an experimental instance consistent with the hyperreality thesis. At the second layer, Manovich's (2024) model of algorithmic decomposition becomes relevant. Manovich argues

that machine vision and generative artificial intelligence optimize visual statistics according to human intuitive standards; therefore, images produced by algorithms generate a visual economy that meets or exceeds the expectations of the average photographic viewer. In the present study, the relatively low standard deviations for AI-generated images, particularly those in the portrait pair in Set 1 ($SD = 0.84\text{--}0.93$), indicate a comparatively homogeneous distribution of responses and suggest that algorithmic image production creates a form of consensus among participants' reactions. At the third layer, Kluger et al.'s (2025) Asymmetric Block Design and SRM framework explain the structural source of individual differences in the findings. The fact that the generation effect ($X < Y \approx Z$) was both significant and independent of gender and education supports Kluger et al.'s proposition regarding the observer component and suggests that, among the socio-demographic variables tested here, generation was the clearest predictor of visual trust perception. The convergence of these three layers demonstrates that the perception of visual reality on social media is a multilayered process that requires analysis at the macro level through Baudrillard, the meso level through Manovich, and the micro level through Kluger et al.'s SRM framework.

5. Discussion and Conclusion

This study examined the transformative effects of generative artificial intelligence (GenAI) technologies on perceptions of visual reality and how these effects differ across generations, using a quasi-experimental design. The growing accessibility of deepfake technologies has enabled the rapid production and dissemination of hyper-realistic synthetic images, increasing their potential to manipulate perceptions of reality (Söğütülüler, 2025). Within the present experimental context, the findings suggest that photographic origin did not function as a guarantee of perceived credibility: for several tested stimuli, participants rated AI-generated images as more trustworthy than real photographs. Participants' total trust score for AI-generated images ($M = 16.73$) was significantly higher than their trust score for real images ($M = 13.27$), revealing a clear "trust reversal" in the perception of visual reality. This result is consistent with Baudrillard's (2018) approach to simulation and hyperreality, since AI-generated images constitute a new visual regime with no direct counterpart in the physical world, yet they produce a sense of reality. Manovich's (2001) account of digital media, in terms of the interaction between databases and algorithms, provides a theoretical framework for interpreting how algorithmically optimized image surfaces can shape perceived visual credibility.

One of the strongest findings of the study is the large effect size favoring AI-generated images, as indicated by the paired-samples t-test: $t(398) = -21.12$, $p < .001$, $d = -1.058$. This finding points to a significant rupture not only statistically but also theoretically. In parallel with Nightingale and Farid's (2022) study, which showed that AI-generated faces can be indistinguishable from real faces and may even be perceived as more trustworthy, the present study suggests that, within this sample, some synthetic images produced a stronger impression of authenticity and credibility than matched real photographs. Similarly, Miller et al. (2023) show that some AI-generated faces are perceived as more real than human faces, while Osińska et al. (2025) note that the photorealistic quality of AI-generated images challenges users' visual discrimination abilities. Therefore, the findings suggest that, for some stimuli in this experiment, synthetic images can achieve a perceptual advantage over matched real photographs.

The analyses conducted through paired visual sets showed that this trust reversal does not operate with the same intensity across all visual categories. In four of the five sets, AI-generated images received significantly higher trust scores than real images, whereas this difference was not significant in only Set 4. In particular, the fact that the AI-generated image in the portrait comparison in Set 1 received much higher trust than the real portrait is a striking result in relation to Mori's (2012) "uncanny valley" approach. While the classical theory of the uncanny valley argues that humanoid artificial representations produce discomfort at a certain threshold of realism, the present study shows that some AI-generated portraits surpass this threshold and generate trust. This situation is consistent with Kishnani's (2025) findings that uncanniness increases at medium levels of realism but may decrease at high levels. In other words, contemporary generative AI systems not only narrow the uncanny valley; in some cases, they reverse it by making the artificial appear more trustworthy.

