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Editorial

The OPUS Journal of Society Research (OPUS JSR) brings together a diverse range of theory, practice, and research in the pursuit of understanding human behavior in its social context. The interdisciplinary viewpoint lays the groundwork for presenting and establishing a holistic relationship with other disciplines, concepts, and methods. The OPUS JSR allows researchers to use an interdisciplinary approach to present different interpretations and alternative points of view. The theoretical frameworks that underpin the analyses and interpretations of the subjects under study are as important as the intersection of disciplines. This framing can lead to greater clarity of multiple, even contradictory findings, allowing for a better understanding of social dynamics that would otherwise be invisible if scholars concentrated on a single set of theoretical dynamics.

OPUS JSR reflects more than 10 years of journal sponsorship by ADAMOR Society Research Center and its partner organization, the Institute of Urban Studies. The OPUS Journal of Society Research is the direct successor of two previously published journals: OPUS Turkish Journal of Social Policies and Work Life Studies: OPUS International Journal of Society Research (ISSN 2528-9527 E-ISSN 2528-9535). Since its inception, our journal has steadily increased its issue numbers in the Year - Volume and Issue format. As of 2024, our issue numbers will be limited to 1-6.

OPUS Journal of Society Research (JSR) is abstracted in EBSCO Information Services, ERIHP-LUS European Reference Index For The Humanities and Social Sciences, Cite Factor, TEI Index of Turkish Education, ULAKBIM TR Index, SOBIAD Citation Index and ASOS Index.

RESEARCH ARTICLE

Sustainability Communication in Higher Education Institutions: Scale Development and Validation Study*

Mehmet Alper Akdemir¹ | Canan Gamze Bal²

¹ Phd., National Defence Ministry. Ankara/Türkiye
ORCID: [0000-0002-3782-034X](https://orcid.org/0000-0002-3782-034X)
E-Mail: maakdemir.ac@gmail.com

² Prof. Dr., Kahramanmaraş Sütçü İmam University Faculty of Economics and Administrative Sciences Kahramanmaraş / Türkiye
ORCID: [0000-0003-1031-2588](https://orcid.org/0000-0003-1031-2588)
E-Mail: cgbal@ksu.edu.tr

Corresponding Author:
Mehmet Alper Akdemir

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Abstract

This article aims to develop and validate the Sustainability Communication Scale in higher education institutions. An eight-step process proposed by DeVellis (2022) was applied to develop the scale, which consists of 32 items capable of measuring the level of sustainability communication in Turkish universities. A total of 1291 participants, comprising 109 academics and 1182 students, participated in the study. Expert opinion analysis, KMO and Barlett tests, exploratory and confirmatory factor analyses, Cronbach's alpha, composite reliability, and partial correlation analyses were all used to check the scale's validity and reliability. According to the results of the exploratory factor analysis using the principal components method, the scale consists of 4 factors: environmental sustainability communication, social sustainability communication, economic sustainability communication, and sustainability of communication. The general structure and measurement of the scale have been validated by confirmatory factor analysis. The internal consistency coefficient found using Cronbach's alpha was .769; internal consistency coefficients found using composite reliability were .875(F1), .888 (F2), .866(F3), .882(F4). The findings indicate that the scale is a valid and reliable measurement tool.

Keywords: Sustainability, Sustainable Development, Sustainability Communication, Scale Development, Sustainability in Higher Education Institutions.

Öz

Bu makalede Yükseköğretim Kurumlarında Sürdürülebilirlik İletişimi Ölçeğinin geliştirilmesi ve doğrulanması amaçlanmıştır. Ölçek geliştirmek için DeVellis (2022) tarafından ortaya konulan sekiz aşamalı süreç uygulanmıştır. Ölçek Türk üniversitelerinin sürdürülebilirlik iletişiminin düzeyini ölçebilecek 32 maddeden oluşmaktadır. 109 akademisyen ve 1182 öğrenciden oluşan toplam 1291 kişi araştırmaya katılmıştır. Ölçeğin geçerliği ve güvenilirliği; uzman görüşü analizi, KMO ve Barlett testleri, açımlayıcı ve doğrulayıcı faktör analizleri, Cronbach Alpha, birleşik güvenilirlik, kısmi korelasyon analizleri kullanılarak test edilmiştir. Temel bileşenler (principal components) yöntemi ile ortaya çıkan açımlayıcı faktör analizi sonuçlarına göre ölçeğin 4 faktörden oluştuğu belirlenmiştir: Çevresel sürdürülebilirlik iletişimi, sosyal sürdürülebilirlik iletişimi, ekonomik sürdürülebilirlik iletişimi ve iletişimin sürdürülebilirliği. Ölçeğin genel yapısı ve ölçümü doğrulayıcı faktör analizi ile doğrulanmıştır. Cronbach Alpha analizi kullanılarak bulunan iç tutarlılık katsayısı .769; birleşik güvenilirlik kullanılarak bulunan iç tutarlılık katsayıları .875(F1), .888 (F2), .866(F3), .882(F4) olarak ölçülmüştür. Bulgular ölçeğin geçerli ve güvenilir bir ölçüm aracı olduğunu göstermektedir.

Anahtar Kelimeler: Sürdürülebilirlik, Sürdürülebilir Kalkınma, Sürdürülebilirlik İletişimi, Ölçek Geliştirme, Yükseköğretim Kurumlarında Sürdürülebilirlik..

* This study is derived from the doctoral dissertation completed by the first author under the supervision of the second author.

Introduction

Nowadays, sustainability practices have become a necessity for institutions and businesses to operate while protecting natural resources for future generations and maintaining ecological balance. Sustainability requires the development of actionable strategies rather than remaining theoretical. The success of these strategies is directly linked to sustainability communication. Sustainability communication ensures that sustainability goals are conveyed clearly and effectively to all stakeholders.

The United Nations (UN) Sustainable Development Goals (SDGs), developed under the leadership of the UN, guide sustainability efforts. In this context, the importance of sustainability and sustainable development is addressed, encompassing both past developments and future planning.

The process that began with the Club of Rome's "Limits to Growth" report in 1972 highlighted the environmental damage caused by the industrialization of G-7 countries, marking a turning point for global sustainability movements (Zink et al., 2008, p.5). The 1987 Brundtland Report by the UN defined the framework of sustainability, presenting a three-pronged approach combining economic growth, environmental improvement, and social justice (Mebratu, 1998, pp.496-501). This report defined sustainable development as meeting the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). Significant meetings such as the 1992 Earth Summit and the 2000 Millennium Summit led to a broad consensus on sustainable development, resulting in action plans involving the private sector and other stakeholders. The UN SDGs established at the 2015 UN Sustainable Development Conference shape the sustainability agenda, with 17 goals and 169 targets to be achieved by 2030, forming the foundation of related communication activities (Akdemir, 2023, p.2).

Sustainability is addressed in three main dimensions in UN activities and literature: economic, environmental, and social. The importance of balanced development in these

three dimensions is emphasized (Purvis, 2019). Institutions and businesses that are environmentally respectful, socially valued, and economically sustainable are the primary targets of sustainability efforts. Sustainability and sustainable development concern all segments of society and hold universal importance that needs to be supported by effective communication. Universities hold a crucial responsibility in educating the public and promoting active engagement. Through effective communication and collective collaboration, steps toward a sustainable future can be taken more consciously and effectively.

Universities play a crucial role in addressing societal issues and improving environmental, economic, and social impacts. These institutions should pioneer in the field of sustainability by developing and implementing innovative strategies. Sustainability communication is critical to ensuring that these strategies are understood and adopted by the public, encouraging widespread participation. Incorporating sustainability activities into universities' academic work and communicating them to society can establish these institutions as knowledge and practice centers, accelerating sustainable change. In this context, measuring sustainability communication for organizations is essential. This study aims to develop and validate a scale for sustainability communication. While developing a measurement tool to assess the quality and strength of sustainability communication, a scale was designed to be developed in higher education institutions, which are presumed to have more knowledge and interest in the concept.

Existing research on measuring sustainability communication has provided various perspectives that aid in the development of sustainability communication scales (Djordjevic & Cotton, 2011; Siano et al., 2015; Lertpratchya et al., 2017; Atmaca et al., 2019; Filippo et al., 2020; Sezen Gültekin & Argon, 2020; Arief et al., 2022), focusing on different industries (Baviera-Puig et al., 2015, Hamani, 2019), communication channels (Katiliute et al., 2014; Siano et al., 2016; Amey et al., 2020; Wut et al., 2021; Amabile et al., 2022; Tanç et al., 2022), and specific areas related to the topic such as

organizational, environmental sustainability, and corporate social responsibility (Kassing et al., 2010; Parguel et al., 2011; Ferraz & Gallardo-Vazquez, 2016; Baghoor et al., 2017; Lock & Seele, 2017; Lock & Schulz-Knappe, 2018; Tetreanova et al., 2021). However, these studies are generally narrow in scope and do not offer a comprehensive solution that covers all aspects of sustainability communication. Therefore, a comprehensive sustainability communication scale encompassing all dimensions needs to be developed. This new scale could be a more effective and reliable tool to support institutions and companies in achieving their sustainability goals.

This study aims to fill the existing gap in the literature and develop a new scale that can evaluate sustainability communication more broadly. The research began with a literature review, examining the conceptual foundations of sustainability, sustainable development, and sustainability communication. A mixed-method approach, evaluating both qualitative and quantitative data, was adopted methodologically. A draft scale was prepared based on findings from the literature review and improved with contributions from field experts. As a result, a valid and reliable scale was obtained through validity and reliability analyses, which can be used to measure sustainability communication. This scale has the potential to be an important tool for enabling higher education institutions to assess their sustainability communication strategies and make strategic decisions in this area. This study adhered to "Research and Publication Ethics."

Sustainability and Sustainable Development

Environmental movements have urged people to address environmental issues to make the world a livable place. However, abandoning the achievements of civilization, such as technology, industry, economy, corporations, and state structures, to protect the environment could result in significant costs. Therefore, a balanced development model that is not detrimental to both the environment and human achievements has been needed, leading to the development of the concept of sustainable development. This concept gained prominence with the Brundtland Report by

the UN World Commission on Environment and Development (Akdemir, 2023, p.17). Efforts to achieve sustainability and sustainable development aim to balance the environment, economy, and society.

In terms of its definition, sustainability means "the ability to continue at a certain rate or level"; in a second sense, it refers to "avoiding the depletion of natural resources to maintain an ecological balance" (Oxford English Dictionary, 02.03.2024, oed.com); from an academic perspective, sustainability is defined as "economic, social, and environmental systems that create and sustain human welfare" (Markandya et al., 2003, p.171). Sustainable development is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs," while sustainability refers to the same principle of balancing current needs with future needs (WCED, 1987).

Sustainability and sustainable development are categorized into three main dimensions: social, economic, and environmental. Dalal-Clayton & Bass (2000) defined the three main dimensions of sustainability as follows: economic sustainability is defined as the creation of wealth and livelihoods; social sustainability as the elimination of poverty and improvement of quality of life; and environmental sustainability as the conservation and enhancement of natural resources for future generations.

The UN and all its stakeholders have proposed the concept as a "prescription" to address the world's current outcomes. The agenda, scope, and roadmap for sustainable development efforts are determined by the UN. The current plan for sustainable development efforts is the UN SDGs, which cover the years 2015–2030. The UN SDGs, which shape the agenda for sustainability efforts for 2015–2030 and consist of 17 goals and 169 targets, also have three main categories. Of the 17 goals, 7 are related to economic, 5 to environmental, and 5 to social sustainability (Barbier & Burgess, 2017, p.6).

Sustainability Communication

The concept of sustainability represents a communication approach aimed at encouraging changes, improving conditions, and increasing participation in decision-making processes. Efforts by experts and political leaders alone are insufficient in this area (Aversano-Dearborn et al., 2018, p.6). Sustainability communication has significant potential to overcome these challenges.

Sustainability communication is a strategy used to manage stakeholder relationships by considering environmental, social, and economic factors, as well as to instill awareness and behavioral change for a future in harmony with nature. The focus of this strategy is to enhance societal welfare while protecting nature and to ensure that people adopt a sustainable lifestyle, thereby enabling future generations to benefit from these resources (Özgen, 2022, p.3).

Sustainability communication is approached from two different perspectives: one is to communicate sustainability itself, and the other is to communicate through sustainable methods. The first approach addresses social and environmental issues to drive behavior and attitude change, while the second approach aims to communicate the impacts of research on the environment. The concept of sustainability communication is evolving over time, and it lacks a precise definition (Doğru, 2023, p.323).

Sustainability communication, in alignment with the principles of sustainable development, focuses on economic, environmental, social, and cultural values. This approach aims to help various stakeholders better understand the relationship between humans and the environment, thereby gaining broad support and acceptance. The main goal is to develop methods that support individuals in adopting a sustainable lifestyle and enhance social interactions (Lähtinen et al., 2017, p.2).

When conceptualizing sustainability communication, various definitions and literature from different disciplines are examined. The three main dimensions of sustainability and sustainable development and the current 2015-2030 SDGs defined under these dimensions come to the forefront (Adomßent & Godemann, 2011; Fischer et al., 2016; Özgen, 2022; Doğru, 2023; Akbayır,

2019; McDonagh, 1998; Godemann & Michelsen, 2011b; Gutterman, 2020; Lähtinen et al., 2017; Signitzer & Prexl, 2008; Purvis et al., 2019; Weder et al., 2021; Cahyandito, 2010; Servaes & Lie, 2015; Ziemann, 2011; Demirci, 2022; Newig et al., 2013; Genç, 2017; Oçak, 2018, Kuşay, 2020, Heinrichs, 2011; Özdemir, 2023). In addition to the sustainable development literature, a sub-dimension has been identified: sustainability of communication, which is defined in various ways in the literature (sustainable communication, communication sustainability, etc.) (Arın Saydam, 2014; Kilbourne, 2004; McDonagh, 1998; Kuşku Özdemir, 2019; Ural, 2013; Özgen, 2022; Kaya et al., 2014). In this context, Figure 1 presents the four dimensions of sustainability communication.

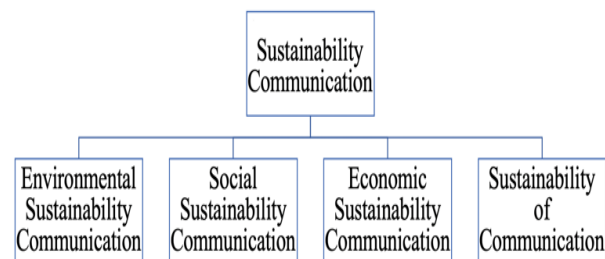


Figure 1. Dimensions of Sustainability Communication (Source: Akdemir, 2023, p.52)

Sustainability communication is a dynamic process aimed at fostering mutual understanding to promote a sustainable future for society. It emphasizes justice, norms, and the need to analyze the root causes of issues, transforming knowledge into action on both individual and societal levels. This process spans various domains, including individuals, institutions, education, media, politics, and business (Godemann & Michelsen, 2011, p.6). Measuring sustainability communication and evolving it based on findings is critical to ensuring the effectiveness of sustainability initiatives. Therefore, the development of a reliable scale is deemed essential.

Method

In the study, the eight-step scale development hierarchy of DeVellis (2022) was followed. DeVellis (2022) was selected due to its systematic approach to scale development, enhancing both the reliability and validity of measurement tools.

This method is recognized in psychometric research for its scientific rigor. The eight steps in DeVellis's process are: (1) determining the construct, (2) generating an item pool, (3) determining the format of measurement, (4) expert review, (5) including validation items, (6) pilot testing, (7) factor analysis, and (8) finalizing the scale (DeVellis, 2022). The research adhered to all stages of scale development within the exploratory sequential mixed-method design, addressing the process through two fundamental phases: the qualitative research phase and the quantitative research phase (Creswell, 2014; Toraman, 2021). The implementation of this study was carried out within the framework of the decision of the Social and Human Sciences Ethics Committee of Kahramanmaraş Sütçü İmam University dated April 6, 2023, and numbered 11.

The problem and Purpose of the Research

The problem of the research is the need to develop a scale that can identify the deficiencies and shortcomings in the communication processes related to the sustainable development activities of higher education institutions and measure the quality and strength of sustainability communication. In this context, the aim of the research is to develop a 'Sustainability Communication Scale' specific to higher education institutions and to conduct validity and reliability analyses of this scale.

Population and Sample of the Study

The research population consists of academicians and students from 81 Turkish universities that are ranked in the top 1000 according to the GREENMETRIC 2022 index and exposed to sustainability messages. The sample of the research includes 109 academicians and 1182 students from the Faculty of Economics and Administrative Sciences (FEAS) and Business Faculties of the top 5 non-profit public universities listed in the 2022 GREENMETRIC Sustainability Index (GREENMETRIC, 2022), who directly contribute to education and training and are assumed to be directly exposed to sustainability messages. The sample was limited to the FEAS and

Business Faculties, as these are the most prevalent departments in the Turkish universities included in the GreenMetric 2022 rankings. This focus enables a targeted examination of sustainability communication in key academic fields, though it may limit broader generalizability across other disciplines. The study was conducted on a total sample of 1291 individuals. A total of 540 academicians from five public universities were reached via email, and through these academicians, students were also contacted. An "Online Form" application (<https://surdurulebilirlik-iletisimi.vercel.app>) was developed and used to conduct the data collection process effectively and efficiently. Using the homogeneous sampling method, a type of purposive sampling (Patton, 2001; Büyükoztürk et al., 2012:91), a group likely to be conscious of sustainability issues was targeted (Etikan et al., 2016:2). Within this framework, the research was particularly focused on FEAS and business faculties, with participation from 109 academicians and 1182 students. This sample structure reflects the general demographic structure of students and academicians in Turkey (YÖK, 2023). The statistical status of the sample is presented in Table 1.

Table 1. Sample Size of the Study

Student Type	Total Sample	Pilot Study	EF A	CFA
Undergraduate	928	180	376	372
Associate degree	224	42	92	90
Master's degree	25	5	11	9
Doctorate	5	1	2	2
Total Students	1182	228	481	473
Academic Staff Type	Total Sample	Pilot Study	EF A	CFA
Professor	19	4	8	7
Associate Professor	12	2	5	5
Assistant Professor	23	5	9	9
Research Assistant	20	4	8	8
Lecturer	26	5	11	10
Instructor	9	2	4	3
Total Academicians	109	22	45	42
Grand Total	1291	250	526	515

Qualitative Research

Before creating the item pool, a theoretical framework that would form the basis of the scale was determined. This framework was created by

utilizing existing theories, concepts, and literature related to sustainability communication. The current conceptual framework (Barbier & Burgess, 2017:6) is based on the three main factors (Economic, Social, and Environmental Sustainability) determined by the UN (Dyllick & Hockerts, 2002, p.132) and the 17 SDGs, which form the sub-dimensions of these three factors. An additional dimension, "sustainability of communication," was envisioned since the measurement of the concept of sustainability communication was involved (Arın Saydam, 2014; Kilbourne, 2004; McDonagh, 1998; Kuşku Özdemir, 2019; Ural, 2013; Özgen, 2022; Kaya et al., 2014).

The items in the item pool were written using a hybrid method involving inductive (Hinkin, 1998) and deductive methods (Gürbüz & Şahin, 2018:30). The most comprehensive reporting and measurement tool (GRI) (Bayhantopçu & Özuyar, 2021:399), which was considered to form the items of the scale from the theoretical framework, and the SDGs, which determine the main framework and agenda of the concept (Oçak, 2018:1), were reached. Subsequently, items were written because of detailed research within the SDGs and GRI (Global Reporting Initiative) documents. A large item pool was created because having a large item pool positively impacts the validity and reliability of the scale (DeVellis, 2022: 80), and initially, 77 items were written.

The dimensions in the field of sustainability and the item pool were revealed through a detailed and comprehensive examination of the relevant literature. The prepared items were first applied to a group of 11 people (3 academicians and 8 students) as part of a pilot application, and they were asked to indicate the items' understandability and any ambiguous points (Yalçın, 2021:3). Additionally, feedback was received regarding the overall structure of the scale and the experience of completing it. The items were reviewed based on participant feedback, and the scale's face validity was ensured.

For content validity, expert opinions in the field were obtained to determine the items and dimensions of the scale more accurately. To ensure content validity, the Modified Lawshe (1975)

Method proposed by Ayre & Scally (2014) was used. Expert opinions on the scale items were obtained via email from 19 experts selected through purposive sampling (Yurdugül, 2005:2). The opinions received were analyzed using the Modified Lawshe Method, and the scale was revised accordingly (Ayre & Scally, 2014). Table 2 displays the status of the participants.

Table 2. Table of Sample Sizes Participating in the Research

	Title/Profession							
	Prof. Dr.	Dr.	Phd.(c)	UN Expert	Multinational Relations Expert	Turkish Instructor	Statistics Expert	Total
Gender								
Female	1	1	0	3	1	2	0	8
Male	1	6	1	1	0	0	2	11
Total	2	7	1	4	1	2	2	19

Qualitative Research Findings

The Content Validity Index (CVI) value of the 19 experts who participated in the study was determined to be 0.474 (Ayre & Scally, 2014). In the analysis, 25 items were excluded for not meeting the CVI threshold of 0.474 (Lawshe, 1975; Ayre & Scally, 2014). Following expert evaluations, an additional 6 items were removed. As a result, 31 items were excluded overall, leaving 46 items remaining in the scale. After the removal of the 31 items, the CVI value was calculated to be 0.731. This indicates that the remaining items on the scale possess content validity. The obtained CVI value (0.731), which is greater than the CVI criterion (0.474), indicates that the content validity of the remaining 46 items is statistically significant (Lawshe, 1975; Karagöz & Bardakçı, 2020:18). Furthermore, expert opinions support the four predicted factors (environmental sustainability communication, social sustainability communication, economic sustainability communication, and sustainability of communication) identified after the literature review. The analysis table was prepared using the Office 365 Excel program.

Quantitative Research

The scale was designed based on expert opinions and applied to a predetermined sample group of 250 individuals (Baş, 2003, p.185) representing the target audience within the scope of a pilot study to evaluate the scale's structural characteristics, assess its measurement validity, and provide basic information for possible improvements before factor analysis (Karakoç & Dönmez, 2014, p.42). The pilot study involved a total of 228 students and 22 academicians. The student sample comprised undergraduate students (180), associate degree students (42), master's degree students (5), and one doctorate student. Among the academic participants, there were 4 professors, 3 associate professors, 5 assistant professors, 4 research assistants, 5 lecturers, and 2 instructors, providing a diverse academic representation. The collected data were analyzed using SPSS 25 software. Following the pilot study, minor adjustments were made based on the second round of expert opinions, without removing any items, taking into account survey methodologies, Turkish language rules, and literature information.

During the pilot study stage, the remaining 46 items in the item pool were identified with factor codes. For example, the term "F1Q1" denotes the first item in the first factor. According to this arrangement, "F1" represents environmental sustainability communication, "F2" represents social sustainability communication, "F3" represents economic sustainability communication, and "F4" represents sustainability of communication factors.

During the pilot application process, partial correlations between factors were analyzed. Although analyzing these correlations before conducting confirmatory factor analysis (CFA) is not generally appropriate, the clear distinction between the factors has been supported both in the literature and by expert opinions. Therefore, Pearson correlation analysis was conducted for the four factors, namely F1, F2, F3, and F4.

The construct validity of the scale was ensured using a two-phase strategy, including Exploratory Factor Analysis (EFA) and CFA (Karagöz and Bardakçı, 2020, p.15; Büyüköztürk et al., 2012, p.119). In the first phase of this approach, EFA

techniques were applied to determine the fundamental factor structure of the scale. In the second phase, the factor structure determined by EFA was confirmed using CFA (Yaşlıoğlu, 2017:75). In the structural validity analyses, SPSS 25 software was used for dataset preparation, reliability analyses, and determining suitability for factor analysis, while AMOS 24 software was employed to confirm the factor structure.

The EFA phase of this study involved participants from five different universities. Data collected from 526 participants was analyzed using a 36-item scale. During the EFA process, three analyses were conducted, and two items were removed from the scale. The reliability of the scale was tested using Cronbach's alpha and composite reliability analysis methods, and it was concluded that the scale was reliable. In the CFA phase, data collected from 515 participants from 5 different universities, different from the EFA participants, was analyzed to confirm the scale structure.

Quantitative Research Findings

In the pilot study, based on the item-total correlation analysis results, some items showed low correlation values. Specifically, in Factor 1, items 3 (-.233), 7 (.043), and 12 (-.019); in Factor 2, items 8 (-.014), 10 (-.193), and 11 (-.080); in Factor 3, items 4 (-.255) and 5 (-.247); and in Factor 4, items 2 (-.144) and 4 (.069) had item-total correlations below the generally accepted .30 threshold. These items were removed from the scale due to their low overall contribution to it (Field, 2005). After item analysis, the scale was reduced from 46 to 36.

The Cronbach's alpha reliability coefficient of the initial 46-item scale was calculated as 0.826. After removing the low-correlation items, the internal consistency coefficient was calculated as 0.860. Generally, a Cronbach's alpha value above 0.70 indicates sufficient internal consistency for the scale (Nunnally, 1978).

Post-pilot study partial correlation analysis results between factors showed no statistically significant relationships, with $p > .05$ for F1 and F2 ($r = 0.031$, $p = .628$), F1 and F3 ($r = 0.033$, $p = .609$), F1 and F4 ($r = 0.017$, $p = .793$), F2 and F3 ($r = -0.058$, $p = .359$), F2 and F4 ($r = -0.018$, $p = .778$), and F3 and F4 ($r = -0.062$, $p = .328$). The results show no significant

correlations between the factor pairs, indicating that the four factors are independent constructs. This suggests the scale measures distinct dimensions, with no correlations exceeding 0.70, preserving the uniqueness of each factor (Brown, 2006). After item removal, .943 (F1), .954 (F2), .957 (F3), .926 (F4). When the Cronbach's alpha value for all factors is above 0.70, the scale is considered to have sufficient internal consistency (Nunnally, 1978).

Based on the second expert evaluation conducted after the pilot study, the current 36-item form was deemed appropriate. Minor adjustments were made to the items without compromising their conceptual integrity, based on survey methodologies, Turkish language rules, and literature information.

To assess sample adequacy before EFA, the Kaiser-Meyer-Olkin (KMO) test was used (Karagöz & Bardakçı, 2020:35). The KMO measure was 0.922, indicating that the sample was highly suitable for factor analysis. The Bartlett's Test of Sphericity was used to test the applicability of factor analysis. The Chi-Square value was 11859.301, with degrees of freedom (df) of 561. The p-value was .000, which is less than 0.05 (Field, 2005). These findings demonstrate the applicability of EFA for determining the structure of factors and relationships in the data (Karagöz & Bardakçı, 2020). The detailed results are presented in Table 3.

Table 3. EFA KMO and Bartlett's Test

Kaiser-Meyer-Olkin (KMO)			.922
Measure of Sampling Adequacy			
Bartlett's Test	Chi-square	11859.301	
	Value		
	Sd	561	
	p(p<0,05)	.000	

During EFA, oblique rotation methods (direct oblimin and promax) were used, given their capacity to account for correlations between factors, a common practice in social sciences where factors need not be orthogonal (Hair et al., 2010). Additionally, the principal components method, widely applied for its simplicity and effectiveness,

was employed in the analysis (Fabrigar et al., 1999).

The initial EFA revealed a five-factor structure in the 36-item scale. The study aimed to create a four-factor structure. However, a five-factor structure with 36 items (Table 4) was formed.

Table 4. Explained Total Variance Amounts (1st Analysis)

Factor	Initial Eigenvalues		Total Factor Loadings			Transform ed Total Factor Loadings
	Variance %	Cumulative %	Total	Variance %	Cumulative %	
1	6.713	18.647	18.647	6.713	18.647	6.695
2	4.411	12.254	30.901	4.411	12.254	4.354
3	4.227	11.743	42.643	4.227	11.743	4.234
4	3.477	9.659	52.302	3.477	9.659	3.599
5	1.067	2.964	55.266	1.067	2.964	1.073

Extraction Method: Principal Component Analysis

In the pattern matrix analysis, a specific item (F3Q10) in the 36-item scale study does not load on any factor (Table 5). This indicates that the item F3Q10 does not fit the intended factor structure, and as Castello and Osborne (2005) suggest, at least three items should load on a factor. Therefore, this item was removed from the scale.

Table 5. Pattern Matrix (1st Analysis)

	Factor				
	1	2	3	4	5
F3Q3	.977	F4Q1 .727	F2Q1 .757	F1Q8 .761	F3Q10 .914
F3Q9	.975	F4Q5 .721	F2Q4 .753	F1Q10 .681	
F3Q7	.975	F4Q6 .706	F2Q7 .703	F1Q9 .653	
F3Q6	.974	F4Q10 .693	F2Q3 .694	F1Q6 .618	
F3Q1	.973	F4Q9 .685	F2Q9 .668	F1Q11 .607	
F3Q8	.971	F4Q8 .682	F2Q13 .610	F1Q4 .593	
F3Q2	.971	F4Q3 .682	F2Q6 .588	F1Q5 .584	
		F4Q11 .667	F2Q12 .563	F1Q1 .570	
		F4Q7 .663	F2Q5 .559	F1Q2 .556	
			F2Q2 .539		

Extraction Method: Principal Component Analysis

Rotation Method: Oblimin with Kaiser Normalization

a. Rotation converged in 3 iterations.

A new EFA was conducted on the 35-item scale. The analysis's goal was for the scale to have a four-factor structure, and this was achieved. However, upon examining the commonalities table (Table 6), it was observed that the commonality value for item F2Q2 was below the minimum acceptable threshold of 0.32 for an item to be retained in the

scale (Tabachnick & Fidell, 2001). The commonality for item F2Q2 was far below the values of 0.5 (strong), 0.4 (adequate), and the minimum accepted threshold of 0.32 in the literature (Castello & Osborne, 2005). Therefore, this item was removed from the scale. Following the second EFA, the analysis proceeded with the 34-item scale.

Table 6. Communalities Table (2nd Analysis)

Item	Initial	Extraction	Item	Initial	Extraction
F1Q1	1.000	.337	F3Q1	1.000	.947
F1Q2	1.000	.315	F3Q2	1.000	.943
F1Q4	1.000	.354	F3Q3	1.000	.956
F1Q5	1.000	.341	F3Q6	1.000	.948
F1Q6	1.000	.382	F3Q7	1.000	.951
F1Q8	1.000	.575	F3Q8	1.000	.942
F1Q9	1.000	.426	F3Q9	1.000	.950
F1Q10	1.000	.466	F4Q1	1.000	.532
F1Q11	1.000	.382	F4Q3	1.000	.470
F2Q1	1.000	.581	F4Q5	1.000	.520
F2Q2	1.000	.294	F4Q6	1.000	.505
F2Q3	1.000	.488	F4Q7	1.000	.439
F2Q4	1.000	.578	F4Q8	1.000	.470
F2Q5	1.000	.312	F4Q9	1.000	.485
F2Q6	1.000	.353	F4Q10	1.000	.480
F2Q7	1.000	.498	F4Q11	1.000	.451
F2Q9	1.000	.453			
F2Q12	1.000	.325			
F2Q13	1.000	.369			

Extraction Method: Principal Component Analysis

The third exploratory factor analysis (EFA) revealed a four-factor structure for the scale, with factors labeled F1, F2, F3, and F4. The factor loading values ranged from .576 to .759 for F1, .565 to .766 for F2, .971 to .977 for F3, and .662 to .726 for F4, indicating strong relationships between the factors and their corresponding items (Table 7). This demonstrates that the scale effectively measures sustainability communication across multiple dimensions. The scale maintained item loadings above .30, with no cross-loadings, ensuring clarity in the factor structure. Measures were taken to avoid overlapping items with similar load values across factors, and at least three items were included per factor (Castello & Osborne, 2005). This resulted in a coherent four-factor structure comprising 34 items, which is detailed in the pattern matrix presented in Table 8.

Table 7. Item Factor Distributions and Factor Loading Values (3rd Analysis)

Item	Env. Sus. Comm.	Item	Soc. Sus. Comm.	Md.	Eco. Sus. Comm.	Md.	Sus. of Comm.
F1Q1	.576	F2Q1	.766	F3Q1	.973	F4Q1	.726
F1Q2	.559	F2Q3	.697	F3Q2	.971	F4Q3	.682
F1Q4	.595	F2Q4	.763	F3Q3	.977	F4Q5	.720
F1Q5	.581	F2Q5	.565	F3Q6	.974	F4Q6	.706
F1Q6	.616	F2Q6	.589	F3Q7	.975	F4Q7	.662
F1Q8	.759	F2Q7	.708	F3Q8	.971	F4Q8	.683
F1Q9	.652	F2Q9	.676	F3Q9	.975	F4Q9	.687
F1Q10	.680	F2Q12	.570			F4Q10	.694
F1Q11	.608	F2Q13	.605			F4Q11	.667

Table 8. Pattern Matrix (3rd Analysis)

	Factor			
	1	2	3	4
F3Q3	.977	F4Q1 .726	F2Q1 .766	F1Q8 .759
F3Q9	.975	F4Q5 .720	F2Q4 .763	F1Q10 .680
F3Q7	.975	F4Q6 .706	F2Q7 .708	F1Q9 .652
F3Q6	.974	F4Q10 .694	F2Q3 .697	F1Q6 .616
F3Q1	.973	F4Q9 .687	F2Q9 .676	F1Q11 .608
F3Q8	.971	F4Q8 .683	F2Q13 .605	F1Q4 .595
F3Q2	.971	F4Q3 .682	F2Q6 .589	F1Q5 .581
		F4Q11 .667	F2Q12 .570	F1Q1 .576
		F4Q7 .662	F2Q5 .565	F1Q2 .559

According to the EFA results, the scale consists of 34 items across four sub-dimensions, explaining 54.647% of the total variance, confirming its validity as a measurement tool (Streiner, 1994:140). The optimal number of factors is determined when each additional factor contributes less than 5% to the total variance (Yaşlıoğlu, 2017:77).

Table 9. Amounts of Total Variance Explained (3rd Analysis)

Factor	Initial Eigenvalues			Total Factor Loadings			Transformed Total Factor Loadings
	Total	Variance %	Cumulative %	Total	Variance %	Cumulative %	
1	6.713	19.744	19.744	6.713	19.744	19.744	6.695
2	4.409	12.967	32.711	4.409	12.967	32.711	4.350
3	3.986	11.724	44.434	3.986	11.724	44.434	4.003
4	3.472	10.213	54.647	3.472	10.213	54.647	3.598
5	.904	2.659	57.307				

Extraction Method: Principal Component Analysis

The fourth factor accounts for 10.2% of the variance, with the closest following percentage being 2.6%. The detailed variance percentages are listed in Table 9.

The Scree Plot in Figure 2 illustrates the variance explained by each factor in the four-factor model. The first factor accounts for the largest variance, while the last explains the least (Streiner, 1994:138). The optimal number of factors is determined by observing where the plot levels off, using the breakpoints and shape of the graph as guides (Cattell, 1978).

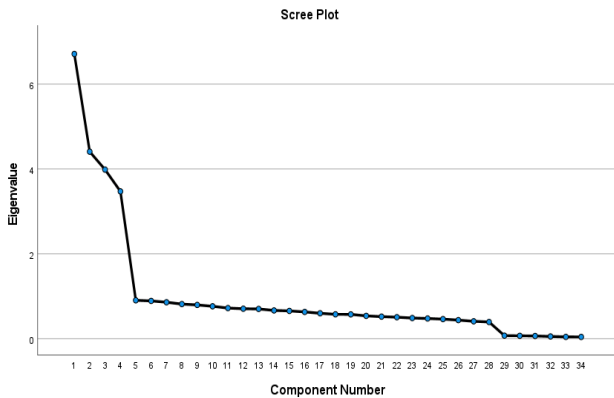


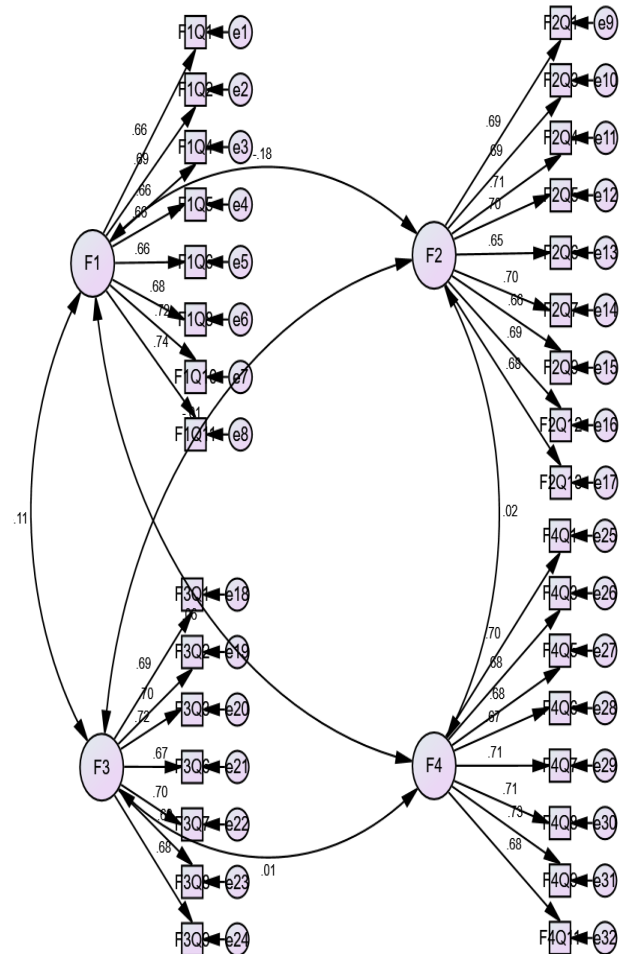
Figure 2. Scree Plot Graph

To determine the reliability of the scale, Cronbach's alpha reliability analysis was conducted, and the scale was found to have an α of 0.779. Since the Alpha value is greater than 0.7, the scale, including its sub-dimensions, is considered a reliable measurement tool. Cronbach's alpha values for the four factors were .804 for "F1", .836 for "F2", .991 for "F3", and .864 for "F4", indicating strong reliability. (Cronbach & Meehl, 1955; Karagöz & Bardakçı, 2020:62).

Considering that Cronbach's alpha does not provide sufficient reliability for multidimensional scales (Karagöz & Bardakçı, 2020), composite reliability (CR) coefficients were used to assess the internal consistencies of the factors. The calculations conducted using Microsoft Office 365 Excel and AMOS 24 software determined the CR as 0.8077 for F1, 0.8409 for F2, 0.9911 for F3, and 0.8646 for F4. Since these values are above 0.70, they provide strong evidence of the reliability of the four factors (Raykov, 1997).

For the CFA, path diagrams were created in AMOS 24 for the four-factor, 34-item scale derived from the EFA, with 9 items in the first factor, 9 in the second, 7 in the third, and 9 in the fourth. The analysis confirmed the requirement of at least

three items per factor (Castello & Osborne, 2005:3), and item F4Q10 was removed due to non-conformance. Item F1Q9 was removed post-CFA due to a factor loading of 0.61, while item F2Q6 was retained as its factor loading was close to the range of 0.65 to 0.70 (Stevens, 2002). Consequently, a 32-item four-factor scale was developed and validated. The path analysis diagram is presented in Figure 3, and the model fit indices are shown in Table 10.



CMIN/df:1.033; AGFI:.939; GFI:.947; NFI:.930; CFI:.998; IFI:.998; TLI:.997; RMSEA:.008

Figure 3. CFA Path Diagram

Table 10. CFA Fit Indices Table

Fit Index	CMI N/df	RMS EA	AG FI	GF I	NF I	CFI	IFI	T LI
Scale Values	1,03	0,008	0,9	0,9	0,9	0,9	0,9	0,99

When examining the fit indices of the model, it was found that the χ^2/df ratio of 1.03 shows excellent fit; the AGFI value of 0.939 provides a

high data fit; other fit indices such as GFI, NFI, CFI, IFI, and TLI with values above 0.90 indicate excellent levels; and the RMSEA value of 0.008 achieves ideal results.

Composite reliability coefficients were calculated to measure the internal consistency of the factors. As a result of these calculations, the CR values were found to be 0.8751 for F1, 0.8885 for F2, 0.8666 for F3, and 0.8820 for F4. These coefficients indicate the measurement reliability of each factor, and generally, values of 0.70 and above suggest that the factors are reliable (Raykov, 1997). Therefore, it can be said that all four factors are reliable.

Before the application of CFA, the Cronbach's alpha reliability coefficient of the 34-item scale was calculated as .763. After CFA, with the removal of items F1Q9 and F4Q10, the scale was reduced to 32 items, and the Cronbach's alpha reliability coefficient of this 32-item scale was found to be .769. Additionally, no item-total correlations below .30 were observed. These results indicate that the scale has high internal consistency, both in its initial form and after CFA.

Partial correlations of the four-factor structure resulting from CFA were evaluated, and significant negative Pearson correlations of -0.163 between F1 and F2 and -0.096 between F1 and F3 were found ($p < 0.01$ and $p < 0.05$, respectively). Correlations between F1 and F4, F2 and F3, F2 and F4, and F3 and F4 were not statistically significant ($p > 0.05$). These results show that F1 has negative relationships with F2 and F3, but the relationships between other factors are not significant, indicating that each factor represents unique structures (Yaşlıoğlu, 2017).

