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BIBLIOMETRIC ANALYSIS OF STUDIES ON ENTREPRENEURIAL RESILIENCE, ENTREPRENEURIAL INTENTIONS AND ENTREPRENEURIAL SELF-EFFICACY

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ABSTRACT

Entrepreneurship is critically importance for individuals' economic and social development. The concepts of entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy have become important research topics in the field of entrepreneurship and the number of studies carried out on these topics is increasing. Entrepreneurial resilience describes the resistance and adaptability of entrepreneurs in overcoming challenges, while entrepreneurial intentions represent individuals' attitudes and motivations towards entrepreneurial activities. Entrepreneurial self-efficacy is based on individuals' entrepreneurial abilities and their confidence in using these abilities.

The aim of this study is to comprehensively examine the bibliometric analysis of academic studies on entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy. This type of analysis is essential for understanding the current knowledge in the field of entrepreneurship, evaluating the effects on entrepreneurial processes and determining future research directions. For this purpose, data was obtained using the Web of Science database and analyzed using the R program using the bibliometric method. Within the scope of the findings, 2525 studies are examined in detail and it is aimed to provide important information for researchers who want to work in this field and to contribute to the literature.

1. Introduction

The concepts of enterprise and entrepreneurship are of critical importance in the economic and social development of individuals. By turning innovative ideas into reality, entrepreneurs have the potential to evaluate business opportunities and contribute to economic development. However, the entrepreneurship process is full of many difficulties and uncertainties. In this context, entrepreneurial resilience refers to the resistance and adaptability of entrepreneurs to the obstacles that they encounter. Entrepreneurial resilience is directly related to entrepreneurs' ability to cope with failure and their psychological resilience in this process. In addition, entrepreneurial intentions are an important factor that reflects individuals' attitudes and

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motivations towards entrepreneurial activities. Entrepreneurial intentions are considered as a critical leading element that determines the steps that individuals will take on the path of entrepreneurship. On the other hand, entrepreneurial self-efficacy is based on individuals' entrepreneurial abilities and their beliefs about using these abilities. This stands out as a determining factor in participation in entrepreneurial activities.

In recent years, in the globalizing economic environment and increasing competition, there has been a remarkable increase in the emphasis on entrepreneurial resilience, entrepreneurial intentions and self-efficacy. This growing emphasis facilitates a deeper of the factors that are effective in the success of entrepreneurs and reveals the important factors that affect the participation of individuals in entrepreneurial activities. In particular, studies on the relationship between entrepreneurial self-efficacy and entrepreneurial intentions have an important place in the literature in this field.

The purpose of this study is to examine the relationships between entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy and the developments in the literature using bibliometric methods. Bibliometric analysis is a method used to identify research trends, authors, journals, and countries by systematically evaluating the literature in a specific field. This type of analysis is of great importance for understanding the current body of knowledge in the field of entrepreneurship and to identify future research directions. By examining in depth the existing literature on entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy, the study will provide researchers and practitioners with the opportunity to increase knowledge in this field and identify new research areas.

2. Enterprise and Entrepreneurship

Enterprise is a common term that refers to the effort of individuals or groups to establish a new business, project or organization to achieve a specific purpose and is thought to have various meanings (Sewell and Pool, 2010). In other words, the concept of entreprise is defined in the dictionary as "taking a step into a business" or "making an attempt" (Bastak and Tekin, 2021). An entrepreneur is a person who organizes resources by taking risks to implement these ideas and thoughts and produces innovative solutions in the process. Gartner (1988) took a behavioral perspective on entrepreneurship and defined it as a role in which individuals take responsibility for establishing a business. Entrepreneurs have the ability to create new business areas, develop products or services, evaluate opportunities and turn them into economic gain. Entrepreneurs can not only take advantage of existing opportunities but also generate new opportunities.

Entrepreneurship is important not only as an economic value but also as a social and cultural phenomenon. It plays an innovative and transformative role in the social structure as well as its impact on the economic process. In addition to taking financial risks, entrepreneurs also use leadership and management skills in the process of coping with uncertainties, overcoming obstacles they encounter, and creating new business opportunities. These individuals contribute to both economic growth and societal change. In this respect, entrepreneurship is closely linked to the opportunities provided by the social and cultural environment. While some societies limit the entrepreneurial spirit and culture, others support and encourage it. Entrepreneurial culture holds great potential for development and progress (Bae and İlhan, 2007). In other words, entrepreneurship offers significant advantages to both individuals and societies. Beyond just creating economic value, the concept of entrepreneurship

has a deep connection with social, cultural and political dynamics in terms of the environment in which it takes place and the transformation process it causes (Aytaç, 2006; Spigel, 2017). Entrepreneurs increase employment and contribute to economic development by creating new job opportunities. At the same time, entrepreneurs' innovative approaches can be effective in solving the problems that societies face. For example, entrepreneurs who develop sustainable business models for environmental problems aim to provide social benefit while gaining economic profit (Terzioğlu et al., 2021; Martin et al., 2013).

The terms entrepreneurship and enterprise are based on a common origin. In Old French, 'enterprise(e)' is the past particle of 'entreprendre', which gave rise to the English term 'entrepreneur'. At the same time, 'emprise(e)' is the past tense form of 'emprendre', meaning 'to undertake'. Thus, initially the terms 'entrepreneur' and 'enterprise' were linked to the undertaking of a project. Over time, the term 'entrepreneur' has come to refer to someone who starts a commercial business venture, often by taking personal financial risk. The entrepreneur may be the person who provides capital, assumes risk, and manages the daily operations of the firm. Thus, while the entrepreneur appears to have undertaken a specific economic role and function, according to Chambers, the term 'enterprise' refers specifically to projects that require courage or risk. In this context, an entrepreneur is defined as an 'adventurer' who is 'brave and creative', but also 'having initiative' (Chell, 2007).

However, the history of the term 'entrepreneurship' in English is relatively recent. The word 'enterprise' began to be used from the 20th century onwards to describe stagnant areas in economic zones designated by the government to promote industrial and commercial revival (hence the term 'enterprise zones' was coined). Indeed, current policy discourse on urban transformation has adopted the language of entrepreneurship and enterprise (Southern, 2001). However, the usage that particularly stands out in our memories is that of ‘enterprise culture’, a concept specific to the UK developed and popularized by the Thatcherite government in the early to mid-1980s (Chell, 2007).

Fairclough (1991) summarizes the Oxford English Dictionary definitions of the noun "enterprise" in three distinct categories: the actions taken by a person; a set of personal characteristics; or a commercial enterprise. Fairclough, who analyzed political speeches made in the UK during the Thatcher era in terms of these different meanings, found that almost all uses referred to personal qualities. He further identified variations within these attributes, with business-oriented characteristics at one end of the spectrum and more general personal qualities at the other. Rosa (1992) examines the concept of enterprise from three different perspectives: as a type of commercial organization; as a set of personal skills and attributes important for economic development; and finally as personal skills essential for good citizenship and individual self-actualization. According to Rosa (1992), most policy makers and educators consider entrepreneurship in the third sense, but argue that this approach is the least relevant option to economic development and least compatible with Thatcher's economic principles (Breen, 2004).

Entrepreneurship and enterprise are among the fundamental factors that shape the dynamics of contemporary economies. Entrepreneurship is the process of developing new business ideas, putting these ideas into practice by taking risks, and generating economic value (Stam, 2015). This process allows individuals or groups to use their innovative thinking abilities to effectively evaluate existing resources and create new opportunities. Entrepreneurship not

only supports economic growth, but is also an important element that triggers social change and innovation (Okay and Tekin, 2020).

Durukan (2005) stated in his study that the main goal of the entrepreneur's activities is to make a profit. Entrepreneurship is a skill that provides wealth by recognizing opportunities in the environment, generating creative ideas from these opportunities, and transforming these ideas into projects (Çiçek and Durna, 2012). The three basic resources that the entrepreneur uses in this process are; their own efforts, the capital they can access and their social relations (Bozkurt, 2000). According to another definition, entrepreneurship is related to the ability to organize production factors, take risks and produce economic value in order to benefit from existing environmental opportunities or create new opportunities. Over time, in parallel with economic development, the concept of entrepreneurship has also changed (Çetin, 1996).

3. Entrepreneurial Resilience, Entrepreneurial Intentions, and Entrepreneurial Self-Efficacy

When the concepts of enterprise and entrepreneurship are examined, entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy are critical psychological elements of the entrepreneurial process and are closely related to each other. While entrepreneurial resilience refers to the ability of entrepreneurs to move forward without giving up in the face of encountered difficulties, entrepreneurial intentions indicate individuals' desire to engage in entrepreneurial activities. Entrepreneurial self-efficacy reflects individuals' beliefs that they can be successful in these activities. Resilience strengthens entrepreneurial intentions and, when combined with self-efficacy, reinforces entrepreneurs' ability to overcome challenges. The balanced development of these three concepts is the key factors affecting the long-term success of entrepreneurs.

As stated in general terms, entrepreneurship is the process of evaluating new business opportunities in an environment where uncertainty and risks are intense. The challenges faced by entrepreneurs in this process test their resilience. Entrepreneurial resilience can be defined as entrepreneurs' ability to cope with difficulties and their determination to overcome these obstacles. Resilience is a critical psychological trait which enables entrepreneurs to cope with obstacles they encounter in both their personal and professional lives (Bullough et al., 2014). Entrepreneurial resilience is closely related to individuals' psychological resistance. Bullough et al. (2014) examined the effects of resilience and self-efficacy on entrepreneurial intentions. Research reveals that individuals with high resilience develop more effective strategies in the face of difficulties (Bullough et al., 2014). Self-efficacy refers to individuals' beliefs in successfully accomplishing certain tasks, and this belief increases entrepreneurs' capacity to overcome the obstacles they face. In this context, entrepreneurs' resilience, supported by their self-efficacy, positively affects their entrepreneurial intentions.