This result can also be explained through Arielli's (2024) concepts of "artificial aesthetics" and "aesthetic alignment." AI models produce perfected surfaces by optimizing the average aesthetic patterns they learn from massive visual datasets. This perfection weakens the viewer's reflex to search for visual flaws and transforms the synthetic image into a trustworthy visual object. The criteria of photorealism, image quality, and text-image alignment emphasized by Aziz et al. (2024) also show that user trust is related not only to content accuracy but also to the technical and aesthetic coherence of the visual surface. Therefore, the findings of this study demonstrate that visual trust is no longer tied solely to the "real source" but also to the aesthetically persuasive power generated algorithmically. Intergenerational analyses showed that trust in AI-generated

images differs most clearly by socio-demographic generation. The one-way ANOVA revealed a significant generation effect, showing that Generation X's trust in AI-generated images was significantly lower than that of both Generations Y and Z. By contrast, the difference between Generations Y and Z was not significant. This finding is important because it shows that proximity to digital technology does not necessarily overlap with critical visual literacy. While Prensky's (2001) concept of "digital natives" suggests that younger generations establish a more natural relationship with technological tools, Buckingham (2003) and Hobbs (2017) emphasize that technical proficiency does not necessarily mean the capacity to critically analyze media messages. The findings of this study likewise reveal that Generation Z, despite its technical familiarity, may be more likely to trust synthetic images.

At this point, Generation X's lower trust scores can be interpreted within the framework of "analog skepticism." Individuals socialized in an analog media environment may have experienced the documentary status of photography within a different historical context and developed a more cautious perception toward digital manipulation. By contrast, Generations Y and Z, who are continuously exposed to visual flows on social media platforms, may evaluate AI-generated images as an ordinary part of the digital experience. Yıldız's (2025) study on Generation Z and synthetic media shows that young people adopt AI tools for ease of use and practical benefits yet also develop epistemic concerns about manipulative content. The quantitative findings of the present study complement this phenomenological observation by demonstrating that young users may assign higher visual trust scores even when they experience such concerns. It is also noteworthy that gender and educational level did not yield significant differences in trust toward AI-generated images. This result suggests that the perception of visual reality is related less to classical demographic variables than to media socialization and generational experience. The fact that educational level did not serve as a significant protective variable indicates that digital literacy cannot be explained solely by formal education level. In this context, Kellner and Share's (2007) treatment of critical media literacy as an essential skill for democratic societies is particularly important. The present findings show that a high level of education alone is insufficient to distinguish synthetic images or to attribute lower trust to them; rather, specific forms of AI literacy, visual verification, and algorithmic awareness training are required.

The findings on the Asymmetric Block Design strengthen the study's methodological originality. Presenting the images in a 2-2-1-2-2-1 sequence prevented participants from detecting a simple pattern and adjusting their responses accordingly; never-

theless, the trust difference in favor of AI-generated images was maintained. The fact that the mean score for real images in Block 1 was $M = 2.35$, while the mean score for AI-generated images in Block 2 was $M = 3.46$, shows that the trust reversal emerged even at the early stage of the experiment. In addition, the Y5 image in the Pivot 2 position received the highest mean trust score ($M = 3.66$), indicating that certain AI-generated images can be highly persuasive even when presented without contextual support. Evaluated within the framework of Kluger et al.'s (2025) Social Relations Model, this finding points both to the partner effect arising from the visual stimulus itself and to the observer effect associated with generation. The findings of this study are also significant for debates on algorithmic authority and disinformation in social media environments. Castells's (2008) argument that information flows restructure power relations in the network society becomes even more relevant with the circulation of AI-generated images through platform algorithms. Pasquale's (2015) "black box" metaphor describes an environment in which users consume visual information without knowing by which criteria specific content is made visible. In this context, AI-generated images create not merely an individual perceptual error, but a systematic trust problem reinforced by platform architectures. Gül Ünlü and Küçükşabanoğlu's (2023) observation that artificial intelligence plays a dual role in both the production of disinformation and the struggle against it aligns with this study's findings. From the perspective of the literature on deepfakes and synthetic media, the study's results show that the visual trust crisis should be addressed not only at the level of individual misperception but also at the levels of social trust and the democratic public sphere. While Altuncu et al. (2024) state that deepfake technologies are rapidly evolving in their definitions, measurement, datasets, and standards, Zan and Zan (2025) emphasize that these technologies pose serious pedagogical, ethical, and social risks. İpek and İpek (2025) likewise note that deepfake images transform the perception of reality within synthetic reality. The fact that trust in AI-generated images exceeded trust in real images in this study demonstrates that these risks are not merely theoretical but also empirically observable.