Results and Recommendations

In this study, the aim was to develop a valid and reliable measurement tool to measure the quality and strength of sustainability communication in higher education institutions. A two-phase scale development process was followed. In the qualitative phase, a pool of 77 items was created; face validity was ensured after a preliminary pilot study; content validity was achieved through expert opinions and analysis; and the number of items was reduced to 46. In the quantitative phase,

a pilot application was conducted, resulting in a 36-item structure based on item analysis. Subsequently, data from the surveys applied to the sample were analyzed in SPSS 25 for EFA. The results of the EFA indicated a model consisting of 34 items and four factors, establishing construct validity. These factors were named environmental sustainability communication, social sustainability communication, economic sustainability communication, and sustainability of communication. The CFA performed using AMOS 24 resulted in the removal of two additional items, leading to a 32-item scale that demonstrated an acceptable level of fit. The reliability analyses using Cronbach's alpha and composite reliability confirmed that the scale and its factors were reliable. Consequently, it was found that the developed sustainability communication scale for higher education institutions was theoretically and statistically appropriate, valid, and reliable.

Although previous studies have offered different perspectives on sustainability communication across various sectors and communication models, they typically have not provided a comprehensive solution by focusing on specific areas. This scale can be used as an effective, comprehensive, and reliable measurement tool for assessing the quality and strength of sustainability communication. The goal was to establish a holistic foundation for the field with a developed scale. The scale can play an important role in identifying and addressing issues in attitudes and practices related to sustainability communication. Particularly, it can make a valuable contribution to Turkish universities adopting the concept of sustainability and leading society in this area in the future.

The scale assesses sustainability communication in a one-dimensional manner. The fact that the concept of sustainability is not yet fully understood by the general public has created a significant need for measurement in this context. This study designed a measurement process to determine whether the messages intended to reach stakeholders are effectively understood. Communication has become a complex process that can be evaluated in multi-dimensional and 360-degree ways. Addressing communication in a one-dimensional manner in the context of evolving

communication under complex and intertwined factors such as Web 3.0, Web 4.0, artificial intelligence, current communication technologies and methods, and the social/new media revolution may cause a deviation from the main framework (sustainability) in the scale development process. Future research should consider other stakeholders besides participants and include other aspects of communication as measurement factors.

Sustainability is a term coined by the UN, aiming to save or shape the future of the world and humanity. Sustainability is an artificial concept introduced by an institution. The UN has characterized its future projection as "sustainable development." The sustainable development agenda consists of 17 goals for 2015–2030. It is desired that concepts and goals related to sustainable development be developed horizontally. Subsequent periods will update these goals. It is anticipated that scientific studies will reach the correct results if they move in line with this horizontal development. In this context, the scale items were primarily written within the framework of the UN SDGs and the most widely accepted sustainability reporting tool, GRI. Furthermore, it can be said that the scale will provide a comprehensive measurement as it includes items related to all factors of sustainability. Thus, when the sustainable development agenda is updated or the scope of the concept is changed in the future, the aim is to provide a dynamic measurement tool that can be renewed.

As a result, the "Sustainability Communication Scale in Higher Education Institutions" has the potential to be an effective tool for assessing sustainability goals and determining future steps in this area. This scale can function as a significant reference point for measuring universities' sustainability performance and making strategic improvements.

Regarding future recommendations, practitioners should implement regular training programs to adopt effective sustainability communication strategies and tools, organize activities to increase interaction with communities and the visibility of sustainability projects, and

maintain continuous dialogue with stakeholders. Researchers should investigate the potential of the "Sustainability Communication Scale in Higher Education Institutions" to yield variable results with different stakeholder groups and expand the sustainability communication literature. Policymakers should ensure the inclusion of sustainability communication in policy processes, implement public and comprehensible communication strategies, and use media and digital tools to communicate sustainability goals to the public.

Declaration of Contribution Rate

The authors of the article have contributed equally to the study.

Declaration of Conflict of Interest

There is no potential conflict of interest in this study.

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RESEARCH ARTICLE

The Strategies of Invitation Speech Act in Turkish

Hülya Ünsal Şakiroğlu¹ | Işıl Özyıldırım²

¹ Phd, Adana Science and
Technology University
Adana/Türkiye
ORCID: [0000-0003-0252-1275](https://orcid.org/0000-0003-0252-1275)
E-Mail:
hsakiroglu@atu.edu.tr

² Prof. Dr., Hacettepe
University, Department of
English Linguistics
Ankara//Türkiye
ORCID: [0000-0003-0391-4708](https://orcid.org/0000-0003-0391-4708)
E-Mail:
isiloz@hacettepe.edu.tr

Corresponding Author:
Hülya Ünsal Şakiroğlu

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Abstract

This study examines the strategies on invitation speech act in Turkish based on the speech act theory in pragmatics which fundamentally positions that when people use language they actually perform a kind of action. The purpose of the present study is to investigate the strategies employed on invitation speech act by native speakers of Turkish. To accomplish the goal, an online Written Discourse Completion Task (DCT) was employed with an aim to delineate the strategies Turkish speakers use while inviting. Another method was examining several different Turkish television series. Following the implication of the quantitative technique of conversation analysis, the utterances in data from invitation acts were analyzed in terms of the patterns of the semantic formulas categorized in the taxonomy by Suzuki (2009). The findings of the study revealed that invitation acts used in Turkish have their unique patterns. Direct invitations (84.90%) were more frequent than indirect ones (15.09%). Moreover, the most predominant type of head act was declarative (40.33%) and query on hearer's plan (17.64%) had the highest frequency among preparatory acts. The most common supportive move was description of event by 48.44% of Turkish invitations.

Keywords: speech acts, invitation speech act, invitation strategies, Turkish, TV series

Öz

Bu çalışma, temel olarak insanların dili kullandıklarında aslında bir tür eylem gerçekleştirdiklerini öne süren edimbilimdeki söz edim/eylem kuramını temel alarak Türkçedeki davet söz eylemine ilişkin stratejileri incelemektedir. Bu çalışmanın amacı ana dili Türkçe olan kişilerin davet söz edimine/eylemine yönelik kullandıkları stratejileri araştırmaktır. Bu amaca ulaşmak için Türkçe konuşanların davet ederken kullandıkları stratejileri belirlemek amacıyla çevrimiçi bir Yazılı Söylem Tamamlama Testi (YSTT) kullanılmıştır. Bir diğer veri toplama tekniği olarak birkaç farklı Türk televizyon dizisi serisinden birçok bölüm izlenerek dökümü çıkartılmıştır. Söylem tamamlama testinden ve dizilerden elde edilen veriler, öncelikle konuşma çözümlemesi ile daha sonra ise Suzuki (2009) tarafından kategorize edilen çerçeve kullanılarak analiz edilmiştir. Araştırmanın bulguları, Türkçede kullanılan davet söz ediminin kendine özgü kalıplara sahip olduğunu ortaya koymuştur. Türkçede doğrudan davetler (%84.90) dolaylı olanlardan (%15.09) daha sık tercih edilmektedir. Ayrıca, en belirgin ana davet eylemi türü bildirim cümleleri olup (%40.33), hazırlık eylemleri arasında en sık kullanılan strateji 'dinleyicinin planını sorma' olmuştur (%17.64). Türkçe davetlerde en yaygın destekleyici hamle ise yüzde 48.44 ile etkinliğin tanımlanması olarak kendini göstermektedir.

Anahtar Kelimeler: söz eylem teorisi, davet söz eylemi, davet stratejileri, Türkçe, TV dizileri

Introduction

Together with meaning, pragmatics studies the relationship between the structure of a language, and how it is used in context. Pragmatics is the study of meaning that focuses specifically on implicit meaning, inference, the unsaid, and how language structure operates on the assumed and the inferred (Levinson, 1983). Under this discipline, there are several subject areas, one of which is speech acts. Speech act theory is a foundational framework for comprehending how language functions beyond simple exchanging of information. According to this view, language is used for a variety of activities and tasks, including making requests, providing commands, making claims, and making promises (Austin, 1962). Austin argued that language is not solely about describing the world but is a means of performing actions. He introduced the notion of 'illocutionary acts,' which are the underlying intentions or purposes behind an utterance. For instance, saying "I promise to be there" is not just describing an event; it is the act of making a promise.

Speech acts are deeply embedded in social contexts, and their interpretation is often influenced by cultural norms, social hierarchies, and individual backgrounds. The same speech act may be received differently in various social settings. For instance, a request made by a subordinate to a superior might carry a different illocutionary force than the same request made between peers. Politeness theory, a key topic within speech act theory has been suggested and further developed by various scholars such as Brown & Levinson (1978), Goffman (1967), Grice (1975), Lakoff (1973), Leech (1983), Spencer-Oatey (2000) yet the most influential and prevalently used politeness theory is Brown and Levinson's face-saving theory. The model assumes that all adult members of society have 'face,' the public self-image that each member wishes to claim for himself, comprising two related aspects: negative face, which is the desire to be unimpeded and free from imposition, and positive face, which is the desire for one's self-image to be valued and accepted.

Politeness also refers to the capacity to communicate in a way that improves the environment of a social contact. Although all human contacts involve the potential for conflict and disagreement, according to Lakoff (1973), politeness is a set of social norms aimed at making interpersonal communication simpler. Interlocutors could be polite with avoidance of conflict by satisfying hearer's feelings and not imposing. Kasper (1990) regards politeness as attainable through conversational methods that allow conversation participants to avoid risk and reduce resentment. Leech (1983) provides a pragmatic principle whose purpose is to maintain social balance and relationships, allowing us to believe that our communications are cooperative. Goffman (1981) focused on politeness as a social value and "face" as an image of self. Brown and Levinson (1987) define the face as "the public self-image that every member wishes to establish for himself," adopting Goffman's concept of social self. As a result, Goffman, Brown, and Levinson contend that in social interactions, the face is something to be established, maintained, enhanced, misplaced, and rebuilt.

One of the latest models for politeness is Rapport Management Theory which was proposed and expanded over time and extensively used in a variety of majors. Rapport Management Framework (Spencer-Oatey 2000), which expanded from Brown and Levinson's (1987) Politeness Theory (PT), provides a broader approach by focusing on rapport-building in areas other than speech acts, which are the primary focus of politeness theory. Spencer-Oatey's rapport management theory (RMT), which emphasizes mainly the use of language to promote, maintain, or threaten harmonious social ties, tries to investigate how harmonious or disharmonious relationships are formed. Her approach takes social rights into account in addition to the idea of face and has been extensively employed in studies on intercultural communication, pragmatics, and intercultural business communication.

1. Background Information About Invitation Speech Act

The study of speech acts, particularly the act of extending invitations, has been a subject of great interest in the field of linguistics and communication. Invitations represent a fundamental component of human interaction, serving as a means to bring individuals together, foster social bonds, and facilitate various social activities. Understanding the intricacies of how invitations are formulated, interpreted, and responded to is essential for unraveling the complexities of human communication.

Invitation Speech Act

The invitation speech act is defined as an illocutionary act used when the inviter asks the invitee to come to an event and is prepared to accept the invitee's participation at a specific time and location for an immediate or future occasion. According to Wijaya & Helmie (2019), an invitation is categorized as assertive by Austin (1962) and as a directive speech act by Searle (1979), as it obliges the hearer to act and reflects the speaker's intention. Based on this interpretation, invitations are comparable to requests, directives, and commands as they all require listeners to take certain acts.

Although studies on the invitation speech act are limited, the existing literature is summarized as follows. In Russian, Vlasyan & Kozhukhova (2019) aimed to determine the politeness strategies used in Russian invitations in both formal and informal settings across three age groups. The study associated the strategies with the Russian communicative culture and the idea of politeness using DCT (Discourse Completion Task) and anthropological observations. Differences in formal and informal invitations regarding politeness strategies and linguistic means of expression were reported. The study also revealed that making an invitation was not seen as a face-threatening act in Russian culture; instead, direct invitations are preferred and the imposition of the inviter was typically received favorably (Vlasyan & Kozhukhova, 2019).

Garcia (1992) studied the invitation speech act in Hispanic culture and found that invitation-refusal and insistence-acceptance are the language use guidelines for Peruvians in the inviting-declining process. Spanish speakers use some techniques to lessen the impact of rejection during the invitation-refusal stage. Sociolinguistic principles guide that in the insistence-acceptance stage, an invitation must appear to be accepted even though it has already been declined (García, 1992).

In Greek, Bella (2009) studied two age groups' linguistic behavior in issuing invitations and refusals within the politeness framework. The data was drawn from role plays. Findings showed that age is a determining parameter in issuing invitations and their realizations. While older age informants conceive invitations as face-threatening acts and barely insist on favoring negative politeness contrary to traditional expectations, the younger age group envision invitations as face-enhancing and insist more during invitations preferring positive politeness. Moreover, she also found that it is difficult to distinguish between positive and negative politeness techniques since the negative ones are mixed with the positive strategies or they act as such in the setting.

Suzuki (2009) explored the pragmatic techniques used by native English speakers studying in the USA universities to deliver an English invitation speech act by analyzing linguistic strategies at the lexical, grammatical, and discourse levels. Findings suggest that participants frequently invite others to a party, a meal, an event (e.g. concert), their houses, a movie, etc. Lexical and grammatical analysis indicates that some significant keywords that are unique to this speech act included phrases like *come, would, like, party, want, tonight, having, if, house, doing, or weekend*. Addresses (vocatives and interjections etc.), supportive move (description of event), head act (interrogative, hypothetical + interrogative) and preparatory act (query on hearer's plan) were the most employed strategies.

Some researchers focus on how the invitation act is structured, such as Yu and Wu (2017) in Mandarin Chinese. The study investigates the

relationship between making an invitation and its linguistic realization in terms of turn design and sequential development. Researchers collected data using the conversation analysis methodology and audio recordings of everyday Mandarin conversations. They found out that inviting in Mandarin is primarily implemented through three syntactic forms of imperatives, declaratives, and interrogatives and the inviter's expectation of the possibility that an invitation would be accepted is systematically correlated with the distributional pattern of certain grammatical variants.

Speech acts were also examined from a cross-cultural pragmatics standpoint. Choraih (2022) conducted a contrastive analysis between Moroccan Arabic (MA) and American English (AE) in the invitation speech act highlighting the similarities and differences between the two languages. The results of the study showed similarities in the use of direct and indirect strategies. However, several differences were also reported. For instance, the strategies of conditional, welcoming expressions, desire, time consideration, imperative form, and possibility were utilized in MA for someone of higher status (their boss) whereas modality, conditional, request for time, suggestion, permission, and want or wish were used in AE.

In addition to providing a thorough analysis of the invitation speech act, they identified potential causes of variations in the speech act realization strategies used during conversations, such as pragmatic or linguistic factors, cultural values, or social parameters. Comparison between cultural values in invitation act in English and Iraqi Arabic (Al-Darraj et al., 2013); German, Greek, Polish, and Russian (Ogiermann & Bella, 2020); Chinese and American (Lu, 2001); English, Persian, and Arabic (Vahid Dastjerdi & Nasri, 2012); the role of social status in realization refusal speech act for invitation, suggestion and offer among Yemenis and American native speakers (Al-Ghamdi & Alrefae, 2020); in terms of Speech acts, facework, and politeness theory (Cheng, 2012) were some contemporary researches.

Understanding the phenomenon of issuing invitations and answers to invitations in any language is essential to understanding how

speakers of other languages and cultures comprehend and perform these speech actions appropriately. It is beneficial for future linguistics and pragmatics studies as well. Invitations are used frequently in daily conversation, although they haven't been studied as much as speech acts namely, request, apology, and refusal. The responses and the form of the invitation speech act were examined in various world languages. Research on the invitation made by Turkish speakers is scarce.

Speech acts such as invitation, acceptance, rejection, suggestion, apology, request, and compliment are intensively studied across different languages. Nonetheless, they have not been thoroughly examined in Turkish. A few speech acts were examined in the context of the ability of recognition and production as Turkish speakers of English, or it has been studied in the context of pragmatic competence, or pragmatic (negative) transfer from the native language among EFL/ESL learners rather than investigating them directly in Turkish (Asmali, 2012; Çapar, 2019; Çiftçi, 2016; Demirkol, 2015; Gungormezler, 2016; Han & Burgucu-Tazegül, 2016; Marti, 2006; Sadler & Eröz, 2002).

To the best of the author's knowledge, there is no study targeting the strategies used in invitation speech acts in Turkish. Thus, this study aims to fill this gap and reveal the strategies employed in Turkish invitations. The present study is expected to stand in the breach in the literature and contribute to the field in this respect since there has been no study on the invitation speech act in Turkish before. Being the first in the Turkish literature, the current paper manifests the strategies used in Turkish invitations based on comprehensive data and it can be a basis for subsequent cross-cultural and multilingual studies. Therefore, our objective was to explore the strategies of invitation speech act in Turkish.

2. Methodology

Research Design and Participants

DCT was sent to participants online through a link using a

the snowball data collection method. The very same link also provided participants access to the consent form. The volunteer participation form cannot be collected by hand because the study's data-gathering method is shared by everyone with their contacts and is conducted online through the snowball technique. As a result, the consent section was added to the questionnaire's initial part to create the "Consent form". Participants needed to continue by confirming their participation in the study choosing from the options • Yes, I consent to voluntarily participate in the study or • No, I do not approve of participating in the study. The age of subjects is assured to be 18 or above.

Table 1. An overview of the participants' demographic parameters that were used to identify the most popular invitation-related activities within the Turkish community.

Social Parameters	values
Participants	279
Gender	125 (man) -154 (woman)
The number of Jobs	49
The number of Provinces	46
Regions	7 (Mediterranean, Black Sea, Central Anatolia, Aegean, Marmara, Southeastern Anatolia, Eastern Anatolia)
Education Level	8 (Primary), 11 (Middle School), 40 (High School), 163 (University), 56 (Graduate)

Data Collection

The study includes two different methods to gather data, a written Discourse Completion Task (DCT) and a secondary data collection tool through Turkish soap operas broadcasted on various TV channels. Written DCT was prepared as described in (Nadar, 2009) and consisted of two steps.

First, a quick online preliminary survey was applied to about 200 native Turkish speakers to determine what are the most frequent activities native speakers of Turkish invite others to. The gathered data was subjected to frequency analysis. The most frequent activities were determined as inviting someone to have a coffee, have a meal such as dinner, breakfast, etc., and hang out together.

In the second phase of the DCT, the task was prepared and presented online, and a link was sent

to adult participants to elicit the answers using the snowball technique. The same link also provided participants access to the consent forms. The respondents were instructed to read and respond to three invitation scenarios as if they were in a real situation. In the end, 279 volunteers participated the DCT and after elimination of false and missing answers, data obtained from approximately 200 individuals were subjected to further analysis and classification.

The researcher also watched 114 episodes of 11 different up-to-date and highly rated TV series to explore the invitation acts and record what strategies are utilized on TV series. Our aim here was to use two different data collection tools to both increase our data count and benefit from their complementary features. The aim was not to compare the two data/ tools but to ensure that one tool provided features that the other did not. This technique was also used extensively in previous studies that evaluated speech acts in various languages (Fahurrozi, 2015; Fernández-Guerra, 2008; Yazdanfar & Bonyadi, 2016).

An ethical committee approval for the study was obtained from Hacettepe University (E-35853172-300-00002846808 in 05.09.2023), the DCT was subsequently implemented about 200 volunteer participants online, and the data was gathered for downstream analyses.

Data analysis

In terms of data evaluation, scenarios in discourse completion task presented to participants were analyzed through a quantitative technique. All the sentences produced by the participants and the TV series were analyzed using the Conversation Analysis (CA) technique, the method for the study of language. Conversational analysis refers to any human activity that involves taking turns, small talk, and engaging in meaningful conduct. CA research could be based on the data on informal interactions such as everyday talk of friends, family, and neighbors or data from informal settings namely, courtrooms, hospitals, classrooms, etc. (Jefferson, 1972; Sacks, 1992; Sacks et al., 1974; Schegloff, 1968; Schegloff & Sacks, 1973).

In the second phase, the invitation utterances were examined based on semantic formulas developed by Suzuki, (2009). He classifies strategies into four categories, namely address, head act, preparatory act, and supportive move. The taxonomy that was adapted is given below:

1. Address (voc/intj etc)
2. Head act (interrogative)
3. Head act (declarative)
4. Head act (imperative)
5. Head act (present option)
6. Head act (hypothetical + interrogative)
7. Head act (hypothetical + declarative)
8. Preparatory act (query on h's plan)
9. Preparatory act (specification of reason)
10. Preparatory act (s's want)
11. Preparatory act (query on h' will)
12. Preparatory act (query on h' situation)
13. Preparatory act (s's readiness)
14. Supportive move (directions)
15. Supportive move (description of events)
16. Supportive move (encouragement)
17. Supportive move (present option)
18. Supportive move (s's want to have h)
19. Supportive move (s's want to have h)
20. Supportive move (specify what h can do)

DCT data collected from the participants were analyzed by two researchers to provide interrater reliability. The interrater was informed about the study and trained regarding the strategies. After deliberation the interrater evaluated a total of 25% of all the data and recorded the results. The first step to be followed in data analysis was the classification of invitation steps according to certain taxonomies by the researcher, a second evaluator was included in the study to ensure the reliability of the analysis, and it was tested with Cohen's Kappa value (Cohen, 1968) for inter-rater reliability and guaranteed. The comparisons of all the data were subsequently performed and both percentage agreement between the investigator and interrater as well as Cohen's Kappa statistics were estimated using *vcd* package in R (Meyer et al., 2020).

The relative frequency of each category of the abovementioned taxonomy were quantified and reported.

3. The findings and discussion about invitation speech act

The two data gathering tools, DCT and TV series were analyzed, and findings and discussion of strategies are presented.

In DCT, participants were requested to perform an invitation to someone *to have a coffee, to have a meal such as dinner, breakfast etc., and to hang out together*. As a second data collection tool, invitation excerpts are gathered from 114 episodes of a variety of TV series. Invitation patterns were analyzed by Suzuki's (2009) taxonomy. Invitation patterns of head acts, preparatory acts, and supportive moves combined from both data collection methods are displayed in Table 2.

Table 2. The frequency and percentages of invitation strategies used by native speakers of Turkish

Invitation	n:709	
	Freq.	%
Direct invitation	602	84.90
Indirect invitation	107	15.09
Addressee terms	172	24.25
Head act	697	98.30
Imperative	240	33.85
Declarative	286	40.33
Interrogative	128	18.05
Hypothetical declarative	23	3.24
Hypothetical interrogative	12	1.69
Hypothetical imperative	7	0.98
Declarative +imperative	5	0.70
Declarative + interrogative	2	0.28
Imperative + interrogative	2	0.28
Preparatory acts	279	39.35
Preparatory act (query on hearer's plan)	144	20.31
Preparatory act (specification of reason)	102	14.38
Preparatory act (query on hearer's will)	12	1.69
Preparatory act (s's readiness)	10	1.41
Preparatory act (speaker's want)	8	1.12
Preparatory act (query on hearer's situation)	3	0.42
Supportive moves	455	64.17
Supportive move (description of event)	320	45.13
Supportive move (speaker's want to have hearer)	94	13.25
Supportive move (query on hearer's availability)	21	2.96
Supportive move (encouragement)	11	1.55
Supportive move (present option)	5	0.70
Supportive move (specify what h can do)	2	0.28
Total	709	100

Table 2 shows the frequencies and percentages of invitation strategy patterns used by native Turkish speakers. As can be discerned from the table, most of the invitations were issued through direct

strategies (84.90%) and a relatively smaller percentage included indirect invitations (15.09%). Direct acts are generally issued directly and explicitly without any implication or hesitation. Direct invitations are also syntactically obvious, as in imperatives, or performatives e.g. *come to my party*. Indirect acts, on the other hand, are realized through either partial reference to elements or contextual clues. One such example is “*There is a concert on Friday night and I have an extra ticket, I would be delighted if you would consider coming along if you have time.*” The examples of direct invitations from our data were presented in (1) and (2) and those for the indirect invitations are given in (3) and (4).

- (1) **Buyurun, bugün yemeği bizde yiyelim.**
Come on, let's have dinner in our place today. (DCT)
- (2) A:Nişanlandığından nasıl haberim yok.
Bozuldum doğrusu. – I did not know you were engaged. I'm actually upset.

B: Bozulmana gerek yok, bu gece zaten. Serkan'ın evinde. **İstersen sen de gel.** -There's no need to be upset, it's tonight anyway. At Serkan's house. Come, if you want. (TV-SÇK)

In the first and second examples, inviters directly invite the invitee to the dinner that day. But in 3 and 4 the invitations are not explicit rather they are implicit since parts of the utterances did not include inviting act directly but via implication.

- (3) **Bugün bizde akşamlayalım.** –today-usLOC-we spend. –Let's have dinner at ours today. (DCT)
- (4) A:Çok yorgunum. Beni bekleme demiştim.
–very-I tired.meACC-you not wait-I said. – I am very tired. I told you not to wait for me.

B: **tadına bakmayacak mısınız? Lütfen** (masaya davet ederek) – taste-you notFUT?
–won't you taste it? Please. (inviting him to the table) (TV-EHH)

The direct invitation is an element that appears prominently. Direct strategies were the majority of

invitations made. This shows us that invitations are generally made more directly in Turkish culture. The directness of the invitations issued in Turkish is consistent with the studies conducted in Arabic by Al-Hamzi et al., (2020); Al-Khatib (2006); Ghazzoul (2019). The reason why direct invitations are mostly used is that in Turkish culture invitees are not offended by direct invitations.

Directness in invitation in Turkish could be further interpreted as inviting is not something face threatening or an imposition culturally, on the contrary, it is a gesture that indicates that the invitee would be considered and that s/he is loved. Therefore, Turks generally feel honored to be invited to an event and to be a part of such an organization. Russian also shows similarity in that respect. The study conducted by Vlasyan & Kozhukhova (2019) highlighted some distinctions in politeness strategies and language used between formal and informal invitation. It also demonstrated that making an invitation is not seen as a speech act that threatens someone's face in Russian culture; instead, direct invitations are preferred in social circumstances.

Directness also implies not an imposition but *affiliation*, *closeness* and *solidarity* as discussed in some languages in previous studies (Al-Darraj et al., 2013; Alfalig, 2016; Al-Marrani & Sazalie, 2010). For this reason, Al-Darraj recommends that facilitating cross-cultural communication would be made easier by recognizing and comprehending these distinctions. Similarly, regarding directness and the syntactic form, Lubecka (2000) concluded that Polish participants used imperative forms and direct invitations more than English speakers in the study in which English and Polish were compared with some speech acts, such as requests, invitations, compliments, and apologies. The directness that Polish speakers choose is explained as a reflection of their sociocultural politeness. Al Marrani & Suraih's study (2019) had similar results in that Yemeni EFL students favored using direct invitation strategies and yes/no questions strategy indicating that mother tongue influenced their answers since direct invitations are common in their society.

Another important strategy in the present study was the use of addressee terms. The *addressee terms*

were moderately frequent (24.25%). This could be attributed to the fact that address terms play an important role in shaping intimacy and hierarchy and are culturally imbued markers (Kiaer et al., 2022). The related examples are displayed in (5) and (6):

(5) *Cerenciğim geliyor musun? Bebekteki suşiciye gidiyoruz.* – dear Ceren-you comePROG?

– Dear Ceren, are you coming? We're going to the sushi shop in Bebek (İstanbul). (TV-SÇK)

(6) *Canım bugün müsait misin? Seni yemeğe bekliyorum.* –my dear-today-you available? YouACC-to mealDAT-I expectPROG.

– My dear, are you available today? I'm expecting you for dinner. (DCT)

Head acts are core parts of the invitation acts in which actual performing invitation takes place. In our data, almost all the sentences included head acts (98.30%). One example is in (7):

(7) *Bu akşam müsaitsen bana yemeğe gelsene.*
This evening-if you available-meLOC-dinner-you come.

– If you are free this evening, come to me for dinner.

The most prevalent way of constructing invitations is *declaratives*. About 40.33% of the head acts were formed in declarative form and one example is shown in (8):

(8) *Sizi yemeğe bekliyorum.*-youDAT-dinnerLOC-I waitPROG. – I am expecting you for dinner.

Using *imperatives* is the second most frequently employed strategy to invite others. Of the head acts, 33.85% were issued using imperatives. The regarding example can be seen in (9).

(9) *Yarın için yoksa bana yemeğe gel.* – tomorrow-your work-if you don't have-to meDAT-dinnerDAT-comeIMP.

– If you are available tomorrow, come to my house for dinner.

The reason why speakers employed more direct speech acts of imperative phrases in head acts is that the speakers believe that close hearers should not be subject to the politeness principle and/or as Mohammed (2020) pointed out, to demonstrate close bonds and familiarity, speakers prefer to be straightforward. This could provide a good enough reason to choose imperative.

The three most common forms for generating invitations in the present study were *declaratives*, *imperatives*, and *interrogatives*. This finding coincides with the results of Yu and Wu's (2017) study in which the distributional pattern of the three primary formats in Chinese (Mandarin) invitations was found to be declarative, imperative, and interrogative. On the other hand, interrogatives were the most preferred invitation form in Suzuki's (2009) study regarding invitations in American English.

Interrogative form in the present study was also included in closer proportions by 18.05% as stated in the example (10):

(10) *Akşam müsaitsen benim evimde yemek yiyebilir miyiz?* -evening-if available-my house-we-have-mealPOSSIB?

- If you are free in the evening, can we have dinner at my house?

Hypothetical declarative (3.24%), *Hypothetical interrogative* (1.69%), hypothetical imperatives, and the combination of *declarative + imperative* (0.70%), *declarative + interrogative*, *imperative + interrogative* were strategies used much less frequently in the present study.

(11) *Akşam yemeğinde bize katılmak ister misin?* - Dinner-to usDAT-would you like to attend? -Would you like to join us for dinner? (hypothetical interrogative)

We found out that in terms of preparatory acts, Turkish speakers preferred asking mostly on *hearer's plan* with a frequency of 20.31%. These are the strategies that inviter asks if hearer has any plan for the day and time. Suzuki (2009) states that using *the query on hearer's plan* is assumed to be more elaborated because the Speaker is asking

Hearer if he/she can spare time for his/her invitation. Because the speaker can stop performing this speech act if H gives a negative answer, this is also a smart face-saving move on S's part. Suzuki (2009, p.95) explains that

"an if-clause is frequently used as an alternative to the question form in several speech acts (e.g. offering, suggesting and requesting) asking Hearer about his/her willingness to accept the invitation. This conditionality can be recognized as a phenomenon related to linguistic politeness (especially in Leech's framework) in showing S's tentativeness and giving H an option".

According to Brown and Levinson (1987) and Sifianou (1999), the conditional phrase "if you are free" further weakens the illocutionary force of the statement and gives the invitee the impression that s/he is not being forced.

Specification of reason (14.38%) was the second most often employed strategy in our study. Treanor (2015) explained the reason why preparatory acts were used often with cultural preferences for specific rhetorical styles. Additionally, we could propose that the preparation phase and the reasons given for inviting might be considered as strategies to reduce the likelihood of rejection. According to Brown and Levinson (1987), justifying a forced transferable agreement (FTA) is a positive politeness strategy that allows the speaker to involve the hearer in the event or activity, assume reflexivity, and persuade the hearer that the FTA is acceptable. These two strategies are shown in the examples (12-13):

(12) **Bugün müsaitsen bize gelir misin? Birlikte vakit geçiririz.** Today-if you available-usDAT-you comePRES. Together-time-we spend. –If you are available today, will you come to us? We spend time together.

(13) **Arkadaşım sana anlatacağım şeyler var; bunu akşam bir yemekle konuşalım mı? –** my friend-youDAT-I talkFUT-I have; this-evening-a-dinner-we discussFUT?

–My friend, I have things to tell you; Shall we talk about this over dinner tonight?

Some of the preparatory act strategies such as *query on hearer's will*, *query on hearer's situation* *speaker's readiness*, and *speaker's want* appeared less than 2%. Supportive moves were the third element of examining invitation speech acts. Supportive moves were present among 64.17% of all the invitations. Out of 455 supportive moves, *description of event* had the percentage of 45.13. Treanor (2015) also found out that *description of events* was employed the most frequently both by English and Chinese speakers. *Description of event* generally includes the information about time, place, and attendees of the invited event. The reason for the frequent use of *description of event* is to give information about the invitation, thus providing the necessary information and avoiding producing a shallow, superficial invitation. At the same time, it is an attempt to be polite, with the idea of not causing trouble by imposing invitees to have to come. According to Suzuki (2009), using a *description of the event* is regarded as a better and politer approach because it offers a separate reason for the occasion. The example (14) shows the *description of event*:

(14) **Bu akşam bir programın var mı? Yoksa akşam bize yemeğe gelir misin?** –this evening-a-programme-you have? If not-evening-usDAT-dinnerDAT-you come?

– Do you have a program this evening? If not, will you come to dinner with us tonight?

With a percentage of 13.25, *speaker's want to have hearer* was the second most common supportive move. The current study has some similarities with Suzuki's (2009) in this regard. Both strategies were the highest-ranked strategies. An example is presented in (15):

(15) **Akşam yemeğe bekliyorum, itiraz istemem.** –evening-dinnerDAT-I expectPROG, objection-I not wantPRES.

- I'm expecting you for dinner, I don't want any objections. (DCT)

Query on hearer's availability (3%), *encouragement*, *present option*, and *specify what hearer can do* (< 2%) were rather rare strategies attained in the present study.

There are also head acts without any preparatory acts or supportive moves both in DCT and TV series with a total of 10.71%. This type of utterance is structured as nothing, but invitation sentences as shown in (16):

(16) **Yemeğe bize gelsene.** –dinnerDAT-usDAT-come. –why don't you come over for dinner.

(17)

To summarize the prominent features, *direct strategies* were used in most invitations made (84.90%) whereas *indirect invitations* were rather infrequent (15.09%). The frequent use of declaratives and direct strategies might be indicative of a cultural norm in Turkish society that values clarity and directness in social interactions. This could be reflective of broader societal values such as hospitality and straightforwardness, where being clear and direct is seen as a sign of respect rather than imposition. The most common method of the head acts for generating invitations is to use *declarative* (40.33%). *Asking question about hearer's plan* was the most common preparatory act among Turkish speakers (20.31%). With a percentage of 14.38, *specification of reason* was the second most often employed strategy. The final component of analyzing invitation speech acts was supportive move and they were used in 34.17% of cases. About 45.13% of the supportive moves included a *description of event*.

4. Conclusion

The present study aims to delineate the invitation strategies employed in Turkish spoken invitations. For this purpose, data was gathered by using DCT and TV series. One of the first findings of the present study is the usage of addressee phrases. It is evident that addressee terms are employed implying that it is traditionally common in Turkish to address individuals with dignity and respect. When speaking to everyone, regardless of status,

Turkish speakers are accustomed to using addressee phrases. According to Suzuki (2009), the use of the addressee terms is an indication of intimacy and camaraderie.

Another key finding is that invitations are issued *directly*. This might be seen as a sign that the invitee is valued rather than being perceived as a cultural imposition or a face-threat. *Declaratives*, *imperatives*, and *interrogatives* are the most frequently used forms for issuing invitations. The most common preparatory acts among Turkish speakers are *asking question about hearer's plan* and *specification of reason*. Moreover, *description of events* and *speaker's want to have hearer* were the most frequently occurring supportive moves.

Direct strategies were used in most of invitations performed. In line with studies completed in Arabic (Al-Hamzi et al., 2020; Al-Khatib, 2006; Ghazzoul, 2019), the invitations issued in Turkish were direct. Sincere relationships are valued more highly in Turkish culture, and straightforward invites do not cause offense, this explains why they are typically extended to people of close equal status. According to Amelia (2015), speakers typically use a more direct approach in more intimate, close relationships than in formal, distant ones. When the speaker has a strong connection to the hearer, they invite the listener and use a direct approach. Lubecka (2000) also found that Polish speakers preferred direct acts over indirect ones to satisfy social politeness.

By being more direct than indirect in their approach, Turks are not impolite when they issue invitations; rather, they are straightforward to the point where they require an answer. In that regard, Russian exhibits a resemblance to Turkish. Some differences between formal and informal invites' language and politeness methods were brought to light by Vlasyan & Kozhukhova's (2019) study. It also showed that straightforward invites are preferred in social situations and are not viewed as a speech act that threatens someone's face in Russian culture.

Almost half of the head acts contained *declaratives* which are the most widely used technique for issuing invitations and *imperatives* follow declaratives as the second prevalent form of head acts. This finding aligns with the findings of

Yu and Wu's (2018) investigation which outlines the three main formats—declarative, imperative, and interrogative—that are present in Chinese (Mandarin) invitations. However, interrogatives were the most popular type in American English invitations (Suzuki, 2009).

Preparatory acts were frequent in invitations. Among those, *query on hearer's plan* and *specification of reason* were the two most common strategies. Asking hearer's about his/her plan to accept the invitation, according to Suzuki (2009), can be identified as a phenomenon connected to linguistic politeness in that illustrates Speaker's hesitancy and it gives Hearer an option. The conditional structure of "if you are free" further reduces the illocutionary impact of the remark and gives the invitee the appearance that they are not being forced, according to Brown and Levinson (1987) and Sifianou (1999).

When supportive move is considered, they were more abundant than preparatory acts and the most common strategies used include *description of events* and *speaker's want to have hearer*. According to Suzuki (2009), using a description of the event is regarded as a better and politer approach because it offers a separate reason for the occasion. The current study has some similarities with Suzuki's (2009) in this regard. Both strategies were the highest ranked two strategies as preparatory act and supportive moves in the study. In Treanor's study (2015), it is also found out that *description of events* was employed the most both by English speakers and Chinese partakers.

As pioneering research in the field, the study will be a guide for future research and will shed light on both pragmatics and applied linguistics in Turkish. The study has implications for cross-cultural communication since Turkish speakers use the conventions of their native tongue to express meaning in the target language, the findings of the present study will clear up foreign languages studied as well as for studies on teaching Turkish as a foreign language. Speaking Turkish with an awareness of the language will help avoid misunderstandings. To avoid misinterpreting communications or losing important points that are being delivered, it is significant that one understands and uses

language appropriately for the context. One of the limitations of the present study is that only the data obtained by DCT and TV have been examined, which poses a limitation to the current study. Thus, it is primarily restricted to the responses of about 200 participants and the lines in soap operas. Gender, age, and cultural background have not been considered and this could be noted as another limitation of the study. Consequently, additional research on the invitation act in Turkish that accounts for all relevant variables would further enhance the extent of the knowledge on the subject.

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RESEARCH ARTICLE

A Comparative Study on Social Perceptions Towards Syrians Living in Şanlıurfa and Ankara

Esra Tüylüoğlu¹ | Veysel Ayhan² | Canpolat Özpolat³

¹ Asst. Prof., İzmir Katip Çelebi University, Media and Communication Department
İzmir /Türkiye

ORCID: [0000-0002-8554-6293](https://orcid.org/0000-0002-8554-6293)

E-Mail: dresratyuluoglu@gmail.com

² Prof. Dr., Abant İzzet Baysal University, Bolu /Türkiye

ORCID: [0000-0001-7382-1318](https://orcid.org/0000-0001-7382-1318)

E-Mail: veyselayhan@gmail.com

³ M.A., Abant İzzet Baysal University, Bolu /Türkiye

ORCID: [0009-0003-6529-7909](https://orcid.org/0009-0003-6529-7909)

E-Mail: canpolat.ozpolat@gmail.com

Corresponding Author:

Esra Tüylüoğlu

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Abstract

This study examines the social perceptions of Syrians under temporary protection in the Turkish cities of Şanlıurfa and Ankara, which host significant Syrian populations. Şanlıurfa, with approximately 273,000 Syrians, and Ankara, with around 90,000, were selected due to their differing cultural, linguistic, and geographical contexts. Using a quantitative research method, data were collected from 500 participants—300 from Şanlıurfa and 200 from Ankara—through 400 face-to-face interviews and 100 telephone surveys. The survey, consisting of 28 five-point Likert scale questions, aimed to capture the local population's attitudes toward the integration of Syrians, focusing on aspects such as education, cultural proximity, and forced repatriation. The findings revealed significant regional differences. In Şanlıurfa, societal acceptance of Syrians was largely influenced by religious, ethnic, and cultural proximity, particularly regarding access to education. In contrast, respondents in Ankara demonstrated a more negative attitude toward these factors. Furthermore, a clear divide emerged in views on the forced return of Syrians, with Şanlıurfa showing higher tolerance and Ankara favoring repatriation under certain conditions. These results underscore the importance of localized studies in understanding the nuanced public perceptions of refugee communities

Keywords: Perception, Syrians, Temporary Protection, Comparison, Ankara, Şanlıurfa

Öz

Türkiye'de geçici koruma altındaki Suriyelilerin en yoğun yaşadığı illerin başında 530.165 kişi ile İstanbul gelirken, Şanlıurfa'da yaşayan Suriyeli sayısı yaklaşık 273.000, Ankara'da yaşayan Suriyeli sayısı ise yaklaşık 90.000'dir. Buna göre çalışmanın amacı, Şanlıurfa ve Ankara'daki yerel halkın Suriyelilere yönelik (toplumsal) algılarının nasıl olduğunu belirlemektir. Nicel araştırma yönteminin kullanıldığı çalışmada, veri toplama yöntemlerinden anket tekniğine başvurulmuştur. Araştırma kapsamında Şanlıurfa'da 300 kişi ve Ankara'da 200 kişi olmak üzere bölgede yaşayan 500 kişiden 400 katılımcı ile yüz yüze ve 100 katılımcı ile telefon üzerinden anket tekniği ile veri toplanması gerçekleştirilmiştir. Araştırma kapsamında uygulanan anketler, görüşülen kişilerin Suriyelilere yönelik (toplumsal) algıları ile ilgili fikirlerini öğrenmek için beşli likert şeklinde hazırlanmış 28 sorudan oluşmaktadır. Şehirlerin seçiminde kültürel yapı, dil, etnik yapı ve coğrafi faktörler temel alınmıştır. Çalışmada; eğitime erişim konusunda her iki ilde de toplumsal bir kabulün olduğu, Şanlıurfa'da Suriyelilere yönelik toplumsal kabulde din, etnik ve kültürel yakınlık önemli bir rol oynarken Ankara'da ise bu üç unsurdan da olumsuz bir yaklaşım olduğu ve Suriyelilerin zorla geri gönderilmesi konusunda Ankara ve Şanlıurfa'daki vatandaşlar arasında ciddi görüş ayrılıkları olduğu yönünde dikkat çekici sonuçlar elde edilmiştir.