Entrepreneurial resilience plays a critical role not only for individuals but also for businesses. Korber and McNaughton emphasize that entrepreneurs' resilience is an important factor that determines how businesses respond to external shocks (Korber and McNaughton, 2018). Resilient entrepreneurs have the ability to develop innovative solutions to sustain their businesses. This allows entrepreneurs to develop their resilience at both the personal and organizational levels.

Furthermore, entrepreneurial resilience also has a significant impact on career success. Salisu et al. (2020) examined the effects of perseverance and continuity of interest on success in entrepreneurial careers. Their research shows that perseverance and continuity of interest positively affect career success by increasing the resilience of entrepreneurs (Salisu et al., 2020). In this context, the resilience of entrepreneurs plays a key role in achieving their career goals.

Entrepreneurial resilience can be strengthened with the support of social networks, along with many other factors. Santoro et al. (2020) suggest in their study that entrepreneurs can increase their resilience by using their social networks. Social networks help entrepreneurs cope with the problems they face by facilitating their access to information and resources. In addition, the support provided by these networks strengthens the resilience of entrepreneurs and enables them to overcome difficulties.

The development and spread of entrepreneurship has positive effects in many areas and also plays a critical role in terms of development and progress. One of the most critical and first steps in entrepreneurship is the decision making process (Duygulu, 2008). At this stage, the concept of entrepreneurial intention comes to the forefront (Karabey, 2013). For this reason, one of the important elements to be taken into consideration regarding entrepreneurship is entrepreneurial intention. Because it is impossible to carry out entrepreneurial activities without entrepreneurial intention. From this perspective, entrepreneurship emerges as an action planned in accordance with a deliberate intention (Kalkan, 2011). Entrepreneurial intentions refer to individuals' willingness to start their own business or engage in entrepreneurial activities. These intentions are considered a fundamental component of entrepreneurship and are an important factor influencing individuals' entrepreneurial behavior. Entrepreneurial intentions play a critical role in determining individuals' entrepreneurial tendencies and potential (Bae et al., 2014; Şeşen and Basım, 2012; Timuroğlu and Çakır, 2014).

The comprehension of entrepreneurial intentions is supported by various theoretical frameworks. The most common of these is Ajzen's Theory of Planned Behavior. The Theory of Planned Behavior identifies three main factors that influence individuals' intentions: attitudes, social norms, and perceived behavioral control (Kautonen et al., 2015). Entrepreneurial intentions of entrepreneurs are shaped as a result of the interaction of these factors. For example, if individuals' attitudes towards entrepreneurship are positive and they receive support from their environment, their entrepreneurial intentions tend to increase.

Personal characteristics are also among the determinants of entrepreneurial intentions. Self-efficacy refers to individuals' beliefs about their ability to perform a particular task and has a significant impact on entrepreneurial intentions. Feola et al. (2019) found in their study that young researchers' entrepreneurial intentions are strongly related to perceived behavioral control (Feola et al., 2019). This indicates that individuals' self-efficacy in entrepreneurship plays a critical role in enhancing their entrepreneurial intentions.

In addition, social environments and family support are also important factors affecting entrepreneurial intentions. Social networks play an important role in influencing individuals' attitudes and intentions regarding entrepreneurship. Duong examined the relationship between entrepreneurship education and entrepreneurial intentions and stated that social factors in the field of education affect the entrepreneurial intentions of individuals (Duong, 2022). In this context, social support and environmental factors play an important role in the development of entrepreneurial intentions.

Self-efficacy is a person's belief in their own abilities, and this confidence is shaped by experiences accumulated over time (Günhan and Başer, 2007). Entrepreneurial self-efficacy refers to individuals' beliefs in their abilities to be successful in entrepreneurial activities. This concept plays a critical role in understanding the influence of individuals' confidence in their own skills and abilities on their entrepreneurial intentions and behavior. Entrepreneurial self-efficacy increases individuals' determination to evaluate new business opportunities and implement these opportunities (Martyajuarlinda and Kusumajanto, 2018).

Entrepreneurial self-efficacy is based on Bandura's theory of self-efficacy. This theory suggests that individuals' beliefs about their ability to perform a particular task affect their likelihood of successfully performing that task. Self-efficacy positively affects entrepreneurial intentions by increasing individuals' ability to cope with the challenges they face (Pulami, 2023). In particular, individuals with high levels of self-efficacy tend to engage more in entrepreneurial activities.

Entrepreneurial self-efficacy also has a significant impact on individuals' entrepreneurial intentions. Pulami examined the effect of self-efficacy on entrepreneurial performance and showed that individuals with high levels of self-efficacy are more successful in entrepreneurial activities (Pulami, 2023). This reveals that entrepreneurial self-efficacy plays a critical role in enhancing individuals' entrepreneurial intentions.

Additionally, social support and environmental factors are among the important factors affecting entrepreneurial self-efficacy. Self-efficacy can be strengthened by the support individuals receive from their social network. Fauziyah and Pangaribuan examined the relationship between social support and entrepreneurial self-efficacy and found that individuals who receive social support have higher levels of self-efficacy (Fauziyah and Pangaribuan, 2023). In this context, social environment and support play an important role in the development of entrepreneurial self-efficacy.

In conclusion, based on the studies in the literature, entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy represent complementary elements of the entrepreneurial process. Resilience enables entrepreneurs to cope with challenges, while self-efficacy strengthens individuals' belief in themselves. These two characteristics directly contribute to the realization of entrepreneurial intentions. The development of these elements in entrepreneurship education and support programs is among the basic factors that increase the probability of entrepreneurs to be successful in the long term.

4. Methodology

Bibliometric analysis means examining publications in a specific field using mathematical and statistical methods (Pritchard, 1969; Sökmen et al., 2023). These analyses provide statistical data by examining studies related to the researched field from various perspectives such as author, subject, keywords, citations and sources used. In this way, the conceptual, intellectual and social structure of the discipline studied becomes understandable (Çetinkaya Bozkurt and Çetin, 2016). Therefore, bibliometric analysis is a widely used method (Erkan, 2020).

The R statistical program is recognized as a powerful tool for bibliometric analysis. In particular, the "bibliometrix" package offers researchers the opportunity to perform operations such as literature review, scientific mapping and data visualization. In this context, bibliometrix's "biblioshiny" interface facilitates the analysis and reporting of bibliometric data by providing a

intuitive platform. For these reasons, the R statistical program and the bibliometrix package have become indispensable tools for bibliometric analysis.

Within the scope of this study, firstly, the Web of Science database was entered and studies containing the expressions "entrepreneurial resilience", "entrepreneurial intentions" and "entrepreneurial self-efficacy" were searched using the conjunction "or" in the title section and 2525 studies were reached. The data of the results were transferred to the R software environment and a bibliometric analysis was performed. The "bibliometrix" package was utilized in the analysis process. "Bibliometrix" is a tool developed by Aria and Cuccurullo (2017) for use in the R platform, allowing detailed analysis of studies in the literature and monitoring of processes on a specific subject.

5. Findings

The 2525 studies covered in our research include studies between 1988 and 2025. The numerical data of the studies are presented in Table 1.

Table .1 Basic Information About the Dataset

DESCRIPTION	RESULTS
Basic Information About the Dataset	
Time Range	1988:2025
Sources (Journals, Books, etc.)	779
Documents	2525
Average Age of Document	4.43
Average Citations per Document	29.08
Document Content	
Keywords Plus (ID)	1812
Author's Keywords (DE)	4395
Authors	
Authors	6586
Authors of Single-Author Documents	234
Author Collaboration	
Single Author Documents	283
Co-Authors per Document	3.34
International Co-Authorship Rate %	30.65

When Table 1 is examined, it is seen that there are 779 different sources where these studies are published. The average citation rate per article per year is 29.08. The number of single-authored articles is 283, which constitutes 11% of the total studies examined. Another important finding of the study is that the international co-authorship rate is 30.65%. This situation is noteworthy in terms of emphasizing that our study is a suitable area where different researchers can collaborate. Figure 1 was created to examine the distribution of studies on the subject by year.

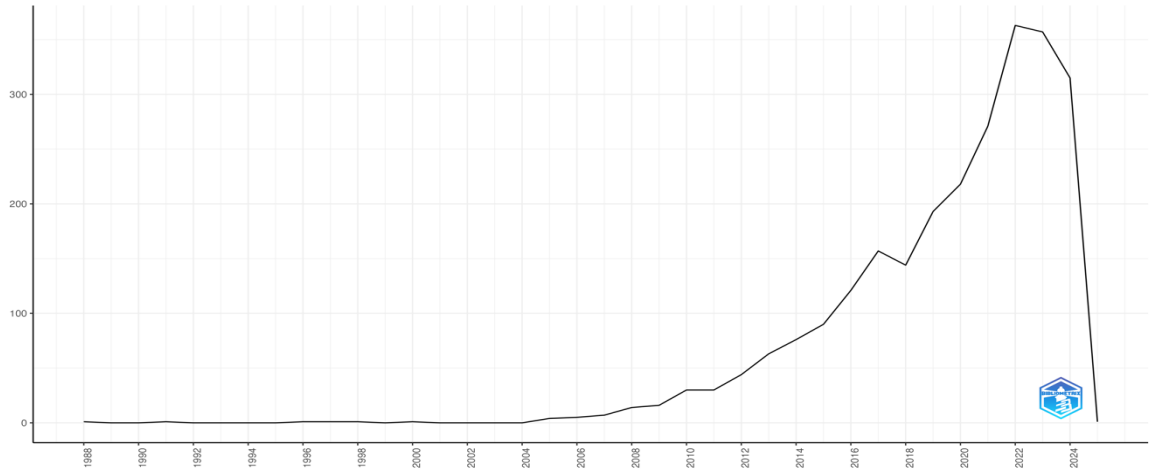

Fig. 1 Change in the Number of Articles by Year

Figure 1 shows that there were almost no studies conducted between 1988 and 2004, but the number of studies has gained significant momentum over the last 20 years since 2004. Especially as of 2010, a great increase was recorded in the number of studies, and 2022 stands out as the period in which the most studies were conducted. The reason for the decrease in the number of studies in 2024 is due to the fact that the period has not been completed yet. Considering the increase in studies conducted in the last 20 years, it is clear that this topic remains relevant and will be the subject of more studies in the coming years. The years of the most cited studies on the relevant subject are shown in Figure 2.