In conclusion, this study shows that the perception of visual reality is undergoing a serious ontological and epistemological transformation in the age of generative artificial intelligence. Participants' perception of AI-generated images as more trustworthy than real photographs reveals that photography's status as "evidence of truth" has weakened and that algorithmic image production has created a new regime of trust. The significance of intergenerational differences shows that this transformation is not experienced in the same way across all user groups; Generation X appears more cautious, whereas Ge-

nerations Y and Z are more likely to trust synthetic images. By contrast, the fact that gender and educational level did not yield significant differences suggests that the solution lies not merely in raising the overall level of education, but in developing generation-specific strategies for critical digital and visual literacy. Within this framework, overcoming the trust crisis created by AI-generated images requires intervention at three levels. First, critical media literacy programs should be expanded to improve users' ability to recognize, verify, and question synthetic content. Second, mechanisms for labeling AI-generated content, ensuring source transparency, and strengthening algorithmic accountability on social media platforms should be reinforced (Diakopoulos, 2016). Third, by taking into account generation-specific media use practices, safe verification practices should be prioritized for Generation X, professional-digital balance skills for Generation Y, and synthetic media awareness and AI literacy for Generation Z. In this way, while preserving the creative possibilities offered by generative artificial intelligence, the potential of synthetic images to produce disinformation, perception management, and the erosion of social trust can be limited.

5.1. Limitations and Future Research

Several limitations should be considered when interpreting the findings. First, the study relied on a 399-participant online volunteer sample that was not probability-based and was unevenly distributed across generations, gender, and education; therefore, the results should not be generalized to all social media users or to society at large. Second, the experiment used only ten standardized visual stimuli (five real photographs and five AI-generated images). Image-specific characteristics may have influenced the observed effect sizes, and the stimulus set cannot represent the full diversity of synthetic media. Third, the design did not treat the image-generation platform, model version, prompting strategy, post-processing, or platform-specific presentation as experimental factors. Because different systems may produce different aesthetic tendencies and levels of photorealism, AI-generated imagery should not be interpreted as a homogeneous category on the basis of this study.

Fourth, generative image technologies and users' familiarity with them are changing rapidly, which means that the trust pattern observed here may be time-sensitive. Finally, the Likert-type measure captures perceived credibility and trustworthiness under controlled exposure rather than actual verification, sharing, or belief behavior in a naturalistic social media feed. Future research should therefore use larger and more diverse samples, broader and periodically updated stimulus sets, multi-platform and multi-model comparisons, longitudinal replications, and

field-based designs that examine how source cues, labels, and platform context affect visual credibility over time.

5.2. Conclusion and Recommendations

In conclusion, within the boundaries of this 399-participant, ten-image quasi-experimental study, the findings suggest that highly realistic AI-generated imagery can alter perceived visual credibility. In the experimental context, participants rated AI-generated images as more trustworthy than real photographs overall; this pattern suggests that photography's conventional role as "evidence of truth" can be challenged in some digital-media contexts and that algorithmically generated imagery may produce a reconfigured pattern of perceived trust. These results should not be interpreted as evidence of a society-wide transformation. The observed generational differences further suggest that this pattern is not experienced uniformly: Generation X participants were more cautious, whereas Generations Y and Z assigned higher trust scores to synthetic images. The absence of significant gender and education effects indicates that general educational attainment alone may be insufficient and that more targeted forms of critical digital, visual, and AI literacy are needed. Accordingly, a multi-level response is recommended. At the individual level, media-literacy programs should strengthen visual verification skills, source checking, reverse-search habits, and awareness of common synthetic-media cues. At the platform level, visible labeling of AI-generated content, clearer source and provenance information, accessible verification tools, and stronger algorithmic accountability should be reinforced (Diakopoulos, 2016). At the educational and institutional levels, training should be adapted to generation-specific media practices while avoiding assumptions that technological familiarity automatically produces critical literacy. For researchers, repeated studies with updated stimuli, multiple AI-generation systems, and longitudinal or field designs are necessary to determine whether the present pattern persists as generative technologies and user expectations evolve. Such measures can help preserve the creative benefits of generative AI while reducing the risks of disinformation, manipulation, and misplaced trust in synthetic visual content.