Anahtar Kelimeler: Algı, Suriyeliler, Geçici Koruma Statüsü, Karşılaştırma, Ankara, Şanlıurfa

Introduction

Migration is a societal phenomenon that leaves deep imprints on the consciousness of individuals and societies. Throughout every period of history, various migrations have occurred due to political, economic, environmental, and social factors, and these migrations will continue as long as the world exists. Migration is a social phenomenon that profoundly affects societies in economic, cultural, and political aspects. People who migrate, either voluntarily or involuntarily, are influenced not only as individuals but also as communities by the effects of migration. Therefore, it is clear that both the quantity and the quality of the migration phenomenon, which is not just about numbers, are important.

Migration, as a social phenomenon that causes cities to change, has many causes. Domestic migrations are often driven by the desire for development in education, health, and technological opportunities, which make it easier to travel from one place to another. In the case of external migrations, the idea of continuing life in a different country can be a factor, but forced migration can occur due to risks of loss of life and property, increasing violence, or even war. One example of such a migration is the influx of Syrians to Turkey, which has been escalating in recent years. Due to the war, Syrians have been compelled to leave their country, seeking refuge in Turkey, owing to both historical and geographical proximity. The beginning of this process dates back to 2011, when public demonstrations in Tunisia quickly spread to other Arab countries (T.C. Ministry of Interior Directorate General of Migration Management, 2024a).

In 2011, popular demonstrations that began in Tunisia quickly spread to other Arab countries. Following Tunisia, anti-government protests in Egypt encouraged opposition groups in Syria. By February, the first anti-regime protests took place in Damascus, Syria's capital (Ayhan, 2012). These small protests escalated into mass demonstrations across cities like Damascus and Aleppo. In

response, the Baath regime employed force to suppress the protests (Ayhan, 2012).

By late 2011, armed conflicts erupted near the Turkish border, with opposition forces organizing attacks against the regime. As the violence intensified, the Syrian regime targeted civilians, leading to mass displacement. Turkey's Open-Door policy facilitated the migration of Syrians to its borders (Tuj-Juhra, 2021). The main reasons for this migration include ongoing conflict, loss of state control, and the collapse of security, prompting Syrians to flee for safety. Although Turkey did not formally recognize Syrians as refugees, it enacted measures to offer legal protection (Makovsky, 2019).

Turkey's efforts to address the mass influx led to the introduction of the 'Directive on the Reception and Accommodation of Citizens of the Syrian Arab Republic' in March 2012 (Acar, 2019). This directive emphasized non-refoulement (protection from forced return to persecution) and established minimum humanitarian standards (Mazur, 2022). The 'Law on Foreigners and International Protection,' passed in April 2013, formalized the legal framework for Syrians under temporary protection in Turkey. Article 91 of this law defines temporary protection as providing emergency assistance for those forced to leave their country en masse and seeking asylum (<https://www.mevzuat.gov.tr/MevzuatMetin/1.5.6458.pdf>).

Syrians in Turkey are granted temporary protection, allowing them to stay under legal status. According to the United Nations Executive Committee Resolution No. 100 (2004), temporary protection is necessary when mass asylum occurs, and normal asylum processes cannot be applied. It offers immediate solutions and ensures that people are not returned to life-threatening situations.

Thus, the term 'Syrians under temporary protection'¹ is used to refer to Syrians residing in Turkey as a result of this legal framework. Over time, social perceptions of Syrians have evolved due to political, economic, and cultural factors.

¹ Syrians have been granted Temporary Protection Status in Turkey in accordance with national and international custom. In this study, instead

of repeating the expression 'Syrians under Temporary Protection', only the expression 'Syrian' or 'Syrians' will be used.

Theoretical Framework

Migration has existed throughout human history, driven by various factors. Individuals and groups may migrate for educational, economic, religious, or touristic reasons, either temporarily or permanently. Some migrations are voluntary (Toker & Kozak, 2023). However, migration can also occur involuntarily due to political upheaval, natural disasters, or other crises. Forced migration refers to individuals compelled to move because of such events (Cohen & Bradley, 2010).

Forced migration can be categorized as displacement caused by political instability, disasters, or coercion (International Organization for Migration [IOM], 2019). Post-World War II, the displacement of hundreds of thousands of people due to conflict prompted the UN to address the issue. The 1951 Geneva Convention on the Status of Refugees legally defined "refugee," marking a significant advancement. The convention, along with the 1967 amendment, defines a refugee as follows (<https://multeci.org.tr/wp-content/uploads/2021/07/1951-Cenevre-Sozlesmesi-1.pdf>):

An individual who, owing to a well-founded apprehension of persecution on account of nationality, religion, race, political opinion or membership of a particular social group, is outside the country of his nationality and who, owing to such apprehension, does not desire to avail himself of the protection of that country.

This definition highlights the political value associated with the term "refugee," differentiating it from other migrant communities. Countries that have signed the convention have committed to not forcibly returning refugees, providing them with protection and support. Organizations like the United Nations High Commissioner for Refugees (UNHCR) work to distinguish between refugees and other migrant groups. Over time, the definition of refugees has expanded, particularly with the involvement of the Organisation for African Unity (OAU). The expanded definition includes individuals fleeing foreign invasions, civil conflicts, or severe disruptions to public order (Wood, 1994). The 1984 Cartagena Declaration also broadened the definition to include those fleeing human rights violations (Toksöz, 2006).

In some cases, the terms "refugee" and "asylum seeker" are used interchangeably. A refugee is an individual who has not yet attained legal refugee status but is undergoing the necessary procedures (UNHCR, 2021). Asylum seekers, on the other hand, are individuals seeking protection in another country but may not meet all the criteria set out for refugees under the 1951 Convention (Expert Group on Refugee and Internally Displaced Persons Statistics, 2018). In some studies, the terms are used synonymously (Turton, 2003). While asylum seekers may request protection for economic or better living conditions, political asylum specifically refers to forced migration due to political causes (Marfleet, 2006).

Forced migration is generally defined as the displacement of individuals fleeing disasters, man-made or natural, as well as armed conflicts (Castles & Miller, 2008). In some contexts, it refers to people displaced within their own country, while in others, it applies to those crossing national borders (Ruiz & Vargas-Silva, 2013). Whether migration occurs within or across borders, the root causes remain consistent. Migrants displaced by necessity are often referred to as refugees or Internally Displaced Persons (IDPs). While refugees flee across borders, IDPs are displaced within their own country (Fragomen, 1970).

Researchers have categorized forced migration based on factors like political instability, war, persecution, economic collapse, or environmental crises that threaten lives. Discrimination based on religion, ethnicity, or tribe also contributes to forced migration (Wood, 1994). Wood (1994) identified three primary categories of forced migration:

1. Conflicts or civil wars, persecution, and political instability.
2. Life-threatening economic crises caused by environmental factors.
3. Conflicts stemming from religious, ethnic, or tribal disputes.

While multiple factors may occur simultaneously, even one of these factors can be sufficient to prompt forced migration. Wood (1994) further identifies three categories of refugees: illegal migrants, guest workers/legal migrants, and refugees/asylum seekers. For those who fail to

settle in the host country, options like mandatory repatriation or deportation may apply. These concepts are essential to understanding the migration of Syrians to Turkey and their status within the country.

Additionally, the study emphasizes the importance of understanding "perception" in this context, as societal perceptions of Syrians play a crucial role in shaping the study's focus.

Perception

The existence of facts, events, and physical objects is independent of individuals' attitudes towards them. While these elements have objective reality, various factors—such as mistakes, paradoxes, and differing perspectives—can create discrepancies between what is perceived and what is actually happening (Tutar, 2013, p.185).

Behaviors and attitudes of individuals, groups, and societies are shaped by perceptions, which are influenced by historical accumulation and experience. Perception, in its broadest definition, is the process through which objective reality is transferred to subjective consciousness via the senses. Since individuals believe in their perceptions, these perceptions become their reality. However, perceptions can either enhance or diminish individual value. To react to events, take action, or generate ideas, individuals must first perceive and process the relevant information or stimuli (Özer, 2012, p.148).

Perceptions allow individuals to interpret what they feel, how they behave, and how they understand the world around them (Bakan & Kefe, 2014, p. 20). The accuracy and truthfulness of one's perceptions determine their ability to evaluate events and situations in a balanced manner (Tutar, 2013, p. 188). For harmonious social interactions, individuals must be able to perceive and organize their social environment at a basic level. This understanding of situations, events, and objects is essential for adapting to social life (Güney, 2012, p.118).

Perception, influenced by individual characteristics, organizes information about others' actions and behaviors by categorizing it in the mind. This process updates initial perceptions

as new information becomes available. As a result, the individual assigns value or worthlessness to the person, event, or situation being perceived, enabling them to form interpretations (Bakan & Kefe, 2014, pp.21-22).

With this background on perception, the next section explores societal perceptions regarding the social acceptance of Syrians.

Public Perception of Social Acceptance of Syrians

The 2011 civil war in Syria triggered the forced migration of hundreds of thousands of people in a short period (Ceritoğlu, Gürçihan-Yüncüler, Torun, & Tümen, 2017, p.2). By September 2015, 1.7 million Syrians had officially migrated to Turkey, with unofficial figures suggesting close to two million. The number of registered Syrians in Turkey reached 3,303,113, although this figure had decreased to 3,099,524 by August 2024 (T.C. Ministry of Interior Directorate General of Migration Management, 2024b). In the initial five years, a significant portion of Syrians were required to reside in border provinces. Many of them stayed in camps managed by the Disaster and Emergency Management Authority (AFAD) (AFAD, 2016, p.47). During this period, few Syrians migrated to western provinces, as AFAD camps were both geographically and culturally close to the conflict zone (AFAD, 2016, p.49).

However, over time, particularly for economic reasons, many Syrians began moving to western provinces. After 2020, the number of Syrians in cities like Istanbul, Bursa, Izmir, and Ankara significantly increased (Erdoğan, 2022, p.79). This shift led to increased tension and confrontation between citizens and Syrians.

For Syrians, life in Turkey has introduced numerous challenges. International forced migration often involves adjusting to a new environment, people, social relations, and an unfamiliar cultural structure. This is compounded by language barriers and differences in religious practices or sects. Migration to western provinces intensified these challenges. Border provinces such as Şanlıurfa, Hatay, and Kilis, which share cultural and linguistic similarities with Arab-speaking regions, allowed immigrants to maintain

communication and kinship ties (Kalaycı Önaç & Altunsoy, 2020, p.272). In contrast, Syrians moving to western provinces encountered a vastly different social structure. For instance, while a Syrian in Şanlıurfa could easily communicate with locals in Arabic, the same individual in Ankara would need to converse in Turkish, leading to a lack of neighborhood ties and limited social interaction.

This study compares the perceptions of individuals in two distinct cities regarding Syrians. Şanlıurfa, geographically and culturally closer to Syria, was chosen due to its linguistic, ethnic, and cultural similarities. In contrast, Ankara, Turkey's second-largest and more cosmopolitan city, was selected for its greater cultural distance from Syrians. The study compares participants' perceptions of equality in education, religious, ethnic, and cultural proximity, forced return, family unity, commercial relationships, and social stability.

Methodology

The aim of this study is to comparatively measure the perceptions of citizens in Şanlıurfa and Ankara towards Syrians between July 2018, when opposition to Syrians began to increase, and July 2024. In this context, the study uses a quantitative research method, specifically the survey technique.

In this context, the study compares the perceptions of citizens in Ankara and Şanlıurfa regarding Syrians living in Turkey and provides detailed information based on the data obtained. As of July 2024, the number of Syrians residing in Şanlıurfa was recorded as 272,919, while in Ankara, the number stood at 89,926 (<https://multeciler.org.tr/turkiyedeki-suriyeli-sayisi/>).

The universe of the study consists of Turkish citizens living in the cities of Şanlıurfa and Ankara. The sample consists of 500 participants, aged 18 and over, who were randomly selected and agreed to participate in the study. The sample size was determined in proportion to the number of Syrians living in these cities. Accordingly, 300 participants were selected from Şanlıurfa, where more Syrians reside, and 200 participants were selected from

Ankara, where fewer Syrians live. The gender distribution of the total number of participants was 60% male (n=300) and 40% female (n=200).

Face-to-face and telephone interviews were conducted with these 500 participants from the two cities. Of the total, 400 participants were interviewed face-to-face, while 100 participated via telephone surveys. In Şanlıurfa, 250 out of 300 participants were interviewed in person, while 50 were interviewed by phone. Similarly, 150 participants in Ankara were interviewed face-to-face, with 50 contributing through telephone surveys. Table 1 provides details on the participation of individuals from each city.

Table 1. General demographic properties of participants

	Şanlıurfa	Ankara	Total
Number of Syrians	272.919	89.926	362.845
Number of participants	300	200	500
Number of participants (Attended to face-to-face survey)	250	150	400
Number of participants (Attended to survey over the phone)	50	50	100

The survey used in the study was developed by Özpolat (2019) and consists of 28 Likert-type items designed to assess societal perceptions of Syrians. The reliability of the scale was confirmed with a Cronbach's Alpha coefficient of .95, and the margin of error was determined to be 5%. The data obtained were analysed in SPSS statistical programme and the findings were obtained.

Findings and Discussion

Perceptions in Şanlıurfa Towards Syrians

The findings from the interviews conducted in Şanlıurfa are presented in Table 2.

The survey aimed to understand the perceptions of Syrian individuals who arrived in Şanlıurfa following the Syrian civil war. The results show that negative societal reactions are limited. In addition to general perceptions, the survey explored societal attitudes toward factors such as "historical and geographical responsibilities," "education rights," and "humanitarian reasons."

Table 2. The Perception of the Province of Şanlıurfa Towards Syrians in Turkey

Propositions	Strongly Agree	Agree	No Answer / Undecided	Disagree	Strongly Disagree
Humanitarian reasons are more important than religious, linguistic, or ethnic factors in accepting Syrians in Turkey.	64.25%	22.75%	5.25%	4.50%	3.25%
The acceptance of Syrians stems from Turkey's historical and geographical responsibility.	21.75%	27.00%	13.00%	27.00%	11.25%
The acceptance of Syrians is beneficial and will strengthen Turkey.	10.00%	17.25%	19.25%	25.75%	11.25%
The problems of Syrians do not concern us, and we should stay away.	11.50%	12.75%	14.00%	43.50%	18.25%
Syrians are disrupting the social order in Şanlıurfa.	13.50%	24.25%	23.50%	26.00%	12.75%
Syrians are our religious brothers; they should be accepted.	24.00%	45.25%	8.25%	15.00%	7.50%
Syrians are our ethnic brothers; they should be accepted.	18.50%	36.00%	6.75%	23.25%	15.50%
Even if the war continues, Syrians should be returned to their country.	9.75%	5.50%	15.75%	23.00%	46.00%
Syrians should be returned to their country.	23.07%	13.93%	21.42%	17.86%	23.09%
Syrians should only be housed in camps.	19.25%	21.00%	5.50%	34.00%	20.25%
Do you think you share the same culture as Syrians?	13.25%	23.25%	14.25%	33.50%	15.75%
Could the continued presence of Syrians in Şanlıurfa lead to problems?	19.00%	33.75%	20.75%	17.25%	9.25%
Şanlıurfa welcomed Syrians during the Syrian crisis.	31.75%	37.00%	5.25%	20.00%	6.00%
I would support a family member marrying a Syrian.	19.75%	30.00%	26.50%	10.00%	13.75%
I would do business with a Syrian.	11.50%	38.00%	18.50%	14.00%	18.00%
Syrians should have the same educational rights as Turkish citizens.	19.50%	36.25%	6.00%	13.50%	24.75%
I do not see any problem with shopping from Syrian-owned businesses.	20.50%	38.00%	9.50%	14.00%	18.00%

Regarding the local community's sensitivity and approach toward Syrian individuals, 87% of respondents agreed with the statement, "In the process of accepting Syrians into Turkey, humanitarian considerations are more important than ethnic, linguistic, or religious factors." Only 7.75% disagreed with this proposition, highlighting the prominence of humanitarian concerns in local attitudes.

In response to other questions, approximately 50% of respondents agreed with the statement, "I would welcome a marriage between a Syrian and someone from my family," while 26.5% were undecided or did not wish to answer. Similarly, 69% of respondents agreed with the statement, "Syrians are our religious brothers and sisters and should be accepted." Moreover, 54.5% of participants supported the proposition, "Syrians are our ethnic brothers and should be accepted." This question, not included in the Ankara survey, was added to the Şanlıurfa survey due to the region's large Arab and Kurdish populations.

The survey results indicate a strong social acceptance of Syrians in Şanlıurfa, grounded in humanitarian, religious, cultural, and ethnic factors. The level of agreement with the statement that Syrians are "ethnic brothers" is particularly noteworthy, underscoring the significant role of religion, ethnicity, and cultural proximity in fostering social acceptance.

To assess the community's stance on more provocative issues, participants were asked additional questions. In response, 24.25% agreed with the statement, "The problems of Syrians do not concern us and should be avoided," while 61.75% disagreed, indicating a sense of responsibility among the majority. When asked whether Syrians should be sent back to their country even if the war continues, 15.25% agreed, while 69% opposed the idea.

Although the proposition, "The acceptance of Syrians benefits our country and will strengthen it," did not receive strong agreement, the results suggest that the community's acceptance of Syrians is driven by humanitarian concerns and

shared religious values. Overall, it is clear that the humanitarian perspective is prioritized within the local community.

Perceptions in Ankara Towards Syrians: A More Distant Approach

The findings from the interviews conducted in Ankara, as part of this study, are presented in Table 3.

Table 3 *Perceptions in Ankara Towards Syrians*

Propositions	Strongly Agree	Agree	No Answer / Undecided	Disagree	Strongly Disagree
Regardless of religion, language and ethnicity, the humanitarian reason is more important in the admission of Syrians to Turkey.	30,36	25,00	12,50	14,29	17,86
The admission of Syrians stems from Turkey's historical and geographical responsibility.	16,07	23,21	8,93	32,14	19,64
Admission of Syrians is beneficial and strengthens Turkey.	3,57	23,21	17,86	17,86	37,50
The problems of Syrians do not concern us and should be avoided.	25,00	14,29	10,71	16,07	33,93
Syrians are our religious brothers and sisters and should be accepted.	14,29	23,21	10,71	16,07	35,71
Syrians disrupt social order in Ankara.	26,79	28,57	14,29	21,43	8,93
Even if the war continues, Syrians should be sent back to their country.	16,07	8,93	32,14	17,86	25,00
Syrians should be sent back.	41,07	8,93	21,43	17,86	10,71
Syrians should only be accommodated in camps.	23,21	14,29	10,71	39,29	12,50
Do you think that you are from the same culture as Syrians?	5,36	14,29	17,86	23,21	39,29
Can Syrians staying in Ankara cause problems?	37,50	17,86	12,50	26,79	5,36
Ankara has embraced Syrian asylum seekers with the Syrian crisis.	12,50	48,21	23,21	10,71	5,36
I would welcome a marriage between a Syrian and a member of my family.	7,14	17,86	26,79	8,93	39,29
I would do a joint business with a Syrian.	7,14	25,00	21,43	12,50	33,93
Syrians should have the same right to education as Turkish citizens.	21,43	28,57	19,64	7,14	23,21
I do not see any problem in shopping from Syrian shops.	25,00	33,93	7,14	8,93	25,00

Unlike Şanlıurfa, the migration of Syrians to Ankara began to intensify after 2015. By 2017, the number of Syrians in Ankara had reached 73,042 (Gürel Üçer, Özkazanç, & Atılgan, 2018, p. 617), and by 2024, this figure had risen to approximately 90,000. There are several reasons why Syrians prefer Ankara over Şanlıurfa. These include the quieter neighborhoods they settle in, lower rental costs compared to other areas, and better job opportunities. Additionally, Syrians reportedly

feel safer in Ankara than in cities closer to the Syrian border.

Survey results on citizens' perceptions of the mass migration of Syrians to Ankara after 2015 show that citizens generally perceive Syrian migration as forced. The survey focused on questions related to "humanitarian reasons," "cultural elements," "religious reasons," and "the country's historical and geographical responsibilities" to better understand the public's perspective. The results of questions aimed at

measuring citizens' determination and sensitivity toward Syrians are as follows:

1. More than 55% of respondents agreed with the proposition, "Humanitarian reasons are more important than religious, linguistic, or ethnic factors in the acceptance of Syrians in Turkey." However, around 31% disagreed, which is significantly higher than the rate in Şanlıurfa.

2. Approximately 37.5% agreed with the statement, "Syrians are our religious brothers and sisters and should be accepted." This indicates that humanitarian concerns and responsibility, rather than religion, play a more dominant role in the acceptance of Syrians in Ankara.
3. Around 25% agreed with the statement, "Even if the war continues, Syrians should be sent back to their country." This further highlights the importance of humanitarian concerns in shaping public opinion.
4. Similarly, only 19.5% agreed with the statement, "Do you think that you are from the same culture as Syrians?" while 63% disagreed. This demonstrates that while citizens of Ankara maintain a humanitarian perspective, they still perceive significant cultural differences. Despite this, the overall humanitarian approach toward Syrians remains positive. However, responses to other questions measuring social acceptance reveal a certain level of social opposition to Syrians in Ankara.
5. When analyzing the results in more detail, it becomes evident that approximately 55% of respondents in Ankara believe that Syrians disrupt social order and stability. In contrast, around 20% disagreed with this statement.
6. Similarly, more than 55% of respondents believe that the continued presence of Syrians in Ankara will cause future problems.
7. Approximately 27% of respondents agreed with the proposition "The acceptance of Syrians is beneficial and will strengthen our country," while around 55% disagreed.
8. On the other hand, only 25% of respondents agreed with the proposition "I would support a family member marrying a Syrian," while about 48% disagreed. The rate of those who were undecided or did not want to give an answer was approximately 27%.
9. Around 52% of respondents opposed the proposition "Syrians are our religious brothers; they should be accepted."
10. The proportion of respondents who believed that Syrians should receive equal education rights was close to 50%, reflecting a humanitarian stance.

Syrian perception in Şanlıurfa and Ankara Provinces: Comparisons in the Context of Thematic Issues

Equality in Education

The survey conducted in Şanlıurfa aimed to assess the attitudes of citizens toward the access and utilization of education for Syrians. Respondents were asked about the rights of Syrian individuals in this context. In Şanlıurfa, 56% agreed with the statement, "Syrians should have equal rights to education as Turkish citizens," while 38% disagreed. These results suggest that most residents of Şanlıurfa have no issue with the education provided to Syrian individuals.

In Ankara, the survey found that 50% of respondents agreed with the same statement regarding equal educational rights for Syrians, while approximately 30% disagreed. This level of disagreement is lower than in Şanlıurfa. Overall, the findings indicate a level of social acceptance in both provinces regarding access to education for Syrians.

It is noteworthy that in both cities, the proportion of individuals supporting equal educational rights for Syrians is higher than those opposing it. This suggests a recognition within the local community of the importance of not excluding those affected by war from their right to education, and ensuring they can continue their education in line with Turkey's system.

The positive approach toward education for Syrians, particularly for those displaced by war, demonstrates that the local community upholds a humanitarian and rights-based perspective toward these individuals.

Perception of religious, ethnic and cultural affinity

The findings of the study, aimed at identifying the perceptions of citizens towards Syrians from neighboring southern Syria, reveal cultural and religious differences in perceptions across provinces. In Şanlıurfa, 69.25% of respondents supported the proposition "Syrians are our religious brothers, they should be accepted," while 22.5% opposed it. Similarly, around 55% supported the proposition "Syrians are our ethnic brothers, they should be accepted." However, the favourable attitude of the citizens participating in the Ankara survey towards the proposition of religious brotherhood remained at 37%. The rate of those who oppose the proposition is close to 52 per cent. In Ankara, the rate of those who agree with the statement 'Syrians are our ethnic brothers and sisters and should be accepted' is around 30 percent, while the rate of those who oppose this statement is above 57 percent.

In this context, it can be said that religious, ethnic, and cultural proximity plays a significant role in the societal acceptance of Syrians in Şanlıurfa, whereas a more negative approach exists towards these three elements in Ankara.

The Forced Return of Syrians

Approximately 49% of respondents living in Ankara support the repatriation of Syrians. However, only about 25% agree with the statement, "Syrians should be sent back to their country even if the war continues," while around 43% oppose it. This indicates that although a significant portion of Ankara's citizens support repatriation, the proportion of those advocating for forced repatriation during ongoing conflict decreases to 25%. The fact that the rate of opposition is below 50% suggests that there is some level of social acceptance in Ankara regarding the idea of forced return.

There are notable differences in opinions between citizens of Ankara and Şanlıurfa on the issue of forced return of Syrians. In Şanlıurfa, 37% of respondents agree with the statement, "Syrians should be sent back," while over 41% oppose it. Furthermore, only about 15% of Şanlıurfa's

citizens agree with the idea of sending Syrians back even if the war continues, with around 68% opposing this view.

These findings reveal a significant divergence of opinions between the citizens of Ankara and Şanlıurfa regarding the forced return of Syrians.

Family unity and commercial relations

Nearly 50% of respondents in Şanlıurfa supported the proposition "I would support a family member marrying a Syrian," while less than 24% opposed it. Similarly, more than 58% of respondents agreed with the proposition "I do not see any problem with shopping from Syrian-owned businesses," while around 34% directly opposed it. About 50% of respondents supported the proposition "I would do business with a Syrian." In Ankara, 25% of respondents agreed with the statement, "I would approve a marriage between a Syrian and a member of my family," while over 48% opposed it. Similarly, 32% stated they would do business with Syrians, whereas over 46% opposed the idea. However, nearly 60% of respondents expressed that they would have no issue doing business with a Syrian-owned business.

This contrast highlights that while there is notable social opposition to family unity and direct business relations with Syrians in Ankara, there is a higher level of social acceptance towards Syrians in Şanlıurfa.

Perception of social stability

To measure public perception of the social stability and social cohesion of Syrians, certain propositions were presented to the survey participants. In this context, the proposition 'Syrians disrupt social order in Şanlıurfa' was presented and 38% of the respondents agreed with this statement, while 38.75% of the respondents disagreed with it. In the second proposition, which measured societal perceptions crosswise, the question "Could the continued presence of Syrians in Şanlıurfa lead to problems?" was asked. Approximately 43% of respondents stated that it could cause problems, while around 27% indicated that it would not.

The participation of the citizens residing in Ankara to the statements 'Syrians disrupt social order in Ankara' and 'Syrians staying in Ankara would cause problems' has been above 55%. Therefore, more than 50% of the citizens in Ankara have the perception that Syrians are a factor of social instability.

Conclusion

In recent years, many public opinion surveys on the perception of immigrants have been conducted in Turkey. These surveys often present a general overview of public perception across the country. However, when conducting comparative analysis at the city and settlement level, different patterns of perception emerge.

Religious, cultural, geographical proximity, and ethnic similarities play a significant role in the social acceptance of Syrians. This research highlights that humanitarian concerns are shared across various social groups, especially as the Syrians' presence in Turkey enters its 13th year. Particularly in perceptions towards Syrians, religious, cultural, geographical proximity, and ethnic similarities play a significant role in societal acceptance, which is one of the prominent findings of the study.

In both provinces, a social acceptance has been reached in terms of access to education. In a study by Kızıl & Dönmez (2017), the educational services provided to Syrians in Turkey were discussed, and the challenges that arose from this process were highlighted. The educational policy developed by the Ministry of National Education for Syrians who are of school age has changed many times since the first wave of migration. Initially, Syrians were perceived as "short-term guests," and thus not many educational measures were taken. It was even considered that students should receive the Turkish education system's curriculum in Arabic (Seydi, 2014, p. 275). This education was not designed to award students with any certificate or diploma, and the main goal was to ensure that they would not lose any academic years when they returned to their country. However, following the significant increase in the number of Syrians in 2013 and the realization of their long-term

presence in Turkey, certain educational measures were implemented. As a result of these ongoing measures in the following years, Syrian students were given the opportunity to receive education both in the camps and in Temporary Education Centers (TEC) established in city centers, as well as in public schools. However, these policies and implementations also brought challenges in terms of civic education. Studies on the curriculum that Syrian children were receiving in their home country revealed that many elements in the curriculum were antagonistic to the Turkish nation and the Republic of Turkey. Moreover, Syrian students, who had to interrupt their education and came to Turkey, faced issues regarding the "national" character of the curriculum they received in Syria compared to what they started learning in Turkey. In Syria's national curriculum, Turkey's territory was presented as part of the "Arab Homeland," with claims that these lands were forcibly taken from the Arabs. The Asi River was depicted as an internal waterway of Syria, the Tigris and Euphrates were said to originate from Armenian highlands, negative aspects of Ottoman policies towards Arabs were emphasized, and Hatay was portrayed as a city of Syria. These issues, especially during middle school Social Studies and high school History education, have led to contentious topics.

For Turkish society to coexist with these individuals within itself and for a peaceful and stable environment to be established socially, one of the necessary conditions is the achievement of equality in education. However, as mentioned above, it is crucial to prepare curricula that will ensure equality in education and are compatible with the historical backgrounds and national ideologies of both countries' peoples, minimizing conflict and tension.

Among the findings of the study, it was determined that there is societal opposition to family unity and joint commercial relations in Ankara, while there is social acceptance towards Syrians in Şanlıurfa. In a study prepared by Baydemir (2024), the neighborhood relations between Turkish citizens and Syrians living in Şanlıurfa were examined. In this study, which included 360 Turkish citizens and 360 Syrians, a

total of 720 participants, it was found that neighborhood relations between the two communities were weak and that there was a significant lack of contact between the citizens of the two countries. This result differs from the findings of this study. This variation may be due to some demographic characteristics (age, occupation, income level, education level, etc.) of the participants. In fact, the perceptions of Turkish citizens living in areas where there is a high concentration of Syrians in Şanlıurfa regarding neighborhood, joint trade, and family unity may differ from those living in areas with lower concentrations.

Another conclusion reached in the study is that more than half of Turkish citizens living in Ankara perceive Syrians as a source of social instability. It can be said that social changes and instabilities, which are the result of socio-economic and political crises, generally stem from migration movements that force the local population and foreigners to live together (Eser & Uygur, 2019, p. 87). It can be suggested that the legal framework that emerged over time, allowing Syrians to live alongside Turkish citizens, contributed to the perception of social instability.

Another conclusion reached in the study is that religious, ethnic, and cultural proximity play a significant role in the social acceptance of Syrians in Şanlıurfa, while a negative approach exists in Ankara towards these three factors. In a study by Güzel (2021) examining local attitudes towards Syrians in Kahramanmaraş, it was found that local society had a low level of acceptance towards Syrians. The study suggested organizing religious and cultural events that would allow Turkish and Syrian citizens to spend more time together, which corresponds to the findings of this study that religious, ethnic, and cultural proximity plays a significant role in societal acceptance in Şanlıurfa.

According to the final result of the study, there are significant differences in the views of citizens living in Ankara and Şanlıurfa regarding the forced return of Syrians. On March 28, 2022, work began on the "Support for the Nationally Endorsed Voluntary Return Mechanism in Turkey" (NAVRR) Project, in cooperation with the Directorate General of Migration Management

(DGMM) and the International Centre for Migration Policy Development (ICMPD), which aimed at supporting voluntary return. However, these projects, which primarily focused on health and education, made it more difficult for Syrians to integrate and adapt in Turkey, and also complicated their harmonious coexistence with the local society. In fact, the integration policies, which attempted to change the economic and social habits of Syrians in a one-sided manner, failed to reduce the social tension between the local population and Syrians. In a report by the Refugees Association (Mülteciler Derneği) (2020) on the subject, it was noted that the local population viewed foreigners as an unnecessary burden on the state and perceived them as competitors in an already shrinking labor market. The report also stated that these dynamics led to the local society seeing foreigners as "disruptors of order," and individuals in disadvantaged groups (such as the disabled, elderly, etc.) becoming "disillusioned citizens." These developments explain the findings of this study. In the country's capital, Ankara, where there are relatively fewer Syrians compared to Şanlıurfa, and due to its cosmopolitan nature and its status as the political center, there is a stronger perception of returning Syrians. In Şanlıurfa, where ethnic structure, cultural similarity, and religious brotherhood are more prevalent, the idea of forced return is less common compared to Ankara, which is an expected result.

In conclusion, the lack of micro-scale field studies in public opinion research on the social acceptance of Syrians and the perception of Syrians has been the main motivation for this research. Thanks to this research, it has been seen that the results that will emerge in the case of deepening micro studies in measuring public perception will be different from macro-scale results.

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Capacity to Striving for Goals and Coping with Earthquake Stress in University Students After the Kahramanmaraş Earthquakes

Ayşin Çetinkaya Büyükbodur¹ | Ayşegül Kılıçlı² | Murat Genç³ | Ümmet Erkan⁴

¹ Assoc.Prof. Dr., Muş Alparslan University, Department of Social Work, Faculty of Health Sciences Muş/Türkiye
ORCID: [0000-0002-8042-4174](https://orcid.org/0000-0002-8042-4174)
E-Mail: aysine2@gmail.com

² Asst.Prof. Dr., Muş Alparslan University, Faculty of Health Science, Nursing Department Muş/Türkiye
ORCID: [0000-0003-1105-9991](https://orcid.org/0000-0003-1105-9991)
E-Mail: aysegul_ay_9@hotmail.com

³ Research Asst., Muş Alparslan University, Faculty of Health Science, Department of Language and Speech Therapy, Muş/Türkiye
ORCID: [0000-0002-8486-2905](https://orcid.org/0000-0002-8486-2905)
E-Mail: m.genç@alparslan.edu.tr

⁴ Assoc.Prof. Dr., Muş Alparslan University, Faculty of Health Sciences, Department of Social Work, Muş/Türkiye
ORCID: [0000-0002-7806-4886](https://orcid.org/0000-0002-7806-4886)
E-Mail: u.erkan@alparslan.edu.tr

Corresponding Author:
Ayşin Çetinkaya Büyükbodur

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Abstract

Earthquakes are natural disasters that cause loss of life, property, and can lead to mental health issues such as PTSD. The Kahramanmaraş Earthquakes, which caused widespread destruction across Turkey on February 6, 2023, significantly impacted the psychosocial well-being of university students. The aim of this study was to investigate the relationship between the symptoms of post-traumatic stress disorder, coping strategies with earthquake stress, and striving for goals and the factors affecting them in university students after the 6 February earthquakes in Turkey. The mean scale scores of the participants were ESCS (46.0±8.7) high, SGS (40.8±6.1) moderate, and PSS-SR (32.9±12.0) moderate. According to the sociodemographic characteristics of the participants and their experiences in the earthquake, the mean scores of ESCS and PSS-SR and the median score value of SGS showed a significant difference ($p<.01$). A negative correlation was found between PSS-SR and ESCS and SGS ($p<.01$). In addition, the goals give up sub-dimension of SGS is the factor that most positively predicts PTSD. In this context there is a need to develop coping strategies for earthquake stress and the capacity to struggle for goals in university students. For this reason, universities and mental health professionals should develop programs and practices to help students achieve goals in their lives and develop strategies to cope with earthquake stress.

Keywords: Earthquake, Trauma, Earthquake Stress, Striving for Goals, University Students

Öz

Depremler, can ve mal kaybına neden olan ve TSSB gibi ruh sağlığı sorunlarına yol açabilen doğal afetlerdir. 6 Şubat 2023'te Türkiye genelinde yaygın yıkıma neden olan Kahramanmaraş Depremleri, üniversite öğrencilerinin psikososyal refahını önemli ölçüde etkiledi. Bu çalışmanın amacı Türkiye de meydana gelen 6 Şubat depremleri sonrasında üniversite öğrencilerinde trauma sonrası stres bozukluğu belirtileri, deprem stresi ile baş etme stratejileri ve amaçlar için mücadele durumları arasındaki ilişkiyi ve bunlara etkide bulunan faktörleri araştırmaktır. Katılımcıların ölçek puan ortalamaları DSBSÖ (46.0±8.7) yüksek, AMÖ (40.8±6.1) ve TSSBBÖ-KD (32.9±12.0) için orta düzeyde saptanmıştır. Katılımcıların sosyodemografik özelliklerine ve depremde yaşadıkları deneyimlere göre DSBSÖ ve TSSBBÖ-KD puan ortalaması, AMÖ ortanca puan değerinin anlamlı farklılık gösterdiği ($p<.01$), TSSBBÖ-KD ile DSBSÖ ve AMÖ arasında negatif yönlü ilişki saptanmıştır ($p<.01$). Ayrıca AMÖ'nin mücadeleyi bırakma alt boyutu TSSBB'yi en fazla pozitif yordayan faktördür. Bu bağlamda üniversite öğrencilerinde deprem stresi ile baş etme stratejilerinin ve amaçlar için mücadele kapasitesinin geliştirilmesine gereksinim duyulmaktadır. Bunun için üniversiteler ve ruh sağlığı profesyonelleri öğrencilerin yaşamlarında amaçlar edinmeleri ve deprem stresi baş etme stratejileri geliştirmeleri için programlar ve uygulamalar geliştirmelidirler.

Anahtar Kelimeler: Earthquake, Trauma, Earthquake Stress, Striving for Goals, University Students

Introduction

Disasters occur outside the ordinary course of life and create short and long-term effects in ecological, economic, physical, developmental, social and psychological dimensions (Baral & K.C, 2019). Earthquakes are among the natural disasters that cause loss of life and property. In Turkey, devastating earthquakes with magnitudes of 7.7 Mw and 7.6 Mw (Afad, 2023; MTA, 2023), with epicentres in Pazarcık and Elbistan districts of Kahramanmaraş, respectively, 9 hours apart on 6 February 2023, killed more than 50,000 people in 11 provinces in Turkey and Syria (International Medical Corps, 2023), injured many people, caused major material damage and collapse of different types of buildings (private houses, hospitals, schools, public buildings).

Earthquakes cause great destruction not only on the environment but also on people. In this context, it is included in traumatic events. Natural disasters such as earthquakes disrupt daily routines, create economic hardship, make it difficult to meet basic needs, and can cause mental health problems by triggering significant emotional reactions among survivors (World Health Organisation, 2002). Various studies in the literature show that there is a link between natural disasters and posttraumatic stress disorder (Farooqui et al., 2017; Dai et al., 2016). PTSD is one of the most common (Farooqui et al., 2017) and unrecognised (Cooper, Metcalf, & Phelps, 2014) mental health problems after earthquakes worldwide. Post-traumatic Stress Disorder (PTSD) is a mental disorder that occurs after a significant traumatic event and is characterized by symptoms of hyperarousal, avoidance of stimuli that remind or evoke the trauma, and re-experiencing the traumatic event through dreams and “flashbacks” and lasting at least 1 month (Şuer, 2005). PTSD, which occurs following the experience of a traumatic event, is a complex and serious psychological disorder that can lead to morbidity, impairment of life functions, or disability (Foa, Keane&Friedman, 2000).

Symptoms of posttraumatic stress disorder (PTSD) include intrusive thoughts or memories, avoidance of stimuli related to traumatic events,

and increased arousal (APA, 2013; van der Kolk, 2000). The effects of PTSD may be deep and may negatively affect the daily life of the individual (Ahmed et al., 2023). Factors that increase the likelihood of developing PTSD after a traumatic event include previous trauma experience, death of family members, loss of home and property, severity of trauma, exposure to a different life stressor, injury and witnessing the death of people (Xu & Song, 2011; Naeem et al., 2011; Zhang & Ho, 2011), advanced age, being female, low education level and lack of social support (Ali et al., 2012; Jia et al., 2010).

The prevalence rate of PTSD after earthquakes is generally around 20% (Galea, Nandi, & Vlahov, 2005). This ratio varies in various studies after different earthquakes occurring in the world. When the rates are analysed; 51.9% in the Bam earthquake in Iran (Montazeri et al., 2005), 75% in the earthquake in Armenia (Goenjian et al., 2005), 34.3% in the Taiwan earthquake (Neria, Nandi, & Galea, 2008), and 21.5%-40.1% in the Wenchuan earthquake (Liu et al., 2010). According to a systematic review on the mental health effects of natural disasters in Southeast Asia, the rate of PTSD symptoms reported after natural disasters varies between 8.6% and 57.3% (Udomratn, 2008). Studies conducted after major earthquakes show that approximately one in four (23.66%) survivors were diagnosed with PTSD (Dai et al., 2016). Individuals' perception and reactions to traumatic events, as well as their ability to use coping mechanisms, are different (Korucu & Özer Kaya, 2023).

Studies on the effects of earthquake on people show that individuals may show different reactions to earthquake stress and the effects of stress may vary from individual to individual (Yöndem & Eren, 2008). Lazarus (1966) stated that stress does not always arise due to external factors, but may depend on the vulnerability, injurability and coping abilities of individuals. Coping involves ever-changing cognitive and behavioural efforts to manage external and/or internal demands that challenge or exceed one's resources (Lazarus & Folkman, 1984, p. 141). Coping is process-oriented and dynamic rather than trait-based (Brough, O'Driscoll, & Kalliath, 2005). It

includes conscious and purposeful actions used when individuals evaluate a situation as stressful (Lazarus & Folkman, 1984). Effective coping strategies can protect individuals from developing mental health problems when they experience an earthquake (Xu and He, 2012). Maladaptive coping strategies increase survivors' vulnerability to PTSD (Ehrenreich, 2001). In this context, unhealthy coping strategies that increase vulnerability include denial, avoidance, blame, helplessness, addiction and substance use (Adhikari Baral & Bhagawati, 2019).