Fig. 2 Most Cited Years

Figure 2 shows us the average number of citations that studies have received each year since the year they were published. This analysis allows us to evaluate how influential a study is over the years and the speed at which it is cited. This analysis reflects the effectiveness of studies conducted between 1997-2006. Figure 3 analyzes the sources that work on the subject.

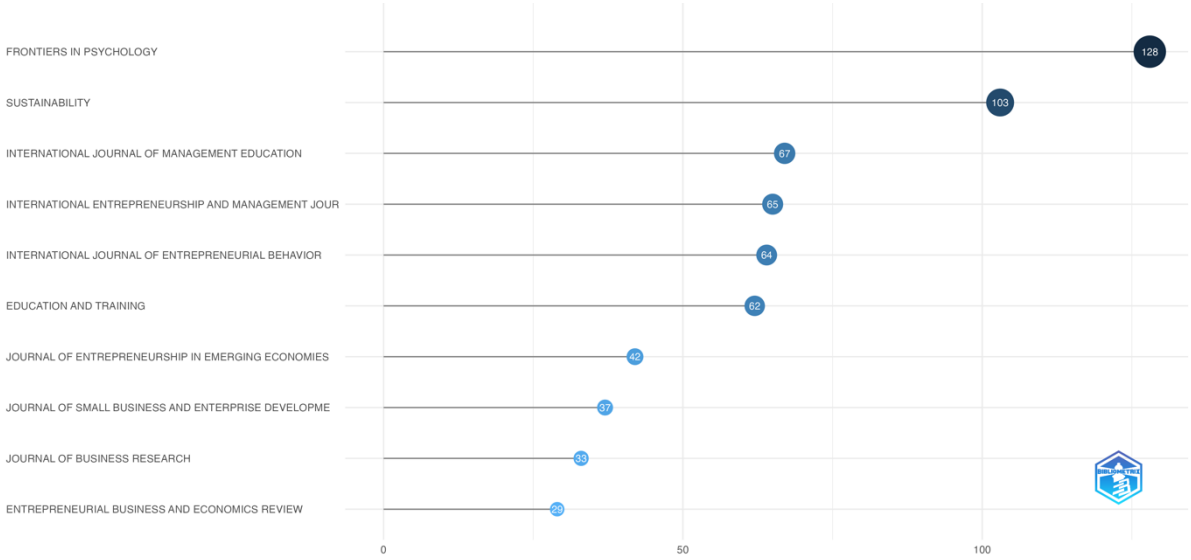

Fig. 3 Most Relevant Sources

Figure 3 indicates that the source that shows the most interest in the subject of the study is Frontiers in Psychology with 128 studies. Frontiers in Psychology is followed by Sustainability with 103 studies. Figure 4 shows the publication of sources that have shown interest and work on the subject over the years.

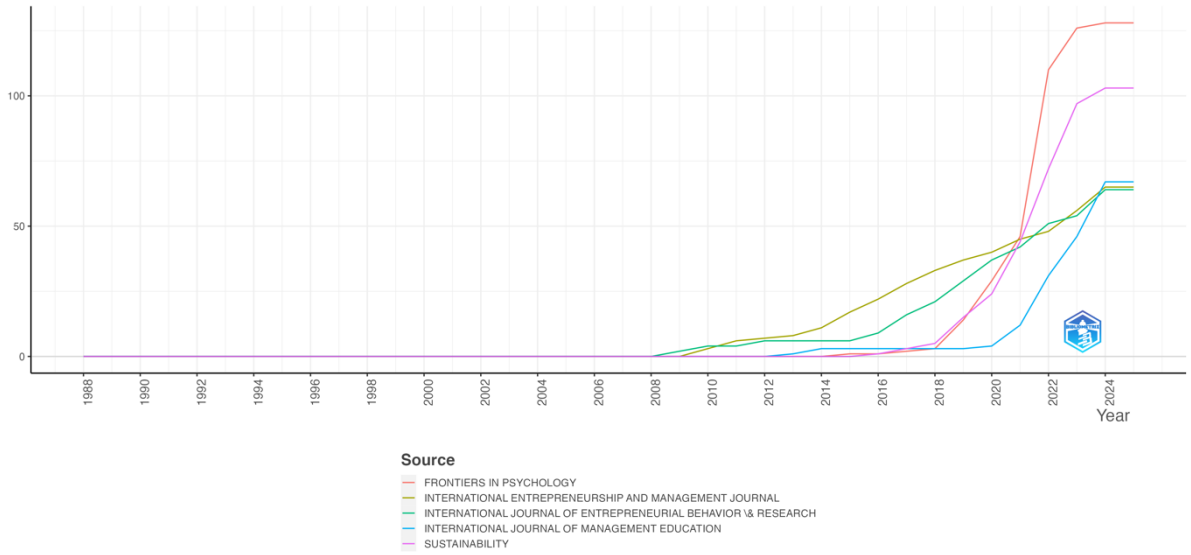

Fig. 4 Publication of Related Sources Over the Years

When Figure 4 is examined, it can be observed that the sources that show interest in the subject have focused on studies related to the subject, especially since 2008. Figure 5 illustrates the researchers who have shown the most interest in the subject.

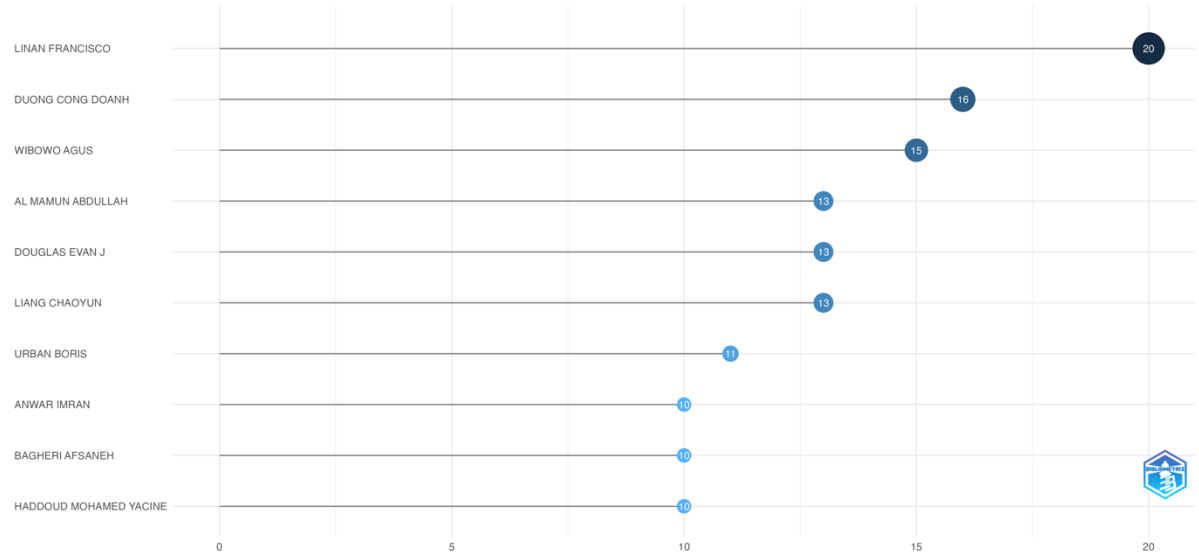

Fig. 5 Most Relevant Authors

When Figure 5 is examined, it is seen that Francisco Linan has done the most work on the subject. Figure 6 presents the institutions that are most significantly engaged with the subject matter.

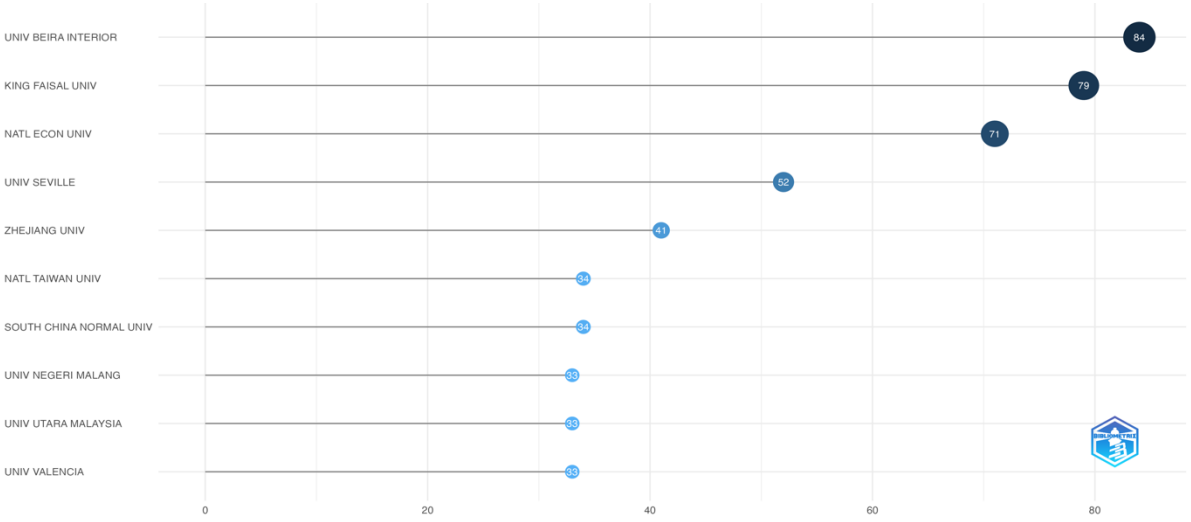

Fig. 6 Most Relevant Institutions

An examination of the most relevant institutions reveals that Beira Interior University has the highest level of engagement with the subject, with a total of 84 studies. Figure 7 shows the number of studies of the relevant institutions over the years.