References

- Altuncu, E., Franqueira, V. N. L., & Li, S. (2024). Deepfake: Definitions, performance metrics and standards, datasets, and a meta-review. *Frontiers in Big Data*, 7, 1400024. <https://doi.org/10.3389/fdata.2024.1400024>
- Arielli, E. (2024). Made by and for humans? The issue of aesthetic alignment. In L. Manovich & E. Arielli (Eds.), *Artificial aesthetics: Generative AI, art and visual media* (pp. 170–191). <https://manovich.net/index.php/projects/artificial-aesthetics>
- Arslan, E. (2026). Dezenformasyonla karşılaşma deneyimi, ileti-

şimsel tepkiler ve psikolojik yansımalar: 60+ Tazelenme Üniversitesi öğrencileri örneği. *The Turkish Online Journal of Design, Art and Communication*, 16(1), 219–236. <https://doi.org/10.7456/tojdac.1797644>

Aziz, M., Rehman, U., Safi, S. A., & Abbasi, A. Z. (2024). Visual verity in AI-generated imagery: Computational metrics and human-centric analysis [Preprint]. *arXiv*. <https://doi.org/10.48550/arXiv.2408.12762>

Baudrillard, J. (2018). *Simülakrlar ve simülasyon* (O. Adanır, Trans.). Doğu Batı Yayınları.

Bińkowski, M., Sutherland, D. J., Arbel, M., & Gretton, A. (2018). Demystifying MMD GANs [Preprint]. *arXiv*. <https://doi.org/10.48550/arXiv.1801.01401>

Boztunç, N. (2014). Y kuşağını elde tutabilme üzerine bir çalışma [Unpublished graduation project]. Ege Üniversitesi Sosyal Bilimler Enstitüsü.

Buckingham, D. (1998). Media education in the UK: Moving beyond protectionism. *Journal of Communication*, 48(1), 33–43. <https://doi.org/10.1111/j.1460-2466.1998.tb02735.x>

Buckingham, D. (2003). *Media education: Literacy, learning and contemporary culture*. Polity Press.

Büyüköztürk, Ş., Kılıç Çakmak, E., Akgün, Ö. E., Karadeniz, Ş., & Demirel, F. (2017). *Bilimsel araştırma yöntemleri* (23. baskı). Pegem Akademi. <https://doi.org/10.14527/9789944919289>

Canbolat, K. (2022). Kuşaklar arası dijital mahremiyet algısının dönüşümü [Unpublished master's thesis]. Çanakkale Onsekiz Mart Üniversitesi.

Castells, M. (2008). *Enformasyon çağı: Ekonomi, toplum ve kültür, ağ toplumunun yükselişi* (E. Kılıç, Trans.). İstanbul Bilgi Üniversitesi Yayınları.

Castells, M. (2009). *Communication power*. Oxford University Press.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge. <https://doi.org/10.4324/9780203771587>

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications.

Diakopoulos, N. (2015). Algorithmic accountability: Journalistic investigation of computational power structures. *Digital Journalism*, 3(3), 398–415. <https://doi.org/10.1080/21670811.2014.976411>

Diakopoulos, N. (2016). Accountability in algorithmic decision making. *Communications of the ACM*, 59(2), 56–62. <https://doi.org/10.1145/2844110>

Doğan, S. (2024). Sosyal medyada görsel üretim için yapay zekâ kullanımı. In H. N. Tarakçı & N. Tufan Yeniçikti (Eds.), *Sosyal medyada iletişim-II* (pp. 229–243). Palet Yayınları.

Foucault, M. (1992). *Hapishanenin doğuşu*. İmge Kitabevi.

Goodfellow, I. J., Pouget-Abadie, J., Mirza, M., Xu, B., Warde-Farley, D., Ozair, S., Courville, A., & Bengio, Y. (2014). Generative adversarial nets [Preprint]. *arXiv*. <https://doi.org/10.48550/arXiv.1406.2661>

Göring, S., Rao, R. R. R., Merten, R., & Raake, A. (2023). Analysis of appeal for realistic AI-generated photos. *IEEE Access*, 11, 38999–39012. <https://doi.org/10.1109/ACCESS.2023.3267968>

Gül Ünlü, D., & Küçükşabanoglu, Z. (2023). Dezenformasyon ve yapay zekâ: Dezenformasyonla mücadele yollarına yapay zekâ uzmanlarının gözünden bakmak. *İletişim ve Diplomasi*, 11, 83–106. <https://doi.org/10.54722/iletisimvediplomasi.1375478>

Gürel, E. (2023). *Dijital medyada siyasal iletişim ve Z kuşağı üniversite öğrencileri: İstanbul özelinde çevrimiçi siyasal katılım üzerine bir araştırma* [Master's thesis]. Maltepe Üniversitesi.