One of the most important indicators that can contribute to psychosocial well-being in people against posttraumatic stress disorder is the goals acquired in life. The concept of purpose is also considered as a higher concept that includes different but interrelated factors such as personal struggle, individuals' desires, and self-designs (Kasser & Ryan, 1996). In this context, goals are among the factors that enable individuals to connect to life, protect their mental health, and help individuals reveal their own potential (Elliot & Dweck, 1988, Emmons, 1999; Eryılmaz, 2015). Individuals' efforts to achieve meaningful goals play an important role in their well-being and life adaptation (Brunstein, Schultheiss, & Graßmann, 1998; Brunstein, Schultheiss, & Maier, 1999). Goals contribute to successful developmental patterns throughout life and facilitate subjective well-being (Freund & Baltes, 2002; Heckhausen, Wrosch, & Schulz, 2019).

In most cases, people encounter relatively favourable opportunities to achieve their goals. Even if they face obstacles, they can overcome difficulties by spending more time and energy, getting help and advice from other people, or choosing a different way to achieve the desired goal (Heckhausen, 1999). However, individuals may encounter stressful life events (earthquakes, accidents, etc.) that may make it impossible for them to achieve their desired goals and require time and energy to manage. Consequently, changes occur in individuals' motivation, cognitions and emotions regarding the goals they want to realise (Simmen-Janevska, Brandstätter, Maercker, 2012) and individuals' well-being and life adaptation may be negatively affected. Nevertheless, some individuals do not stop

fighting for their goals. Struggling to achieve goals is an indicator of healthy functioning and subjective well-being (Vainio & Daukantaite, 2016; Disabato, Goodman, & Kashdan, 2018). Striving for goals is explained as individuals' progress towards realising achievable and personally meaningful goals in daily life (Emmons, 1999). In the study conducted by Akın Arıkan, Demirtaş Zorbaz & Koç (2019), it was determined that the most common life goal among university students was the aim of living a meaningful life (Akın Arıkan, Demirtaş Zorbaz & Koç, 2019). Struggling for goals includes being committed to the goal, being persistent to realise the goals and not giving up efforts to achieve the goal (Locke & Latham, 2006; Eryılmaz, 2015).

University students are vulnerable to various stressors such as academic demands, financial pressures, and social adjustment difficulties. They can be particularly affected by events that may cause trauma, such as earthquakes. In their study by Kaya & Bayram (2024), anxiety and hope were examined together in university students after the Kahramanmaraş earthquakes, and as a result of the research, the anxiety levels of students who suffered material and moral damage were found to be high, and a negative relationship was found between hope and anxiety (Kaya & Bayram, 2024). Koçoğlu et al. (2023), the trauma levels of female university students were found to be higher than men after the Kahramanmaraş earthquakes (Koçoğlu et al., 2023). In this context, university students constitute an important study group to examine PTSD symptoms, earthquake stress coping strategies, and struggle for goals. Understanding university students' experiences, needs, earthquake stress coping strategies, and struggle for goals can help prevent PTSD symptoms and determine effective interventions. The aim of the study was to examine the relationship between university students' sociodemographic characteristics and earthquake-related life experiences, PTSD symptoms, earthquake stress coping strategies, and struggle for goals.

Research Questions

* What are the mean scores of the participants regarding the earthquake stress coping strategies scale, striving for goals scale (SGS), PTSD Symptom Scale-Self-Report (PSS-SR) and its sub-dimensions?

- According to the participants' sociodemographic characteristics and post-earthquake experiences, do the mean total scores of the earthquake stress coping strategies scale, striving for goals scale and PTSD Symptom Scale-Self-Report (PSS-SR) show statistically significant differences?
- How and in what direction is there a statistical relationship between the total mean score of the participants' PTSD Symptom Scale-Self-Report (PSS-SR) and the total and sub-dimension mean scores of the earthquake stress coping strategies scale and striving for goals scale?
- Do the participants' sociodemographic characteristics, post-earthquake experiences, earthquake stress coping strategies scale and striving for goals scale sub-dimension mean scores predict the PTSD Symptom Scale-Self-Report (PSS-SR) total mean score?

Materials and Methods

Study Design

The descriptive and cross-sectional study was conducted between 17/03/2023- 20/11/2023 at the Faculty of Health Sciences of Muş Alparslan University. The data were collected from the students of the Faculty of Health Sciences of Muş Alparslan University who volunteered to participate in the study through an electronic google form and face-to-face interviews.

Population and sample of the research

The study included students at the Faculty of Health Sciences of Muş Alparslan University, who were over the age of 18 and volunteered to

participate in the study. Students who were under the age of 18, did not want to fill out the questionnaire, and did not continue their education were excluded from the research. The population of the study consisted of 1100 students continuing their education and training at Muş Alparslan University Faculty of Health Sciences. The sample consisted of 330 students who volunteered to participate in the study continuing their education and training at the Faculty of Health Sciences. The study was conducted in accordance with the Declaration of Helsinki. Since 8 of the 330 students who participated in the study filled the questionnaire incompletely, the data of 322 students were included in the analysis.

Data Collection Tools

Participants' Introductory Information Form, Earthquake Stress Coping Scale (ESCS), Striving For Goals Scale (SGS), PTSD Symptom Scale-Self-Report (PSS-SR) were used as data collection tools in the study.

Participants Introductory Information Form: The form prepared by the researchers consists of 16 questions in total. It consists of 4 questions about the sociodemographic characteristics of the participants and 12 questions to understand their experiences after the earthquake.

Earthquake Stress Coping Scale (ESCS): The validity and reliability study of the earthquake stress coping scale (ESCS) was conducted by Yöndem and Eren in 2008 (Yöndem & Eren, 2008). The ESCS consists of 16 items and three sub-dimensions (positive reappraisal, seeking social support, religious coping) in four-point Likert type (always, mostly, sometimes, never) (Yöndem & Eren, 2008). The score ranges for religious coping (2,8,9,10,11) and seeking social support (1,3,4,6,7), each sub-dimension consisting of 5 items, are 5-20, and the score range for the positive reappraisal (5,12,13,14,15,16) sub-dimension consisting of 6 items is 6-24 (Yöndem & Eren, 2008). Minimum (16) and maximum (64) points can be obtained from the scale (Yöndem & Eren, 2008). A high score for each sub-dimension indicates that the

individual uses that coping strategy more, while a low score indicates that the individual uses it less (Yöndem & Eren, 2008). When the internal consistency reliability coefficients of ESCS are analysed, it is seen that α coefficients are between $\alpha=.69$ and $\alpha=.85$. It was determined as $\alpha=.85$ for religious coping, $\alpha=.69$ for positive reappraisal and $\alpha=.74$ for seeking social support (Yöndem & Eren, 2008). In this study, $\alpha=.78$ for the total score, $\alpha=.78$ for religious coping, $\alpha=.98$ for positive reappraisal and $\alpha=.79$ for seeking social support.

Striving for Goals Scale (SGS): This scale was developed by Eryılmaz (2015) in order to determine the individuals' setting goals and struggling for the goals they set, and its validity and reliability were carried out (Eryılmaz, 2005). The scale is four-point Likert type (strongly disagree, disagree, agree, strongly agree). It consists of 3 sub-dimensions and 17 questions, namely Commitment of Goals (1,2,3,4,5,6), Continuing Striving for goals (7,8,9,10,11,12) and Quitting Struggle (13,14,15,16,17) (Eryılmaz, 2015) (Eryılmaz, 2015). Eryılmaz (2015) states that when scoring the scale, an equality can be reached as "Struggling for Goals = (Commitment of Goals + Persistence in goal striving) - Goals give up". When the internal consistency reliability coefficients of the Striving for Goals Scale are analysed, it is seen that the α coefficients are between $\alpha=.86$ and $\alpha=.88$. Accordingly, $\alpha=.88$ for commitment of goals, $\alpha=.86$ goals give up, and $\alpha=.86$ persistence in goal striving, which are the sub-dimensions of the striving for goals scale (Eryılmaz, 2015). In this study, $\alpha=.96$ was found for the total striving for goals scale, $\alpha=.93$ for commitment of goals, $\alpha=.95$ for goals give up, and $\alpha=.92$ for persistence in goal strivings.

PTSD Symptom Scale-Self-Report (PSS-SR): This scale was adapted into Turkish by Aydın et al. (2012) in order to measure PTSD symptoms and validity and reliability studies were conducted (Aydın et al., 2012). The scale was developed by Foa et al. (1993) in order to screen PTSD symptoms in the community in accordance with the criteria in the Diagnostic and Statistical Manual of Mental Disorders. PTSD symptom scale-self-report (PSS-SR) is a self-assessment scale (Aydın et al., 2012). In

the first part of the scale, which consists of 17 items scored between 0-3, there are three sub-dimensions of overstimulation (1,2,3,4,5), avoidance (6,7,8,9,10,11,12) and reliving (13,14,15,16,17) (Aydın et al., 2012). In addition, in the second part of the scale, there is another subscale consisting of nine-item yes-no questions measuring impairment in functionality due to posttraumatic symptoms (Aydın et al., 2012). When the internal consistency reliability coefficients of the PTSD Symptom Scale-Self-Report (PSS-SR) were examined; $\alpha=.90$ for the total PTSD Symptom Scale-Self-Report (PSS-SR), its sub-dimensions were found as re-experiencing $\alpha=.81$, avoidance $\alpha=.72$, hyperarousal $\alpha=.81$, and impairment in functioning $\alpha=.82$ (Aydın et al., 2012). In this study, $\alpha=.89$ was determined for the total PTSD Symptom Scale-Self-Report (PSS-SR), its sub-dimensions were re-experiencing $\alpha=.91$, avoidance $\alpha=.90$, hyperarousal $\alpha=.92$, and impairment in functioning $\alpha=.87$.

Data collection

At the time the study was planned, no similar research could be found in the literature. Furthermore, no research using the scales included in this study could be found. For this reason, the sample volume calculation method was used according to the correlation analysis calculation. In the literature, correlation coefficients are interpreted as 0.10-0.29 low, 0.30-0.49 medium, 0.50-1.00 high level effect sizes regardless of their sign (Cohen, 1992a; Field, 2009). Therefore, the sample size of the study was calculated using low effect size. The sample size of the study was determined with 90% power by taking type I error 0.05 and low correlation coefficient 0.2 according to the sample size calculation using GPower 3.1.9.2 programme. It was calculated that there should be at least 255 people for correlation analysis (Cohen, 1992b; Faul et al., 2007). In addition, when the acceptable sample sizes for some universes in scientific research are taken into consideration, the universe size is 1100, while the required sample size is 285 (Sekaran, 2003). Therefore, our sample size of 330 participants is consistent with these findings and is considered sufficient for the current study.

The data of the study were collected between 17/03/2023 - 20/11/2023 at Muş Alparslan University, Faculty of Health Sciences. Data collection took a total of 20 minutes for each participant. No sampling method was used in data collection and all students studying at the Faculty of Health Sciences were tried to be reached.

Statistical Analysis

SPSS 26.0 package program was used for data analysis. Descriptive statistics such as number (percentage), mean, \pm standard deviation, median (minimum-maximum) values, Cronbach alpha values of the scales were calculated. The upper limit of the margin of error in the analyses was taken as .05. The normality of the distributions of numerical variables was analyzed by skewness and kurtosis coefficients. Accordingly, the skewness and kurtosis coefficient of the total ESCS was determined between 0.477 and -0.765. The skewness and kurtosis coefficients for the total PSS-SR were found to be between 0.392 and -0.601. The skewness kurtosis values of the total of the SGS were found to be between -0.494 and -0.381. According to Tabachnic and Fidell (2015), a range between -1.5 and +1.5 indicates that the relevant variable can be normally distributed. Accordingly, when the skewness and kurtosis coefficients are evaluated in the study, it can be stated that the mean total scores of PSS-SR and ESCS show a normal distribution, while the mean total score of SGS does not show a normal distribution. In order to determine whether the mean total scores of ESCS and PSS-SR differed significantly according to the sociodemographic characteristics and post-earthquake experiences of the participants, Independent Sample t-test, one of the parametric tests, was used for pairwise comparisons, and One Way ANOVA test was used for multiple comparisons. In order to determine whether the mean total score of the SGS showed a significant difference according to these variables, Mann-Whitney U test was used for pairwise comparisons and Kruskal-Wallis H test was used for multiple comparisons. Spearman's correlation analysis was applied to determine whether there was a significant relationship between the mean total

score of PSS-SR and the mean total and sub-dimension scores of ESCS and SGS, and if there was, to determine the direction and degree of the relationship.

The effect of the participants' sociodemographic characteristics, post-earthquake experiences, mean scores of ESCS and SGS sub-dimensions on the mean score of PSS-SR was analyzed by stepwise multiple linear regression analysis. The statistical significance of the study was accepted as $p < 0.05$ at 95% confidence interval.

Ethical Considerations

Before starting the study, ethics committee permission (Date: 10/03/2023, No: 34) was obtained from Muş Alparslan University Scientific Research and Publication Ethics Committee. Then, institutional permission (Date: 15.03.2023, No: 87317) was obtained from the Dean's Office of the Faculty of Health Sciences. Informed consent was obtained from the participants before the questionnaire was administered.

Results

The findings regarding the mean scores of the scale and subscale scores of the participants are given in Table 1. The mean total scores of the participants were found to be 46.0 ± 8.7 , 40.8 ± 6.1 , 32.9 ± 12.0 on the ESCS, SGS and PSS-SR, respectively (Table 1).

The difference between the mean scale scores of the participants according to their sociodemographic characteristics and their experiences during the earthquake is given in Table 2. Participants' grade level [$F(3,317)=9.8$, $p < .01$], age group [$F(4,316)=6.0$, $p < .01$], gender [$t(319)=3.7$, $p < .01$], income status [$F(2,318)=23.7$, $p < .01$], death of a loved one in an earthquake [$t(319)=5.3$, $p < .01$], injury in an earthquake [$t(319)=4.8$, $p < .01$], injury of a relative in an earthquake [$t(319)=8.7$, $p < .01$], loss of housing/property in an earthquake [$t(319)=9.4$, $p < .01$], loss of job due to earthquake [$t(319)=8.6$, $p < .01$], status of continuing to live in the earthquake zone [$t(319)=3.8$, $p < .01$], status of close family members continuing to live in the

Table 1. Findings related to the mean scores of ESCS, SGS and PSS-SR and sub-dimension scores of the participants

Scale and sub-dimensions	Available from scale min-max values	Number of Participants (n=322)		
		Mean±SD	Min-Max (Median)	α
ESCS	16-64	46.0±8.7	19-62 (47)	.78
ESCS- Religious Coping	5-20	14.9±3.2	6-20 (15)	.78
ESCS- Positive Reappraisal	6-24	17.9±4.7	6-24 (18)	.98
ESCS- Seeking Social Support	5-20	13.1±3.9	5-20 (14)	.79
SGS	17-68	44.9±4.97	32-60 (46)	.40
SGS- Commitment of Goals	6-24	17.9±4.92	6-24 (18)	.93
SGS- Goals give up	6-24	12.2±5.18	6-24 (12)	.95
SGS-Persistence in Goal Striving	5-20	14.7±4.11	5-20 (15)	.92
PSS-SR	0-51	32.9±12.0	15-63 (33)	.89
PSS-SR- Reliving	0-15	5.6±4.4	0-15 (5)	.91
PSS-SR- Avoidance	0-21	7.9±5.8	0-21 (7)	.90
PSS-SR- Overstimulation	0-15	5.1±4.6	0-15 (5)	.92
PSS-SR- Impaired Functionality	0-27	14.1±2.9	9-22 (15)	.87

ESCS: Earthquake Stress Coping Scale

SGS: Striving for Goals Scale

PSS-SR: PTSD Symptom Scale-Self-Report

SD: Standart Deviation

Min: Minimum

Max: Maximum

α : Cronbach Alpha değeri

earthquake zone [$t(319)=4.4$, $p<.01$] and according to the types of needs in the earthquake zone [$F(5,315)=6.6$, $p<.01$], the mean score of the ESCS showed a significant difference (Table 2).

Participants' grade level [$KW(sd=3, n=322)=31.5$, $p<.01$], age group [$KW(sd=4, n=322)=39.1$, $p<.01$], gender [$U=6733.5$, $p<.01$], income status [$KW(sd=2, n=322)=12.5$, $p<.01$], death of a loved one in an earthquake [$U=7389.5$, $p<.05$], injury in an earthquake [$U=1324.5$, $p<.01$], injury of a relative in an earthquake [$U=6633.0$, $p<.01$], loss of housing/property in an earthquake [$U=4223.0$, $p<.01$], loss of job due to earthquake [$U=6272.5$, $p<.01$], status of continuing to live in the earthquake zone [$U=7428.5$, $p<.01$], status of close family members continuing to live in the earthquake zone [$U=9092.0$, $p<.01$] and according to the types of needs in the earthquake zone [$KW(sd=5, n=322)=17.29$, $p<.01$], the median values of the SGS score show a significant difference (Table 2).

Participants' grade level [$F(3,317)=11.8$, $p<.01$], age group [$F(4,316)=5.5$, $p<.01$], gender [$t(319)=6.0$, $p<.01$], income status [$F(2,318)=30.3$, $p<.01$], death of a loved one in an earthquake [$t(319)=8.5$, $p<.01$], injury in an earthquake [$t(319)=4.6$, $p<.01$], injury of a relative in an earthquake [$t(319)=7.5$, $p<.01$], loss of housing/property in an earthquake [$t(319)=9.1$, $p<.01$], loss of job due to earthquake [$t(319)=9.7$, $p<.01$], status of continuing to live in the earthquake zone [$t(319)=7.2$, $p<.01$], status of close family members continuing to live in the

earthquake zone [$t(319)=9.5$, $p<.01$] and types of needs in the earthquake zone [$F(5,315)=13.2$, $p<.01$], the mean score of the PSS-SR showed a significant difference (Table 2).

There is a moderate negative correlation between the mean scores of the participants on the PTBSBSS and the mean scores on the ESCS ($r=-.53$), ESCS- positive reappraisal ($r=-.54$), ESCS- seeking social support ($r=-.59$), SGS ($r=-.45$), SGS ($r=-.51$), SGS commitment of goals ($r=-.58$), and SGS persistence in goal striving ($r=-.61$), there was a moderately significant positive correlation between goals give up ($r=.64$) ($p<.01$) (Table 3).

Table 4 presents the findings of the stepwise linear regression analysis examining the effect of participants' sociodemographic characteristics, post-earthquake experiences, mean scores of ESCS and SGS sub-dimensions on the mean score of PSS-SR. In the first stage, the highest and positive effect of %42.5 on the mean score of the participants' PSS-SR was found to be the quitting of the struggle in the first stage. In the second stage, SGS - goals give up and close family members continuing to live in the earthquake zone (no) % 51.2, in the third stage, the SGS - Goals give up, close family members continuing to live in the earthquake zone (no) and the ESCS - seeking social support %55.4, in the fourth stage, SGS - goals give up, close family members continuing to live in the earthquake zone (no),

Table 2. Comparison of the mean scale scores of the participants according to their sociodemographic characteristics and post-earthquake experiences

Sociodemographic characteristics and post-earthquake experiences	Total (n=322)	ESCS	SGS	PSS-SR
	X±SD / %(n)	X ±SD	Median	X±SD
Class level				
1	41.3 (133)	44.5 ±9.37	136.0	37.0±12.0
2	13.4 (43)	41.9 ±7.7	138.4	31.0±9.4
3	17.4 (56)	49.8±8.8	203.3	26.9±11.1
4	28.0 (90)	47.7 ±6.6	184.0	31.4±11.5
Test/p		F=9.8 p=.000	KW=29.3 p=.000	F=11.8 p=.000
Age				
Between 17-19 years old	26.1 (84)	42.2±10.4	106.8	37.8±13.0
Between 20-22 years old	52.5 (169)	47.5±8.1	183.9	30.9±11.4
Between 23-25 years old	17.7 (57)	46.7±6.4	170.8	31.0±10.7
Between 26-28 years old	0.9 (3)	52.0±4.5	234.6	32.6±9.0
29 years and over	2.8 (9)	47.1±4.8	166.9	36.1±7.4
Test/p		F=6.0 p=.000	KW=41.5 p=.000	F=5.5 p=.000
Gender				
Female	69.6(224)	44.8±8.7	146.0	35.4±10.8
Male	30.4(98)	48.7±8.0	196.8	27.1±12.5
Test/p		t=3.7 p=.000	U=7517 p=.000	t=6.0 p=.000
Income Status				
Income <Expense	20.8 (67)	39.8±11.1	135.0	42.3±11.7
Income =Expense	72.0 (232)	47.7±6.8	169.2	30.6±10.8
Income >Expense	7.1 (23)	46.2±9.7	160.1	28.7±11.1
Test/p		F=23.7 p=.000	KW=.7.0 p=.029	F=30.3 p=.000
Death of a loved one in an earthquake				
Yes	21.7(70)	41.2±10.1	144.31	42.8±10.8
No	78.3(252)	47.3±7.8	166.27	30.2±10.8
Test/p		t=5.3 p=.000	U=7617 p=0.08	t=8.5 p=.000
Injury in earthquake				
Yes	5.3(17)	36.3±13.8	84.94	45.7±12.0
No	94.7(305)	46.5±8.0	165.77	32.2±11.6
Test/p		t=4.8 p=.000	U=1291 p=.000	t=4.6 p=.000
Injury of a relative in an earthquake				
Yes	28.6(92)	39.9±9.9	123.2	42.3±10.8
No	71.4(230)	48.4±6.8	176.7	29.1±10.3
Test/p		t=8.7 p=.000	U=70.63.5 p=.000	t=7.5 p=.000
Housing/property loss in earthquake				
Yes	19.6(63)	37.7±10.5	105.2	44.0±10.8
No	80.4(259)	48.0±6.8	175.1	30.2±10.6
Test/p		t=9.4 p=.000	U=4613.5 p=.000	t=9.1 p=.000
Job loss in the family due to the earthquake				
Yes	30.4(98)	40.3±9.6	118.7	41.5±10.3
No	69.6(224)	48.5±6.9	180.2	29.1±10.6
Test/p		t=8.6 p=.000	U=6784.5 p=.000	t=9.7 p=.000
Continuing to live in the earthquake zone				
Yes	28.3(91)	43.0±11.0	128.6	40.0±12.2
No	71.7(231)	47.1±7.3	174.4	30.0±10.6
Test/p		t=3.2 p=.000	U=7517.5 p=.000	t=7.2 p=.000
Status of immediate family members continuing to live in the earthquake zone				
Yes	50.3(162)	43.6±9.6	139.1	39.1±11.2
No	49.7(160)	47.9±7.4	179.5	27.8±10.0
Test/p		t=4.4 p=.000	U=9601 p=.000	t=9.5 p=.000
Types of needs in the earthquake zone				
1. Basic physical needs	39.1(126)	42.7±9.6	148.75	38.0±12.1
2. Security needs	11.8(38)	48.0±10.6	188.18	26.9±11.1
3. Communication needs	9.0(29)	49.0±4.3	198.09	24.1±9.7
4. Job need	3.1(10)	49.7±5.8	213.75	26.1±7.4
5. Psychosocial support needs	21.1(68)	47.2±7.5	146.96	30.0±10.3
6. All of them	15.8(51)	48.4±5.7	161.46	34.6±9.7
Test/p		**F=6.6 p=.000	KW=14.8 p=.011	**F=13. p=.000

ESCS: Earthquake Stress Coping Scale
 SGS: Striving for Goals Scale
 PSS-SR: PTSD Symptom Scale-Self-Report
 X: Mean
 SD: Standart Deviation
 Median: Sıra ortalaması
 F: One Way Anova

KW: Kruskal Wallis Test
 U: Mann Whitney U Test
 t: Independent Sample t Test
 p: Statistical significance value, p<.05
 *Mann Whitney U Test was found zero

Table 3. The relationship between the mean scores of PSS-SR, ESCS, SGS and sub-dimension scores of the participants

Scale and sub-dimensions	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. PSS-SR	1	-.53**	.084	-.54**	-.59**	-.45**	-.58**	.64**	-.61**
2. ESCS		1	.35**	.90**	.72**	.49**	.63**	-.68**	.66**
3. ESCS- Religious Coping			1	.17**	-.17**	.019	.05	-.12*	.06
4. ESCS- Positive Reappraisal				1	.58**	.51**	.66**	-.69**	.68**
5. ESCS- Seeking Social Support					1	.44**	.54**	-.54**	.57**
6. SGS						1	.85**	-.47**	.79**
7. SGS-Commitment of Goals							1	-.78**	.83**
8. SGS-Goals give up								1	-.81**
9. SGS- Persistence in Goal Striving									1

ESCS: Earthquake Stress Coping Scale
 SGS: Striving for Goals Scale
 PSS-SR: PTSD Symptom Scale-Self-Report

Spearman correlation analysis was performed between the variables
 **p<0.01. * p<0.05

ESCS - seeking social support, loss of a relative in the earthquake (no) % 58.8, in the fifth stage, SGS - Goals give up, close family members continuing to live in the earthquake zone (no), ESCS - seeking social support, loss of a relative in the earthquake (no) and SGS - persistence in goal striving %60.1, in the sixth stage, SGS- Goals give up, close family members continuing to live in the earthquake zone (no), ESCS-seeking social support, loss of a relative in the earthquake (no), SGS- persistence in goal striving the struggle for the goal, and gender being male affect with a rate of % 60.7 (p<.05) (Table 4).Accordingly, the mean score of the participants' PSS-SR - goals give up positively with a rate of 42.5%, not having close family members living in the earthquake zone negatively with a rate of 8.5%, ESCS-seeking social support negatively with a rate of 4.2%, not losing a relative in the earthquake negatively with a rate of 3.4%, persistence in goal striving negatively with a rate of 1.3%, and gender being male negatively with a rate of 6% (p<.05) (Table 4).

Discussion

In this study, a statistically significant relationship was determined between post-traumatic stress disorder symptoms, coping strategies with earthquake stress and striving for goals in university students after the Kahramanmaraş earthquakes that occurred 9 hours apart on February 6, 2023. In addition, coping strategies with earthquake stress and struggling for goals were found to effect PTSD symptoms. In addition, as a result of the study, it was found that according to the sociodemographic characteristics of university students (age, gender, income status)

and various consequences of the earthquake; earthquake stress coping strategies and striving for goals and PTSD symptoms differed.

Among the sociodemographic findings obtained from the study, firstly, when the averages of the total scores obtained from the earthquake stress coping scale (ESCS) and striving for goals scales (SGS) were compared according to age, it was determined that the highest mean score was found in university students aged 26-28 years and the lowest mean score was found in students aged 17-19 years. When the averages of the scores of university students on the total of the PSS-SR are compared, the highest mean score is observed in students aged 17-19 years and the lowest mean score is observed in students aged 20-22 years. When this finding of the study is evaluated, it can be concluded that the most risky group in terms of PTSD may occur in students who are in the transition phase from adolescence to young adulthood, who are new to university, strategies for coping with earthquake stress and struggling for goals may increase after 20-22 years of age and are most common in adults between 26-28 years of age, it was found that the least number of students between the ages of 17 and 19 years. In this context, it can be stated that students between the ages of 17-19 who are new to university may need psychosocial interventions to improve their coping strategies with earthquake stress and their ability to striving for goals.

Among the sociodemographic findings obtained from the study, when the averages of the total scores obtained from the earthquake stress coping scale and striving for goals scales were compared according to gender, it was found that male university students had higher mean scores than female university students. Gender

Table 4. Results of the stepwise linear regression analysis results regarding the prediction of PSS-SR mean score by participants' sociodemographic characteristics, post-earthquake experiences, ESCS and SGS sub-dimension mean scores

Model	Variables	B	SE	β	F	p	95,0% CI for B		Collinearity Statistics	
							Lower	Upper	Tolerance	VIF
Stage 1	Constant	14.471	1.300		11.135	.000	11.914	17.028		
	SGS-Goals give up	1.513	.098	.654	15.421	.000	1.320	1.706	1.000	1.000
R=.654, R ² =.427, Adjusted R ² =.425, F=237.819, p<.001										
Stage 2	Constant	28.565	2.206		12.946	.000	24.224	32.906		
	SGS-Goals give up	1.308	.094	.565	13.861	.000	1.122	1.494	.918	1.089
	Relatives or family members continue to live in the earthquake zone (no)	-7.470	.982	-.310	-7.605	.000	-9.403	-5.538	.918	1.089
R=.718, R ² =.515, Adjusted R ² =.512, F=169.012, p<.001										
Stage 3	Constant	40.896	3.055		13.389	.000	34.886	46.905		
	SGS-Goals give up	.996	.106	.430	9.385	.000	.787	1.205	.663	1.508
	Relatives or family members continue to live in the earthquake zone (no)	-6.121	.969	-.254	-6.313	.000	-8.028	-4.213	.861	1.162
	ESCS-Seeking Social Support	-.806	.144	-.263	-5.580	.000	-1.090	-.522	.629	1.591
R=.747, R ² =.559, Adjusted R ² =.554, F=133.731, p<.001										
Stage 4	Constant	49.381	3.368		14.661	.000	42.754	56.007		
	SGS-Goals give up	.936	.103	.404	9.114	.000	.734	1.138	.655	1.527
	Relatives or family members continue to live in the earthquake zone (no)	-5.027	.956	-.209	-5.256	.000	-6.909	-3.145	.819	1.222
	ESCS-Seeking Social Support	-.738	.140	-.240	-5.286	.000	-1.012	-.463	.623	1.605
	Loss of relative in earthquake (no)	-5.800	1.125	-.199	-5.154	.000	-8.015	-3.586	.867	1.154
R=.770, R ² =.593, Adjusted R ² =.588, F=115.029, p<.001										
Stage 5	Constant	62.415	5.119		12.193	.000	52.344	72.487		
	SGS-Goals give up	.548	.154	.237	3.560	.000	.245	.851	.282	3.543
	Relatives or family members continue to live in the earthquake zone (no)	-4.777	.944	-.198	-5.058	.000	-6.635	-2.919	.813	1.229
	ESCS-Seeking Social Support	-.630	.141	-.205	-4.464	.000	-.908	-.352	.590	1.694
	Loss of relative in earthquake (no)	-6.050	1.110	-.207	-5.449	.000	-8.235	-3.866	.863	1.159
	SGS- Persistence in Goal Striving	-.654	.196	-.225	-3.342	.001	-1.039	-.269	.276	3.623
R=.779, R ² =.607, Adjusted R ² =.601, F=97.217, p<.001										
Stage 6	Constant	65.430	5.210		12.558	.000	55.179	75.682		
	SGS-Goals give up	.503	.154	.217	3.275	.001	.201	.806	.279	3.590
	Relatives or family members continue to live in the earthquake zone (no)	-4.274	.957	-.177	-4.468	.000	-6.157	-2.392	.779	1.284
	ESCS-Seeking Social Support	-.697	.142	-.227	-4.897	.000	-.977	-.417	.570	1.754
	Loss of relative in earthquake (no)	-6.006	1.101	-.206	-5.456	.000	-8.171	-3.840	.862	1.159
	SGS-Persistence in goal striving	-.595	.195	-.204	-3.043	.003	-.979	-.210	.272	3.675
	Gender (Male)	-2.543	.996	-.098	-2.552	.011	-4.504	-.583	.838	1.194
	R=.784, R ² =.615, Adjusted R ² =.607, F=83.519, p<.001, Durbin-Watson=1.618									

ESCS: Earthquake Stress Coping Scale
 SGS: Striving for Goals Scale
 PSS-SR: PTSD Symptom Scale-Self-Report
 B: Unstandardized Coefficients

SE: Standardize Error
 β : Standardized Coefficients
 F: Stepwise Linear Regression Analysis Test Statistic Value

CI: Confidence Interval
 VIF: Variance Inflation Factor

differences are effective in the use of coping strategies (Hollifield et al., 2008; Xu & He, 2012). While men are more likely than women to use confrontational coping strategies to solve problems (Adhikari & K.C., 2019), women are more likely to remain passive in denying what happened to them and distancing themselves from coping with the situation (Olff et al., 2007). In a study conducted by Luce et al. (2022) with Nepal earthquake survivors, it was determined that men showed coping skills at a higher rate than women. Studies conducted in various countries show that women are more afraid of earthquakes than men (Goltz & Bourque, 2017). This may affect coping strategies for earthquake stress. The negative impact of disasters on women is high (Gaillard, Gorman-Murray, & Fordham, 2017). In this study, when the mean scores of female students were compared with the mean scores of male students, it was determined that the mean score of female students was higher than that of male students. Women are more at risk than men in terms of PTSD after an earthquake (Cerdá et al., 2013). This finding of the study suggests that women may need interventions to improve their coping strategies with the stress that the earthquake may cause and their ability to struggle for goals. In addition, it can be said that female students may be more at risk for PTSD symptoms than males, and that women may need psychosocial interventions to prevent and reduce mental health problems after natural disasters such as earthquakes more than men.

When the averages of the total scores obtained from the scale of coping with earthquake stress according to income status are compared, the highest mean score among university students can be seen in those with medium income, followed by those with high income, and the lowest mean score can be seen in those with low income, when the mean scores obtained from the total scale of striving for goals were compared, it was found that the mean scores of those with medium and high income levels were close to each other, while the lowest mean score could be seen in those with low income levels. Low-income households face various problems in accessing the resources they need to cope with the aftermath of disasters. In this context, they face more challenges in terms of

stress than people with higher incomes. In this study, when the mean scores of university students according to income status were compared in the total of the PSS-SR, it was found that the highest mean score was observed in those with low income levels and the lowest mean score was observed in those with high income levels. Low income level is a risk factor for PTSD (Cohen et al., 2019). Valladares-Garrido et al. (2022) also found that low income may be a risk factor for PTSD in the study they conducted after the earthquake in Piura, Peru. Accordingly, it can be stated that those with low income among university students may be at risk for PTSD, and inadequate coping strategies and striving for goals may be seen in coping with earthquake stress.

Within the scope of the study, it was examined whether the mean scores of the total scores obtained from the earthquake stress coping scale, the striving for goals scale and the PSS-SR differed according to the loss of life, injury, housing, property and job loss caused by the earthquake, and the status of continuing to live in the earthquake zone. According to the results, university students who lost someone in the earthquake, who themselves or their relatives were injured, who had housing, property and job losses in their families, and whose families continued to live in the earthquake zone had lower mean scores on the coping strategies scale and the striving for goals scale compared to the students who did not experience loss of life in the earthquake, who did not have injuries in themselves or their relatives, who did not experience housing, property and job losses in their families, and whose families did not live in the earthquake zone, it was found that the mean total score obtained from the total of the PSS-SR was higher in this group. Löw, Rihtarić, Vrsejka (2023) found that PTSD may be seen in those whose houses were damaged after the Croatian earthquake, and that the possibility of passive coping was high. Losses due to earthquakes can aggravate stress factors and other problems that existed in people's lives before the earthquake (Hewitt, 1997; Bolin and Stanford, 1998). Reinhardt et al. (2021) conducted a study with survivors of the Wenchuan earthquake and found that PTSD may be observed in the injured. In addition, the injury of one of their relatives was also determined

as a risk factor for PTSD (Valladares-Garrido et al., 2022). İlhan et al. (2023) conducted a study with survivors of the February 6 earthquake in Turkey and similar to the results of this study, it was found that having lost loved ones was a risk factor for PTSD. As a result, it can be said that PTSD symptoms may be more common in university students who have experienced loss of life, injury, loss of housing, property and work in their families, and whose families continue to live in the earthquake zone, and that these life events caused by the earthquake may cause inadequacy in coping strategies and struggle for goals.

When the averages of the total scores obtained from the scale of earthquake stress coping and the scale of striving for goals according to the types of needs perceived by university students regarding the earthquake zone are examined, it is seen that the highest mean score is in the participants who stated the need to work, and the lowest mean score is in the participants who stated basic physical needs (food, water, clothing, heating). When the mean score obtained from the total PSS-SR is examined according to the types of needs perceived by university students regarding the earthquake zone, it is seen that the highest mean score is in the participants who stated basic physical needs (food, water, clothing, heating) and the lowest mean score is in the participants who stated the need for communication. When these findings are evaluated, problems that may be experienced in meeting basic physical needs after the earthquake may increase the risk of PTSD symptoms.

A moderate negative correlation was found between university students' scores on the total of the PSS-SR and positive reappraisal and seeking social support from the total and sub-dimensions of the ESCS. A statistically significant moderate negative correlation was found between the participants' scores on the total of the PSS-SR and the total and sub-dimensions of the SGS-commitment of goals and SGS-persistence in goal striving.

There was a statistically significant positive relationship between the PSS-SR and the sub-dimension of goals give up, which is one of the sub-dimensions of the SGS, at a moderate level.

There are studies on the effectiveness of positive coping strategies to protect mental health after natural disasters (Spurrell, 1993; Udomratn, 2008). Accessing social support shortly after the earthquake is an important resource in coping with earthquake stress (Alipour & Ahmadi, 2020). In a study conducted with a group of teachers 3 months after the Lushan earthquake, they found that perceived social support can reduce PTSD. The stress that occurs after traumatic life events negatively affects striving for goals and individuals may give up fighting for their goals (Simmen-Janevska, Brandstätter, Maercker, 2012). Individuals react to a traumatic event with intense feelings of fear, helplessness or terror and perceive the stressor as uncontrollable or unpredictable (Foa, Zinbarg, & Rothbaum, 1992). Exposure to such uncontrollable adversities can lead to learned helplessness (Seligman, 1975), which in turn can negatively affect future expectations and people may give up on their goals. When this finding is evaluated, as coping strategies for earthquake stress and striving for goals increase, post-traumatic stress disorder symptoms may decrease, PTSD symptoms may also increase as there is an increase in the situation of goals give up for goals. In this context, it can have a negative impact on goal setting and goal implementation (Simmen-Janevska, Brandstätter, Maercker, 2012).

When the results of the stepwise linear regression analysis examining the effect of the participants' sociodemographic characteristics, post-earthquake experiences, mean scores of ESCS and SGS sub-dimensions on the mean score of PSS-SR were evaluated the mean PSS-SR scores of university students were positively influenced by the following variables: SGS- goals give up with a rate of %42.5, not having close family members living in the earthquake zone with a rate of %8.5 negatively, ESCS - seeking social support with a rate of %4.2 negatively; not having a relative lost in the earthquake with a rate of %3.4 negatively; SGS - persistence in goal striving for the goal with a rate of %1.3 negatively; and gender being male with a rate of %6 negatively ($p < .05$).

Conclusion

When the results obtained from the study are evaluated, it can be stated that among university students, those who are younger, women, those with low income, those who lost their relatives, those whose relatives or themselves were injured, those who experienced loss of housing, property and work in their families, those who continue to live in the earthquake zone, and those who have problems in meeting basic needs are at risk for PTSD symptoms. ESCS-positive reappraisal and ESCS-seeking social support, which are among the coping strategies of university students with earthquake stress, and ensuring positive development in attachment to the goal and continuing the struggle for the goal may be effective in preventing and reducing PTSD symptoms. In this context, there is a need for psychosocial interventions to develop strategies for struggling for goals and coping with earthquake stress in university students in order to prevent and reduce PTSD symptoms that may potentially occur due to earthquake.

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RESEARCH ARTICLE

Analysis of Adverse Event Notifications Within the Scope of Patient and Employee Safety: An Example of a Public Hospital

Burçin Nur Özdemir¹ | İrem Malatyalı²

¹ Phd, İstanbul University-
Cerrahpaşa Faculty of Health
Sciences. İstanbul/Türkiye
ORCID: [0009-0009-5316-4301](https://orcid.org/0009-0009-5316-4301)
E-Mail:
burcinnur.ozdemir@ogr.iuc.edu.tr

² Phd, İstanbul University-
Cerrahpaşa Faculty of Health
Sciences. İstanbul/Türkiye
ORCID: [0000-0002-1089-498X](https://orcid.org/0000-0002-1089-498X)
E-Mail:
irem.malatyalı@ogr.iuc.edu.tr

Corresponding Author:
Burçin Nur Özdemir

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Abstract

This study aimed to analyze the adverse events reported in a public hospital within the scope of patient and employee safety, to develop studies aimed at learning from errors and to increase the awareness of healthcare professionals and to increase the quality of healthcare service provision. The research was designed as a descriptive, cross-sectional, and retrospective quantitative research design. Data were obtained from the Hospital Information Management System and written records with the data collection form created by the researcher. Data were obtained from the adverse events reported between 01.01.2022 and 30.12.2023. According to the findings of the research; A total of 3447 patient safety adverse event reports were made in 2022, and it was determined that 19 of them were falls, 8 were medication safety, 5 were transfusion safety, and 3415 were laboratory safety. A total of 4788 patient safety adverse event reports were made in 2023, and it was determined that 37 of them were falls, 20 were medication safety, 2 were transfusion safety, and 4729 were laboratory safety. In 2022, a total of 111 employee safety undesirable incidents were reported, of which 59 were sharp-edged injuries, 9 were blood and body fluid splashes, and 45 were legal incidents. In 2023, a total of 120 employee safety undesirable incidents were reported, of which 63 were sharp-edged injuries, 6 were blood and body fluid splashes, and 51 were legal incidents. When the 2022-2023 undesirable incident reports are compared, it is seen that the number of reports has increased over the years, which indicates that a reporting culture has been formed in the institution. As a result of the research; It was determined that the most reported undesirable incidents were laboratory safety and sharp-edged injuries.