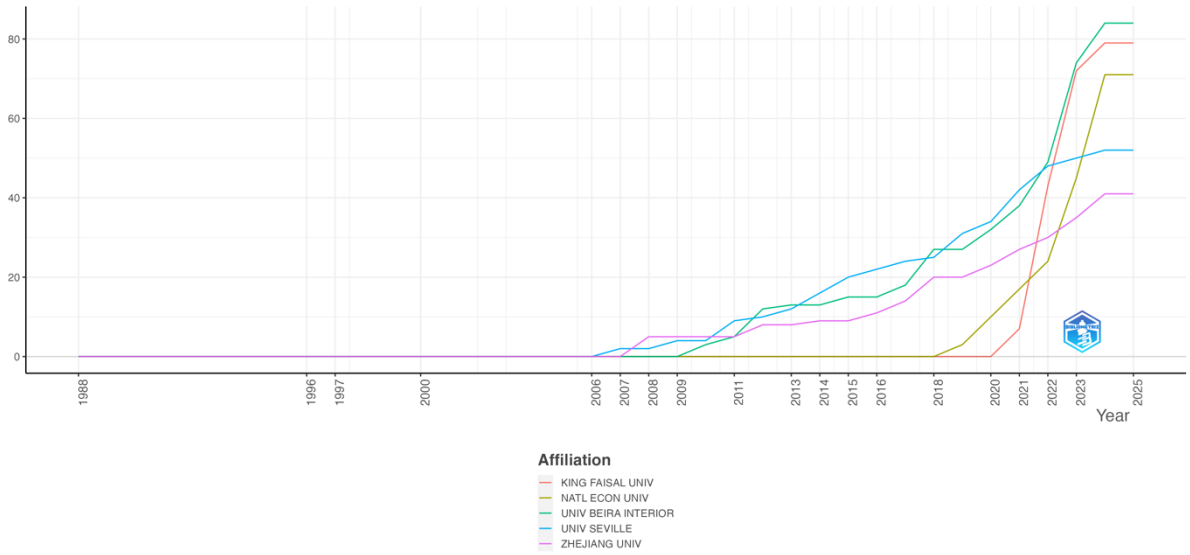

Fig. 7 Number of Studies of the Relevant Institutions Over the Years

When the publications of the relevant institutions are examined over the years, it is seen that the institutions interested in the subject started to deal with the subject especially after 2006. The increasing number of studies since 2006 shows that the interest of the relevant institutions in the subject continues and the subject maintains its current status. Figure 8 indicates the countries of the corresponding authors and their joint or sole publication status.

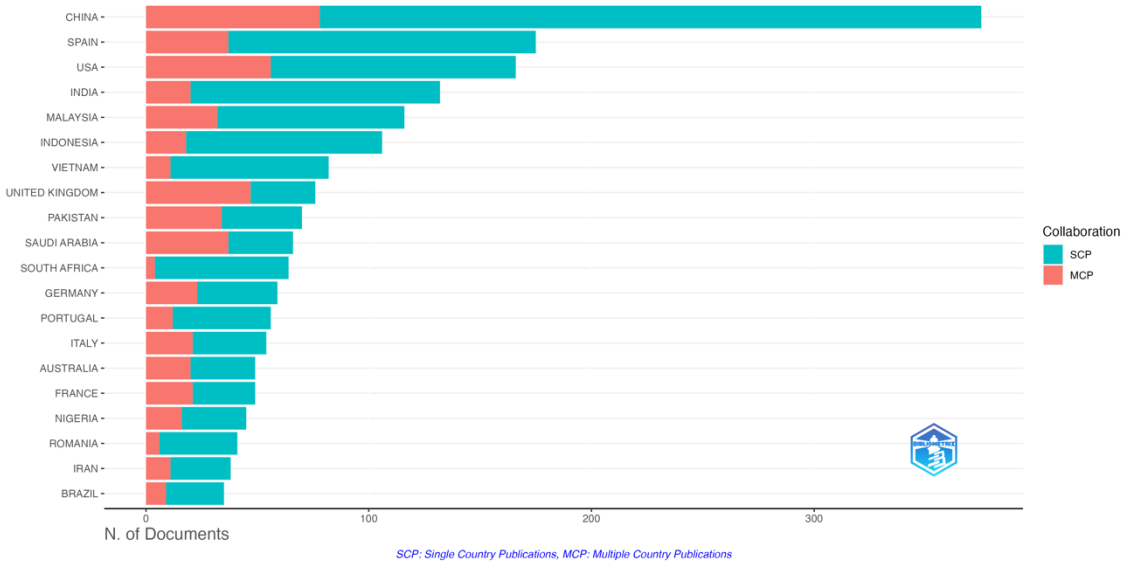

Fig. 8 Corresponding Author Countries and Joint or Individual Publication

Figure 8 reveals that more than half of the studies carried out are from a single country. However, the fact that the number of multinational publications is too high to be ignored reveals that the subject is a concept that can be collaborated on. In addition, our analysis also shows that the country with the most interest in the subject is China.

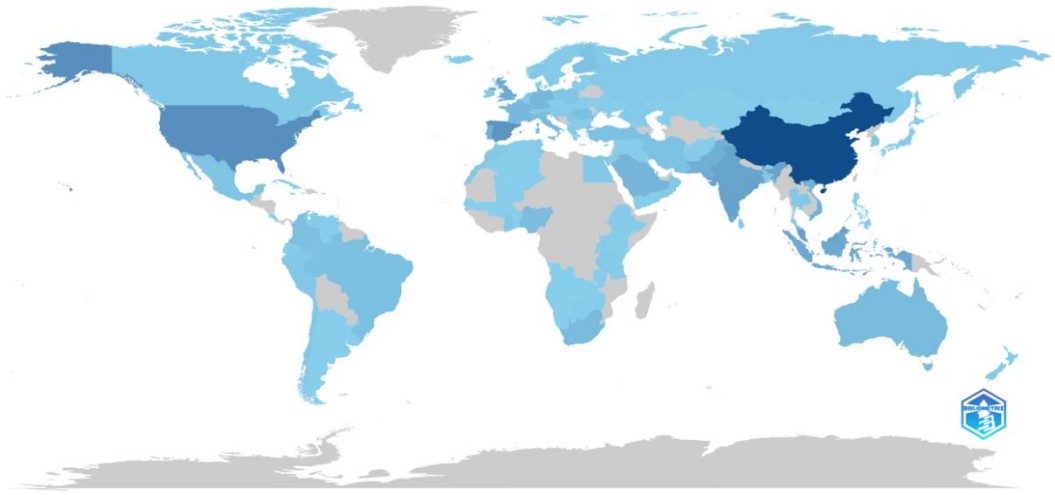

Fig. 9 Scientific Publications of Countries

When examining the map, it is seen that the countries are colored in different colors, from dark blue to light blue and gray. These colors represent the number of articles in each country. In the countries highlighted in grey, there are no articles on the relevant topic in the database. Blue tones indicate that the number of articles in the countries decreases as the tones move from dark to light. In other words, the countries highlighted in dark blue represent countries with higher scientific productivity in this field. Figure 10 shows the scientific publications of countries by year.

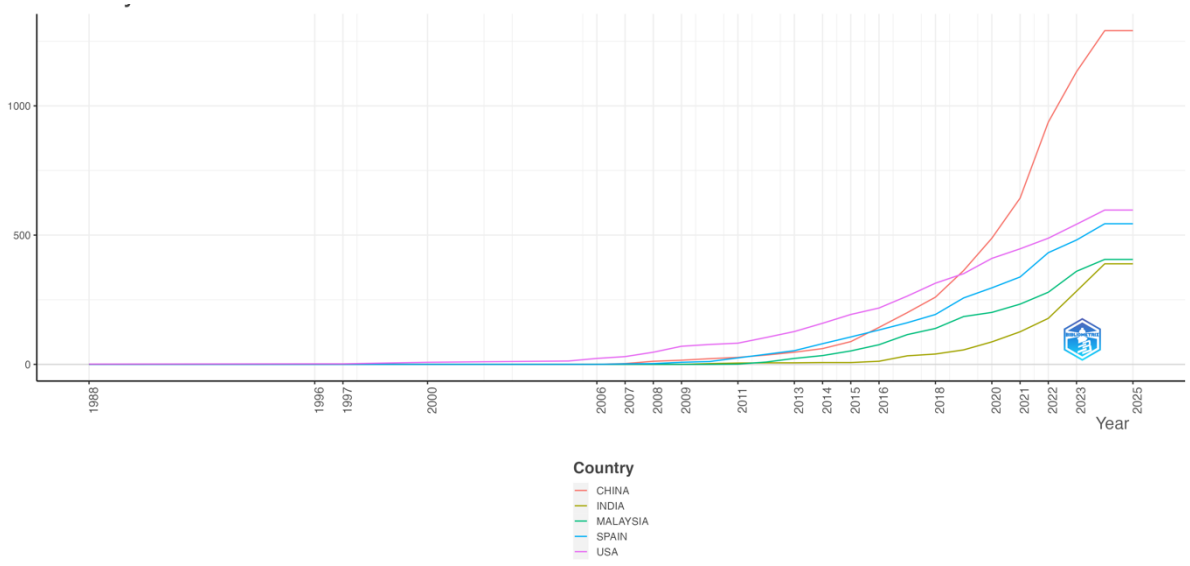

Fig. 10 Scientific Publications of Countries by Year

When Figure 10 is examined, it is evident that the interest of the relevant countries started in 2006, just like the relevant institutions. It is seen that China is the country that has shown the most interest in the subject, especially with its increasing momentum in recent years. China is followed by the USA, Spain, Malaysia and India, respectively. The interest of Far Eastern countries in the subject attracts attention. Figure 11 shows the countries with the most cited studies.