Hashmi, A., Shahzad, S. A., Lin, C.-W., Tsao, Y., & Wang, H.-M. (2024). Understanding audiovisual deepfake detection: Techniques, challenges, human factors and perceptual insights [Preprint]. *arXiv*. <https://doi.org/10.48550/arXiv.2411.07650>

Hobbs, R. (1998). Teaching with and about film and television: Integrating media literacy concepts into management education. *Journal of Management Development*, 17(4), 259–272. <https://doi.org/10.1108/02621719810210136>

doi.org/10.1108/02621719810210136

Hobbs, R. (2017). *Create to learn: Introduction to digital literacy*. John Wiley & Sons. <https://doi.org/10.1002/9781394260201>

Hutson, J., & Smith, A. A. (2025). *Cinematic algorithms: The rise of generative AI in video art and visual culture*. CRC Press. <https://doi.org/10.1201/9781003601128>

İpek, A. R., & Ermiş İpek, S. (2025). Sentetik gerçeklik bağlamında yapay zekâ destekli derin sahte görsellerin gerçeklik algısını dönüştürmesi. *Sanat Yazıları*, (53), 725–744. <https://doi.org/10.61742/sanatyzalari.1761815>

Karakaya, Ü., & Dayı, H. (2024). Yapay zeka destekli görüntü üretimi ve gerçeklik ilişkisi. *Akdeniz Sanat*, 18(33), 9–31. <https://doi.org/10.48069/akdenizsanat.1389695>

Karaoğlu, G. (2022). *Dijital okuryazarlık*. In G. Karaoğlu (Ed.), *Dijital okuryazarlık* (pp. 43–58). Efe Akademi.

Kellner, D., & Share, J. (2007). Critical media literacy is not an option, it's a necessity. *Learning Inquiry*, 1(1), 59–69. <https://doi.org/10.1007/s11519-007-0004-2>

Kishnani, D. K. (2025). The uncanny valley: An empirical study on human perceptions of AI-generated text and images [Master's thesis, Massachusetts Institute of Technology]. DSpace@MIT. <https://hdl.handle.net/1721.1/159096>

Kluger, A. N., Ackerman, R. A., Kenny, D. A., Malloy, T. E., & Eastwick, P. W. (2025). The social-relations model for asymmetric-block-design data: A tutorial with R. *Advances in Methods and Practices in Psychological Science*, 8(1), 1–40. <https://doi.org/10.1177/25152459241279522>

Kress, G., & van Leeuwen, T. (2021). *Reading images: The grammar of visual design* (3rd ed.). Routledge. <https://doi.org/10.4324/9781003099857>

Manovich, L. (2001). *The language of new media*. MIT Press.

Manovich, L. (2024). AI aesthetics and media evolution. In L. Manovich & E. Arielli (Eds.), *Artificial aesthetics: Generative AI, art and visual media* (pp. 119–144). <https://manovich.net/index.php/projects/artificial-aesthetics>

Manovich, L., & Arielli, E. (2024). *Artificial aesthetics: Generative AI, art and visual media*. <https://manovich.net/index.php/projects/artificial-aesthetics>

Metzger, M. J., & Flanagin, A. J. (2013). Credibility and trust of information in online environments: The use of cognitive heuristics. *Journal of Pragmatics*, 59, 210–220. <https://doi.org/10.1016/j.pragma.2013.07.012>

Miller, E. J., Steward, B. A., Witkower, Z., Sutherland, C. A. M., Krumhuber, E. G., & Dawel, A. (2023). AI hyperrealism: Why AI faces are perceived as more real than human ones. *Psychological Science*, 34(12), 1390–1403. <https://doi.org/10.1177/09567976231207095>

Mori, M. (2012). The uncanny valley (K. F. MacDorman & N. Kageki, Trans.). *IEEE Robotics & Automation Magazine*, 19(2), 98–100. <https://doi.org/10.1109/MRA.2012.2192811>

Nightingale, S. J., & Farid, H. (2022). AI-synthesized faces are indistinguishable from real faces and more trustworthy. *Proceedings of the National Academy of Sciences*, 119(8), e2120481119. <https://doi.org/10.1073/pnas.2120481119>

Noble, S. U. (2018). *Algorithms of oppression: How search engines reinforce racism*. New York University Press. <https://doi.org/10.18574/nyu/9781479833641.001.0001>

Osińska, V., Kortas, W., Szalach, A., & Welter, M. (2025). AI images vs. real photographs: Investigating visual recognition and perception. *Journal of Eye Movement Research*, 18(6), 61. <https://doi.org/10.3390/jemr18060061>

Palfrey, J., & Gasser, U. (2008). *Born digital: Understanding the first generation of digital natives*. Basic Books.