Keywords: Patient safety, employee safety, adverse event reporting

Öz

Bu çalışmada, bir kamu hastanesinde bildirim yapılan istenmeyen olayların hasta ve çalışan güvenliği kapsamında analiz edilerek hatalardan öğrenmeye yönelik çalışmaların geliştirilmesi ve sağlık çalışanlarının farkındalıklarının artırılarak sağlık hizmet sunum kalitesinin artırılması amaçlanmıştır. Araştırma nicel araştırma tasarımı olan tanımlayıcı, kesitsel ve retrospektif olarak tasarlanmıştır. Veriler araştırmacı tarafından oluşturulan veri toplama formu ile Hastane Bilgi Yönetim Sistemi ve yazılı kayıtlardan elde edilmiştir. Veriler 01.01.2022-30.12.2023 tarihleri arasında bildirim yapılan istenmeyen olaylardan elde edilmiştir. Araştırmadan elde edilen bulgulara göre; 2022 yılında toplam 3447 hasta güvenliği istenmeyen olay bildirimleri gerçekleştirilmiş olup bunların 19'unun düşme, 8'inin ilaç güvenliği, 5'inin transfüzyon güvenliği, 3415'inin laboratuvar güvenliği olduğu tespit edilmiştir. 2023 yılında toplam 4788 hasta güvenliği istenmeyen olay bildirimleri gerçekleştirilmiş olup bunların 37'sinin düşme, 20'sinin ilaç güvenliği, 2'sinin transfüzyon güvenliği, 4729'sinin laboratuvar güvenliği olduğu tespit edilmiştir. 2022 yılında toplam 111 çalışan güvenliği istenmeyen olay bildirimleri gerçekleştirilmiş olup bunların 59'unun kesici-delici alet yaralanması, 9'unun kan ve vücut sıvısı sıçraması, 45'inin hukuka yansımış olay olduğu tespit edilmiştir. 2023 yılında toplam 120 çalışan güvenliği istenmeyen olay bildirimleri gerçekleştirilmiş olup bunların 63'ünün kesici-delici alet yaralanması, 6'sının kan ve vücut sıvısı sıçraması, 51'inin hukuka yansımış olay olduğu tespit edilmiştir. İstenmeyen olay bildirimlerinin 2022-2023 yılları karşılaştırıldığında bildirim sayısının yıllara göre artış gösterdiği ve bununla kuruma bir raporlama kültürünün oluştuğunu göstermektedir. Araştırma sonucunda; bildirim en fazla yapılan istenmeyen olayların laboratuvar güvenliği ve kesici-delici alet yaralanmalarının olduğu tespit edilmiştir.

Anahtar Kelimeler: Hasta güvenliği, çalışan güvenliği, istenmeyen olay bildirimleri, raporlama kültürü

Introduction

Healthcare is evolving globally into healthcare systems operating in increasingly complex environments. While new treatment methods, newly developing medical technologies and care models have the potential to improve the quality of health services, they can also pose new threats to safe care. Patient safety is a fundamental principle of healthcare, and safe healthcare is viewed as a fundamental human right. The World Health Organization defines patient safety as "a framework of organized activities in healthcare that creates cultures, processes, procedures, behaviors, technologies and environments that consistently and sustainably reduce risks, reduce the occurrence of preventable harm, reduce the likelihood of errors and reduce their impact when they do occur." Since healthcare is predominantly a service, it is always produced together with users. Providing safe care requires that patients be informed, included in the health care process, and treated in full cooperation with healthcare professionals in their care. During the health service delivery process, the working conditions, health and safety of healthcare professionals are also important in ensuring that patients receive safe, effective and quality healthcare services (Meydanlıoğlu, 2013). The World Health Organization defines employee safety as "maximizing the physical, mental and social condition of working individuals, taking and implementing protective measures to minimize risks to the employee's health, and suiting the employee's job and the job to the employee." Activities aimed at ensuring and maintaining patient and employee safety in all health institutions in our country are carried out under the umbrella of the Turkish Health Quality System, established by the Department of Health Quality Accreditation and Employee Rights under the General Directorate of Health Services. With the "Regulation on Ensuring Patient and Employee Safety" published by the Ministry of Health, in addition to providing safe services for the safety of patients and employees in health institutions, it is aimed to increase the quality of health care, to detect possible risks for patients and employees in

health institutions, to report errors in order to eliminate these risks, In order to develop a culture of learning from mistakes, training is planned and activities are organized to ensure reliable service and a reliable working environment. Hazards in healthcare delivery environments not only endanger the safety of healthcare personnel, but also cause errors regarding patient safety in hospitals. Protecting the healthcare worker from the dangers in working conditions also means protecting the patient from the dangers. For this reason, it is important to evaluate possible hazards and risk factors in work environments for both patients and employees and to report any incident when it occurs. With these notifications, possible dangers are identified and eliminated, and the risks of harm to patients and employees are reduced (Sezgin, 2007; Bozoğlan, 2015). In order to create an effective patient and employee safety culture in healthcare institutions, it is necessary to build a reporting system that allows errors to be reported, recorded, classified and analyzed (Tak, 2010). The name of the system that allows notification of errors or near misses within the scope of patient and employee safety in healthcare institutions is defined as "Adverse Event Notification System" in the Healthcare Quality Standards Hospital Set Version 6. Undesirable events are defined as "events that negatively affect or may affect the safety of the patient, patient's relatives, employees and/or other people in the healthcare institution." (Sağlık Bakanlığı 2020). Knowing what causes undesirable events and finding solutions to errors by performing root cause analysis will create a culture of learning from mistakes, ensure patient and employee safety, and increase service quality. In this context, our study aims to compare the undesirable events reported over the years and analyze them within the scope of patient and employee safety, to develop studies aimed at learning from mistakes, and to increase the quality of health service delivery by increasing the awareness of healthcare professionals about continuous improvement.

Literature Review

Patient Safety

Patient safety is a fundamental principle of healthcare, and safe healthcare is viewed as a fundamental human right. The World Health Organization defines patient safety as “a framework of organized activities in healthcare that creates cultures, processes, procedures, behaviors, technologies and environments that consistently and sustainably reduce risks, reduce the occurrence of preventable harm, reduce the likelihood of errors and reduce their impact when they do occur.” Patient safety has been broadly defined as “the prevention and recovery of adverse outcomes or injuries resulting from healthcare processes” (Vincent, 2010). Patient safety stakeholders worldwide have taken a number of measures to promote patient safety. One of these is the initiation of patient safety goals. National Patient Safety Goals were published for the first time in the world by Joint Commission International (JCI) in 2002 (JCAHO, 2002). Thus, the formulation and implementation of patient safety goals has been initiated in countries around the world (Catalano et al., 2008). Australia and the United Kingdom have taken similar actions through the Australian Council for Safety and Quality in Healthcare's Priority Programs and the United Kingdom's National Patient Safety Alerts initiatives (JCAHO, 2003). Activities aimed at ensuring and maintaining patient and employee safety in all health institutions in our country are carried out under the umbrella of the Turkish Health Quality System, established by the Department of Health Quality Accreditation and Employee Rights under the General Directorate of Health Services. With the "Regulation on Ensuring Patient and Employee Safety" published by the Ministry of Health, in addition to providing safe services for the safety of patients and employees in health institutions, it is aimed to increase the quality of health care, to detect possible risks for patients and employees in health institutions, to report errors in order to eliminate these risks, In order to develop a culture of learning from mistakes, training is planned and activities are

organized to ensure reliable service and a reliable working environment. VII. organized by the General Directorate of Health Services, Health Quality Accreditation and Employee Rights Department, on 14-17 December 2022. "National Patient Safety Goals" were declared at the International Congress on Performance and Quality in Health. National Patient Safety objectives Safe Surgery, Safe Birth, Radiation Safety, Information Security, Material and Device Safety of Falls, Facility Safety, Patient Safety in Diagnosis, Correct Identification of Patients, Safe Transfer of Patients, Combating Healthcare-Associated Infections, Medication Safety, Blood Safety and Management, Safe Patient Transfer, Newborn Safety, Airway Safety, Cardiac Arrest Management, Fighting Venous Thromboembolism, Prevention of Pressure Sores, Nasogastric Tube and Patient Safety, Participation of Patient and Patient Relatives, Fighting Postoperative Delirium in Elderly Patients, Learning from Mistakes. It consists of 22 titles (Sağlık Bakanlığı 2022).

Employee Safety

The World Health Organization defines employee safety as "maximizing the physical, mental and social condition of working individuals, taking and implementing protective measures to minimize risks to the employee's health, and suiting the employee's job and the job to the employee." Health institutions are in the very dangerous class according to the "Danger Class List Communiqué" published on March 29, 2013. Since healthcare workers work in institutions that are classified as very dangerous, they are at risk of being exposed to many dangers. This situation negatively affects the safety of both employees and patients. It is important for healthcare workers to be protected from errors caused by the work environment for both patient and employee safety. In this context, it is necessary to analyze the hazards and risks that healthcare workers may be exposed to in the working environment and reduce the risks of workplace-related harm to healthcare workers and patients. According to the "Occupational Health and Safety Risk Assessment

Regulation" published on December 29, 2012, Risk Assessment Teams have been established in healthcare institutions. The Risk Assessment Team carries out the work of identifying hazards, determining and analyzing risks. With these studies, possible dangers that healthcare workers may be exposed to are revealed and eliminated (Sezgin, 2007; Bozoğlan, 2015). The United States National Institute for Occupational Safety and Health (NIOSH) defines a healthy hospital environment as "all kinds of hazards, including physical, chemical, biological and ergonomic, that occur during the work and are harmful to health, and the causes of these hazards." It is defined as "the situation where work accidents and occupational diseases do not occur due to possible risks". Those working in the healthcare field are exposed to chemical, biological and physical hazards, especially since hospitals are classified as very dangerous. Activities aimed at enabling healthcare workers to operate in a safe working environment and also improving the quality of healthcare services are carried out internationally by Joint Commission International (JCI), which is a unit of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and nationally by Health Quality Accreditation, affiliated with the General Directorate of Health Services. It is carried out under the umbrella of the Turkish Health Quality System established by the Department of Health and Employee Rights (Sağlık Bakanlığı 2017). With the "Regulation on Ensuring Patient and Employee Safety" published by the Ministry of Health, in addition to providing safe services for the safety of patients and employees in health institutions, it is aimed to increase the quality of health care, to detect possible risks for patients and employees in health institutions, to report errors in order to eliminate these risks, In order to develop a culture of learning from mistakes, training is planned and activities are organized to ensure reliable service and a reliable working environment (Sağlık Bakanlığı 2011).

Undesirable Event

Undesirable Events are defined in the Health Quality Standards Version 6.0 as "Events that negatively affect or may affect the safety of patients, patient relatives, employees and/or other people in the healthcare institution" (Ministry of Health, 2020). This system aims to ensure patient and employee safety by creating a culture of learning from mistakes and reporting in healthcare institutions. The system is organized under two main headings: patient and employee safety. Healthcare facility employees can report near misses and undesirable events concerning patient or employee safety to the quality unit via the Hospital Information Management System or via a form. Unwanted event notifications are made under the topics specified in Table 1. In healthcare institutions, root cause analyzes are conducted for undesirable event reports concerning patient and employee safety and corrective and remedial actions are planned.

Table 1. Adverse event reporting topics

Patient Safety	Employee Safety
Drug Safety	Physical Exposure
Surgical Safety	Biological Exposure (Sharps, Blood and Body Fluids Splash)
Transfusion Safety	Psychosocial Exposure
Laboratory Safety	Chemical Exposure
Fall	Radiological and Nuclear Exposure
Incidents Reflected in Law	Near Miss Incidents
Near Miss Incidents	

Error is defined as the failure to perform a planned action as intended or the use of the wrong plan to achieve a goal (Liang, 2002; IOM, 1999). According to James Reason, errors result from two types of errors. The first is when the correct action is not performed as intended (execution error) or when the initially planned action is incorrect (planning error) (Reason, 1990). Errors can occur at every stage of the nursing process (IOM, 1999). The NPSF defines medical error as an unintended consequence caused by a specific deficiency in the provision of medical care (NPSF, 2003). Although Leape defines medical error as an unintentional act or failure to achieve an intended outcome (Leape, 1994), it has also been defined as negligence in the provision of medical care (Grober & Bohnen, 2005).

Adverse events: Patients are harmed by events that affect them. Events that harm patients are divided into two categories: sentinel events and adverse events (CPSI, 2011).

A sentinel event (unexpected event) can be defined as an event that is not related to the natural course of the disease and that causes a significant loss of vital functions, serious physical or psychological trauma, or death to the patient. Examples: Wrong blood transfusion, abduction of an infant or child, a fall of a patient that causes serious loss of function, poisoning, placement of the baby with the wrong family, wrong treatment plan (Akgün, 2014), wrong place, wrong procedure on the wrong patient; suicide, contaminated organ and tissue transplantation, rape, workplace violence, and transmission of chronic or terminal diseases and conditions (JCI, 2017).

Adverse events are unwanted negative events that result from a medical intervention and are independent of the patient's underlying disease (WHO, 2010; IOM, 1999). Adverse events can be preventable or unavoidable.

No Harm: The incident reached the patient but no harm was done. The patient was given the wrong blood transfusion but the patient did not suffer any serious harm because the blood type was not compatible (CPSI, 2011).

Near-Miss Detection: These are incidents where the error is noticed just before it reaches the patient. An example of a near-miss is the blood product being brought to the wrong patient's room and the error being noticed just before the transfusion begins (CPSI, 2011).

Near-Miss Events: This term is also used in the sense of error and refers to the failure or failure to perform a procedure or event that has the potential to harm the patient without harming the patient (WHO, 2005).

Sentinel (unwanted) Events: Refers to an unexpected event that represents death, serious physical or psychological injury, or the risk of such

events. This term includes serious injuries, especially loss of limb or function (Akgün, 2014; WHO, 2009).

In the studies conducted, undesirable events are examined by dividing them into different categories. According to the GRS, the Ministry of Health has explained undesirable events as follows:

- Drug safety (Includes errors related to all processes related to drugs in the health institution).
- Laboratory Safety (Includes errors related to pre-analytical, analytical and post-analytical processes of laboratories.)
- Surgical safety (Includes errors related to preparation, operation time and postoperative processes of surgical procedures) (Ministry of Health, 2020).

Method

Knowing the causes of adverse events in healthcare institutions and finding solutions to errors by conducting root cause analysis studies are important in ensuring patient and employee safety by creating a culture of learning from errors. This study, which aims to analyze the reported adverse events within the scope of patient and employee safety by comparing them according to years and developing studies aimed at learning from errors, increasing the awareness of healthcare professionals about continuous improvement and increasing the quality of healthcare service delivery, has been designed as a descriptive, cross-sectional and retrospective quantitative research design. The research was carried out between August and January 2024 by collecting the adverse event notifications made to the quality unit of a public hospital in 2022 and 2023 using the data collection form created by the researcher and the Hospital Information Management System and data obtained from written records. The analysis of the data obtained in the study was carried out with the SPSS 27.0 program. Descriptive statistical methods such as number, percentage, frequency and average were used in the evaluation of the data. Before starting the research, permission was obtained from the hospital administration with a

petition, and the study was conducted by obtaining Ethics Committee Approval No. 2023/318 from the Istanbul University-Cerrahpaşa Social and Human Sciences Research Ethics Committee. The fact that the research was conducted in a single center and cannot be generalized constitutes the limitation of the research. As an inclusion criterion, all patient and employee safety notifications made through the hospital's adverse event notification system in 2022 and 2023 were included, and as an exclusion criterion, notifications made in violation of the confidentiality principle of the adverse event notification system were excluded from the evaluation.

Findings

As a result of analyzing the data collected from this study, the following findings were obtained. According to the results obtained from the research, patient safety adverse event notifications for 2022 and 2023 are presented in Table 2 and Table 3.

Table 2. 2022 patient safety adverse event notifications

2022	Fall	Surgical safety	Drug safety	Transfusion safety	Laboratory safety	Near miss incident	Total
January	2	0	0	0	141	0	143
February	0	0	0	0	71	0	71
March	1	0	3	3	99	0	106
April	3	0	2	0	181	0	186
May	1	0	0	0	155	0	156
June	1	0	0	0	176	0	177
July	1	0	0	1	59	0	61
August	1	0	1	0	672	0	674
September	2	0	1	0	176	0	179
October	2	0	0	0	619	0	621
November	3	0	0	0	542	0	545
December	2	0	1	1	524	0	527
Total	19	0	8	5	3415	0	3447

When Table 2 is examined, a total of 3447 patient safety adverse events were reported in 2022, and it was determined that 19 of them were falls, 8 were drug safety, 5 were transfusion safety, and 3415 were laboratory safety.

Table 3. 2022 subparameters of patient safety notifications

Types of errors	Subparameters	N	%
Fall	Wet/slippy floor	3	15,78
	Patient-related (balance problem, weakness due to old age, muscle)	9	47,36
	Patient relative's fault (caregiver's inadequacy)	5	26,31
	Bedside open	2	10,52
	Other	0	0
	Total	19	100
Drug safety	Wrong dose order	0	0
	Wrong drug order	0	0
	Wrong drug preparation	0	0
	Transfer of wrong drug from pharmacy	3	37,50
	Wrong drug order in electronic environment	0	0
	Lack of communication	2	25
	Wrong drug packaging	2	25
	Temperature and humidity impropriety	0	0
	Illegible handwriting	0	0
	Wrong drug administration	0	0
	Other	1	12,50
	Total	8	100
	Surgical Safety	Failure to mark the surgical site/site	0
Failure to verify patient identity, surgical site and surgical procedure		0	0
Failure of team members to introduce themselves		0	0
Failure to check that the material is ready and sterile		0	0
Other		0	0
Total		0	0
Transfusion safety	Incorrect blood and blood product request	0	0
	Incorrect blood product transfer from laboratory	0	0
	Inappropriate transport container	1	20
	Inappropriate transport temperature conditions	1	20
	Non-identification process	0	0
	Blood group incompatibility	0	0
	Cross match incompatibility	0	0
	Development of allergic reaction	3	60
	Expired blood and blood products	0	0
	Other	0	0
Total	5	100	
Laboratory safety	Clotted sample	605	17,71
	Insufficient sample	845	24,74
	Hemolyzed sample	1588	46,50
	Improperly stored sample	0	0
	Transfer time overrun	62	1,81
	Improper transfer conditions	0	0
	Improperly collected sample	55	1,61
	Device failure	54	1,58
	Faulty sample container	45	1,31
	Lipidemic sample	26	0,76
	Other	135	3,95
	Total	3415	100

The data regarding the sub-parameters of adverse events reported within the scope of patient safety in 2022 are given in Table 3. A total of 19 fall incidents occurred in 2022, 3 of which were due to wet/slippery ground, 9 due to patient-related (balance problem, weakness due to old age, muscle), 5 due to the patient's relative's error (caregiver's inadequacy), and 2 due to the bedside being left open. Of the drug safety notifications in 2022, 3 were due to incorrect drug transfer from the pharmacy, 2 due to lack of communication, 2 due to incorrect drug packaging, and 1 due to other reasons. Of the transfusion safety notifications in 2022, 1 was due to an inappropriate transportation container, 1 due to inappropriate transportation temperature conditions, and 3 due to the development of an allergic reaction. Of the laboratory safety notifications in 2022, 605 were for clotted samples, 845 for insufficient samples, 1588 for hemolyzed samples, 62 for transfer time overruns, 55 for improperly collected samples, 54 for device failures, 45 for faulty sample containers, 26 for lipidemic samples, and 135 for other reasons.

Table 4. 2023 patient safety adverse event notifications

2023	Fall	Surgical safety	Drug safety	Transfusion safety	Laboratory safety	Near miss incident	Total
January	9	0	0	0	431	0	440
February	2	0	2	1	448	0	453
March	4	0	3	0	419	0	426
April	2	0	4	1	321	0	328
May	1	0	6	0	443	0	450
June	1	0	2	0	372	0	375
July	3	0	0	0	345	0	348
August	1	0	1	0	358	0	360
September	3	0	0	0	332	0	335
October	4	0	0	0	377	0	381
November	3	0	0	0	363	0	366
December	4	0	2	0	520	0	526
Total	37	0	20	2	4729	0	4788

When Table 3 is examined, a total of 4788 patient safety adverse events were reported in 2023, and it was determined that 37 of them were falls, 20 were drug safety, 2 were transfusion safety, and 4729 were laboratory safety.

Table 5. 2023 subparameters of patient safety notifications

Types of errors	Subparameters	N	%	
Fall	Wet/slippery floor	4	10,81	
	Patient-related (balance problem, weakness due to old age, muscle)	15	40,54	
	Patient relative's fault (caregiver's inadequacy)	17	45,94	
	Bedside open	0	0	
	Other	1	2,70	
	Total		37	100
Drug safety	Wrong dose order	0	0	
	Wrong drug order	2	10	
	Wrong drug preparation	4	20	
	Transfer of wrong drug from pharmacy	2	10	
	Wrong drug order in electronic environment	1	5	
	Lack of communication	5	25	
	Wrong drug packaging	2	10	
	Temperature and humidity impropriety	3	15	
	Illegible handwriting	1	5	
	Wrong drug administration	0	0	
	Other	0	0	
	Total		20	100
Surgical Safety	Failure to mark the surgical site/site	0	0	
	Failure to verify patient identity, surgical site and surgical procedure	0	0	
	Failure of team members to introduce themselves	0	0	
	Failure to check that the material is ready and sterile	0	0	
	Other	0	0	
	Total		0	0
Transfusion safety	Incorrect blood and blood product request	0	0	
	Incorrect blood product transfer from laboratory	0	0	
	Inappropriate transport container	0	0	
	Inappropriate transport temperature conditions	0	0	
	Non-identification process	0	0	
	Blood group incompatibility	0	0	
	Cross match incompatibility	0	0	
	Development of allergic reaction	2	100	
	Expired blood and blood products	0	0	
	Other	0	0	
	Total		2	100
Laboratory safety	Clotted sample	1065	22,52	
	Insufficient sample	1141	24,12	
	Hemolyzed sample	1701	35,96	
	Improperly stored sample	30	0,63	
	Transfer time overrun	21	0,44	
	Improper transfer conditions	12	0,25	
	Improperly collected sample	126	2,66	
	Device failure	35	0,74	
	Faulty sample container	112	2,36	
	Lipidemic sample	0	0	
	Other	486	10,27	
	Total		4729	100

The data regarding the sub-parameters of adverse events reported within the scope of patient safety in 2023 are given in Table 5. A total of 37 fall incidents occurred in 2023, 4 of which were due to wet/slippery ground, 15 due to patient-related (balance problem, weakness due to old age, muscle), 17 due to the patient's relative's error (caregiver inadequacy), and 1 due to other reasons. Of the drug safety notifications in 2023, 2 were due to requesting the wrong drug, 4 due to preparing the wrong drug, 2 due to transferring the wrong drug from the pharmacy, 1 due to requesting the wrong drug electronically, 5 due to lack of communication, 2 due to incorrect drug packaging, 3 due to temperature and humidity incompatibility, and 1 due to illegible handwriting. Of the transfusion safety notifications in 2023, 2 were due to allergic reactions. Of the laboratory safety notifications in 2023, 1065 were for clotted samples, 1141 for insufficient samples, 1701 for hemolyzed samples, 30 for improperly stored samples, 21 for transfer time overruns, 126 for improperly collected samples, 35 for device failures, 112 for faulty sample containers, and 486 for other reasons.

According to the results obtained from the research, employee safety adverse event notifications for 2022 and 2023 are presented in Table 6 and Table 5.

Table 6. 2022 employee safety adverse event notifications

2022	Cutting Drilling Tool Asst.	Blood and Body Fluid Splash	Incident Reflected in Law	Miss Incident	Total
January	4	2	6	0	12
February	5	1	4	0	10
March	5	1	4	0	10
April	1	0	4	0	6
May	7	0	3	0	11
June	5	0	7	0	12
July	4	1	1	0	6
August	6	1	9	0	17
September	5	0	3	0	8
October	2	3	1	0	7
November	9	0	0	0	6
December	4	0	3	0	6
Total	57	9	45	0	111

When Table 6 is examined, a total of 111 employee safety adverse events were reported in 2022, and it was determined that 57 of them were sharp object injuries, 9 were blood and body fluid splashes, and 45 were legal incidents.

Table 7. 2023 employee safety adverse event notifications

2023	Cutting Drilling Tool Asst.	Blood and Body Fluid Splash	Incident Reflected in Law	Near Miss Incident	Total
January	6	0	6	0	11
February	4	0	2	0	7
March	3	1	4	0	8
April	6	0	2	0	8
May	6	1	4	0	11
June	3	0	8	0	11
July	9	0	7	0	16
August	6	0	3	0	9
September	2	1	2	0	5
October	4	0	4	0	9
November	9	1	6	0	16
December	5	2	2	0	9
Total	63	6	51	0	120

When Table 7 is examined, a total of 120 employee safety adverse events were reported in 2023, and it was determined that 63 of them were sharp object injuries, 6 were blood and body fluid splashes, and 51 were legal incidents.

Table 8. 2022-2023 Socio-demographic information of healthcare personnel who reported adverse events

Types of errors	Socio-demographic information		2022		2023	
	N	%	N	%	N	%
Cutting Drilling Tool Asst.	Gender					
	Female	32	56,14	48	76,19	
	Male	25	43,86	15	23,81	
	Total	57	100	63	100	
	Age					
	24-29	35	61,42	21-25	19	30,15
	30-35	10	17,54	26-30	29	46,03
	36-41	8	14,03	31& 15	23,82	
	42 &	4	7,01	Total 63	100	
	Total	57	100			
Title						
Dentist	1	1,75	0	0		
Midwife	1	1,75	8	12,69		
General practitioner	6	10,52	6	9,52		
Specialist physician	1	1,75	0	0		
Cleaning staff	15	26,34	10	15,87		
Nurse	33	57,89	37	58,76		
laboratory technician	0	0	1	1,58		
x-ray technician	0	0	1	1,58		
Total	57	100	63	100		
Educational Status						
Elementary School	2	3,52	4	6,34		

Middle School	3	5,26	1	1,58
High School	14	24,56	11	17,46
Associate Degree	0	0	5	7,93
Undergraduate	38	66,66	42	66,69
Total	57	100	63	100
Unit worked	N	%	N	%
Emergency room	37	64,91	44	69,84
Operating room	0	0	2	3,17
Polyclinic	5	8,77	5	7,93
Intensive care	5	8,77	5	7,93
Inpatient service	9	15,78	6	9,59
Delivery room	0	0	1	1,58
Blood collection unit	1	1,78	0	0
Total	57	100	63	100
Gender	N	%	N	%
Female	5	55,55	6	100
Male	4	44,45	0	0
Total	9	100	6	100
Age	N	%	N	%
24-29	6	66,66	23-25 3	50
30-35	2	22,22	26-28 3	50
36-41	1	11,12		
Total	9	100	6	100
Title	N	%	N	%
Dentist	0	0	0	0
Midwife	0	0	1	16,66
General practitioner	1	11,11	2	33,36
Specialist physician	0	0	0	0
Laboratory technician	2	22,22	1	16,66
Cleaning staff	0	0	1	16,66
Medical waste staff	0	0	0	0
Nurse	6	66,67	1	16,66
Total	9	100	6	100
Educational Status	N	%	N	%
Elementary School	0	0	0	0
Middle School	0	0	0	0
High School	1	11,11	0	0
Associate Degree	2	22,22	2	33,33
Undergraduate	6	66,67	4	66,67
Total	9	100	6	100
Unit worked	N	%	N	%
Emergency room	3	33,33	3	50
Operating room	1	11,11	0	0
Polyclinic	2	22,22	0	0
Laboratory	2	22,22	1	16,67
Intensive care	0	0	1	16,67
Inpatient service	1	11,12	0	0
Delivery room	0	0	1	16,66
Blood collection unit	0	0	0	0
Total	9	100	6	100
Gender	N	%	N	%
Female	26	57,77	34	66,66
Male	19	42,23	17	33,34
Total	45	100	51	100
Age	N	%	N	%
26-30	11	24,44	18	35,29
31-35	19	42,23	20	39,22
36 ve üzeri	15	33,33	13	25,49
Total	45	100	51	100
Title	N	%	N	%
Physician	34	75,55	36	70,58
Midwife	1	2,23	0	0
Nurse	10	22,22	9	17,66
Security personnel	0	0	2	3,92
Data entry personnel	0	0	4	7,84
Total	45	100	51	100
Educational Status	N	%	N	%
Associate Degree	0	0	5	9,81
Undergraduate	45	100	46	90,19
Total	45	100	51	100
Unit worked	N	%	N	%
Emergency room	19	42,23	21	41,17

Polyclinic	26	57,77	30	58,83
Total	45	100	51	100
Type of incident reflected in law	N	%	N	%
Verbal violence	42	93,34	43	84,32
Verbal violence & Physical violence	3	6,66	8	15,68
Total	45	100	51	100
Total	111	100	120	100

In 2022, 57 sharp object injuries were reported. When examined according to the gender variable, 54.16% of the 57 employees were female and %43.86 were male. When their distribution by age groups was examined, 61.42% were in the 24-29 age group. When their distribution by occupational groups was examined, 57.89% were nurses and when their education status was examined, 66.66% were bachelor's degree graduates. 64.91% of sharp object injuries occurred in the emergency room.

In 2022, 9 blood and body fluid splash incidents occurred. Of the 9 employees exposed to blood and body fluid splash incidents, 5 were female and 4 were male. 66.66% of the employees exposed to the incident were in the 24-29 age group. When looking at the distribution of occupational groups, 66.67% of those exposed to blood and body fluids are nurses and 66.67 are undergraduate graduates. 33.33% of blood and body fluid splash incidents occurred in the emergency room.

A total of 45 incidents reflected in the law occurred in 2022. 57.77% of the employees exposed to the incident are female and 42.23% are male. When their distribution by age groups is examined, 42.23% are in the 31-35 age group. When looking at their distribution by occupational groups, 75.55% are physicians and 100% are undergraduate graduates. 57.77% of the incidents occurred in the polyclinic. When the type of incidents reflected in the law is examined, it was determined that 93.34% was verbal violence and 6.66% was both verbal and physical violence.

In 2023, 63 sharp object injuries were reported. When examined according to the gender variable, 76.19% of the 63 employees were female and 23.81% were male. When their distribution by age groups was examined, 46.03% were in the 26-30 age group. When their distribution by occupational groups was examined, 58.76% were nurses and when their education status was examined, 66.69% were bachelor's degree

graduates. 69.84% of sharp object injuries occurred in the emergency room.

In 2023, 6 blood and body fluid splash incidents occurred. 100% of the 6 employees exposed to blood and body fluid splash incidents were female. 50% of the employees exposed to the incident were in the 23-25 age group and 50% were in the 26-28 age group. When looking at the distribution of occupational groups, 33.36% of those exposed to blood and body fluids are general practitioners and 66.67 are undergraduate graduates. 50% of blood and body fluid splash incidents occurred in the emergency room.

A total of 51 incidents reflected in the law occurred in 2023. 66.66% of the employees exposed to the incident were female and 33.34% were male. When their distribution by age groups was examined, it was determined that 39.22% were in the 31-35 age group. When looking at their distribution by occupational groups, 70.58% are physicians and 90.19% are undergraduate graduates. 58.83% of the incidents occurred in the polyclinic. When the type of incidents reflected in the law was examined, it was determined that 84.32% was verbal violence and 15.68% was both verbal and physical violence.

Discussion and Conclusion

In this study, the undesirable events of a public hospital reported within the scope of Patient and Employee safety for the years 2022 and 2023 were analyzed. According to the analysis results, a total of 3471 patient safety notifications were made in 2022 and a total of 4833 adverse event notifications were made in 2023. Of the incidents reported within the scope of patient safety in 2022, 97.83% will be laboratory safety errors, 0.51% will be fall events, 0.23% will be medication safety errors, 0.14% will be transfusion safety errors, 1% will be laboratory safety errors. It was determined that 26 of them consisted of events reflected in the law. In 2023, 97.70% of the incidents reported within the scope of patient safety will be laboratory safety errors, 0.76% will be fall incidents, 0.41% will be medication safety errors, 0.04% will be transfusion safety errors, 1% will be laboratory safety errors. It was determined that 0.07% of the cases were made

up of events reflected in the law. Cakmak et al. (2018) found that 87.37% of the safety reporting notifications made in Turkey in 2016 were laboratory safety errors, 4.90% were surgical errors, 4.61% were medication errors, and 3.12% were laboratory safety errors. It has been determined that falls occur. According to the safety reporting system statistics of the Ministry of Health (2017), 84.60% of the safety reporting notifications made in Turkey in 2017 were laboratory errors, 6.42% were surgical safety errors, 4.99% were medication errors, 3.99 of them are falling errors. Akar et al. (2019) analyzed the incidents reported within the scope of patient safety in a training and research hospital between 2016 and 2018, and found that 34.78% of the reported incidents were falls, 13.04% were medication errors, 8.69% were medication errors. It was determined that 4.34% were reported as blood transfusion errors, 4.34% were reported as surgical safety errors, and 39.13% were reported as other. Aygin et al. (2020) found that the most frequently reported medication errors were "administration of the wrong medication (44.8%)", "administration of medication to the wrong patient (37.3%)", "administration of the wrong dose of medication (35.8%)". Karagözoğlu et al. (2019) found that the most frequently reported medication errors were "ordering the wrong medicine (24%)", "administering the wrong medicine (37.7%)", "administering the medicine at the wrong time (24%)", "wrong medicine being taken from the pharmacy". (27%)", "drugs not arriving from the pharmacy under appropriate conditions (17.2%)", "records received incorrectly (15.7%)", "other (7.4%)". In the study conducted by Aslan (2020), it was determined that 24.66% of the reported errors were medication errors, 4.27% were blood and blood product errors, and 10.82% were falls.

Wundavalli et al. (2018) found in their study in India that 30% of medication errors were administration errors. Alrwisan et al. (2011) in their study evaluating electronic reports in Scotland; It was determined that 6.1% of the incidents caused harm to the patient, 59% of the errors occurred in the drug administration phase, 10.8% occurred in the administration/prescribing phase, and 9.9% occurred in the preparation

phase/dose adjustment phase. Ernawati et al. (2014) states that most medication errors are caused by administration errors (59%), order/prescription errors (20%), recording errors (15%), and preparation/dose adjustment errors (14%). In his study examining adverse events related to drugs reported based on patient safety data, Sørensen (2013) found that 31% of those providing information were at the consultation/prescription stage, 29% at the use stage, and 19% at the preparation/dose stage.

Recording errors in patients who received blood transfusions in Canada between 2008 and 2017 were examined to identify recording errors in the national database, characterize these errors, identify critical high-risk failure points, and identify needs for system re-evaluation and redesign. During the research, 554 registration errors were reported in 10 hospitals in three provinces. The overall capture error per sample collected in the transfusion laboratory is 5.4/10,000; No significant change in the overall error rate was reported from 2008 to 2017 ($p = 0.5$). The most frequently reported errors were name errors (31.7%), duplication of patient records (29.3%), and missing wristbands (10.6%); The least common reports were found to be wrong wristband (0.7%), patients using someone else's ID (1.7%), and wrong gender (1.7%) (Vijenthira, 2008).

Yao et al. (2018) examined 44,691 incident reports and found that the transfusion reaction rate was 3.5%. Fastman et al. (2011) found that 40% of blood transfusion-related events were due to errors in the post-analysis phase. In their study in India, Elhence et al. (2012) reported 285 reports regarding transfusion between 2009 and 2010, 95% of which were near-miss events that did not harm the patient, 1.5% were adverse events, and 3.5% were events that reached the patient and did not cause any harm. Maskens et al. (2014) found that 15,134 transfusion-related events were reported between 2005 and 2010, of which 0.15% resulted in patient harm. Dubeck (2016) noted that between 2010 and 2014, healthcare facilities reported 19,687 transfusion-related incidents to Pennsylvania patient safety regulators, and 99% of them did not cause any harm to patients. The Public Health Agency of Canada (2016) found that

17,344 transfusion-related events were reported between 2012 and 2013, 6.63% of which reached the patient, and approximately 97% of events that reached the patient did not cause harm to the patient. A study conducted by the Victorian Government (2008) in Melbourne, Australia, found that 49% of 155 reported transfusion-related events were acute transfusion reactions.

According to the analysis results, a total of 111 employee safety notifications were made in 2022 and a total of 120 undesirable event notifications were made in 2023. It has been determined that 53.15% of the incidents reported within the scope of employee safety in 2022 are sharp injuries, 9.9% are blood and body fluid splashes, and 40.54% are legal incidents. It has been determined that 50.83% of the incidents reported within the scope of employee safety in 2023 were sharp injuries, 5.83% were blood and body fluid splashes, and 43.33% were legal incidents.

Akar et al. (2019) analyzed the incidents reported within the scope of employee safety in a training and research hospital between 2016 and 2018, and it was determined that 75% of the reported incidents were sharp object injuries and 25% were blood and body fluid splashes. Pıçakçıefe et al. (2024) reported that 46.6% of the participants had a sharp object injury in the last year, and 95.1% of them were injured by a needle, 22.2% by a scalpel, and 25.9% by a sharp object. It has been determined that it occurs with ampoules/vials. Dogan et al. (2016) examined the sharps injuries and their causes reported among hospital employees between January 2012 and June 2013, and found that a total of 46 sharps injuries were reported. When the causes of the reported cutting-piercing injuries were examined, it was determined that 21.9% of them were injured during blood collection, 18.8% were injured while separating medical waste, 15.6% were injured while closing the syringe cap, and 15.6% were injured while opening a vascular access.

As a result, it was concluded that the adverse event reporting system creates a reporting culture in healthcare institutions, prevents preventable errors in terms of patients, healthcare professionals and healthcare institutions by detecting them in advance and preventing their negative

consequences, and also provides a proactive approach to healthcare institutions by planning corrective and remedial activities for the undesirable events that have occurred, so that the same events do not occur again. The key to quality development in healthcare institutions is to develop a culture of learning from mistakes by carrying out such organizational studies. It is thought that increasing the awareness of healthcare professionals about adverse event reporting through continuous training will ensure patient and employee safety and increase service quality.

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RESEARCH ARTICLE

Exchange Rate Pass-Through into Import Prices: Evidence from Türkiye during 2010-2020 Period

Volkan Sezgin¹

¹ Ph.D., Post Doc Fellow,
Humboldt University, Berlin,
Germany.

ORCID: [0000-0001-7642-7674](https://orcid.org/0000-0001-7642-7674)

E-Mail:
volkansezginhds@gmail.com

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Abstract

This article analyses pass through of exchange rates into the import prices for an emerging economy, Türkiye, which faced severe fluctuations in the nominal exchange rate in the recent years, and experienced significant increases in domestic prices. The Turkish economy continues to struggle due to high inflationary pressures and a steep Turkish Lira (TL) devaluation particularly after 2017. This study aimed at examining the relationship between exchange rate and import prices using quarterly data for the period of 2010q1-2019q1, while the empirical methodology is framed in the multivariate cointegration analysis, along with the application of the Johansen cointegration test and the development of an autoregressive error correction vector for the determination of the pass-through in the long term. Our findings show that 85.6% of the fluctuations of the nominal exchange rate are transmitted to the import prices in the mentioned period, slower than the findings of the study by Akgunduz and his colleagues as the difference of import prices from its long-run relationship implied by the real exchange rate is likely dominated by energy prices in a strong manner. Second significant finding derives from the parameter that measures the speed of the pass-through, whose estimate has been found as -0.0125, inferring that the adjustment in short-term imbalances between import prices and the nominal exchange rate through changes in import prices is rather slow.

Keywords: Exchange rate pass through, import prices, Türkiye.

Öz

Bu çalışma, nominal döviz kurunda önemli dalgalanmalar ve yurt içi fiyatlarda artış yaşamakta olan gelişmekte olan ekonomilerden biri olan Türkiye'deki döviz kuru geçişkenliğinin ithalat fiyatları üzerindeki etkisini incelemektedir. Türkiye ekonomisi özellikle 2017'den bu yana yüksek enflasyon ve Türk Lirası'ndaki değer kaybı nedeniyle baskı altında kalmayı sürdürmektedir. Araştırma, 2010 ilk çeyreğinden 2019 yılı ilk çeyreğine kadar üç aylık verileri kullanarak döviz kurları ile ithalat fiyatları arasındaki ilişkiye odaklanmaktadır. Çalışma, uzun vadeli geçiş etkisini analiz etmek için çok değişkenli eşbütünleşme analizi, Johansen eşbütünleşme testi ve otoregresif hata düzeltme vektörünü kullanmaktadır. Sonuçlar, belirtilen dönemde nominal döviz kuru dalgalanmalarının %85,6'sının ithalat fiyatlarını etkilediğini, enerji fiyatlarının ithalat fiyatları üzerindeki etkisi sebebiyle Akgunduz ve arkadaşlarının 2020 yılında yaptıkları çalışma ile kıyaslandığında daha yavaş bir geçişkenliğin var olduğunu göstermektedir. Çalışmanın bir diğer önemli bulgusu ise geçiş hızına ilişkin tahmin edilen parametrenin -0,0125 olması, bunun da ithalat fiyatları ile nominal döviz kuru arasındaki kısa vadeli dengesizliklerin kademeli olarak düzeltildiğini göstermesidir.

Anahtar Kelimeler: Döviz kuru geçişkenliği, ithalat fiyatları, Türkiye

Introduction

Globalization has encouraged the international integration of emerging markets to grow in addition to developed ones, as stated by Peynirci (2023). Despite Turkish economy followed a fluctuating course after 1980s partly due to multifaceted political and economic circumstances, the economy continued to grow fast thanks to implementations of various economic reforms and execution of agreements such as the Customs Union (CU) in 1996 concerted with the European Union (EU), which led the economy to transform, as Ketenci (2014) emphasized.