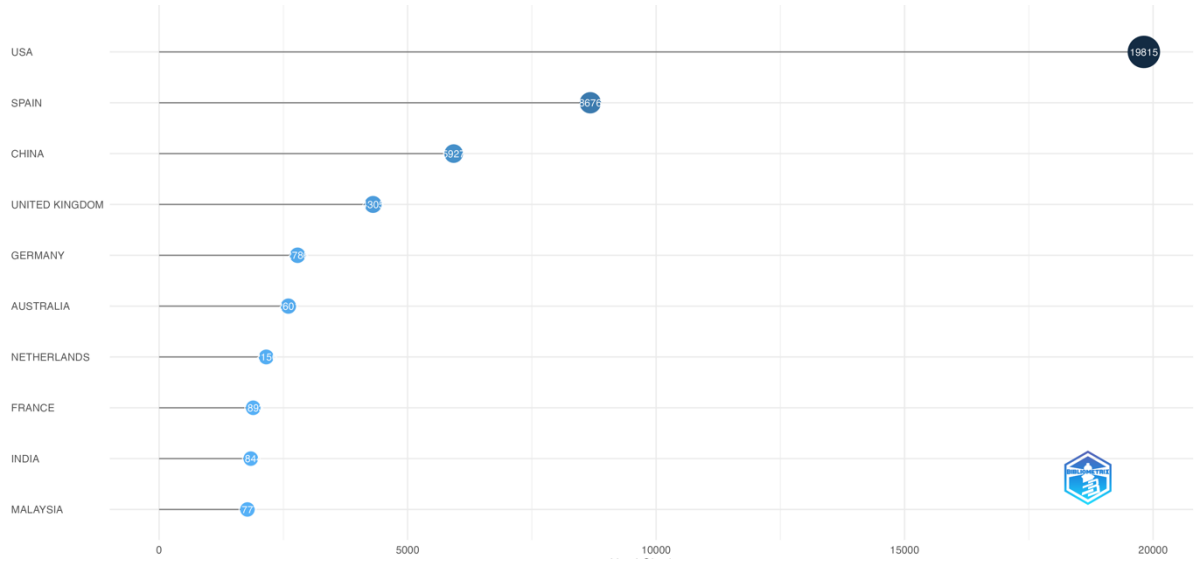

Fig. 11 Most Cited Countries

When the scientific publication of countries was analyzed, it was seen that the most studies belonged to China. In the analysis of the countries with the most citations, the USA ranks first. This shows us that the studies conducted by researchers in the USA are more effective. Another noteworthy detail in the analysis is that researchers in China should pay more attention to their work. Figure 12, Figure 13, Figure 14 and Figure 15 show the analysis of the words used in the study area.

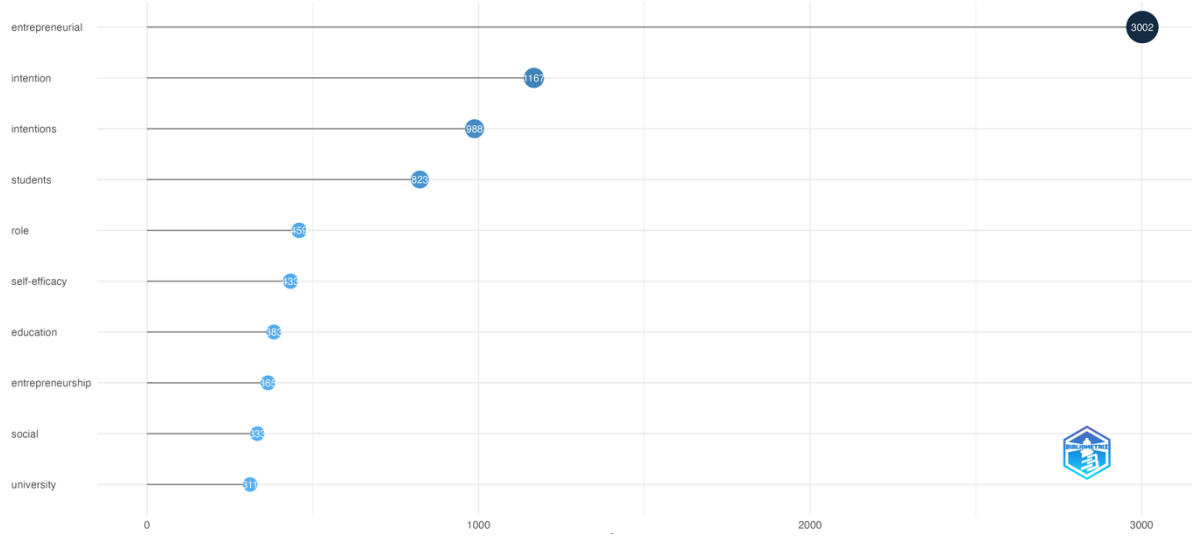

Fig. 12 Most Relevant Words

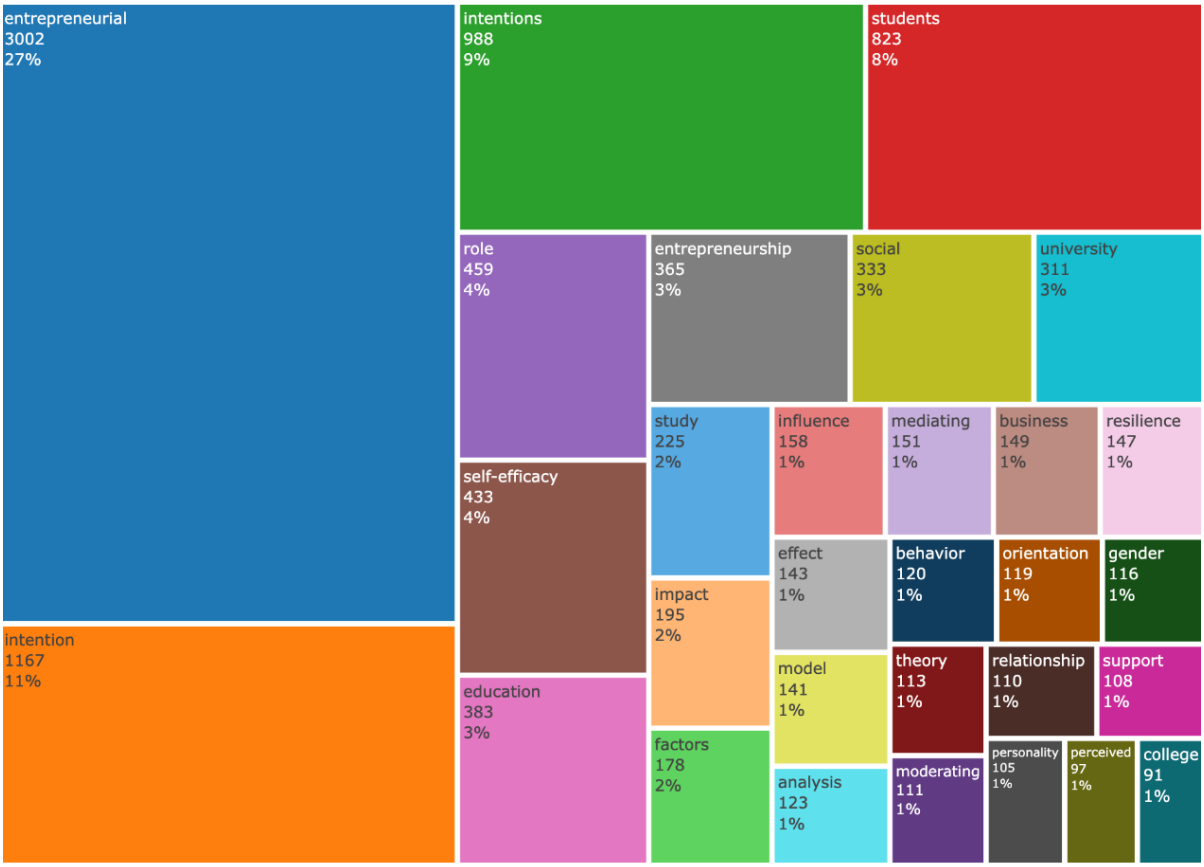

Fig. 13 Word Tree Map

Fig. 14 Word Cloud

When the analyses of the most used words in the studies are examined, it is seen that the word "entrepreneurial" is the most preferred word. This word is followed by the words "intention" and "intentions" in order of frequency. The word analyses were made by selecting the "title" format and show the most preferred words in the titles.

Word cloud and word tree are one of the text mining methods and visually present the most frequently used terms in a text. In the word cloud, proximity to the center and the size of the words indicate that the relevant terms are related and frequently used, while distance from the center and smaller words indicate that these terms are less preferred (Aslancı, 2022). As seen in the word cloud analysis, the research area is closely related to initiative and entrepreneurial intentions, resilience and self-efficacy.

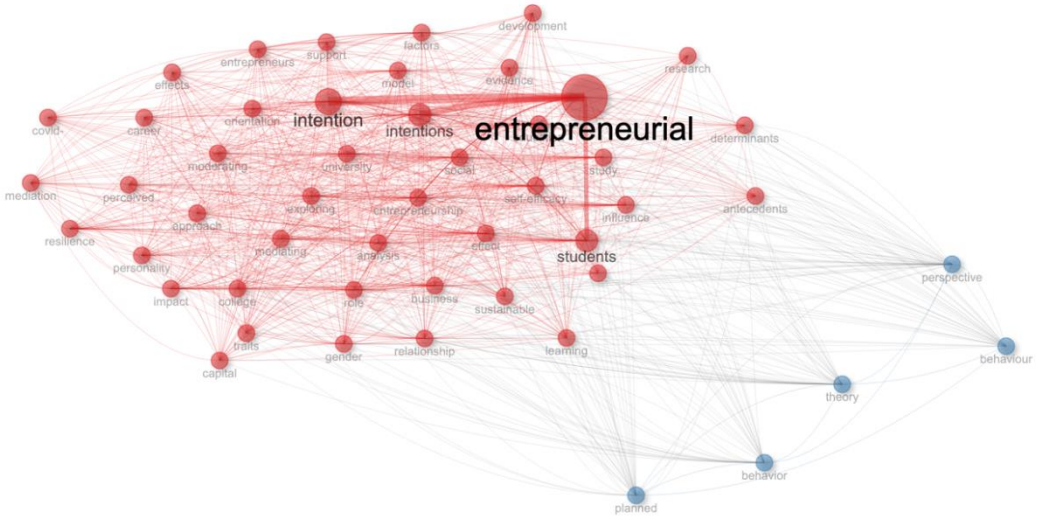

Fig. 15 Co-occurrence of Words Used in the Studies

When the co-occurrence of terms used in the studies conducted is examined within the scope of Figure 15, it is observed that two separate clusters emerge. Clusters are created based on the terms included in the studies and their combined use. Figure 15, unlike the Word Cloud, Word Tree Map, and Most Related Words graphs we presented earlier, also provides information on the combined use of the most frequently used terms in the studies. Interdisciplinary fields and the interactions of interdisciplinary fields are also clearly seen in our analysis.