Pandey, P., & Pandey, M. M. (2015). *Research methodology: Tools and techniques*. Bridge Center.

Pasquale, F. (2015). *The black box society: The secret algorithms that control money and information*. Harvard University Press. <https://doi.org/10.4159/harvard.9780674736061>

Prensky, M. (2001). *Digital natives, digital immigrants part 1*. On the

- Horizon, 9(5), 1–6. <https://doi.org/10.1108/10748120110424816>
- Qin, N., Xue, J., Chen, C., & Zhang, M. (2020). The bright and dark sides of performance-dependent monetary rewards: Evidence from visual perception tasks. *Cognitive Science*, 44(3), e12825. <https://doi.org/10.1111/cogs.12825>
- Ramesh, A., Pavlov, M., Goh, G., Gray, S., Voss, C., Radford, A., Chen, M., & Sutskever, I. (2021). Zero-shot text-to-image generation. *Proceedings of the 38th International Conference on Machine Learning*, 139, 8821–8831.
- Rapp, A., Di Lodovico, C., Torrielli, F., & Di Caro, L. (2025). How do people experience the images created by generative artificial intelligence? An exploration of people's perceptions, appraisals, and emotions related to a Gen-AI text-to-image model and its creations. *International Journal of Human-Computer Studies*, 193, 103375. <https://doi.org/10.1016/j.ijhcs.2024.103375>
- Sanchez-Acedo, A., Carbonell-Alcocer, A., Cascarano, P., Hajahmadi, S., Gertrudix, M., & Marfia, G. (2026). Exploring the impact of visual components on the perceived realism of generative AI videos. *Online Journal of Communication and Media Technologies*, 16(1), e202603. <https://doi.org/10.30935/ojcm/17737>
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.
- Seymen, A. F. (2017). Y ve Z kuşak insanı özelliklerinin Millî Eğitim Bakanlığı 2014–2019 stratejik programı ve TÜBİTAK Vizyon 2023 öngörülleri ile ilişkilendirilmesi. *Kent Akademisi*, 10(4), 467–489.
- Sezgin, S. (2025). Yapay zekâ çağında dijital uçurumu yeniden düşünmek: Eğitime yönelik altı boyutlu bir kavramsal çerçeve. *Mehmet Akif Ersoy Üniversitesi Eğitim Bilimleri Enstitüsü Dergisi*, 13(17), 1–28. <https://dergipark.org.tr/pub/ebed/article/1832400>
- Singh, K. (2007). *Quantitative social research methods*. SAGE Publications. <https://doi.org/10.4135/9789351507741>
- Sontag, S. (2008). *Fotoğraf üzerine* (O. Akınhay, Trans.). Agora Kitaplığı.
- Söğütlüler, T. (2025). Deepfake manipulation on social media: A case study of fraudulent activities in Türkiye. *Intermedia International E-Journal*, 12(22), 237–265. <https://doi.org/10.56133/intermedia.1614843>
- van Hees, J., Grootswagers, T., Quek, G. L., & Varlet, M. (2025). Human perception of art in the age of artificial intelligence. *Frontiers in Psychology*, 15, 1497469. <https://doi.org/10.3389/fpsyg.2024.1497469>
- Yıldız, G. (2025). Yapay zekâ çağında gençlik: Sentetik medya içerikleri ve eleştirel okuryazarlık üzerine fenomenolojik bir inceleme. *İmgelem, Yeni Medya Çalışmaları Özel Sayısı*, 315–350. <https://doi.org/10.53791/imgelem.1732361>
- Zan, N., & Zan, B. U. (2025). Yapay zekâ destekli derin sahtecilik teknolojisinin pedagojik, etik ve toplumsal boyutları. *Turkish Studies*, 20(4), 2961–2983. <https://doi.org/10.7827/TurkishStudies.83049>
- Zuboff, S. (2019). The age of surveillance capitalism: The fight for a human future at the new frontier of power. *PublicAffairs*.