Türkiye was hit hardly by the domestic financial crisis, which burst out in the banking sector in late 2000 and early 2001. The crises can be regarded as a milestone since it ignited the applications of the new set of economic reforms that targeted to put the economy back on track. After financial crisis, significant economic and political developments gave momentum to the integration of Turkish economy into world markets: Formal accession negotiations started with the EU in 2004, 6 zeros were knocked off from TL in 2005, various laws and regulations were harmonized with the EU acquis, foreign direct investments (FDI) into the country amounted to U.S. Dollar (USD) 19 billion in 2007, which was the highest in modern Turkish history, thanks to mentioned reforms. One other major change during this period was Türkiye adopting the inflation targeting regime after 2003.

Mentioned scenario partly changed particularly after 2010/11. Economic problems started to re-arise particularly following 2010 as trade deficits grew, foreign direct investments fell, and Türkiye had difficulties in managing to keep the inflation under control. Although exchange rate pass-through (ERPT) to inflation shrank after the adoption of inflation targeting regime in 2003, as Bari (2020) highlighted, its contribution to the consumer price index (CPI) and producer price index (PPI) in addition to its link with import prices were remarkable in this period. Figures 1 and 2 below show how Turkish foreign trade, and CPI changed between 2010 and 2020, respectively.



Figure 1. Turkish Foreign Trade (in Billion U.S. Dollar) 2010-2020.

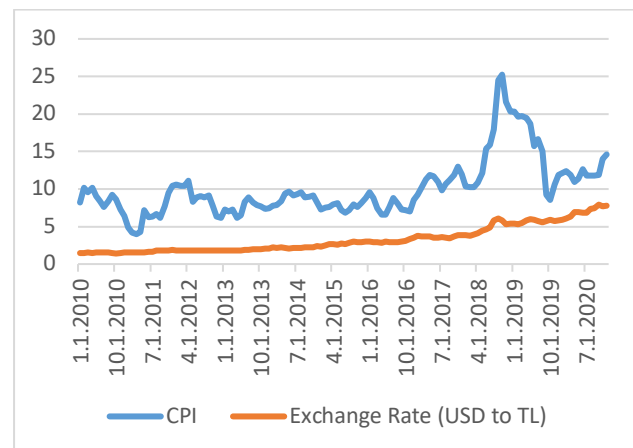


Figure 2. Consumer Price Index (% Year over Year), USD/TL Exchange Rate, 2010-2020

According to Figure 1, Türkiye's foreign trade followed a fluctuating course between 2010 and 2020 while the trade deficit was persistent during this decade. The CPI spiked particularly after 2016 and hit its peak in 2018, as shown in Figure 2. There was no correlation detected between CPI and foreign trade as depicted.

In this framework, scholars claim that the relatively stable economic environment of Türkiye deteriorated after 2010s as the investments slowed down, the inflation rates increased, current account deficit (CAD) grew, and economic vulnerabilities accelerated. To illustrate it, TL severely depreciated against major currencies. Despite USD/TL rate stood at 1.49 as of December 31, 2010, the rate rose to 5.95 as of December 31, 2019. These fluctuations likely impacted Türkiye's foreign trade through the channels of export and import prices and impacting domestic inflation.

In line with this, the purpose of this paper is to evaluate the pass-through of the exchange rates to the import prices in Türkiye during 2010 and 2019 through analyzing the degree and speed of adjustment to the equilibrium of ERPT.

To answer this question, at a theoretical level, we rely on the approach developed by Campa and Goldberg (2005), while the empirical development is framed in the multivariate cointegration analysis, with the application of the Johansen Cointegration Test (JCT) and the development of an autoregressive error correction (EC) vector for the determination of the long run pass-through. Considering that Türkiye frequently experience fluctuations in the nominal exchange rate, trade balance coupled with surges in inflation, this paper motivates the choice of Türkiye in a view to analyse specific economic dynamics and transmission mechanisms in this emerging market. The estimation of ERPT is based on the data covering the period 2010q1-2019q1. ¹The reason why this time interval is taken into consideration is that Türkiye experienced various economic undulations in this period, as noted above.

The paper is organized as follows: Section 1 provides an introduction, Section 2 conveys literature review, Section 3 specifies the economical formulation and econometric formulation, Section 4 demonstrates the empirical strategy, Section 5 provides the empirical results and last section conveys conclusions. In this study, firstly a literature review is conducted. Then, the findings obtained are evaluated by making an analysis with the econometric data. The findings are commented afterwards.

Literature Review

As mentioned above, the studies which addressed the mechanism of exchange rate pass-through to inflation, namely ERPT, are discussed in this section. The mechanism of ERPT to import prices has been largely analyzed in the literature, be it from a cointegration framework or a static framework, as the behavior of import prices is

certainly important in the formulation of optimal monetary policies to maintain stable inflation and macroeconomy.

Global integration has led to an increase in the interconnectedness of foreign trade markets, serving as a conduit for the transmission of domestic economic developments, such as fluctuations in exchange rates, onto export and import prices. This phenomenon has been highlighted by Aron, Macdonald, and Muellbauer (2014), among others. The empirical models examined the extent of complete, delayed, and incomplete ERPT, as well as the apparent decline in ERPT in certain countries since the 1980s, in relation to aggregate import prices and domestic consumer price indices. Scholars have made significant contributions to the analysis of ERPT by studying cases from various countries, as noted below.

Numerous studies have focused on the impact of exchange rate fluctuations on import prices, including works by Swamy and Thurman (1994), Webber (1999), Campa and Goldberg (2002), and Barhoumi (2006). These studies try to answer the following question: How does the exchange rate influence domestic consumer prices through the prices of imported consumer goods and imported inputs used in domestic production?

The standard models assume ERPT is linear (in logs of prices and the exchange rate), while other research also investigated asymmetries in price responses to exchange rate fluctuations, as illustrated by Bussière (2007), Marazzi & Sheets (2007), Coughlin & Pollard (2003). Much literature investigates a different non-linearity: apparent secular declines in ERPT with structural/regime changes.

Various industry-specific factors can result in a wide range of exchange rate pass-through effects on domestic prices, as highlighted by Goldberg (2005), McCarthy (2007), and Bhattraï and Schoenle (2014). This means that different industries may show varying responses in domestic prices to fluctuations in exchange rates. One possible explanation is the shift from uniform raw materials

¹ Complete data set showing Exchange Rate Pass Through dynamics is available at https://figshare.com/articles/dataset/DataPassThrough_xls/12420701

in the trading basket (which adjust prices quickly) to diverse manufactured goods and services, as discussed by Campa and Goldberg (2002). Another factor could be the changing geographical distribution of trading partners, such as Chinese imports impacting the exchange rate pass-through in the United States, as noted by Marazzi and Sheets (2007).

A significant macro-explanation is the implementation of transparent and stable monetary policies, following Taylor (2000). Until recently, there have been limited studies testing these hypotheses on trade and domestic prices in emerging markets and developing countries. These economies, which are small, open, and heavily reliant on trade, possess unique characteristics that can complicate the estimation of exchange rate pass-through, as emphasized by Aron, Macdonald, and Muellbauer (2014).

Despite this, there is an ongoing increase in the literature that investigate ERPT for a emerging economies like Türkiye, which is one of the developing countries regularly experiencing fluctuations in exchange rates, hikes in domestic consumer prices and deteriorations in trade balance, which makes Türkiye an interesting case study.

Dedeoglu and Kaya (2014) conducted a rolling Vector Auto Regressive (VAR) analysis to examine Exchange Rate Pass-Through (ERPT) between 1995 and 2012. Their results indicate a significant decrease in ERPT following the adoption of an inflation targeting regime in Türkiye, with ERPT having a greater impact on producer prices than on consumer prices during the inflation targeting period. In a separate study, Civcir and Akcaglayan (2010) investigated ERPT and the monetary policy reaction function of the Central Bank of the Republic of Türkiye (CBRT) over two periods (1987-2001 and 2001-2009) using a VAR model. They highlighted that the primary channel through which inflation is fueled in Türkiye is the depreciation of the domestic currency, even under an inflation targeting regime.

The research by Karagoz et al. (2016) aimed to quantify the pass-through effects of exchange rates on prices in regions that implement inflation targeting regimes such as Asia Pacific, Latin

(South) America, and Türkiye. To assess the pass-through effects from exchange rates to domestic prices, the authors developed a model with five variable factors and applied a VAR approach. They discovered that the pass-through effect in Latin America and Türkiye is higher compared to Asia Pacific economies.

Another noteworthy study conducted by Karahan (2017) involved a time series analysis of ERPT for the Turkish economy. The analysis utilized a single equation error correction model (ECM) estimation. Karahan (2017) specifically examined the effect of adopting an inflation targeting regime in 2006 on ERPT in Türkiye. The study utilized monthly data and considered two distinct periods: 1995-2000 and 2006-2014. The main findings indicated a reduction in the degree of pass-through, with values decreasing from 0.665 in the first period to 0.218 in the second period. This reduction was attributed to the adoption of the inflation targeting regime.

Ciftci and Yilmaz (2018) explored the non-linear dynamics of exchange rate pass-through (ERPT) and inflation persistence in Türkiye. They employed the Smooth Transition Regression (STR) model to identify different regimes characterized by the magnitude of exchange rate movements. These regimes exhibited variations in ERPT and inflation persistence indicators. The study demonstrated that inflation persistence and ERPT for the Consumer Price Index (CPI) are high in a regime with a significant import price shock. Additionally, ERPT and import price pass-through to the Producer Price Index (PPI) are more influential in a high depreciation regime.

Saygili et al. (2019) explored the heterogeneity of exchange rate pass-through into industry-specific import, producer, and consumer prices. They discovered that the responsiveness of prices to aggregate and relative exchange rate changes varies significantly depending on the imported input contents. The study highlighted that direct exchange rate impacts are more substantial than indirect effects, with the importance of indirect effects being largely influenced by industries such as energy, basic metal, and chemicals that provide intermediate inputs to other sectors. Furthermore, they found that relative and aggregate exchange

rate changes have opposing effects on domestic prices, indicating that asymmetric information about industry-specific exchange rates can lead to pricing opportunities.

A study conducted by Bari (2020) investigated the influence of exchange rate fluctuations on domestic prices in Türkiye from 2003 to 2019. Bari pointed out that the structural inflationary issues in Türkiye were a result of the reliance on imported intermediate goods, along with inflation expectations. Consequently, fluctuations in exchange rates have a notable impact on domestic inflation. By utilizing VAR analysis to analyze the import price index (IPI), the consumer price index (CPI), and producer price index (PPI), the author concluded that the structural problems of the Turkish economy are linked to the dependence on imported intermediate goods for final production, dollarization, and the pass-through of imported prices to consumer prices.

As outlined by Akgunduz et al. (2020), despite the relatively clear pass-through behavior in Türkiye, the empirical estimates for pass-through rates vary widely. Some studies on the Turkish case have utilized either VAR or single equation estimations. Akgunduz et al. (2020) calculated the export and import pass-through rates based on product-level data from Türkiye, revealing that changes in the TL exchange rate mainly affect the prices of exports and imports in TL, and to a lesser extent in the currencies of trading partners. They determined the export and import pass-through rates using Turkish 6-digit product-level data, concluding that TL exchange rate changes primarily impact TL prices of exports and imports, and subsequently affect their prices in trading partners' currencies. The average pass-through rate to TL prices is estimated at 82% for exports and 89% for imports.

Saygili (2022) delved into the impact of invoicing currency and global production integration on the exchange rate pass-through effect on import and export prices in Türkiye using 3-digit product-level data categorized by end use and 2-digit sector-level data. The study revealed that the pass-through rate significantly influences both export and import prices, with a notably

higher pass-through for goods priced in local currency.

Demirel and Karaoglu (2021) conducted a study to analyze the impact of exchange rate on inflation in Türkiye. This analysis is crucial for effectively combating inflation and developing appropriate policy proposals. Their research focused on examining the asymmetric relationships between exchange rate and inflation using a nonlinear autoregressive distributed lag model. The study covered the period from 2004: Q1 to 2019: Q4. The findings revealed that the pass-through effect of exchange rate on inflation in Türkiye is asymmetric in the long run.

Turel and Orhan (2022) conducted a study on the asymmetric behavior of exchange rate pass-through in Türkiye. They utilized a threshold VAR model to investigate the asymmetries in exchange rate pass-through based on various factors such as size, direction, and the inflationary environment of an emerging market economy with a significantly devalued domestic currency and a double-digit inflation rate. Their research revealed that the transmission of exchange rate shocks to domestic inflation is stronger in the upper regime compared to the lower regime. Additionally, they found that the pass-through increases with the magnitude of shocks, and there is a positive relationship between inflation and exchange rate pass-through.

Kal et al. (2022) analyzed the influence of market share on exchange rate pass-through to prices in the Turkish manufacturing sector. Their research, based on disaggregated data at the four-digit industry level, demonstrated that exchange rate pass-through in the manufacturing sector follows an asymmetric U-shape pattern with respect to market share. This suggests that highly competitive and concentrated industries exhibit a higher pass-through of exchange rate movements in both directions (appreciation and depreciation) to local producer prices compared to moderately concentrated sectors.

Within this framework, it is possible to suggest that there are various empirical studies that focused on Turkish case from different perspectives. Like some of others, this research intends to evaluate ERPT particularly into import prices in Türkiye while the empirical development

is framed in the multivariate cointegration analysis, with the application of the JCT and the development of an autoregressive EC vector (VECM) for the determination of the long run pass-through, which makes our study to be offering a different approach that helps the readers better understand the ERPT to import prices mechanism, during the decade of exchange rate fluctuations, high inflation, and trade imbalance.

Our aim in our econometric analysis is to address the ERPT into import price for Turkish case, and we will focus on the following analysis by Campa and Goldberg (2005).

Econometric Formulation

For the sake of our analysis, we focus on Campa and Goldberg (2005) as analyzing how prices react to exchange rate fluctuations is our major goal for research. According to the theory, the import prices can be gathered as a transformation of the export prices of the trading partners which is given by the following notation, where lowercase letters represent logarithms.

$$P_t^m = E_t P_t^x \quad (1)$$

where P_t^m depicts the prices of the imports, P_t^x shows export prices of the trading partners and finally E_t is the nominal effective exchange rate. If we take the logarithm of in Equation 1, following equation is obtained:

$$p_t^m = e_t + p_t^x \quad (2)$$

Furthermore, the export prices are a function of a profit margin over the marginal costs of Türkiye's trading partners' exports.

$$p_t^x = mkup_t^x + mc_t^x \quad (3)$$

where mc_t^x depicts exporters' marginal costs and $mkup_t^x$ demonstrates the profit margin. Substituting Equation 3 in Equation 2, we obtain:

$$p_t^m = e_t + mkup_t^x + mc_t^x \quad (4)$$

Exporters in an industry may decide to fully absorb ER fluctuations through the margin or alternatively the margin be independent of ER variations (which is denoted as the full pass-through). The alternative actions by these exporters can be depicted as:

$$mkup_t^x = \rho + \Omega e_t \quad (5)$$

while it can be asserted that marginal costs move in parallel with export market wages w_t^x and demand conditions in the export destination country y_t

$$mc_t^x = \delta_0 y_t + \delta_1 w_t^x \quad (6)$$

If we replace Equation 5 and 6 in Equation 4, we arrive at the following equation for import prices:

$$p_t^m = \rho + (1 + \Omega)e_t + \delta_0 y_t + \delta_1 w_t^x \quad (7)$$

Note that ERPT is $\beta=1+\Omega$ and this will be subject to the pattern of existing competition in the industry. (If $\Omega=0$, we will have a complete PT.) Thus, the prices of the imports will be dependent to export markets' wages, nominal exchange rate (NER), in addition to the demand conditions in the export destination country.

By conducting our study, we aim to address the ERPT dynamics into import price for Turkish case through basing our analysis on Campa and Goldberg work (2005).

Integration

By using the formations depicted above, firstly, in order to designate the non-stationarity of the time series, augmented Dickey-Fuller (DF) test has been applied. This test basically allows to statistically determine the existence of unitary roots in the autoregressive representation of the time series data. The implementation of the DF test is based on the general auxiliary regression.

$$\Delta X_t = \varphi(t) + \rho X_{t-1} + \delta_1 \Delta X_{t-1} + \dots + \delta_k \Delta X_{t-k} + \varepsilon_t \quad (8)$$

where ε_t is a white noise process which has 0 mean, a constant variance and uncorrelated

autocovariance. The deterministic trend is depicted by the $\varphi(t)$ and three cases have been taken into consideration:

$$\begin{aligned}\varphi(t) &= \alpha + \beta t \\ \varphi(t) &= \alpha \\ \varphi(t) &= 0\end{aligned}$$

The inference which lets us specify the non-stationarity of the time series is denoted through the following hypothesis test:

$$H_0: \rho = 0 \quad \text{vs.} \quad H_1: \rho < 0$$

where the rejection of the null hypothesis implies that the time series will be stationary while the non-rejection of the null demonstrates the non-stationary time series. Dickey-Fuller (1981) includes the tables showing the critical values which allow us to construct the rejection regions for the standard significance levels.

JCT below would help us analyze the presence of cointegration, and reveal whether we would be able to conduct an illustrative analysis.

JCT and VECM

A group of variables can be regarded as cointegrated if they all have the same order of integration while a linear combination of these variables which is stationary can be found and JCT is a technique used to reveal mentioned relationship. (An X_t variable is integrated of order d , denoted $I(d)$, if ΔX_t is stationary. If a variable is stationary, it is denoted by $I(0)$.) Until today, many scholars developed different methodologies in order to specify and determine whether a set of variables are cointegrated. Among these, one of the most widely used method is the one by Johansen (1988). Accordingly, Johansen's cointegration method takes as its starting point the representation as a VAR of the variable vector $X_t' = (x_{1t}, x_{2t}, \dots, x_{nt})$

$$X_t = \Pi_1 X_{t-1} + \dots + \Pi_k X_{t-k} + \Phi D_t + \varepsilon_t \quad \varepsilon_t \sim IN(\vec{0}, \Omega) \quad (9)$$

where D_t is a vector of deterministic variables and all variables in X_t have the order of integration $I(1)$. In this setting, reparametrization of the fundamental VAR is possible, which is as follows:

$$\Delta X_t = \Pi X_{t-1} + \sum_{j=1}^{k-1} \Gamma_j \Delta X_{t-j} + \Psi D_t + \varepsilon_t \quad (10)$$

where $\Gamma_j = -\sum_{i=j+1}^k \Pi_i$ and $\Pi = \sum_{i=1}^k \Pi_i - I$ $i = 1, \dots, k-1$

The main element in the implementation of the JCT is the matrix Π $n \times n$ in Equation 10. If the range (r) of this matrix is located in the interval $(0, n)$ it can be decomposed in the form $\Pi = \alpha_{n \times r} \beta'_{r \times n}$, where the rows of the matrix $\beta'_{r \times n}$ contain cointegration r vectors that allow building r stationary linear combinations of the variables in the vector X_t . The speed of adjustment can be measured by the parameters in the matrix $\alpha_{n \times r}$ in the case of short run imbalances between a variable in X_t and its long run equilibrium. At this point it is possible to note that trace and maximum eigenvalue statistics allow us to make statistical inferences about the range of the matrix Π $n \times n$, while these stats have non-standard distributions which are generated by Monte Carlo methodologies. In this way, it is possible to conduct our data analysis and model as below with the dataset we gathered.

Data and the Model

In the analysis, we used a sample for the ERPT estimate which covers the time interval between 2010 and 2019, on a quarterly basis. In line with the formulation depicted in Equation 7, industrial production index (IPI) and the import unit value index (IUVI) were utilized in order to create proxies for Turkish import prices and demand conditions. The figures for these variables were compiled using the datasets offered by TUIK. The nominal effective exchange rate (NEER) data were retrieved from Bruegel Group's database where the data contain values of real and nominal effective exchange rate indices for a number of countries. Accordingly, we decided the use the following functional relationship intending to construct the proxy variable of wages (W) in the export market, which is as follows:

$$W_t = NEER_t * IUVI_t / REER_t \quad (11)$$

while the real effective exchange rate is represented by REER in the paper. All variables have base year 2010. Table 1 below demonstrates the variables which are employed for the study:

Table 1. Economic Variables

Variable	Definition of Variable
IVIU	Import Unit Value Index
NEER	Nominal Effective Exchange Rate
W	Exporter Cost
IPI	Industrial Production Index

Source: Author's abbreviations.

Table 1 demonstrates the abbreviations of the economic variables that we used in our study. Table 2 below indicates the summary statistics of the variables where the data are measured in logs.

Table 2. Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
IVIU	4593841	0.11525	4386374	4762149
NEER	4007718	0.32921	3169686	4449802
W	4198162	0.28453	3717971	4588582
IPI	4796439	0.11967	4503469	5016357

Source: Author's calculations (2023).

According to the descriptive statistics given in Table 2, the mean of IVIU and IPI are higher than NEER and W while the standard deviations of mentioned variables are lower than those of NEER and W.

Results and Findings

We demonstrate the results gathered via the implementation of the Augmented DF test by means of which we determine the order of integration of each variable stated above. Table 3 demonstrates the outcomes of the test, and all variables are measured in logarithms.

According to Table 3, as for the function $\varphi(t)$ refers the deterministic tendency in the auxiliary regression (Equation 8), for the case of the iuvi series $\varphi(t) = 0$, for graphically displaying the

behavior of a random walk without drift under H_0 , while in the cases of the variables *neer*, *w* and *ipi*, $\varphi(t) = \alpha + \beta t$ was adopted.

Table 3. Unit Roots Test Results ²

Variable	Level			First differences		
	Stat	p-value	Lag	Stat	p-value	Lag
IVIU	-0.366	---	1	-3.079***	---	0
NER	-0.259	0.99	4	-3.652***	0.0048	3
W	-2929	0.15	1	-3.659***	0.0047	0
IPI	-1534	0.81	4	-19.963***	0.0000	0

Source: Author's calculations (2023).

As introduced in Table 1, in no case it is possible to reject the null hypothesis of the existence of at least one unit root, while the null hypothesis of non-stationarity is rejected for all variables at any level of significance, thus implying that the four series are stationary in first differences. In the light of these, it can be stated that the series are I (1).

We also present the outcomes of the application of the JCT and the estimate of the VECM established in this section. According to the economic formulation in Equation 7, the equilibrium relationship in the long run from which the ERPT will be estimated can be specified as:

$$iviu_t = \beta_0 + \beta_1 neer_t + \beta_2 ipi_t + \beta_3 w_t + \varepsilon_t \quad (12)$$

where ε_t represents the error term and the lowercase letters reflect the logarithms of the variables denoted in Table 1 above.

In the first place, it was not possible to reveal a viable cointegration vector estimating LR relationship at the Equation 10, since found cointegration relationships did not make economic sense taking into account that the coefficients did not respect the signs which are required by the economic theory. For this, we decided to review whether it would be doable to gather a subset of the variables which would allow a stationary linear combination that would lead to good ERPT estimation.

² ***, **, * denote that the null hypothesis of a unit root in the series can be rejected at the significance level of 1%, 5% and 10%. The maximum lag used was four quarter.

In the end, *iuvi* and *neer* have been designated as the cointegrated variables; therefore, the estimated LR relationship has been shown as:

$$i\text{viu}_t = \beta_0 + \beta_1 \text{neer}_t + \varepsilon_t \tag{13}$$

where we displayed the results of the estimation of the respective VECM in Table 4.

Johansen (1988) developed the method that allows the estimation of all the different cointegration relationships that may exist between the series by taking into account the VAR model. Since the JCT is based on VAR, the optimum number of lags of the established models must be determined and our selection is made according to the information criteria for determining the optimum lag length. Accordingly, it is significant to underline that the number of lags chosen was 5 and for the number of lags of the VECM was of order 4 to construct the fundamental VAR in Equation 9. Besides, centered seasonal dummies were introduced aiming to capture the possible existence of deterministic seasonality in order to capture the structure of temporal dependence of data in the quarterly frequency.

As Table 4 demonstrates, VECM was statistically adequate while the error vector has been adjusted to a multivariate normal (p-value = 0.369) and the errors are serially uncorrelated (p-value = 0.235). Both maximum eigenvalue and the trace tests reject the null range hypothesis for the matrix in Equation 10, while the second column displays that the range 1 hypothesis cannot be rejected by both tests, at the 95% confidence level.

Table 4. Johansen Cointegration Test and VECM ³

Null Hypothesis	r = 0	r ≤ 1	r ≤ 2
Trace Test	16.88**	1.64	---
Critical Value (95%)	15.41	3.76	---
Null Hypothesis	r = 0	r = 1	r = 2
Max-eigenvalue Test	15.23**	1.64	---
Critical Value (95%)	14.07	3.76	---
Estimation Pass-Through (p values in parentheses)			
Degree of Pass-through	-0.856 (0.029)		
Speed of Pass Through	-0.012(0.017)		
Diagnostic Statistic (VECM)			
Statistic Test	<i>Chi</i> ²	df	p-value
Normality	4.283	4	0.369

³ ** denotes that the null hypothesis can be rejected at the significance level of 5%.

LM-Test 5.553 4 0.235

Source: Author's calculations (2023).

Table 4 also shows that the estimate of the long term pass-through (β_1) is -0.856, demonstrating that 85.6% of the fluctuations of the NER are transmitted into the import prices (the pass-through is not complete) in the long term. On the flip side, given that (β_1) is significantly different from zero at the significance level of 5% in Equation 7 (where $(1 + \Omega) \neq 0 \Rightarrow \Omega \neq -1$). Therefore, the findings reveal that Türkiye's trading partners do not fully absorb ER fluctuations in the profit margin.

Another significant result derives from the parameter that measures the speed of the pass-through, whose estimate has been found as -0.0125, proving that the adjustment in short-term imbalances between import prices and the NER through increases or decreases in import prices is very slow; which means that the system corrects the imbalances of the previous period between *i\text{viu}_t* and *neer_t* in Equation 12 at the speed of 1.25 percent quarterly. This was obtained thanks to the estimation of an EC model as shown below:

$$\begin{aligned} \Delta i\text{uvi}_t = & 0.0029 - 0.0126(i\text{uvi}_{t-1} - 0.756\text{neer}_{t-1} + 8.231) \\ & (0.0033) \quad (0.005) \quad (0.347) \\ & - 0.1391\Delta\text{neer}_{t-1} + 0.8257 \Delta w_{t-1} \\ & + 0.0070sc2_t + 0.0007sc3_t + 0.0069sc4_t \\ & (0.0225) \quad (0.0454) \quad (0.0043) \\ & (0.0044) \quad (0.0043) \end{aligned} \tag{14}$$

Note: $T = 37$ (2010q1 – 2019q1), $R^2 = 0.9254$, $R^2_{Adj} = 0.9099$ with *sc2*, *sc3* and *sc4* centered seasonal dummies variables. Standard errors are in parentheses. The data are measured in logarithms.

Conclusion

This study focuses on the estimation of ERPT in Türkiye for 2010q1-2019q1. Departing from some of existing studies, this paper employs VECM approach. We revealed that in the long run 85.6% of the fluctuations of the NER are transmitted to the import prices (the pass-through is not complete), while the speed of adjustment to

equilibrium was -0.0125 . In conclusion, the imbalances between import prices and the NER in the quarter ($t-1$), are corrected in the quarter (t) to the speed of 1.25 percent quarterly.

Despite an important paper by Akgunduz et al. (2020) revealed that exchange rate changes get reflected rapidly into import prices, at a rate of 89% while the standard error of that estimate was about 0.03, we found the estimate is 0.76, which appears to be outside the 95% confidence range of Akgunduz et al (2020) estimate. Despite we know from Akgunduz et al. (2020) that the impact on import prices is essentially instantaneous (or, rather, takes place in the same month) and there isn't much of a lag, in contrast we found out a slower speed of adjustment, which is not perfectly in line with the data plots shown in Figures 1 and 2 in Akgunduz et al. (2020). We think that the reason for the slower adjustment is probably that the difference of import prices from its long-run relationship implied by the real exchange rate is likely dominated by energy prices in a very strong manner. Therefore, changes in oil prices etc. likely account for most of the residual of the cointegrating relationship. Energy prices are, after all, commodity prices—i.e., an asset price. In other words, one should not expect energy prices to exhibit strong mean reversion, and in fact they do not. This probably explains the absence of a strong speed of adjustment in the residual of the ERPT relationship, and that estimated speed may have nothing to do with the speed of adjustment of import prices to exchange rate changes.

The reason why we selected the study by Akgunduz et al. (2020) as a center of analysis is that it is one of the most recent and pioneer studies shedding light on how Turkish exchange rate changes are reflected into import prices.

In other respects, the expenditure switching policy seems to be not very successful to diminish the chronic CAD—due to the high dependence on imports, especially of raw materials and intermediate goods—, which together with the depreciation of the currency that has been accentuated from 2017, explain in part the increase of the ERPT and increasing inflation in 2018. Besides, it appears the impacts of the currency crisis in 2018 have not disappeared yet:

Fluctuations in the nominal exchange rate, inflation rate and current account balance continue in the last couple of years.

One limitation of our study might be the strong focus on the Turkish case only. A similar analysis can be conducted for other developing countries so that results can be compared the results. Within this framework, our study can be improved by applying similar methodologies for other developing countries like Indonesia, Mexico and South Africa etc. where appropriate.

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RESEARCH ARTICLE

The Relationship between the Technical Capabilities of Revenue Management and Firm Performance¹

Fırat Atbaş¹ | Mehmet Selami Yıldız²

¹ Phd, Düzce University,
Akçakoca School of Tourism and
Hotel Management,
Düzce/Türkiye

ORCID: [0000-0002-7124-9060](https://orcid.org/0000-0002-7124-9060)

E-Mail:
firatatbas@duzce.edu.tr

² Prof. Dr., Düzce University,
Faculty of Business
Administration, Düzce / Türkiye

ORCID: [0000-0002-6557-6372](https://orcid.org/0000-0002-6557-6372)

E-Mail:
selamiyildiz@duzce.edu.tr

Abstract

The study investigates the relationship between revenue management technical capabilities and firm performance, focusing on the hotel industry. It formulates hypotheses regarding the impact of market segmentation, demand forecasting, capacity allocation, and information technology on firm and marketing performance. The research employs a questionnaire-based data collection process to gather information from hotel managers, and the study's scales are adapted and validated to ensure reliability. The findings reveal significant relationships between market segmentation and financial performance, providing insights for hotels to optimize their operations and enhance their competitive edge. However, the study acknowledges limitations such as sample size constraints and the cross-sectional nature of the data, Proposing future research directions to overcome these limitations and investigate other factors affecting financial and marketing performance in the hotel sector.

Keywords: Revenue Management, Firm Performance, Hotel Management, Technical Capabilities.

Corresponding Author:
Fırat Atbaş

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Öz

Çalışma, otel sektörüne odaklanarak gelir yönetimi teknik yetenekleri ile firma performansı arasındaki ilişkiyi araştırmaktadır. Pazar segmentasyonu, talep tahmini, kapasite tahsisi ve bilgi teknolojisinin firma ve pazarlama performansı üzerindeki etkisine ilişkin hipotezler formüle etmektedir. Araştırma, otel yöneticilerinden bilgi toplamak için anket tabanlı bir veri toplama süreci kullanmaktadır ve güvenilirliği sağlamak için çalışmanın ölçekleri uyarlanmış ve doğrulanmıştır. Bulgular, pazar segmentasyonu ile finansal performans arasında önemli ilişkiler ortaya koyarak otellere operasyonlarını optimize etmeleri ve rekabet avantajlarını artırmaları için içgörüler sağlamaktadır. Ancak çalışma, örneklem büyüklüğü kısıtlamaları ve verilerin kesitsel yapısı gibi sınırlamaları kabul etmekte, bu sınırlamaların üstesinden gelmek ve otel sektöründe finansal ve pazarlama performansını etkileyen diğer faktörleri araştırmak için gelecekteki araştırma yönlerini önermektedir.

Anahtar Kelimeler: Gelir Yönetimi, Firma Performansı, Otel Yönetimi, Teknik Yetenekler.

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Introduction

In today's dynamic and highly competitive business environment, organizations are increasingly relying on sophisticated revenue management techniques to optimize their financial performance. Traditionally, revenue management focused on pricing strategies and inventory control. However, recent technological advancements have significantly transformed how firms approach these practices, introducing complex tools like big data analytics, artificial intelligence, and machine learning to manage revenues more effectively. These technical capabilities have reshaped the decision-making process, allowing businesses to respond to market fluctuations with agility and precision. In today's business world, the success of businesses depends on increasingly complex factors. One of them is the combination of revenue management technical capabilities and firm performance. The ability of businesses to effectively manage their revenue management processes not only increases short-term earnings as well as lays the foundation for long-term sustainable achievement. Nevertheless, the full extent of how revenue management technical abilities affect a company's performance remains unclear, particularly regarding the influence of qualified employees on financial outcomes.

El Haddad et al. (2008) stated that revenue management is an effective tool to allocate capacity to different categories in order to meet supply and demand and increase a firm's revenues by categorizing customers into different categories according to their purchasing intentions. Crystal (2007) describes revenue management technical capability as the set of technical procedures and practices that enable the application of RM strategies. When a company engages in revenue management, the initial action involves segmenting its customers and applying varied pricing strategies to each segment (Phillips, 2005). As a component of implementing diverse pricing strategies, the company needs to predict the demand for each customer segment and distribute capacity among these segments. This ensures an understanding of which customers to charge

specific prices and at what timing (Talluri and Van Ryzin, 2004, p.1580). Due to the critical data needed for analysis in revenue management, it's essential to examine these tasks within the framework of an Information Technology (IT) system. These processes, crucial for revenue management, establish the foundation for the technical proficiency in revenue management.

Another aspect under investigation is firm performance, which refers to the qualitative and quantitative assessment of planned endeavours aimed at attaining organizational objectives and outcomes (Kalmuk and Acar, 2015, p.167). In the face of continually evolving market conditions, organizations must enhance their performance to uphold creativity and preserve their competitive edge. Global competition requires organizations to closely monitor their performance. Organizations are increasingly recognizing the significance of not just financial performance but also non-financial performance in shaping strategic decisions and advancement. Presently, many organizations employ both financial and non-financial performance metrics (Akman, 2003, p.74).

Despite the growing significance of these innovations, the relationship between the technical capabilities of revenue management and firm performance remains underexplored in academic research. While numerous studies have examined the individual effects of revenue management and technology on business outcomes, fewer have integrated these dimensions to assess how technical capabilities in revenue management influence firm success. In terms of reflecting the conditions in the tourism sector in Turkey, it is important to conduct the study in hotels in Turkey. On the other hand, it is expected to contribute to the studies in this field by analysing the revenue management technical capabilities of hotel businesses. Given these contributions, this study aims to provide a framework for understanding how revenue management technical capabilities affect firms' performance, while providing practical recommendations for business managers, researchers and industry experts.

The need for this study is particularly pressing as industries like hospitality increasingly rely on technical innovations to enhance revenue

management practices. With the rise of digital transformation and data-driven decision-making, firms that leverage sophisticated revenue management systems are expected to gain a competitive edge. However, without a deeper understanding of how these technical capabilities directly contribute to performance outcomes, firms may struggle to realize their full potential. Therefore, this research aims to provide valuable insights into the mechanisms through which technical capabilities in revenue management can drive firm performance, offering practical recommendations for businesses seeking to optimize their financial outcomes in the digital age

2. Conceptual Framework

2.1. Revenue Management

As per Kimes and Wirtz (2003, p.128), revenue management is characterized as employing information systems and pricing tactics to assign appropriate capacity to specific customers, ensuring optimal timing and pricing alignment. Revenue management's earliest and most well-known application is found in the airline sector, where the challenge lies in selling a predetermined number of seats before every flight. In the hotel industry, revenue management practices are normally implemented due to five conditions: limited capacity, market segmentation and pre-purchase of service, uncertain future demand, perishable products, and cost and pricing structure (Guadix et al, 2010, p.522). In recent times, more and more companies have come to appreciate the significance of revenue management in enhancing their sales and profitability (Wirtz et al., 2003, p.520). A survey of existing literature indicates that the majority of previous research on revenue management has concentrated on forecasting and optimization models. Since the starting point of revenue management is airline companies, this application area has attracted more attention than hotel businesses (Guadix et al, 2010, p.522). Recent bibliometric analysis reveals that RM research in tourism and hospitality has shifted towards consumer orientation, with dynamic pricing, machine learning, and consumer behavior

emerging as dominant topics (Subying and Yoopetch, 2023).

Furthermore, the goal of revenue management is to optimize financial performance by establishing varying prices for identical offerings (Matsuoka, 2022, p.148). Nevertheless, these methodologies have the potential to disrupt the non-monetary aspects of managing customer relationships, such as the perception of value, customer satisfaction, and loyalty. Additionally, revenue management typically establishes elevated prices during periods characterized by high demand or congestion. Congestion may have adverse effects on service quality, leading to reduced perceived value, lower levels of customer satisfaction, and diminished customer loyalty (Guadix et al, 2010, p.522). Hence, revenue management can exert a dual negative influence on customer relationships: by simultaneously affecting objective pricing and occupancy levels, and by detrimentally impacting the non-monetary aspects of customer relationships (Matsuoka, 2022, 148).

2.2. Revenue Management Technical Capabilities

2.2.1. Market Segmentation

The first stage of a revenue management implementation is to study and understand the market. Then, market segmentation is the second part to execute an effective revenue management strategy. Market segmentation, as defined by Kotler et al. (2001, 245), involves categorizing a market into smaller buyer groups that have distinct needs, characteristics, or behaviors, which may require unique products or marketing strategies. The implementation of segmenting and targeting strategies can positively affect marketing performance, as better strategies lead to increased sales (Suyatno et al., 2023). For this reason, market segmentation will have a positive effect on firm performance. Accordingly, the first hypotheses of the study were developed as follows.

- **H₁:** Market Segmentation positively affects Firm Performance.
- **H_s:** Market Segmentation positively affects Marketing Performance.

2.2.2. Pricing

After segmenting customers, a company must establish prices for each group. Pricing is defined as the process of setting charges with the goal of maximizing revenue from the company's customers (Vorhies and Morgan, 2005, p.80). Revenue management enables firms to increase revenue by charging higher prices to certain customers compared to others (Monroe, 2003). Pricing, regardless of its complexity, is deemed a crucial component of revenue management (Preslan and Newmark, 2004), thus acknowledged as one of its technical capabilities. Also, pricing research in hospitality and tourism has experienced significant content enrichment, with growing interest in sharing economy accommodations and the interplay between pricing and electronic word-of-mouth ([Han and Bai, 2022](#)). In the study conducted by Töytäri, Keränen and Rajala (2017), it is stated that if pricing is managed based on customer value, the financial performance and profitability of companies increases. For this reason, pricing will have a positive effect on firm performance. Accordingly, the hypotheses of the study were developed as follows.

- **H₉**: Pricing positively affects Firm Performance.
- **H₁₀**: Pricing positively affects Marketing Performance

2.2.3. Demand Forecasting

Following market analysis and segmentation, the subsequent step is demand forecasting, which serves as the cornerstone of all revenue management efforts. The accuracy of this forecast is paramount for the revenue management system's effectiveness. Inaccurate forecasting can result in subpar inventory management and decreased revenue. Organizations must possess comprehensive insights into historical demand patterns derived from market demand and be proficient in methods for projecting current demand to successfully implement a revenue management system. In numerous service industries, product demand exhibits one or

multiple recurring patterns and trends (Gupta and Zeithaml, 2006, p.720). Further, Demand forecasting is the process of estimating the rate at which consumers will demand goods and services in determining future production levels. When looking at the types of forecasts, they are classified in terms of the time they cover as short-term forecasting, medium-term forecasting and long-term forecasting (Şahin ve Taşkesen, 2022). The study conducted by Zhang and Si (2022) examines the positive effects of demand forecasts on operational efficiency and firm performance in supply chain processes. The positive impact of accurate demand forecasts on inventory management, cost control and overall financial performance is emphasized. For this reason, demand forecasting will have a positive effect on firm performance. Accordingly, the hypotheses of the study were developed as follows.

- **H₂**: Demand Forecasting positively affects Firm Performance.
- **H₆**: Demand Forecasting positively affects Marketing Performance.

2.2.4. Capacity Allocation

Talluri and van Ryzin (2004, p.3) define capacity allocation as the process of deciding whether to accept or reject a purchase offer, determining how to distribute capacity among different segments or channels, and choosing when to either withhold a product from the market or sell it at a later time. Every time a new customer arrives, practitioners of revenue management must make the decision of whether to allocate current capacity to the incoming customer or reserve it for a potential customer willing to pay a higher price, with no certainty that such a customer will materialize (Cavusoglu and Macário, 2021). Businesses employ allocation algorithms that consider the probability of future demand when assigning capacity. Essentially, in an environment of constrained supply, companies aim to maximize profit by selling this supply at the highest possible price (Crystal, 2007). The concept of capacity allocation is a key part of revenue management and is therefore included in revenue management technical capabilities. The study by Pereira et al.

(2016) provides a specific example of how capacity allocation and management in hotels affects firm performance. For this reason, capacity allocation will have a positive effect on firm performance. Accordingly, the hypotheses of the study were developed as follows.

- **H₃**: Capacity allocation positively affects firm performance.
- **H₇**: Capacity allocation positively affects Marketing performance.