6. Conclusion

Although the studies conducted on enterprise and entrepreneurship are mostly new and up-to-date, they have a wide range of interdisciplinary literature. In this context, the concepts of "enterprise" and "entrepreneurship" can be found in many studies. Entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy are also very important concepts that are completely related to the subject of entrepreneurship. As a result of our examinations, it is seen that there has been a significant increase in the number of studies conducted especially after 2006. In this regard, it is thought that the most important factor in the increase in interest in studies on entrepreneurial resilience, entrepreneurial intentions and entrepreneurial self-efficacy are increasing economic competition and globalization.

Especially the abundance of research conducted in the last 20 years and the association of the subject with various literatures create difficulties for researchers. In this context, it is thought that it would be beneficial for researchers to review this study in order to save time and energy. Our analysis clearly shows researchers which studies to review, which institutions they can access effective resources through, and which concepts and terms they should focus on.

As a result of our study, it is found that the country most interested in the subject is China, but the most cited researchers are from the USA. This provides us with the information that the research quality of studies by researchers in the USA is better. However, the interest of Far Eastern countries in the subject is another result that should not be overlooked. It is seen that the most interested researcher in the subject is Francisco Linan with 20 studies and the institution that showed the most interest in the subject is Beira Interior University with 84 studies. In this analysis, the density of institutions in Far Eastern countries among the top 10 is another

remarkable finding. In addition, the high number of multinational publications clearly shows that the subject is an interdisciplinary concept that can be collaborated on. In the analysis, it is seen that the term "entrepreneurial" is the most preferred word among the most frequently used words. This word is followed by the terms "intention" and "intentions", respectively. When the co-occurrence analysis of words is examined; it is observed that two separate clusters emerge. Here, the link between initiative and intention and its frequency is another result we reached in our analyses.

Considering the increasing currency of the subject and its impact on interdisciplinary concepts, it is thought that our study will make deep contributions to the literature and to researchers who will want to conduct research in the future.

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HARMONIC ANALYSIS OF THE LONG-TERM COINTEGRATION BETWEEN PETKIM STOCK PRICES AND USD/TL EXCHANGE RATES

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ABSTRACT

This study employs harmonic analysis to investigate the relationship between Petkim stock prices and the USD/TL exchange rate. The harmonic analysis is a robust analytical method in modern time series analysis, particularly suitable for data exhibiting stationary characteristics without any apparent trend. This approach emphasizes the importance of considering both linear, nonlinear, and periodic components to fully understand and predict the dynamics of the financial market, demonstrating significant implications for econometric modeling. The dynamics between stock prices and exchange rates attract attention due to their profound impact on economic indicators and investment strategies in the volatile world of financial markets. Our study covers the period from May 1, 2023, to March 29, 2024, marked by significant economic events and policy changes potentially affecting Turkey's capital and currency markets. Consequently, a model with a parabolic (quadratic) trend for both factors and small amplitude sinusoidal and cosinusoidal departures around this trend has been constructed.

1. Introduction

During the period under study, several significant economic and political events impacted Petkim stock prices and the USD/TL exchange rate. One of these was the adjustments in monetary policy by the Central Bank of the Republic of Turkey, particularly changes in interest rates aimed at curbing inflation, which affected investor confidence and market liquidity. These changes directly influenced the USD/TL exchange rate and indirectly impacted financial markets, including Petkim stocks. Petkim's operations in the petrochemical sector have shown high sensitivity to global oil prices. During the monitored period, volatility in oil prices was observed due to OPEC's revenue decisions and geopolitical tensions in oil-producing regions. This volatility affected Petkim's operational costs and profitability, subsequently influencing its stock prices. Additionally, Turkey's high inflation rates led to the depreciation of the Turkish lira, increasing the costs of imported raw materials and reducing the global competitiveness of Petkim's products. Depreciation also affected financial transactions related to foreign trade and investment flows, causing fluctuations in the USD/TL exchange rate.

2. Analysis of recent publications

In the paper, the initial conditions for the manifestation of cointegration approaches amid fluctuations in the AZN/TRY and USD/TL exchange rates during the sharp depreciation of the Turkish lira in the first half of 2023 were examined (Burjaliyeva, 2024). The study employed modern econometric methodologies, including the Johansen cointegration test, Granger causality test, vector error correction, and other relevant approaches. In this article, the mathematical model of the financial market in continuous time with models of stochastic moving technical dynamic systems is constructed, where the coordinates of this vector are established from the vector-matrix differential equation of the state vector of the financial market (Оруджев, 2009). The article studied the properties of trajectories, mathematical expectations, and dispersions of these trajectories with certain constraints on the coefficients of the differential system, and solves the system of differential equations for the covariance matrix. Additionally, stability and instability in markets, as well as explosive fluctuations leading to major financial disasters, were also addressed. The structural changes in the AZN/RUB and USD/RUB exchange rates amid increasing sanctions against Russia from January 2, 2023, to September 6, 2023 (five-day indicators, 178 observations), were examined considering the error correction mechanism (ECM) and autoregressive distributed lag (ARDL) models (Orudzhev and Mamedova, 2024). The precise specification of regression models confirming the statistically weak significant co-directional impact of changes in the USD/RUB exchange rate on the AZN/RUB exchange rate was determined. An econometric analysis of changes in the USD/AZN exchange rate based on real indicators from January 1, 2013, to January 10, 2017, was conducted, with their endogenous variability obtained through empirical analysis (Orudzhev et al., 2018). The most suitable model for exchange rate dynamics was constructed using computer modeling, mean-square error indicators of convergence, and Fourier series approach with mean-square divergence and time-dependent behavior in the time series (Orudzhev and Mamedova, 2020). This study was based on 360 daily observations of EUR/AZN currency exchanges from February 3, 2017, to August 3, 2018.

Harmonic analysis is widely used in technical fields, but it is unusual in economics and finance, where ARIMA and GARCH modeling are more commonly employed. The identification of hidden periodic components in high-frequency financial data using harmonic analysis was studied here, with the example of foreign exchange rates (Dolinar, 2013). Statistical analysis methods necessary for constructing double regression models (variance analysis, correlation-regression analysis, statistical assumptions in data analysis) for theoretical analysis of forecast indicators (Hall, 1992), error variance decomposition, and modeling calculations, as well as two-dimensional vector autoregression models and cointegration in these models, approaches to modern economic and mathematical modeling (Verbeek, 2012; Orudzhev, 2018), EXCEL software packages (Воскобойников, 2008) and Eviews-12 software package (Матюшок et al., 2011) were used. The study examined the impact of global crises, including the Global Financial Crisis (GFC), the COVID-19 pandemic, and the subsequent inflation crisis, on changes in the Real Effective Exchange Rate (REER) (Mierzejewski and Prażmowski, 2024). The periodicity of the REER was investigated as influenced by economic shocks, highlighting how the economic disruptions caused by the pandemic shaped REER dynamics differently from the more financially driven fluctuations of the GFC. The methodology used a comparative harmonic analysis approach, utilizing time series data to track REER movements across various countries. Findings indicate that the GFC and COVID-19 pandemic shortened the periods of cyclicality. Additionally, there was a notable improvement in the synchronization of REER movements

post-GFC, suggesting that economies may converge in their responses to global economic shocks. This convergence implied potential stabilization of exchange rate movements in future crises, emphasizing the importance of coordinated monetary policy.

3. Methodology

Harmonic analysis is a methodology used to analyze periodic changes in time series of variables. This analysis aims to identify seasonal or cyclical components within the data. The basic idea of the Fourier series is to approximate a periodic function as a combination of simple oscillating functions, particularly sines and cosines.

$$\hat{y}_t = a_0 + \sum_{k=1}^{m}(a_k \cos kt + b_k \sin kt),\ \text{t=1,2,...,n} \quad (1)$$

Here, $\hat{y}_t$ represents the value of the trend function at time (t) in the model constructed for the time series using harmonic analysis. The parameter (k) denotes the number of the harmonic in the Fourier series, (m) represents the total number of harmonics, (n) indicates the total number of observations in the series, and (t) is the time variable, which can take values such as $0,\frac{2\pi}{n},\frac{2*2\pi}{n},\ldots,\frac{(n-1)*2\pi}{n}$.

The parameters of the model given in (1) can be calculated using the Ordinary Least Squares (OLS) method. By applying this method, a system of (2m+1) normal equations is obtained, from which the following estimation expressions can be derived through simple algebraic calculations:

$$a_0 = \bar{y}_t,\ \text{(t=1,2, …n)} \quad (2)$$

$$a_k = \frac{2}{n}\sum_{t=1}^{n} y_t \cos kt,\ \text{k=0,1,..,}\ \frac{n}{2} \quad (3)$$

$$b_k = \frac{2}{n}\sum_{t=1}^{n} y_t \sin kt,\ \text{k=0,1,…,}\ \frac{n}{2} \quad (4)$$

After estimating the parameters, it is determined which harmonic best describes the harmonic variation of the time series. Increasing the number of harmonics improves the accuracy of the approximation, but this can also increase the value of the quadratic deviation. An increase in quadratic deviation reduces the significance of the model. The mean square deviation is used to indicate how much the observed indicators deviate from the average level of the series. The smaller the mean approximation error and the mean square deviation for the given series, the more adequate the constructed model will be. The mean square deviation is calculated using the following formula:

$$\sigma_{y_t} = \sqrt{\frac{\sum_{t=1}^{n}(y_t-\hat{y}_t)^2}{n-m}} \quad (5)$$

The mean approximation error is determined using the following formula:

$$\bar{\epsilon} = \frac{1}{n}\sum_{t=1}^{n} \left|\frac{y_t-\hat{y}_t}{y_t}\right| \cdot 100\% \quad (6)$$

The main computational formula of harmonic analysis can also be written in the following forms:

$$\hat{y}_t = a_0 + \sum_{k=1}^{m} c_k(\cos kt + \varphi_k) \quad (7)$$

or

$$\hat{y}_t = a_0 + \sum_{k=1}^{m} c_k(\sin kt + \varphi_k) \quad (8)$$

Here, c_k-is the amplitude of the constructed model, φ_k-is the phase of the model.