2.2.5. Information Technologies

Information technologies play a crucial role in the hotel industry, impacting various aspects of operations and guest experiences. IT adoption can enhance hotel branding, customer loyalty, and business performance (Varelas et al., 2021). Practitioners base revenue management decisions on extensive datasets stored, cleaned, and analysed within an information technology system, thereby incorporating information technology into their technical specifications. According to Stratman and Roth (2002), information technology encompasses the hardware, software, and personnel necessary for designing and maintaining information systems that support business operations. Firms must make good use of information technology resources to successfully use revenue management. Based on the data and programs within an IT system, companies can segment markets, grasp consumers' price elasticity, and allocate capacity more efficiently (Talluri and Van Ryzin, 2004). In the study conducted by Mithas, Tafti, and Mitchell (2013), it is emphasized that the strategic implementation of information technologies positively impacts firms' operational and financial performance. The study demonstrates that the use of digital strategies and information technologies provides a competitive advantage, thereby enhancing firm performance. Therefore, it can be said that information technologies will have a positive effect on firm performance. Accordingly, the hypotheses of the study were developed as follows.

- **H₄**: Information Technology positively affects Firm Performance.

- **H₈**: Information Technology positively affects Marketing Performance.

2.3. Firm Performance

Businesses are established with diverse objectives, whether driven by profit motives or not. The operator's performance is primarily gauged by their contributions and achievements in managing the business, facilitating its operation, growth, and development. Performance constitutes a multifaceted concept, with outcomes varying depending on the factors assessed (Zhou et al., 2007, p.160).

The concept of performance is delineated in various manners within the literature. Due to its complexity in measurement, conceptualization, and definition, researchers evaluate it from diverse perspectives (Folan et al., 2007). Taouab and Zineb (1987) equate performance with organizational effectiveness, defining it as criteria for assessment: productivity, relevance, and institutionalization. Robbins (1987) defined performance as the extent to which an organization, viewed as a social system, effectively considers both its resources and its objectives. Lastly, Cohen (1994) highlights the connection between performance and productivity by examining the outcomes achieved by a business in relation to the resources utilized.

Previously, performance measurement was based entirely on financial indicators reflecting the short-term situation. However, performance measurement systems based only on financial indicators based on past data do not provide sufficient contribution to managers' decision-making processes for the future (Voelker et al., 2001). In addition to financial statements based on past data, non-financial dimensions should be evaluated for the future. These dimensions can be expressed as quality, flexibility, innovation, speed, customer satisfaction, shareholder satisfaction, internal efficiency and personnel development (Yıldız et al., 2010). In short, organizations should evaluate the present as well as the past in their performance measurement processes. Scholarly literature suggests that relying solely on financial indicators for performance measurement is inadequate. Therefore, in this study, both financial

and non-financial indicators will be used in performance measurement.

3. Methodology of the Study

This section outlines the research objectives and sub-objectives, establishes the research model, and describes the methodology employed, which includes the research population, data collection tools, process, and analysis procedures.

3.1. Research Model

The purpose of a research explains a general statement that reveals the ultimate goals of the study. Therefore, the purpose of a research should be of a quality that reveals the research problem, the problem to be solved in the research, the basic concepts of the research and the relationship between these concepts (Bilgin, 2015).

The primary aim of the research is to uncover the interconnections among the facets of revenue management technical capabilities, encompassing market segmentation, pricing, demand forecasting, capacity allocation, and information technologies, and their impact on firm performance. Using the model crafted within the research framework, the relationships between dependent and independent variables will undergo testing, and hypotheses will be formulated and subsequently tested.

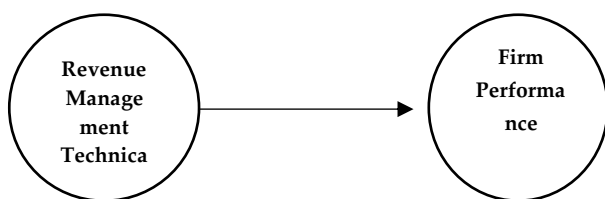


Figure 1. General Model of the Study

The model, which details the sub-dimensions of the variables in the general framework, illustrates the mediating effect of customer relationship management on the relationship between revenue management technical capabilities and firm performance, and is constructed as follows.

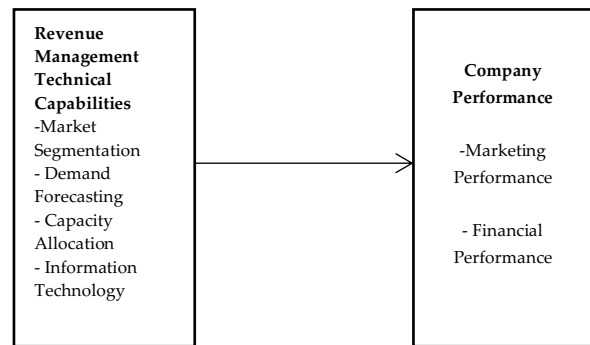


Figure 2. Detailed Model of the Study

3.2. Population and Sample

On September 22, 2002, in addition to the seven geographical regions traditionally used, a new regional classification was established. In line with Turkey's harmonization process with the European Union, in accordance with Law No. 2002/4720, the State Planning Organization and the Turkish Statistical Institute established three different levels of NUTS regions (TUIK, 2020).

The names of the regions and the provinces in the regions that constitute the universe of the study are as follows (TÜİK, 2020):

- TR1: Istanbul, TR2- WEST MARMARA, TR21: Tekirdağ, Edirne, Kırklareli, TR22: Balıkesir, Çanakkale, TR4: EAST MARMARA, TR41: Bursa, Eskişehir, Bilecik, TR42: Kocaeli, Sakarya, Bolu, Düzce, Yalova (TUIK, 2020).

The population of this study, in which the quantitative research method was used, consists of 3, 4 and 5 star hotel establishments with Tourism Operation Certificates operating in TR1, TR2 and TR4 regions. The data needed for the research were collected from the enterprises included in the "Tourism Business Certified Facilities" statistical data of the General Directorate of Investment and Enterprises of the Ministry of Tourism for the year 2020. In the said data, 3, 4 and 5 stars and hotel options were selected from the facility class and facility type filter categories and filtered. According to data from the Ministry of Culture and Tourism as of February 2020, there are 680 3, 4, and 5-star hotels with Tourism Operation Certificates operating in the TR1, TR2, and TR4 regions of Turkey (Table 1).

Table 1. 3,4 and 5 Star Hotel Establishments with Tourism Management Certificate in TR1, TR2 and TR4 Regions

Provinces	3 STAR	4 STAR	5 STAR	Total Number of Hotels
Balıkesir	29	11	5	45
Bilecik	2	1	-	3
Bolu	5	6	4	15
Bursa	26	21	10	57
Canakkale	34	8	2	44
Duzce	5	2	1	8
Edirne	10	1	1	12
Eskisehir	19	5	3	27
Istanbul	132	142	111	385
Kirklareli	4	-	1	5
Kocaeli	16	14	6	36
Sakarya	6	6	4	16
Tekirdag	10	5	2	17
Yalova	4	4	2	10
Total	302	227	151	
General Total				680

Source: General Directorate of Investment and Enterprises (20.02.2020)

Tabachnick and Fidell (2013) state that according to the formulas used in multivariate statistical analyses, there should be at least 10-15 participants for each independent variable in order for the sample size to have sufficient power. When the values were placed in the sample calculation formula, the sample size was calculated as 246 with a 95% confidence interval. As a result of the study, 317 questionnaires were collected. Hence, the quantity of questionnaires gathered was deemed to be indicative of the population. The table below shows the distribution of the surveyed hotels according to the number of stars. In addition, the proportional sample size according to the number of stars of the hotels was calculated and shown in Table 2.

Table Hata! Belgede belirtilen stilde metne rastlanmadı.2. Hotels Surveyed by Number of Stars

	3 STAR	4 STAR	5 STAR	Total
Survey Collected	112	130	75	317

Table 3. Sample Size Proportional to the Number of Stars

Provinces	3 STAR	4 STAR	5 STAR	Total Number of Hotels
Total	302	227	151	680
Proportional Sample Size	109	82	55	

Sample Size: 246 (95% Confidence Level 5% Margin of Error)

When the tables above are examined, the number of hotels targeted to be reached according to the proportional sample size was determined according to the star class before starting the research. As can be seen in the tables, the number of questionnaires collected was as targeted.

3.3. Data Collection Tools

The most appropriate scales for the research topic were determined with the help of academicians specialized in revenue management technical capabilities and firm performance. For firm performance, a previously validated and reliable scale was used. For revenue management technical capabilities, the scale was adapted by applying content validity.

In this section of the study, details regarding the questionnaire employed as a quantitative data collection tool are elucidated. The questionnaire is structured into four parts. The initial segment of the questionnaire focuses on, market segmentation, pricing, forecasting, capacity management, information technologies, which are the technical capabilities of revenue management, were tried to be determined with Likert scale questions. In this section, statements aiming to determine the frequency of application of revenue management techniques coded as 1-"Strongly Disagree", 2-"Disagree", 3-"Neither agree nor disagree", 4-"Agree", 5-"Strongly Agree" on a five-point Likert scale were included. Secondly, the evaluation of the firm's performance according to competitors was tried to be determined with a five-point Likert-type scale. In the fourth part of the questionnaire, it was tried to obtain information about the socio-demographic characteristics of the managers who answered the questionnaire and the main characteristics of the hotel businesses they work in.

3.3.1. Scales of the Study

The research conducted in the literature revealed the existence of a scale developed by Crystal (2007) concerning revenue management technical capabilities. In the study conducted by Gür and Yıldız (2016), the scale developed by Crystal (2007)

was used and it was seen that its validity and reliability were ensured. As part of this study, adaptation studies were conducted on the revenue management technical skills scale prepared by Crystal. The Market Segmentation section consists of 5 questions, Pricing 7 questions, Demand Forecasting 6 questions, Capacity Allocation 6 questions and Information Technology 4 questions. In the initial phase of the adaptation study, the scale was translated into Turkish by proficient translators. After the Turkish translation, it was translated back into English to check whether there was a change in meaning, and finally, it was translated back into Turkish by experts. There are some techniques that were used to finalize the scale by getting opinions from experts. One of these techniques is the Lawshe technique and another is the Davis technique. Within the scope of the research, Davis technique was used to finalize the scale of revenue management technical capabilities. Thus, the scale of revenue management technical capabilities was finalized.

The revenue management technical capabilities scale consists of market segmentation, pricing, demand forecasting, capacity allocation and information technology dimensions. Revenue management technical capabilities consist of 28 questions in total. In order to measure the variable of revenue management technical capabilities, a scale with twenty-eight statements, the validity and reliability of which have been previously tested, was used. The statements in the scale are suitable for the field and the field study.

The items for the firm performance variable were adopted from the study conducted by Öncü and Kethüda (2012), which had established validity and reliability. In this study, the Cronbach's alpha coefficient for the scale was determined to be 0.89, affirming its reliability. Consequently, the decision was made to incorporate the firm performance scale into the current study.

3.4. Data Collection

The survey implementation process, initiated in June 2020, concluded in February 2021 after seven

months of endeavour. Ethics committee permission for this study was obtained with the decision of Düzce University Social Sciences Institute Ethics Committee dated 14/05/2020 and numbered 2020/71. Notably, on March 11, 2020, the Ministry of Health confirmed the first case of the COVID-19 pandemic in Turkey. Due to the pandemic that affected the world, many hotel establishments had to remain closed. Therefore, it took more time than expected to reach the data of the research. The contact information of the hotel establishments with tourism business certificates, which constitute the research population, was obtained from the official website of the Ministry of Culture and Tourism. The data of the research were obtained from the managers of tourism certified hotel establishments operating in the provinces located in TR1, TR2 and TR4 regions through face-to-face, telephone and e-mail surveys. Before the field research was conducted, the people who voluntarily participated were informed about the research. The data collection process consisted of the interviewer reading the questions and the respondent selecting the appropriate option. The participants were duly informed that the outcomes would be utilized solely for academic purposes.

3.5. Data Analysis

Within the scope of the research, factor analyses will be conducted to determine how many different sub-dimensions and at what level the scales related to the dimensions of revenue management technical capabilities and firm performance are perceived by the managers of the hotel enterprises participating in the research.

The statistical technique employed for the analysis can be termed Exploratory Factor Analysis (EFA) or descriptive factor analysis. This method operates under the assumption that any indicator or variable can be associated with any factor. Factor analysis serves as a tool to condense a large number of variables into a smaller set of factors. It aims to extract the maximum shared variance from all variables and consolidate them into a unified score (Nishantha et al., 2019: 66).

Structural equation modelling will also be used in the research. The purpose of structural equation modelling in its most common form is to account for the variation and covariation of measured variables. Structural equation modelling method is a method that is used in testing many theories and developing new models due to its usefulness in testing complex models, facilitating the detection of mediation and moderating effects, conducting a large number of analyses at once, taking into account measurement errors, and recommending new arrangements, if necessary, regarding the relationships in the examined model (Dursun and Kocagöz, 2010, p.2).

4. Findings

In this section of the research, the data collected from hotel operations will undergo analysis, and interpretations will be drawn based on the findings. Initially, demographic characteristics of the participants in the field research will be outlined. Subsequently, validity and reliability analyses of the scales used in the research will be conducted. Finally, the findings pertaining to the relationships and distinctions between the variables will be presented.

4.1. Findings Related to Participants and Hotel Establishments

In this section, findings regarding some characteristics of the participants and the hotel establishments where they work are presented.

4.1.1. Findings Related to Participants

Survey questions were asked to hotels that had a revenue manager and to department managers who could answer questions in that area in hotels that did not have one. Each hotel was represented by a senior manager. Demographic data on the hotel managers who completed the questionnaire form are presented in Table 4.

The study revealed that the majority of hotel managers surveyed were male, with 19.9% being female and 80.1% male. Additionally, most respondents were over the age of 30 and possessed a bachelor's degree. Regarding tenure, 39.4%

reported 0-4 years, 27.8% reported 5-9 years, 13.9% reported 10-14 years, 8.8% reported 15-19 years, and 9.8% reported 20 years or more in their current position. Notably, over 50% of participants had been employed at the same hotel for four years or longer.

Table 3. Findings Related to Participants

Individual Data		F	%
Gender	Woman	63	19,9
	Male	254	80,1
	Total	317	100,0
Age	20-39	55	17,4
	30-39	145	45,7
	40-49	82	25,9
	50-59	27	8,5
	60 and above	8	2,5
	Total	317	100,0
Education Status of Participants	High School	48	15,1
	Associate Degree	20	6,3
	Undergraduate	228	71,9
	Postgraduate	21	6,6
	Total	317	100,0
How many years have you been working in this position	0-4 Years	126	39,7
	5-9 Years	88	27,8
	10-14 Years	44	13,9
	15-19 Years	28	8,8
	More than 20 Years	31	9,8
	Total	317	100,0
Duration of the Participants' Employment in the Hotel Management	Less than 1 Year	25	7,9
	1-3 Years	98	30,9
	4-6 Years	102	32,2
	7-10 Years	52	16,4
	More than 10 Years	40	12,6
	Total	317	100,0

Table 5 shows the characteristics of the hotel establishments that completed the research questionnaire.

Table 4. Characteristics of Hotel Establishments

		F	%
Hotel's Year of Operation	0-4 Years	53	16,7
	5-9 Years	129	40,7
	10-14 Years	11	3,5
	15-19 Years	47	14,8
	More than 20 Years	77	24,3
Hotel Status	Hotel company of an international chain	90	28,4
	A hotel affiliated to a national chain	36	11,4
	National hotel company (Inc.)	73	23,0
	National Sole Proprietorship Hotel Business (Independent)	118	37,2
	Yes	152	47,9
No.	165	52,1	

Revenue Manager Availability	Total	317	100,0
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When we look at the general characteristics of the hotel establishments where the research was conducted; it is seen that more than 50% of the hotels have been operating for 5 years or more. When the data of the research are analysed, it is seen that most of the hotels are national hotel establishments. When asked whether a software related to revenue management is used in the hotels where the research was conducted, 56.8% of the managers answered yes and 43.2% answered no. These rates show that the rate of use of revenue management software in the hotels subject to the research is not very high. While 47.9% of the hotels have a revenue manager, 52.1% do not have a revenue manager. This rate is similar to the rates of revenue management software.

4.2. Findings On Research Variables

4.2.1. Findings on the Reliability of the Scales

Factor analyses were employed to assess the construct validity of the scales measuring revenue management technical capabilities and firm performance in the study. Furthermore, Cronbach's alpha was utilized to evaluate the reliability of these scales. The following table presents the outcomes of the reliability analysis for the scales utilized in the research.

Table 5. Reliability Analysis Results of Research Variables

Variables	Dimensions	Number of Statements	Cronbach's Alpha (A) Values
Revenue Management	Market	5	0,797
	Segmentation		
Technical Skills (0.892)	Pricing	7	0,710
	Demand Forecasting	6	0,802
	Capacity Allocation	6	0,768
	Information Technology	4	0,842
Firm Performance		10	0,845

In social sciences research, Cronbach's alpha value of 0.70 and above is considered sufficient for reliability (Nakip, 2006, p.146). When Table 6 is analysed, it is seen that the reliability of the revenue management technical capabilities, customer relationship management and firm performance scales used in the research are at an acceptable level.

4.2.2. Factor Analysis

Exploratory factor analysis was first applied to the variables of revenue management technical capabilities and firm performance. The findings related to these variables are shared in the following sections.

4.2.2.1. Exploratory Factor Analysis of Revenue Management Technical Capabilities

The results of factor analysis and variance explained for revenue management technical capabilities are shown in table 7.

Table 6. Revenue Management Technical Capabilities Factor Analysis Results

Mediating Variable of the Study		Rotated Factor Loadings	Aritmetic Mean	Variance %	Cumulative Variance %
Demand Forecast	TT1 Compared to our competitors, our hotel's demand forecasts are more accurate.	,653	4,268139	12,03	12,03
	TT2 Demand forecasts are regularly updated according to developments.	,711			
	TT3 We use demand forecasts from various sources to make business decisions.	,575			
	TT4 We use accurate and up-to-date data for demand forecasts.	,594			
	TT5 Our hotel accurately tracks customers who have canceled their reservation and whose reservation request has been rejected.	,702			
	TT6 We take into account projected demand forecasts when making business decisions	,593			
Market	PB1 We group our customers according to our business strategy.	,719	3,966562	11,91	23,94
	PB2 We categorize customers based on similar	,796			

	purchasing characteristics.			
	PB3 We have customer groups categorized according to identifiable characteristics.	,700		
	PB4 Taking into account different customer groups, we differentiate the promotion of our hotel for each group.	,650		
	P5 We regularly review whether we have well-defined market segments.	,696		
Information Technology	BT1 Our Information Technology (IT) adequately supports the revenue management system.	,763	4,19475	
	BT2 We create solutions in our computer system to complete routine Revenue Management tasks.	,798	11,39	35,34
	BT3 The Revenue Management Information Technologies system meets the needs of our hotel.	,729		
	BT4 Our reservations and revenue management system are integrated in real time.	,784		
Capacity Allocation	KT2 We have the tools to make profitable, analytics-based booking decisions for groups.	,643	4,144374	10,88 46,22
	KT3 We overbook customers in a logical way, understanding that the occasional unbooked customer is part of our goal to increase revenue.	,637		
	KT4 Our hotel is constantly full on a certain night of the week.	,702		
	KT5 When analyzing the value of specific customers, in addition to the room rate, other expenses (food, beverages, spa, etc.) are also taken into account.	,687		
	KT6 We have rooms where we can always accommodate our important clients.	,622		
	Pricing	F1 When setting room rates, we consider the impact of the price on customer satisfaction and its impact on short-term revenue.	,582	4,24816
F2 Our hotel has an effective policy that it uses to set room rates.		,452		
F3 We set our room rates according to the value of the room in the eyes of the customer.		,697		
F4 We also take competitors into account when deciding on room rates.		,652		
F5 When setting room rates, we take into account the customers' reaction to the price change.		,618		

Factor extraction method: Principal component analysis; Rotation method: Verimax; KMO Sampling Adequacy: 0.854%; p=0.000(1) Strongly disagree, (2) Disagree, (3) Neither agree nor disagree, (4) Agree, (5) Strongly agree

When the table is examined, factor analysis was performed to determine the dimensions related to the revenue management technical capabilities of hotel businesses and as a result of the analysis, it is seen that the KMO and Bartlett test values are suitable for factor analysis (KMO value 0.854. Bartlett Test result $p < 0.001$). This value is accepted as a valid value according to many sources in the literature (Field, 2009; Pallant, 2013)

In the factor analysis of revenue management technical capabilities, a varimax transformation was applied, and factors that were deemed irrelevant were excluded. Initially, it was noted that revenue management technical capabilities comprised six dimensions. However, items such as s19, s11, and s12 were eliminated from the analysis due to loading on multiple factors with minor distinctions. Consequently, the analysis revealed that the revenue management technical capabilities factor retained six dimensions.

According to Tabachnick and Fidell (2007), the factor loading should be .30 or greater because any lower value indicates a really weak relationship between the variables. After removing the items that loaded with low factor loadings, the factor analysis was repeated and it was seen that revenue management technical capabilities consisted of five dimensions. The explained variance table is important in factor analysis. Explained variance exceeding 50% is an important criterion in factor analysis. If the factor structure created within the scope of the study explains less than 50% of the variable variance, it can be said that it is not representative (Yaşlıoğlu, 2017, p.77). Based on the findings within the research scope, it was established that the explained variance ratio amounted to 55.195%. This outcome suggests a relationship between the variables, indicating the suitability of applying factor analysis.

4.2.2.2. Confirmatory Factor Analysis of Revenue Management Technical Capabilities

In the study, Confirmatory Factor Analysis was performed to confirm that the factor structure

derived from Exploratory Factor Analysis accurately represents the data and to ensure that the model fits well within the context of our research objectives. No items were added or removed in the CFA phase. Instead, we focused on validating the factors previously identified in the EFA. The aim was to verify that the items loading on each factor were indeed appropriate and that the overall model met the established goodness-of-fit criteria.

Confirmatory factor analysis was conducted on the independent variable of the study prior to path analysis. Below are the standardized values obtained as a result of this analysis. The findings of the primary level confirmatory factor analysis for the market segmentation, pricing, demand forecasting, capacity allocation and information technology dimensions of revenue management technical capabilities are presented below.

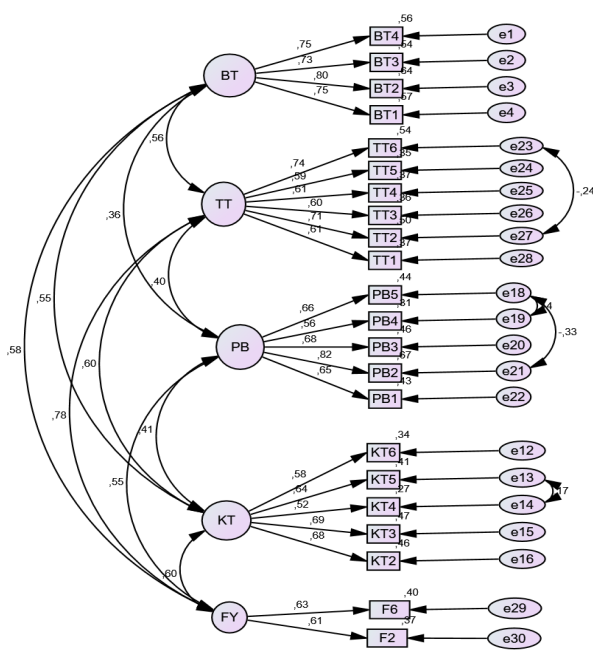


Figure 3. Revenue Management Technical Capabilities Primary Level Confirmatory Factor Analysis

Confirmatory factor analysis was performed on the revenue management technical capabilities variables using the Amos program. The outcome of the confirmatory factor analysis is illustrated in Figure 4.1. During the confirmatory factor analysis, the factor loadings for each item were scrutinized, and items exhibiting low factor loadings (<0.50) were eliminated from the model. Specifically, the

KT1 item pertaining to capacity allocation was excluded from the model due to its low factor value.

To be termed a factor, an entity typically requires a minimum of three variables, although this criterion may vary based on the study's framework. As a rule of thumb, interpreting rotated factors containing two or fewer variables should be approached cautiously. A factor composed of two variables is deemed dependable only if these variables exhibit a strong correlation between them ($r > .70$) while maintaining low correlations with other variables, as outlined by Tabachnick and Fidell in 2007. Therefore, as a result of confirmatory factor analysis, the pricing dimension, which was reduced to F6 and F2 variables as indicated in Figure 3, whose factor loadings were less than $r > .70$, was removed from the model.

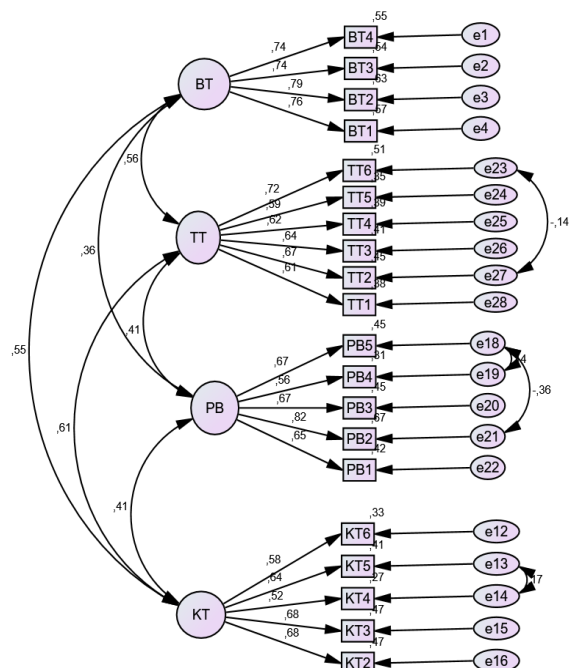


Figure Hata! Belgede belirtilen stilde metne rastlanmadı.4. Four-Dimensional Revenue Management Technical Capabilities Primary Level Confirmatory Factor Analysis

The following table of goodness-of-fit values summarizes the basic goodness-of-fit statistics and their acceptable values commonly used in the field of structural equations modeling (SEM).

Table 8. Fit Indices Table

Goodness of Fit Statistic	Good Fit	Acceptable
Chi-Square (χ^2)	≤ 3	≤ 5
GFI (Goodness of Fit Index)	$\geq 0,95$	$\geq 0,90$

CFI (Comparative Fit Index)	≥ 0,97	≥ 0,90
TLI (Tucker-Lewis Index)	≥ 0,95	≥ 0,90
RMSEA (Root Mean Square Error of Approximation)	≤ 0,05	≤ 0,08

Source: Meydan, C. H., ve Şeşen, H. (2011). *Yapısal Eşitlik Modellemesi: Amos Uygulamaları*. Ankara: Detay Yayın;

When the fit index values resulting from the linear factor analysis are examined, it can be stated that the model is a valid and statistically significant model since the significance value of the model is less than 0.05. CMIN/DF (χ^2 value)= 1,545 and RMSEA= ,042 for the measurement model. In his study, Kline (2011) defines various fit indices that are important for evaluating model fit and provides information about appropriate value ranges. Since these findings are among the acceptable fit values, they indicate an acceptable fit. On the other hand, NFI=,910; CFI=,958; IFI=,958 and TLI=,959 and these values indicate a high level of fit. As a result, the findings of the analysis show that Revenue management technical capabilities is a valid model since the fit indices are within the acceptable fit values in the literature.

Kline, model uyumunu değerlendirmek için önemli olan çeşitli uyum indekslerini tanımlamakta ve uygun değer aralıkları hakkında bilgi vermektedir.

4.2.2.3. Exploratory Factor Analysis of Firm Performance

The results of the factor analysis and variance explained for Firm Performance are shown in Table 8.

Table 9. Firm Performance Factor Analysis Results

Variable of the Study		Rotated Factor Loadings	Arithmetic Mean	Variance %	Cumulative Variance %
Marketing Performance	PP1 Customer Satisfaction	718		34,7	34,79
	PP2 Customer Trust	770		90	0
	PP3 Customer Loyalty	796	3,84		
	PP4 Worker Satisfaction	764	06		
	PP5 Employee Training	727			
	PP6 Number of Innovations	732			
Financial Performance	FP1 Occupancy Rate	,807		28,2	63,03
	FP2 Turnover Profitability	,866	4,12	49	9
	FP3 Return on Capital	889			
	FP4 Return on Investment	723			

According to Field (2013), it is stated that the model will be considered sufficient if the total variance in factor analysis is above 50%. Field states that the variables are adequately represented and exceeding this rate will increase the reliability of the model. Upon applying factor analysis to the performance measurement scale, the identification of 2 factors with eigenvalues exceeding 1 was noted. These two factors, derived from the analysis, collectively account for 63.039% of the total variance. 6 ideas are under the first factor and 4 factors are under the second factor. These two factors include financial and marketing related indicators. Therefore, the factor containing marketing indicators is named 'Marketing Performance'. The second factor is named 'Financial Performance' since it includes financial indicators. The data subjected to factor analysis in order to determine the dimensions of firm performance of hotel businesses are found to be suitable for factor analysis since the KMO and Bartlett's value is 0.840 and Bartlett's test result is $p < 0.01$.

4.2.2.4. Firm Performance Confirmatory Factor Analysis

Before conducting path analysis on Firm Performance, which is one of the dependent variables of the study, primary level confirmatory factor analysis was applied. The standardized values determined as a result of the analysis are given below. The findings related to the primary level confirmatory factor analysis applied to the financial performance and marketing performance dimensions of Firm Performance are given below.

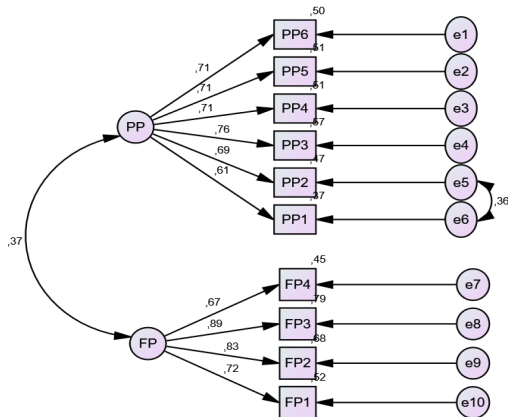


Figure 5. Firm Performance Primary Level Confirmatory Factor Analysis

When the fit index values resulting from the linear factor analysis are examined, it can be stated that the model is a valid and statistically significant model since the significance value of the model is less than 0.05. CMIN/DF (χ^2 value)=2,844 and RMSEA= ,076 of the measurement model. Since these findings are among the acceptable fit values, they indicate an acceptable fit. On the other hand, NFI=,935; CFI=,957; IFI=,957 and TLI=,941 and these values indicate a high level of fit. As a result, the findings of the analysis show that the Firm Performance model is a valid model since the fit indices are within the acceptable fit values in the literature.

4.3. Testing the Impact of Revenue Management Technical Capabilities on Firm Performance

In this section, the effect of revenue management technical capabilities, which are the independent variables of the study, on firm performance will be tested. Revenue management technical capabilities consist of market segmentation, demand forecasting, capacity allocation and information technology. Hotels practicing revenue management are expected to have different firm performance compared to their competitors.

4.3.1. Findings Related to Path Analysis

Path analysis determines the structural relationship between quantitative variables. In addition, it is a method used to determine the proportion of direct and indirect effects of independent variables on dependent variables (Koyuncuoglu et al. 2012). Path coefficient (p) number is the standardized regression coefficient showing the direct effect of the independent variable on the dependent variable (Karagöz, 2016: 1069). Three types of effects can be mentioned in path analysis; direct, indirect and total effects. The effect of a variable without any intermediary is called direct effect, and the effect of a variable on another variable through a third variable (intermediary variable) is called indirect effect.

Path analysis was conducted to reveal the relationship between revenue management technical capabilities and firm performance and to test the hypotheses. The output below shows the standardized direct effects of path analysis between variables.

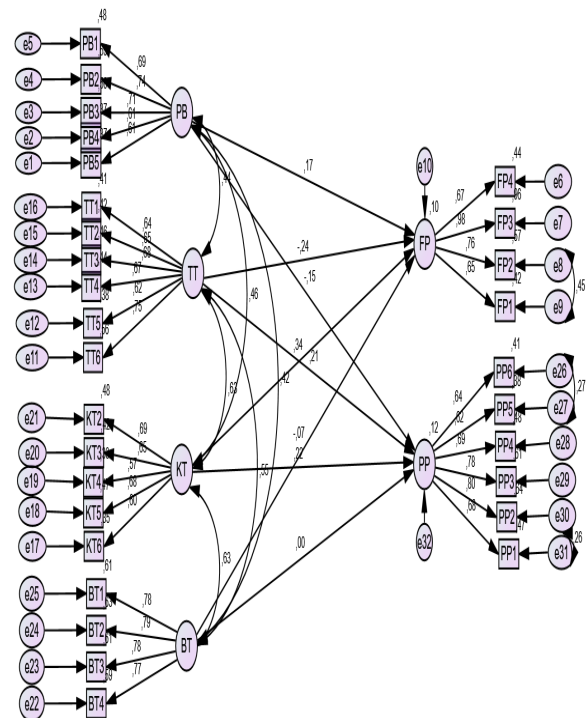


Figure 6. Path Analysis Showing the Relationship between Revenue Management Technical Capabilities and Firm Performance (CMIN/DF:1.900; RMSEA= 0.056; CFI: ,905; IFI: 0.906; TLI: 0.902)

Figure 5.1 shows only the paths towards significant relationships at the 0.05 (95%) significance level. In order to increase the goodness of fit values, covariances were introduced between some latent variables and the model was found to be supported by the data. SEM results for the relevant model are shown in Table 9.

The SEM results for the research model, standardized regression coefficients (β), critical ratio (C.R.), multiple coefficient of determination (R^2) and significance (p) values for structural relationships are shown in the Table 9. The results show that there is a same directional relationship between financial performance and market segmentation (.166); there is an inverse relationship between financial performance and demand forecasting (-.237); there is a same directional relationship between financial performance and capacity allocation (.338) and finally there is an inverse relationship between financial performance and information technology (-.071). It is confirmed at 0.05 significance level that the independent latent variable financial performance explains 10% of the dependent latent variables market segmentation, demand forecasting, capacity allocation and information technology. The rate that the independent variable cannot explain is 90%.

Table 10. Research Model SEM Results (N=317)

Structural Relationships	Standardized Regression Coefficient	Critical Ratio (C.R)	R ²	P	Hypotheses	Hypothesis Results
FP < ---PB	,166	2,029	,10	,042	H1	Supported
FP < ---TT	-,237	-2,354		,019	H2	Supported
FP < ---KT	,338	2,818		,005	H3	Supported
FP < ---BT	-,071	-0,747		,455	H4	Not supported
PP < ---PB	-,150	-1,762	,12	,078	H5	Not supported
PP < ---TT	,211	2,046		0,41	H6	Supported
PP < ---KT	,222	1,851		0,50	H7	Supported
PP < ---BT	,004	0,038		,970	H8	Not supported

There is an inverse relationship between marketing performance and market segmentation (-,150); there is a same directional relationship between marketing performance and demand forecasting (-,211); there is a same directional

relationship between marketing performance and capacity allocation (,222) and finally there is a same directional relationship between marketing performance and information technologies (,004). It is confirmed at 0.05 significance level that the independent latent variable marketing performance explains 12% of the dependent latent variables market segmentation, demand forecasting, capacity allocation and information technology. The rate that the independent variable cannot explain is 88%.

When Table 9 is analyzed, it is seen that market segmentation has a statistically significant and positive effect on the financial performance of hotel businesses (β : ,166 p<0.05). Moreover, demand forecasting affects financial performance negatively (β : -,237 p<0.05) and capacity allocation affects financial performance positively (β : ,338 p<0.05). In addition, demand forecasting (β : ,211 p<0.05) and capacity allocation (β : ,222 p<0.05) positively affect marketing performance. In this context, the results of the accepted and rejected hypotheses are as shown in Table 9.

5. Conclusion and Discussion

The study focuses on the relationship between revenue management technical capabilities and firm performance. The research model includes revenue management technical capabilities such as market segmentation, demand forecasting, capacity allocation, and information technology, and their impact on marketing and financial performance. The study uses both financial and non-financial indicators for performance measurement, emphasizing the importance of evaluating non-financial dimensions such as quality, flexibility, innovation, speed, customer satisfaction, shareholder satisfaction, internal efficiency, and personnel development

The connection between revenue management and firm performance is a significant concern for both business leaders and researchers. Revenue management encompasses the tactics a company employs to boost or preserve its income streams, and how well these tactics are executed can affect company performance. Studies indicate that proficient revenue management practices have the potential to enhance a company's profitability,

refine risk management, and bolster its financial stability. Revenue management strategies may encompass various aspects such as pricing, segmenting products and services, managing marketing communications, and nurturing customer relationships. Skillful adoption and execution of these strategies enable the company to secure a competitive edge and foster sustainable growth. Hence, recognizing the correlation between revenue management and firm performance emerges as a crucial consideration in the formulation of strategies and decision-making processes for business leaders.

The findings of the study focuses on the relationship between revenue management technical capabilities and firm performance. Path analysis was conducted to reveal the structural relationship between these variables and to test the hypotheses. The standardized direct effects of path analysis between variables were presented, showing the relationship between revenue management technical capabilities and firm performance. The results of the path analysis indicate the standardized regression coefficients, critical ratios, and hypothesis results for the structural relationships. The findings suggest that the study aimed to determine the proportion of direct and indirect effects of independent variables on dependent variables, shedding light on the impact of revenue management technical capabilities on firm performance.

The structural equation modeling (SEM) results reveal insightful relationships between various factors and both financial and marketing performance within hotel businesses. Firstly, it is evident that market segmentation exhibits a statistically significant and positive effect on financial performance (β : 0.166, $p < 0.05$), indicating that strategies aimed at effectively segmenting the market can lead to improved financial outcomes for hotels. Market segmentation has a positive effect on financial performance, which is also supported by previous studies. Kotler and Keller (2012) emphasized that hotels can increase their revenues by increasing customer satisfaction and optimizing their marketing activities if they successfully implement market segmentation. In addition, Dolnicar (2008)

stated that segmentation-based strategies provide hotel businesses with more targeted marketing opportunities, which in turn enables more effective implementation of pricing strategies and demand management. The results are consistent with these studies and show that segmentation improves financial performance.

Conversely, demand forecasting shows an inverse relationship with financial performance (β : -0.237, $p < 0.05$), suggesting that inaccurate or ineffective forecasting methods may adversely impact financial performance. The inverse relationship between demand forecasting and financial performance has been emphasized in some studies. Weatherford and Kimes (2003) stated that errors in demand forecasting in hotel businesses generally lead to revenue losses and operational efficiency reductions. Ineffective forecasting can lead to overstaffing or understaffing, inaccurate pricing strategies, and mislocation of resources, all of which can negatively affect financial performance. This finding also coincides with such studies in the literature. In particular, the difficulties of accurate demand forecasting are emphasized and unsuccessful demand forecasting can negatively affect financial performance.

However, capacity allocation demonstrates a positive and significant association with financial performance (β : 0.338, $p < 0.05$), highlighting the importance of efficiently allocating resources within hotel operations to enhance financial outcomes. The strong positive relationship between capacity allocation and financial performance has also been frequently emphasized in studies on operational efficiency and revenue management in hotel businesses. Enz and Canina (2010) stated that hotels can significantly increase their financial performance by optimizing costs and maximizing revenue by using their existing resources and capacities in the most efficient way. In addition, Chiang and Jang (2007) stated that the correct allocation of capacity in hotels plays a key role in revenue management strategies, and thus room occupancy and pricing policies can be managed more efficiently. The results are parallel to these literature findings and reveal that capacity

management significantly affects financial performance.

Furthermore, regarding marketing performance, market segmentation also exhibits a statistically significant and positive effect (β : 0.150, $p < 0.05$), indicating its importance in driving marketing success within hotel businesses. The positive effect of market segmentation on marketing performance is also supported by previous studies. Kotler and Keller (2012) stated that segmentation increases customer satisfaction and marketing effectiveness by allowing marketing strategies to be implemented in a more targeted manner. In addition, Dolnicar (2008) revealed that segmentation-based strategies provide hotels with more specific marketing opportunities for their target audiences, allowing products or services to be marketed more effectively to the right customer groups. This finding is consistent with the existing literature and shows that market segmentation plays an important role in increasing marketing performance in hotel businesses.

Similarly, both demand forecasting (β : 0.211, $p < 0.05$) and capacity allocation (β : 0.222, $p < 0.05$) positively influence marketing performance, emphasizing their role in shaping effective marketing strategies. The positive effect of demand forecasting on marketing performance is also a subject emphasized in the literature. Armstrong (2001) stated that accurate demand forecasting provides businesses with the opportunity to better understand customer demands and develop strategies appropriate to these demands. The accuracy of demand forecasts is critical for the timing and effectiveness of marketing strategies. Weatherford and Kimes (2003) also revealed that accurate demand forecasts are important in optimizing hotel businesses' occupancy rates and pricing strategies, thus increasing marketing performance. This finding in this study is consistent with these studies regarding the positive effect of demand forecasting on marketing. On the other hand, capacity allocation has been stated in previous studies as an important factor affecting marketing performance. Chiang and Jang (2007) stated that the correct allocation of capacity in hotel businesses enables more effective implementation

of marketing strategies and thus customer demands are met more efficiently. In addition, Enz and Canina (2010) stated that correct capacity management ensures the correct use of resources required for the success of marketing campaigns. The positive effect found in the study coincides with these findings in the literature and confirms the contribution of capacity allocation to marketing performance.

The positive effects of market segmentation, demand forecasting and capacity allocation on marketing performance found in this study provide results consistent with studies in the literature. How these factors play an important role in the marketing success of hotel businesses has been supported by previous studies and their strategic importance has been emphasized. Overall, the findings underscore the significance of market segmentation, demand forecasting, and capacity allocation in influencing both financial and marketing performance within the hotel industry. By understanding and leveraging these relationships, hotel businesses can strategically optimize their operations and marketing efforts to achieve improved performance outcomes.