Amplitude

$$c_k = \sqrt{a_k^2 + b_k^2} \tag{9}$$

Phase

$$\varphi_k = \operatorname{arctg}\left(\frac{-b_k}{a_\kappa}\right) \tag{10}$$

is calculated as follows.

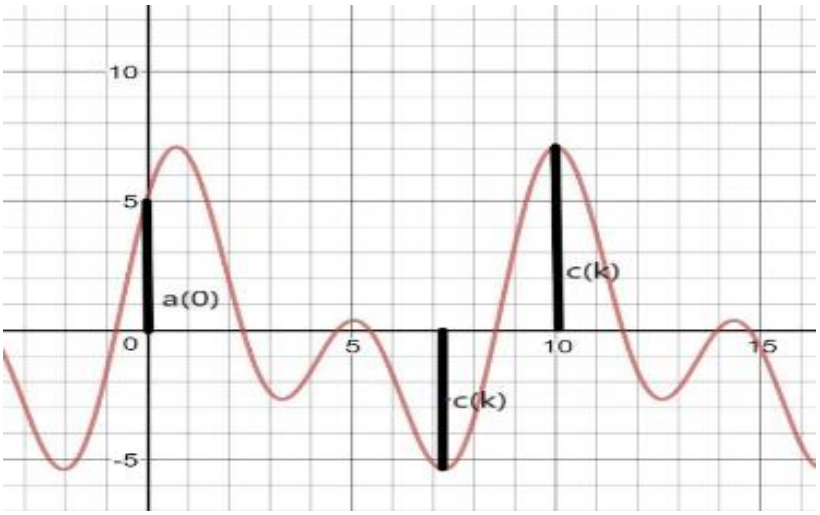

Fig.1 Description of phase and amplitude

The amplitude indicates how far the graph of the model constructed using harmonic analysis is from the (t) (abscissa) axis (graph 1). The distribution of the amplitude of the harmonic components of the signal by frequencies is the amplitude spectrum, while the corresponding distribution of phases is the phase spectrum.

4. The main results of the study

The descriptive statistics of the factors studied are presented in the table below

Table 1. Descriptive statistics

	PETKIM_PRICE	USD/TL
Mean	19.18921	27.39615
Median	19.75000	27.78490
Maximum	25.44000	32.44910
Minimum	11.83000	19.44950
Std. Dev.	3.449713	3.373346
Skewness	-0.405601	-0.959881
Kurtosis	2.308189	3.392066
Jarque-Bera	11.36653	38.39199
Probability	0.003402	0.000000
Sum	4605.410	6575.075
Sum Sq. Dev.	2844.224	2719.691
Observations	240	240

The descriptive statistics indicate that both factors exhibit left-skewed asymmetry. However, the asymmetry is weak in Petkim, whereas it is significant in USD/TL. The kurtosis values satisfy the 3±1 conditions, indicating a distribution close to normal. However, the Jarque-Bera test rejects the normality assumption.

We apply harmonic analysis to the growth rate of Petkim stock prices and changes in the USD/TL exchange rate. Daily data from May 1, 2023, to March 29, 2024, comprising 240 observations for each parameter, are used [13-14] .

First, let's examine the single harmonic model for each parameter, which corresponds to (m = 1). The movement dynamics and smoothing curve depicted in figure 2 can be obtained using the instrumentation procedures for MS EXCEL.

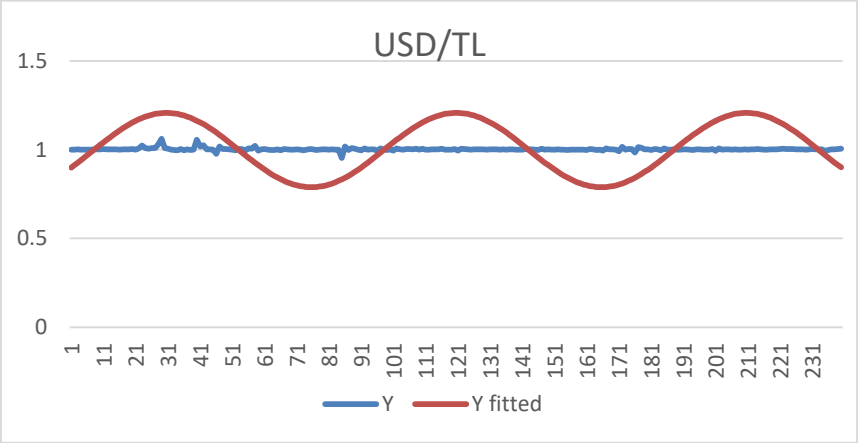

Fig 2. USD/TL exchange rate motion dynamics and smooth curve in the case of one harmonic

Based on the graph, the analytical form of the trend function for USD/TL is depicted below:

$$USD/TL_t = 1 - 0.111cos(t) + 0.177sin(t) \quad (11)$$

Here, for USD/TL, the mean square deviation is σ=0.1414, and the mean error of approximation is $\bar{\varepsilon}$=12.53%.

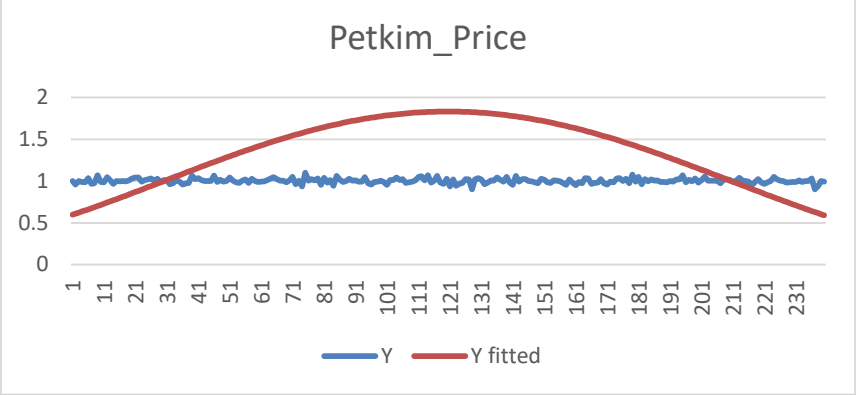

Fig. 3 Petkim stock price motion dynamics and smooth curve in the case of one harmonic

From the graphical representation, the analytical form of the trend function for Petkim stock prices is as follows:

$$PETKIM\_PRICE_t = 1 - 0.418cos(t) + 0.716sin(t) \quad (12)$$

For Petkim, the mean square deviation is σ = 0.3951, and the mean approximation error is $\bar{\varepsilon}$= 44.7%. Now, let's consider the two-harmonic model, i.e., the case where (m = 2). The dynamic description can be obtained by performing the relevant algorithmic procedures in the EXCEL software package, as shown in figures 2 and 3.

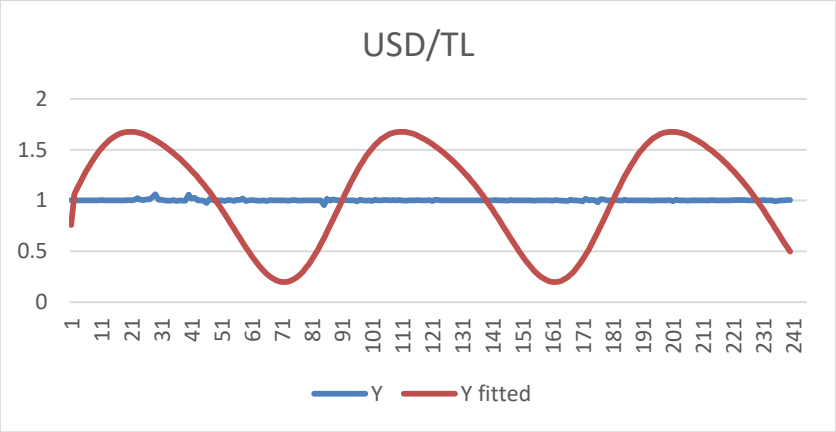

Fig. 4 USD/TL exchange rate motion dynamics and smooth curve in the case of two harmonics

The analytical form of the model is shown as the following trigonometric expression:

$$USD/TL_t = 1 - 0.111cos(t) + 0.045cos2(t) + 0.715sin(t) + 0.092sin2(t) \quad (13)$$

For USD/TL, the root mean square deviation is σ=0.4959, and the mean error of approximation is $\bar{\varepsilon}$=44.58%.