Research results show that there is a strong relationship between revenue management practices and firm performance. The findings of the study support that effective implementation of revenue management has the potential to increase a firm's profitability, improve risk management and strengthen its financial soundness. Proper adoption and implementation of revenue management strategies allows companies to gain competitive advantage and support their sustainable growth. However, it is important in future research to examine in more detail the effects of specific revenue management techniques and strategies on different industries and types of companies. Additionally, long-term studies are needed to track the effects of revenue management practices over time and understand how they respond to changing market conditions. This research offers a new perspective on the literature in the field of revenue management and can help business managers understand the importance of revenue management strategies.

While the study provides valuable insights into the relationships between various factors and the

financial and marketing performance of hotels, it is important to acknowledge several limitations: sample size and generalizability, cross-sectional nature of data, measurement error and bias, omitted variables and endogeneity, assumptions of structural equation modeling (SEM) and contextual factors. Acknowledging these limitations provides a clearer understanding of the scope and implications of the study's findings and highlights opportunities for future research to build upon this work and address unanswered questions.

6. Research limitations and future academic directions

For other researchers interested in exploring similar topics related to financial and marketing performance in the hotel industry, I would suggest the following avenues for further research:

1. **Longitudinal Studies:** Conducting longitudinal studies to examine how the relationships between factors such as market segmentation, demand forecasting, capacity allocation, and information technology evolve over time and their long-term effects on financial and marketing performance. Longitudinal data would provide valuable insights into trends and patterns, allowing researchers to better understand the dynamics of these relationships.
2. **Comparative Analysis:** Comparing the financial and marketing performance of hotels across different geographic regions, market segments, or hotel categories (e.g., luxury vs. budget hotels). Understanding variations in performance metrics across different contexts can shed light on the factors driving performance and inform strategic decision-making for hotel managers.
3. **Qualitative Research:** Supplement quantitative analyses with qualitative research methods such as interviews, focus groups, or case studies to gain a deeper understanding of the underlying mechanisms and processes influencing

financial and marketing performance in the hotel industry. Qualitative insights can provide rich contextual information and uncover nuances that quantitative analyses may overlook.

4. **Moderating and Mediating Effects:** Investigating potential moderating or mediating variables that may influence the relationships between key factors and financial/marketing performance. For example, organizational factors (e.g., firm size, organizational culture) or external factors (e.g., economic conditions, regulatory environment) could moderate the effects of market segmentation or capacity allocation on performance outcomes.
5. **Interdisciplinary Perspectives:** Fostering interdisciplinary collaborations with scholars from fields such as economics, sociology, psychology, and computer science to gain diverse perspectives and leverage complementary expertise in studying financial and marketing performance in the hotel industry. Interdisciplinary approaches can lead to innovative insights and novel research methodologies.

By pursuing these suggestions, researchers can contribute to advancing knowledge and understanding of the factors influencing financial and marketing performance in the hotel industry and provide valuable insights to inform managerial decision-making and industry practices.

Limitations

1. **Sample Size and Generalizability:** The study may have been conducted using a limited sample size or within a specific geographic region, which may limit the generalizability of the findings to a broader population of hotels. Larger sample sizes and more diverse participant demographics would enhance the external validity of the study.
2. **Cross-Sectional Nature of Data:** The data collected for the study may have been cross-

sectional, capturing a snapshot of relationships at a single point in time. Longitudinal data would provide a more comprehensive understanding of how these relationships evolve over time and allow for causal inferences to be made.

3. **Measurement Error and Bias:** The accuracy and reliability of the data collected, including self-reported measures or survey responses, may be subject to measurement error and bias. This could potentially influence the strength and direction of the observed relationships between variables.
4. **Omitted Variables and Endogeneity:** The study may not have accounted for all relevant variables that could influence financial and marketing performance, leading to omitted variable bias. Additionally, endogeneity issues may arise if there are bidirectional relationships between variables that were not adequately addressed in the analysis.
5. **Assumptions of Structural Equation Modeling (SEM):** SEM relies on several assumptions, including linearity, normality, and independence of observations. Violations of these assumptions could affect the validity of the results obtained from the analysis.
6. **Limitations of Statistical Analysis:** Despite the robustness of SEM, it is not without limitations. The complexity of SEM models and the potential for overfitting or model misspecification could impact the accuracy and interpretability of the results.
7. **Low Explanatory Power of the Model:** A low R^2 indicates that the model cannot adequately explain the variance of the dependent variable, thus the model has limited power to predict and accurately represent the relationship. This may reduce the overall validity of the model.
8. Finally, the study may suggest avenues for further research to address these limitations and explore additional factors or moderating variables that could influence financial and marketing performance in the hotel industry. Acknowledging these limitations provides a clearer understanding of the scope and implications of the study's findings and highlights opportunities for future research to

build upon this work and address unanswered questions.

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RESEARCH ARTICLE

The Correlates of Psychological Resilience in Turkish Adolescents During The COVID-19 Pandemic: A Systematic Review

Sema Durmuş Haşimi¹ | Özden Yalçınkaya Alkar²

¹ Master Student, Ankara Yıldırım Beyazıt University, Faculty of Human and Social Sciences, Psychology Department, Ankara/Türkiye
ORCID: [0009-0005-4745-5605](https://orcid.org/0009-0005-4745-5605)

E-Mail: shasimi@gmail.com

² Prof. Dr., Ankara Yıldırım Beyazıt University, Faculty of Human and Social Sciences, Psychology Department, Ankara/ Türkiye
ORCID: [0000-0001-8484-9199](https://orcid.org/0000-0001-8484-9199)

E-Mail: ozdenalkar@yahoo.com

Corresponding Author:
Sema Durmuş Haşimi

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Abstract

Adolescents, already in a vulnerable state due to the challenges of adolescence, were among risk groups to develop psychosocial and emotional problems during the COVID-19 pandemic. Research conducted with adolescents identified psychological resilience as one of the protective factors which helped them cope better with pandemic-related adversities. The aim of this systematic review is to determine the correlates of Turkish adolescents' psychological resilience to gain a better understanding of its protective role during the pandemic. Using the related keywords (Turkish adolescents, students, psychological resilience, COVID-19 Pandemic) and limiting the publication period as 2020-2024, a database search was conducted, in which 340 articles were identified. 10 articles that met the eligibility criteria were included in the systematic review. By reviewing the articles systematically, doing exercise, emotional flexibility, spirituality, hope, parental and peer support, financial support, psycho-education programs supporting pandemic-specific coping, and certain personality traits including openness to new experience, extraversion, conscientiousness, and agreeableness were identified as variables that are positively correlated with psychological resilience. On the other hand, fear of COVID-19, anxiety, depression, post traumatic stress disorder (PTSD), smartphone addiction, playing digital games, online education, exam anxiety and neuroticism are variables that have negative correlation with psychological resilience. Based on the results, it appears that during the COVID-19 pandemic, psychological resilience, in relation with other individual and social/contextual protective factors, functioned as a psychological buffer against psychological problems for Turkish adolescents.

Keywords: Turkish adolescents, students, psychological resilience, COVID-19 Pandemic

Öz

Ergenlik döneminin zorlukları nedeniyle zaten kırılğan bir durumda olan ergenler, COVID-19 salgını sırasında psikososyal ve duygusal sorunlar geliştirme açısından risk grupları arasında yer almıştır. Ergenlerle yapılan araştırmalar, psikolojik sağlamlığı, pandemiyle ilgili olumsuzluklarla daha iyi başa çıkmalarına yardımcı olan koruyucu faktörlerden biri olarak tanımlanmaktadır. Bu sistematik derlemenin amacı, pandemi sırasında Türk ergenlerin psikolojik sağlamlığının koruyucu işlevini daha iyi anlayabilmek için ilişkili olduğu değişkenleri belirlemektir. İlgili anahtar sözcükler (Türk ergenler, öğrenciler, psikolojik sağlamlık, COVID-19 Pandemisi) kullanılarak ve yayın tarihi 2020-2024 arası olarak belirlenmiş veritabanı taramasıyla 340 makaleye ulaşılmıştır. Uygunluk kriterlerine göre belirlenmiş toplam 10 makale sistematik derlemeye dahil edilmiştir. Psikolojik sağlamlığın pozitif yönde ilişkili olduğu değişkenler; egzersiz yapma, duygusal esneklik, maneviyat, umut, ebeveyn ve akran desteği, finansal destekpandemiyle başa çıkma becerilerini destekleyici psikoeğitimler olarak belirlenmiştir. Yeni deneyimlere açıklık, dışadönüklük, vicdanlılık ve uyumluluk kişilik faktörleriyle de pozitif yönde ilişkili çıkmıştır. Öte yandan, ergenlerde psikolojik sağlamlık arttıkça, COVID-19 korkusu, anksiyete, depresyon, travma sonrası stres bozukluğu (TSSB), akıllı telefon bağımlılığı, dijital oyun oynama, online eğitim, sınav kaygısı ve nevrotikliğin azaldığı görülmektedir. Sonuçlar, COVID-19 pandemisinde, psikolojik dayanıklılığın, diğer bireysel ve sosyal/bağlamsal koruyucu faktörlerle birlikte, Türk ergenlerde, psikolojik sorunlar geliştirmeye karşı psikolojik tampon işlevi gördüğüne işaret etmektedir.

Anahtar Kelimeler: Türk ergenler, öğrenciler, psikolojik sağlamlık, COVID-19 Pandemisi

Introduction

The COVID-19 pandemic, which started in Wuhan, China in 2019, rapidly spread and ended up affecting over 200 countries worldwide (World Health Organisation, WHO, 2020). Being a novel, highly contagious, and infectious disease, the COVID-19 pandemic sparked significant fear, stress, and many other psychological problems among people (Liu et al., 2020; Yıldırım et al., 2020). This rapidly growing panic atmosphere, forced governments to take very strict preventive measures such as social distancing, school closures, remote working, online education, curfews, forbidding big social gatherings, concerts, and sports events, etc. which significantly altered the daily life routines of individuals as well as the entire societies (Brooks et al., 2020). Studies have revealed that the long-term effects of the COVID-19 pandemic continue to affect people and the scope and severity of these effects vary across different age and risk groups (Brooks et al., 2020; Loades et al., 2020).

Adolescence, a period of rapid physiological and emotional changes and development, can be a challenging period. During this difficult and critical period, adolescents are more vulnerable to stressful life events, especially if they lack healthy and effective coping skills (İme & Ümmet, 2022). The long-term effects of traumatic and/or negative experiences during a developmentally critical period such as adolescence can be significant (Ellis & Zabatany, 2017; Gotlib et al., 2021). Stressful life events during adolescence was found to be related with increased psychological problems such as depression, substance use, criminal behaviors, academic problems and problems with friends and family members (Hsieh et al., 2016; Murray et al., 2019).

The COVID-19 pandemic, with its prevention measures and regulations significantly disrupted the psycho-social development of adolescents (Ho, et al., 2020). During adolescence, children normally tend to spend more time with their friends and peer groups away from home and parents which is crucial for gaining independence and autonomy, two important developmental tasks of adolescence (Ellis & Zabatany, 2017). However, due to the COVID-19 pandemic regulations and preventive

measures such as online schooling and curfews, adolescents experienced many restrictions on their daily life routines, which, by significantly limiting face-to-face socialization with peer groups and friends, disrupted their autonomy and independence development (Nagata, 2020). Moreover, they started to spend more time on using their digital devices mainly due to online schooling but also to socialize, entertain and keep in touch with their friends and peer groups (Ay Yılmaz et al., 2022; Zhao et al., 2020). As a result of spending more time at home and online, problematic digital behaviors such as video games, social media, and smartphone addictions increased among adolescents during the COVID-19 pandemic (Dong et al., 2020; Li et al., 2021).

Being exposed to different kind of COVID-related stressors led to a significant increase in adolescents' emotional distress (Branje & Morris, 2021). Compared to the other underaged groups, adolescents were found to be the group who experienced the highest increase in emotional problems during the pandemic (Schmidt et al., 2021). Especially due to being socially isolated from peers, teachers, and friends due to COVID-19 restrictions, social distancing, and online schooling, adolescents experienced an increase in a variety of psychological problems such as anxiety (Zhou et al., 2020; Chen et al., 2020; Eroğlu & Yakşi, 2021), depression (Chen et al., 2020; Demir & Çiftçi, 2020; Oosterhoff et al., 2020; Xie et al., 2020), stress (Rosen et al., 2020; Branje & Morris, 2021; Eroğlu & Yakşi, 2021), fear (Döğter et al., 2022; Oosterhoff et al., 2020), a decrease in psychological resilience (Çelebi, 2020; Legido-Quigley et al., 2020; Karaaslan, 2021), hopelessness (Erdoğan et al., 2020), loneliness (Çetin & Anuk, 2020; Orben et al., 2020; Loades et al., 2020), somatic symptoms (Liu et al., 2020; Karaaslan, 2021), social anxiety (Morrisette, 2020) and sleep problems (Jiao et al., 2020).

Despite experiencing many COVID-related stressors alongside the challenges of adolescence, adolescents who are more psychologically resilient seem to be less affected and showed better adaptation to all the new changes and disruptions caused by the COVID-19 pandemic (Noyola et al., 2024). Psychological resilience is defined as the capacity to continue growth and healthy

development in the face of negative and/or traumatic experiences (Masten, 2018). Rather than being innate and fixed, psychological resilience is a dynamic and improvable capacity, in which certain individual, social and contextual factors, which are called *promotive factors*, interact with each other and help the individual cope better with the adverse psychological effects of risk factors (Zimmerman, 2013). The promotive factors fall under two main categories: *assets* and *resources*. *Assets* can be described as positive and protective factors at the individual level such as self-esteem and self-efficacy whereas *resources* refer to positive social and contextual factors such as parental support, having good role models, and intervention programs. Risk factors, on the other hand, can be described as individual, familial, and environmental factors which prevent or disrupt the process of healthy development for an individual (Zimmerman, 2013). In this sense, the COVID-19 pandemic, with its significant and large-scale effects on the daily life routines, causing high levels of stress and disrupting the developmental tasks, is a risk factor for the healthy psychosocial and emotional development of adolescents (Shanafelt et al., 2020; Scott et al., 2021).

Studies show that being psychologically resilient functioned as a psychological buffer by helping adolescents cope better with pandemic-related adversities, adapt more easily to the new circumstances as a result of COVID-19 prevention regulations and protected them from developing psychological problems (Doom et al., 2023; Shi et al., 2022; Grazzani et al., 2022). Similarly, studies conducted with Turkish adolescents show that being psychologically resilient helped adolescents cope better with the psychological distress caused by COVID-related stressors (Yıldırım & Arslan, 2020) and showed lower levels of psychological problems such as depression, anxiety, stress, and somatic symptoms (Bilge & Bilge, 2020; Bozdağ, 2020; Çetin & Anuk, 2020; Yıldırım & Kumcağız, 2021).

In a review study by Doom et al. (2023), individual, and social/contextual resilience factors and interventions that helped adolescents to be more psychologically resilient against COVID-related stressors and psychosocial problems were

reviewed and listed. Some of the individual promotive factors which studies showed helped adolescents to cope better and to experience less depression, anxiety, stress symptoms, and internalization problems included: emotional regulation (Breux et al., 2021), emotional flexibility (İme & Ümmet, 2022), cognitive reappraisal and self-enhancing humor (Kuhlman et al., 2021), problem-focused coping (Stein et al., 2023), as well as protective behaviors such as physical activity and exercising (Magson et al., 2020), spending time in nature (Jackson et al., 2021), and digital socialization (Camerini et al., 2022). Besides individual factors, social protective factors such as parental support (Luthar et al., 2021), parental warmth (Wang et al., 2022), better adolescent-parent relationship quality (Martin-Storey et al., 2021), support from teachers and peers (Zhu et al., 2022) were found to be related with lower psychological problems and higher emotional well-being.

Therefore, examining the different correlates of psychological resilience and its role in protecting adolescents from the negative effects of COVID-19 pandemic is important in gaining a better understanding of the protective factors that helped adolescents cope better with the difficulties caused by the pandemic-related stressors. This understanding is crucial for developing effective intervention programs that will support adolescents' psychosocial and emotional wellbeing and psychological resources in the post-covid era (Magson et al., 2020; Xing et al., 2023).

The purpose of this systematic review is systematically reviewing the resilience studies conducted with Turkish adolescents (11-18 years of age) during the COVID-19 pandemic that specifically examined the relationship between psychological resilience and different variables. By reviewing these studies systematically, it was aimed to provide an answer to the following questions: What are the correlates of psychological resilience identified in these studies and how did they influence the psychosocial and emotional wellbeing of adolescents during the COVID-19 pandemic?

The results of this systematic review are expected to provide a more thorough

understanding of the effects of the COVID-19 Pandemic on Turkish adolescents' psychosocial and emotional well-being and the protective role of psychological resilience in relation to different variables. Moreover, it is expected that the results of this review will contribute to the development of more effective and realistic intervention programs, specifically tailored to the psychosocial and emotional needs of adolescents in order to support their psychological resilience capacity in the post-covid era.

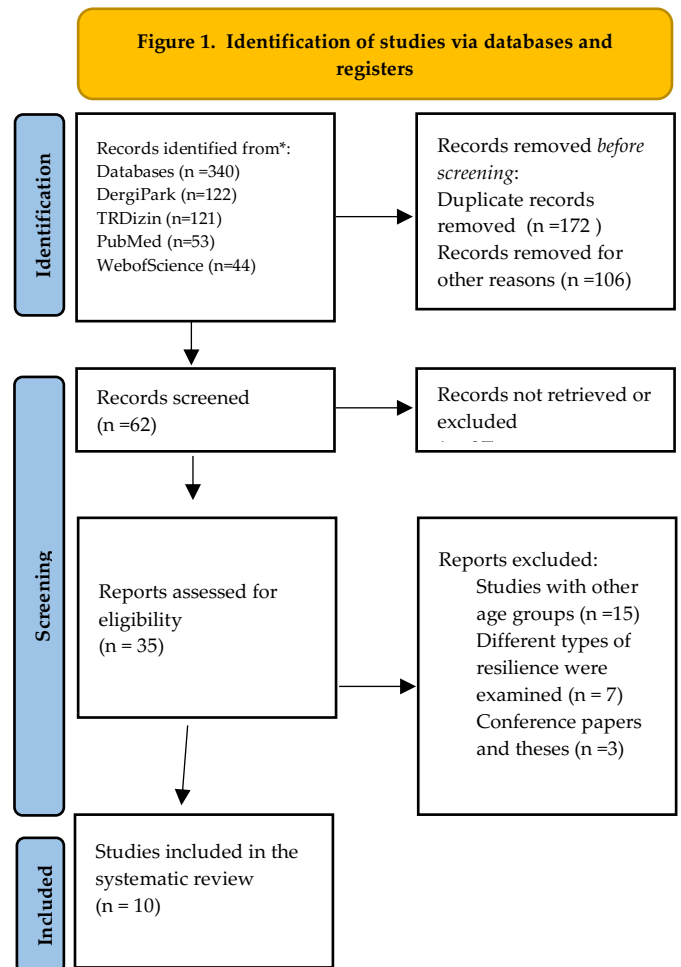
Methods

TRDizin, DergiPark, WebofScience, and PubMed databases were searched to identify the research articles to include in the systematic review. The search period was limited to 2020-2024, beginning from the year the COVID-19 pandemic outbreak was officially announced in Türkiye (March 11th, 2020) until the present. The protocol followed in the current systematic review, as shown in Figure 1, was shaped according to Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines, which is one of the widely used methods for presenting the results of systematic reviews (Moher et al., 2009; Page et al., 2021). While searching the databases, several keywords were used both in Turkish and English in different combinations: "Psychological resilience", "Turkish adolescents", "students", "COVID-19", "pandemic" and "Turkey".

Articles were selected according to the following criteria: i) research articles that were reached via selected databases; ii) sample groups that consisted of adolescents attending middle school and/or high school; iii) studies conducted between 2020-2024; iv) psychological resilience was examined in relation to the COVID-19 pandemic; v) Studies conducted in English or Turkish with only Turkish adolescent sample groups.

The exclusion criteria for the current systematic review were determined as a) studies conducted before 2020 b) articles published in a language other than Turkish or English c) studies that did not examine psychological resilience during the COVID-19 pandemic d) Studies conducted with university students and/or adult groups e) if the

article was not accessible as full text f) studies that were not research articles. The PRISMA Flowchart is presented in Figure 1.



Results

The sample group sizes for the studies ranged from 12 (Yıldırım & Kumcağız, 2021) to 3704 (Söner & Gültekin, 2021) adolescents, in which females constituted 57.7% and males 42.3% of the total number of participants. The average age range for the participants was between 9.92 (Akgül, 2022) and 17.78 (Yıldırım & Çiçek, 2022). Six out of 10 studies included in the review used a correlational descriptive research design model as their method of research (Döğler et al., 2022; Demir & Çiftçi, 2020; Eroğlu & Yakşi, 2021; Acar & Han, 2022; Söner & Gültekin, 2021; Akgül, 2022). One of the studies used explanatory sequential mixed methods as its research design (Erol & Erduran Tekin, 2021), 1 experimental study used a single group pre-test/post-test experimental design (Yıldırım & Kumcağız, 2021), 1 study used confirmatory factor

Table 1. An overview of studies that are included in the systematic review

Author, Year	Population(F/M)	Mean Age	Methodology	Comparators	Findings
Döger et al (2022)	n:45 adolescents (F:28, M:17)	Age 14-18 (Xage= 15.82)	-Quantitative - Correlational descriptive research model -convenience sampling	fear of COVID-19, psychological resilience	When fear of COVID-19 scores increases psychological resilience scores decreases. Lower scores of family support, peer support, perseverance and empathy dimensions were correlated with higher scores of covid-19 fear.
Akgül (2022)	N:199 gifted students F:103, M:96	Xage: 9.92 ± 1.52	-Quantitative - Correlational descriptive research design -convenience sampling	psychological resilience, anxiety, playing digital games, physical activity	-For the whole sample: Anxiety was negatively correlated with resilience. Participants who engaged more in physical activity had lower anxiety scores. For boys: Anxiety was negatively correlated with doing physical activity and positively correlated with playing digital games. Psychological resilience was negatively correlated with playing digital games and positively correlated with doing physical activity.
Acar & Han (2022)	N:512 high school students F: 71,3%, M:28,7% (365) (147)	Age: 14-18	-Quantitative - Correlational descriptive research design -convenience sampling	spirituality, psychological resilience, gender	Boys had significantly higher psychological resilience level compared to girls. Girls' spirituality levels were significantly higher than boys'. Participants whose parents were living together had significantly higher level of spirituality than those whose parents were seperated. Spirituality was positively correlated with psychological resilience.
Yıldırım & Çiçek (2022)	N:508 F:53.9%, M:46.1% (274) (234)	Xage=17.78±1.11	-Quantitative -Cross-sectional study -correlational descriptive analysis and mediation analysis -convenience sampling	fear of Covid-19, smartphone addiction, psychological resilience	Fear of Covid-19 was positively correlated with smartphone addiction and negatively correlated with resilience, resilience had significant negative correlation with smartphone addiction, resilience partially mediated the relationship between fear of covid-19 and smartphone addiction, Girls had lower levels of resilience while also showing higher levels of covid-19 fear and smartphone addiction than boys.
İme & Ümmet (2022)	N: 833 high-schoolers F:423, M:410	Xage: 16.06 ± 0.66	-Quantitative - Confirmatory factor analysis and correlational descriptive research method and mediation analysis -convenience sampling	emotional flexibility, subjective well-being, psychological resilience	Emotional flexibility was significantly positively correlated with both subjective well-being and resilience. Subjective well-being mediated the relationship between emotional flexibility and resilience.
Eroğlu & Yakşı (2021)	N:52 (whose mom and/or dad had covid infection in the last 3 months) F: 27, M:25	Xage: 12	-Quantitative - Correlational descriptive research model -purposive sampling	one or both parents infected with Covid-19, depression, anxiety, post-traumatic stress disorder (PTSD),	Depression, anxiety and PTSD symptoms were strongest when both parents were infected and put into isolation in hospitals instead of home treatment. Depression, anxiety and PTSD scores were higher for children whose mothers were infected and isolated than those whose fathers were put into isolation. Significant and negative correlations were found between anxiety, depression, PTSD levels and psychological resilience scores.

				psychological resilience	
Yıldırım & Kumcağız (2021)	N: 12 middle school students F:7, M:5	Age group: 11-14	-single group pre-test and post-test experimental design -purposive sampling	Psycho-Education Program in Combating Epidemic, fear of Covid-19, psychological resilience	After attending the Psycho-Education Program in Combating Epidemic, fear of Covid-19 scores significantly decreased and psychological resilience scores significantly increased.
Erol & Erduran Tekin (2021)	N:401 high school students F: 175, M:226	Not mentioned	-explanatory sequential mixed methods research design, -Convenience sampling	online education, exam anxiety, psychological resilience	Quantitative results: Participants' average score for exam anxiety was higher than the average score assigned for the test, meaning that they had high exam anxiety. Girls had higher exam anxiety scores compared to boys. Participants' average score for psychological resilience was higher than the average score assigned for the test, meaning that they had high psychological resilience. There was no significant difference between girls' and boys' psychological resilience scores. Qualitative results: Participants reported that their exam anxiety increased during Covid-19 pandemic due to difficulties of online education, low motivation and concentration, higher stress, less regular studying and high health concerns/ fear caused by covid-19. Participants also reported that they felt less psychologically resilient during the pandemic due to social isolation, pandemic restrictions, fear of covid and losing loved ones, anxiety.
Söner & Gültekin (2021)	N:3704 high school students F: 2227 (%60,1) M: 1477 (%39,9)	Age group: 14-18	-Quantitative - Correlational descriptive research design -convenience sampling	hope, psychological resilience, personality traits	Hope was positively associated with resilience. Participants who did not need psychological or financial support had higher levels of hope and psychological resilience than those who needed them. Having a family member infected with Covid-19 or who lost his/her job was associated with lower hope and psychological resilience. Those who were high in neuroticism had lower psychological resilience and hope whereas those who were high in openness to experience, extraversion, conscientiousness and agreeableness had higher psychological resilience and hope.
Demir & Çiftçi (2020)	N:223 high school students (F:116, M:107)	Age Xage=16.18 ±1.06	-Quantitative - Correlational descriptive research model -convenience sampling	psychological resilience, exercise status, preferences and frequency, gender of adolescent	Girls' psychological resilience level is higher than boys. Psychological resilience level significantly differed according to exercise status and frequency in favor of participants who exercised regularly and more frequently during the pandemic.

analysis and correlational descriptive analysis methods together (İme & Ümmet, 2022) and 1 cross-sectional study used correlational descriptive analysis and mediation analysis as its research method (Yıldırım & Çiçek, 2022). When it comes to the method of reaching the participants in the studies convenience sampling method was used as the sampling method in 8 out of 10 studies (Döğ̈er et al., 2022; Demir & Çiftçi, 2020; Yıldırım & Çiçek, 2022; İme & Ümmet, 2022; Erol & Erduran Tekin, 2021; Acar & Han, 2022; Söner & Gültekin, 2021; Akgül, 2022). The purposive sampling method was used in the remaining 2 studies (Erođlu & Yakşı, 2021; Yıldırım & Kumcađız, 2021). In all of the studies included in the review, the data was collected during the COVID-19 pandemic.

As can be seen in table 1, the studies included in this systematic review, which focus on the psychological resilience of adolescents during COVID-19 pandemic showed that psychological resilience was correlated with different variables. These variables can be categorised as risk and protective factors based on their relationship with psychological resilience.

Risk Factors

Based on this systematic review, fear of COVID-19 (Döğ̈er et al., 2022; Yıldırım & Çiçek, 2022; Yıldırım & Kumcađız, 2021), gender (Demir & Çiftçi, 2020; Acar & Han, 2022), smartphone addiction (Yıldırım & Çiçek, 2022), depression (Erođlu & Yakşı, 2021), anxiety (Erođlu & Yakşı, 2021; Akgül, 2022), post-traumatic stress disorder (PTSD) (Erođlu & Yakşı, 2021), online education (Erol & Erduran Tekin, 2021) exam anxiety (Erol & Erduran Tekin, 2021), playing digital games (Akgül, 2022) were identified as risk factors for the psychosocial and emotional wellbeing of adolescents during the COVID-19 pandemic.

High levels of fear of COVID-19 was found to be negatively correlated with psychological resilience scores in adolescents, meaning that when fear of COVID-19 increased psychological resilience decreased (Döğ̈er et al., 2022; Yıldırım & Çiçek, 2022; Yıldırım & Kumcađız, 2021). Adolescents with lower scores of family support, peer support, perseverance and empathy dimensions of psychological resilience reported

higher levels of fear of COVID-19, which shows that getting support from family and friends, being perseverant and empathetic helped adolescents to cope better with fear of COVID-19 (Döğ̈er, et al., 2022). Fear of COVID-19 was also found to be positively correlated with smartphone addiction in adolescents, a relationship which was partially mediated with psychological resilience, suggesting that higher levels of fear of COVID-19 makes adolescents more susceptible for smartphone addiction through reduced level of psychological resilience (Yıldırım & Çiçek, 2022). In another study, adolescents' fear of COVID-19 level significantly decreased after attending a 6-session psycho-education program. Adolescents who had higher levels of fear of COVID-19 and lower psychological resilience scores were chosen to participate in this psycho-education program. At the end of the program, adolescents' psychological resilience scores significantly increased and their fear of COVID-19 scores significantly decreased (Yıldırım & Kumcađız, 2021). Moreover, there were inconsistent findings regarding gender differences in resilience scores and scores of covid-related risk factors in the studies. Girls' psychological resilience scores were found to be significantly higher than boys (Demir & Çiftçi, 2020) whereas Yıldırım and Çiçek (2022) found that girls had lower levels of psychological resilience and higher levels of fear of COVID-19 and smartphone addiction compared to boys. In another study no significant difference was found between girls and boys in terms of psychological resilience scores but girls were found to have significantly higher levels of exam anxiety compared to boys (Erol & Erduran Tekin, 2021). Acar and Han (2022) also found that boys had significantly higher psychological resilience level than girls. Another study examining the relationship between physical activity, playing digital games and anxiety revealed that boys who reported higher level of physical activity and lower level of digital game playing had significantly lower anxiety scores and higher psychological resilience (Akgül, 2022). This finding can be interpreted as for boys, high level of digital play gaming is a risk factor for anxiety and engaging in physical activity functions as a protective factor for

their psychological wellbeing through affecting their resilience level.

Anxiety, depression and post traumatic stress disorder (PTSD) were also identified as risk factors by Eroğlu and Yakşi (2021) in a study conducted with adolescents who had at least one or both parents infected with COVID-19 virus. The anxiety, depression and PTSD scores were highest when both parents were infected and put into isolation in hospitals instead of home treatment. In addition, adolescents whose only mothers were infected and isolated reported higher anxiety, depression and PTSD levels than adolescents whose only fathers were infected and isolated. Depression, anxiety and PTSD scores were significantly lower in adolescents with higher psychological resilience, suggesting that resilience functioned as a psychological buffer against the negative psychological impacts of having a parent who got infected with COVID-19 virus.

Online education was also determined as one of the risk factors that had significant impact on adolescents' psychological wellbeing. Adolescents reported that their exam anxiety increased and they felt less psychologically resilient due to the difficulties of online education such as technical difficulties, learning problems, low motivation and concentration for studying regularly, health concerns, feeling restricted and social isolation (Erol & Erduran Tekin, 2021).

Protective Factors

In this systematic review several variables were identified as protective factors, which together with psychological resilience helped adolescents cope better with Covid-related stressors. For instance, exercising regularly and more frequently was found to be positively related with psychological resilience (Demir & Çiftçi, 2020; Akgül, 2022). Emotional flexibility also functioned as a protective factor for adolescents. Adolescents with higher levels of emotional flexibility reported significantly higher levels of subjective well-being and psychological resilience. Subjective wellbeing mediated the relationship between emotional flexibility and psychological resilience (İme & Ümmet, 2022). Moreover, Acar and Han (2022) identified spirituality as a protective factor which

protected adolescents from developing psychological, social and emotional problems during COVID-19 pandemic. When spirituality increased, psychological resilience also increased. In addition, it was found that girls compared to boys, and adolescents whose parents lived together compared to those whose parents were separated had significantly higher level of spirituality (Acar & Han, 2022). Hope was also found to be positively correlated with adolescents' psychological resilience. Adolescents who were more extroverted, agreeable, open to new experiences or conscientious and those who did not experience financial problems during COVID-19 pandemic reported higher levels of hope and psychological resilience (Söner & Gültekin, 2021).

Discussion

Psychological resilience is one's capability to cope with stress caused by negative life events and continue growth and development (Doom et al., 2023). Being psychologically resilient was found to be mitigate the adverse effects of the COVID-19 pandemic in adolescents, who, due to being in a developmentally vulnerable period, are more prone to experience psychological problems such as depression, anxiety and post-traumatic stress disorder (Liu et al., 2020). Research on psychological resilience identified various protective factors, which can be categorized as individual and social/contextual factors, that helped adolescents cope better with COVID-related stressors, adapt more easily to the new circumstances of the pandemic and protected their psychosocial and emotional wellbeing (Doom et al., 2023). In accordance with the research findings in the resilience literature, the results of this systematic review also revealed that psychological resilience was positively related with different protective resilience factors at the individual and social/contextual levels.

Individual resilience factors: Based on the results of the systematic review, adolescents who exercised more frequently and regularly during the pandemic had higher level of psychological resilience (Demir & Çiftçi, 2020) and reduced level of anxiety (Akgül, 2022). There are several studies

showing that spending more time outdoors and engaging in physical activities (sports, etc.) during the pandemic are related with reduced levels of internalizing problems (Rosen, et al, 2020), anxiety and depression symptoms (Magson, et al, 2020) and better subjective wellbeing (Jackson, et al, 2021) in adolescents.

In addition, higher level of emotional flexibility was positively correlated with psychological resilience and subjective wellbeing (İme & Ümmet, 2022). This positive correlation was found by several other studies in the literature as well (Fu et al., 2018; Schunk et al., 2021). It can be suggested that emotional flexibility helped adolescents adapt more easily to the new changes and circumstances of the pandemic and manage negative emotions.

Spirituality was another protective factor that was positively correlated with psychological resilience (Acar & Han, 2022). Through spirituality adolescents might find more positivity and meaning in the pandemic-related difficulties which led to better coping and better psychological wellbeing. Similarly, hope was also positively correlated with psychological resilience. Adolescents who had higher levels of hope and psychological resilience showed no need for psychological help compared to adolescents who had lower levels of hope and psychological resilience (Söner & Gültekin, 2021). Moreover, in the same study certain personality traits (openness to experience, extraversion, conscientiousness, and agreeableness) found to function like protective factors, which were also positively associated with psychological resilience. In addition to being extroverted, agreeable, open to new experiences or conscientious, adolescents with no financial problems and who had no family member suffering from the COVID-19 disease reported higher levels of hope and psychological resilience (Söner & Gültekin, 2021). This finding can be interpreted as a reflection of the interplay between individual and social/contextual resilience factors that made adolescents psychologically resilient and more hopeful about the circumstances of the pandemic. On the other hand, neuroticism was found to be negatively correlated with hope and psychological resilience (Söner & Gültekin, 2021). It can be suggested that neuroticism negatively

influenced the healthy coping mechanisms of adolescents making them more prone to experience psychosocial and emotional problems during the COVID-19 pandemic.

Social/contextual resilience factors: A 6-session Psycho-Education Program in Combating the Epidemic which was applied to a group of adolescents, increased their psychological resilience scores while significantly reducing their fear of COVID-19 level (Yıldırım & Kumcağız, 2021). This finding is in line with the literature showing that intervention programs, specifically developed to support the psychological wellbeing of adolescents during the pandemic were found to be effective in reducing hopelessness, symptoms of anxiety and depression and increasing agency, psychological resilience and social support (Schleider et al., 2022; Glaser et al., 2022). This shows the importance of providing the necessary social support and helping them to learn more effective ways of coping with COVID-related stressors in order to support their psychosocial and emotional wellbeing.

Moreover, adolescents reported that parental support, supportive teachers, spending more time with family members, peer support and digital socialization helped them to be more psychologically resilient during lockdowns (Döğler et al., 2022). Similarly, in the literature, parental support was found to be related with reduced level of anxiety and depression (Luthar et al., 2021) and higher emotional wellbeing in adolescents (Wang et al., 2022). Additionally, adolescents with better family functioning and good parent-adolescent relationship quality reported lower level of depressive symptoms and higher level of psychosocial wellbeing (Afriat et al., 2023). On the other hand, support from friends/peers and teachers were also found to be important in protecting the mental wellbeing of adolescents during the pandemic (Zhu et al., 2022). In this sense, digital socialization, by providing a new way of keeping in touch with friends and other peer groups, were found to be effective in reducing adolescents' internalizing symptoms (Rodman et al., 2022). These findings are important in showing the protective role of feeling socially connected

and having good relationships with family, peers and teachers for adolescents' psychosocial and emotional wellbeing during the COVID-19 pandemic in which social interactions were significantly restricted due to pandemic-related preventive measures such as lockdowns and online education.

Risk factors

Based on the results of this systematic review, there were also several variables identified as risk factors based on their negative impacts on adolescents' psychosocial and emotional wellbeing during the COVID-19 pandemic. Studies revealed that adolescents who had higher levels of psychological problems such as fear of COVID-19 (Döğer et al., 2022; Yıldırım & Çiçek, 2022; Yıldırım & Kumcağız, 2021), depression (Eroğlu & Yakşi, 2021), anxiety (Eroğlu & Yakşi, 2021; Akgül, 2022), PTSD (Eroğlu & Yakşi, 2021) and exam anxiety (Erol & Erduran Tekin, 2021) had lower level of psychological resilience. Moreover, adolescents who had both or one of their parent infected with COVID-19 virus showed higher levels of depression, anxiety, and PTSD symptoms, whereas the severity of symptoms was reduced in adolescents who had higher psychological resilience (Eroğlu & Yakşi, 2021). These findings show that adolescents who were less psychologically resilient during the COVID-19 pandemic were more prone to develop psychosocial and emotional problems due to COVID-related stressors.

In addition, online education was also identified as a COVID-related risk factor for adolescents which was found to be positively related with exam anxiety (Erol & Erduran Tekin, 2021), psychological distress levels (Ay Yılmaz et al., 2022), and problematic internet use (Fernandes et al., 2021). Due to pandemic regulations such as lockdowns and online education, adolescents had to spend more time at home away from their friends and peer groups which resulted in spending more time online as a way of stress relief, digital socialization and keeping in touch with friends (Ay Yılmaz et al., 2022), which increased the risk of developing problematic digital behaviours such as excessive use of internet, social media and

digital game addiction in adolescents (Fernandes et al., 2021). Adolescents who had lower level of psychological resilience reported higher level of smartphone addiction (Yıldırım & Çiçek, 2022) and digital game playing (Akgül, 2022). Lower levels of TV watching, video game playing and social media surfing were found to be related with better mental wellbeing in adolescents during the pandemic (Camerini et al., 2022). Based on these results, it can be suggested that psychological resilience, by helping adolescents find more effective ways of coping with stress caused by the pandemic-related adversities, also protected them from developing problematic digital behaviors and habits.

Conclusion

The COVID-19 pandemic, significantly altered the way of life at different levels for every age group worldwide. Adolescents, due to the developmental sensitivity of adolescence, were more prone to be negatively effected by the drastic preventive measures and regulations the pandemic had brought along. Studies conducted with adolescents revealed that being socially isolated from peer groups, friends, teachers, and family members due to COVID-19 restrictions, social distancing, curfews, and online schooling, adolescents experienced an increase in a variety of psychological, behavioral, and social problems (Liu et al., 2020; Morrisette, 2020; Nagata, 2020; Karaaslan, 2021; Ay Yılmaz et al., 2022). On the other hand, research shows that, during the COVID-19 pandemic, adolescents who had higher levels of psychological resilience coped better with the pandemic-related adversities and were less likely to develop psychological problems such as depression, PTSD, and anxiety (Doom et al., 2023; Xing et al., 2023; Beames et al., 2021; Karaaslan, 2021; Yıldırım & Arslan, 2020).

The expected hypothesis of this systematic review study was that psychological resilience, in relation with other variables, would also function as a psychological buffer for Turkish adolescents, helping them cope better with the adversities of the COVID-19 pandemic and protecting them from developing psychosocial, emotional and behavioral problems, which was supported by the results of the current study. In accordance with the

literature examining the role of psychological resilience for adolescents during COVID-19 pandemic, the results of this systematic review revealed that psychological resilience, together with the individual and social/contextual protective factors identified in this study, protected Turkish adolescents' psychosocial and emotional wellbeing from pandemic-related risk factors during the COVID-19 pandemic.

The findings of this systematic review underlie the importance of extending both the scope and content of psychological resilience research on adolescents, especially when considering adolescents' vulnerability for developing psychosocial and emotional problems in the face of stressful life events such as the COVID-19 pandemic. More research is needed on identifying the resilience factors at the individual, familial and social/contextual level which helped adolescents cope better and become more resilient during the pandemic. This understanding is crucial for correctly identifying the psychosocial and emotional needs of adolescents so that more effective psycho-education programs, interventions and youth-specific policies can be developed to promote adolescents' resilience both at individual and social-contextual levels in the post-covid era. Limitations

One limitation of this systematic review is the low number of studies reached as a result of the database search. Although it may decrease the generalizability of the findings, it also indicates the limited number of resilience studies conducted with Turkish adolescents younger than 18 during the COVID-19 pandemic. One possible explanation for this could be that due to pandemic restrictions, it became more difficult for researchers to reach adolescents and get the permission of their parents. Thus, they may preferred to conduct studies with university students who were easier to reach both online and face to face.

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