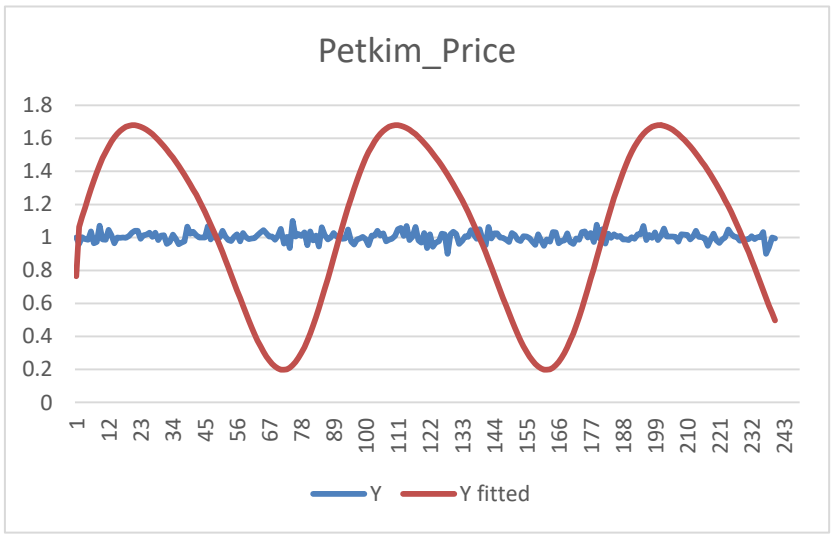

Fig. 5 Petkim stock price motion dynamics and smooth curve in the case of two harmonics

$$PETKIM\_PRICE_t = 1 - 0.108cos(t) + 0.043cos2(t) + 0.715sin(t) + 0.094sin2(t) \quad (14)$$

For Petkim, the mean square deviation σ=0.4955, and the mean error of approximation, $\bar{\varepsilon}$=44.62%.

Now let's look at the case of m = 3.

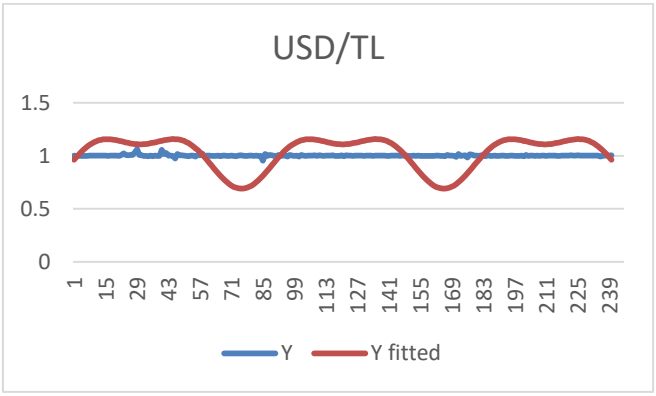

Fig. 6 USD/TL exchange rate motion dynamics and smooth curve in the case of three harmonics

Based on the graph, the analytic function of the trigonometric model is as follows.

$$USD/TL_t = 1 - 0.111\cos(t) + 0.045\cos2(t) + 0.001\cos t3(t) + 0.177\sin(t) + 0.092\sin2(t) + (-6.2E-05)\sin3(t) \quad (15)$$

For USD/TL, the mean square deviation σ= 0.15184, and the mean error of approximation, $\bar{\varepsilon}$= 13.64917%.

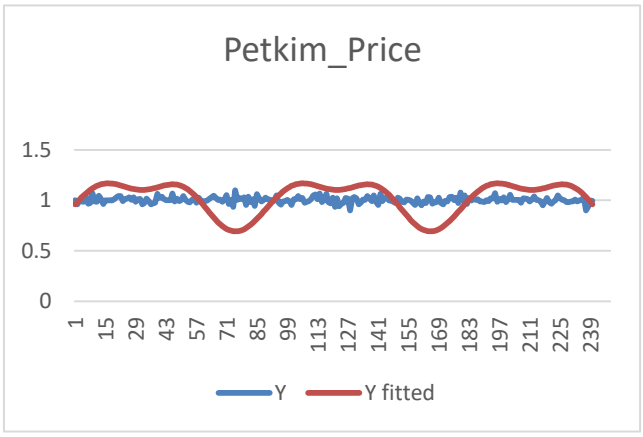

Fig. 7 Petkim stock price motion dynamics and smooth curve in the case of three harmonics

Based on the graph, the analytic function of the trigonometric model is as follows.

$$PETKIM\_PRICE_t = 1 - 0.108\cos(t) + 0.043\cos2(t) - 0.002\cos t3(t) + 0.179\sin(t) + 0.094\sin2(t) - 0.006\sin3(t) \quad (16)$$

For Petkim, the mean square deviation σ= 0.1545, and the average error of approximation, $\bar{\varepsilon}$= 13.86055%.

Since the values of mean square deviation and approximation increase in the next harmonics, it is possible to be satisfied with the separation of only 3 harmonics.

It should be noted that the phase for each harmonic must be calculated separately. In harmonic analysis, phase angles (φ) represent the displacements or time differences of cyclic components relative to a sinusoidal reference. These phase changes are crucial for interpreting dynamic relationships and synchronizations between different time series, such as Petkim stock prices and USD/TL exchange rates. The econometric interpretation of the phase angles for both time series is provided below:

Phase for Petkim φ_1=1,042582rad, φ_2= -1,13818rad, φ_3=-1,12675rad

Phase for USD/TL φ_1= 1,010780141rad, φ_2= -1,11586rad, φ_3= 0,115983rad

Now, let's do a visual analysis of each indicator. A quadratic trend is the best trend, and small harmonic oscillations of the sin and cos type are made around this parabola.

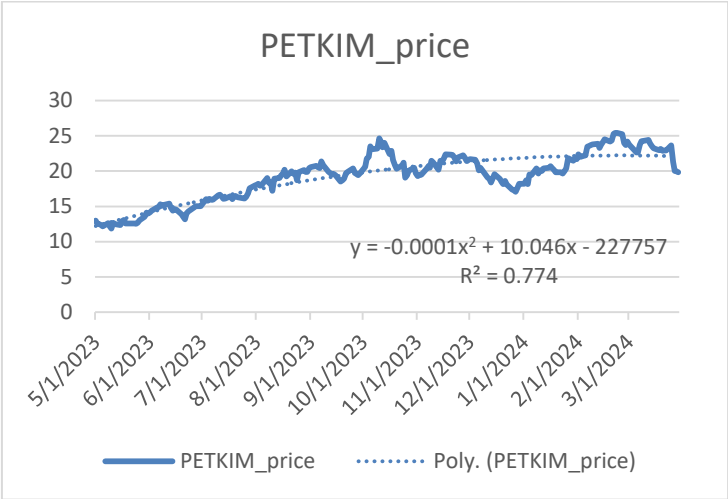

Fig. 8 Dynamics of Petkim Stock Prices

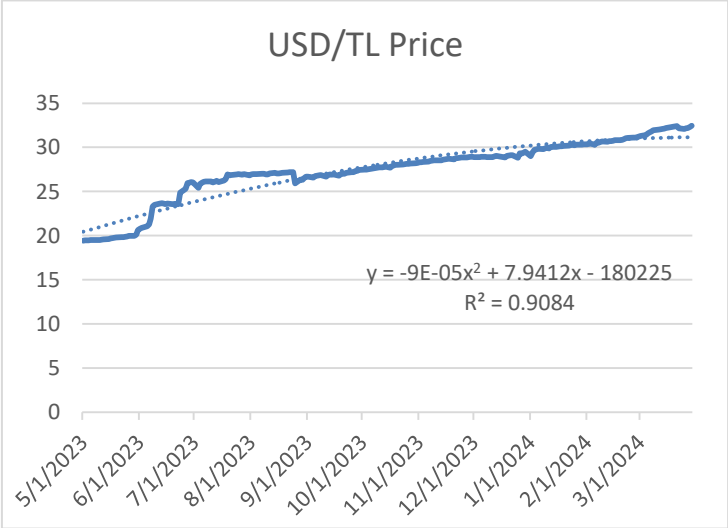

Fig. 9 Dynamics of USD/TL

In USD/TL dynamics, the best approximation of the trend is the quadratic trend. The general dynamics are small harmonic oscillations around this trend.

As a result,

$$USD/TL_t = -9\text{E}-05\text{x}^2 + 7{,}9412\text{x} - 180225 + 1 - 0.111\cos(\text{t}) + 0.045\cos2(\text{t}) + 0.001\cos t3(\text{t}) + 0.177\sin(\text{t}) + 0.092\sin2(\text{t}) + (-6.2\text{E}-05)\sin3(\text{t}) \quad (17)$$

$$PETKIM_t = 0{,}0001\text{x}^2 + 10{,}046\text{x}227757 + 1 - 0.108\cos(\text{t}) + 0.043\cos2(\text{t})0.002\cos t3(\text{t}) + 0.179\sin(\text{t}) + 0.094\sin2(\text{t}) - 0.006\sin3(\text{t}) \quad (18)$$

Obtained formulas can be applied in trigonometric cointegration analysis and ECM model construction.

Conclusion

This study applied harmonic analysis to explore the long-term cointegration relationship between Petkim stock prices and the USD/TL exchange rate, emphasizing the periodic components that influence the dynamics of these financial variables. By modeling both a parabolic trend and small harmonic deviations, we were able to capture the underlying cyclical behaviors that traditional methods often overlook.

The results demonstrated that the relationship between Petkim stock prices and USD/TL exchange rates is characterized by three primary harmonics, which provide a sufficiently accurate representation of the cyclical fluctuations in both variables. The harmonic analysis revealed that despite significant external factors, such as fluctuations in oil prices, inflation, and monetary policy changes the long-term relationship between these variables remains stable.

The implications of this research are significant for both financial analysts and policymakers. The identification of periodic patterns in stock prices and exchange rates offers a new dimension for forecasting, particularly in volatile markets like Turkey's, where economic indicators can change rapidly. Furthermore, the model's ability to incorporate both linear and nonlinear components makes it a robust tool for understanding the complex dynamics of financial markets. Thus, a model with a parabolic (quadratic) trend and 3-harmonic sine and cos deviations of small amplitude around them was built for both factors.

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A CONCEPTUAL APPROACH TO IMPLEMENTING THE NET PROMOTER SCORE IN HIGHER EDUCATION

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ABSTRACT

The Net Promoter Score (NPS) has emerged as a well-known measure for assessing customer satisfaction and loyalty across different sectors, including higher education. This study examines how NPS is applied in higher education institutions to assess student satisfaction, loyalty, and overall institutional effectiveness. This study explores how adapting NPS, typically used in business environment, to the specific dynamics of higher education can function as an essential instrument for evaluating student experiences, pinpointing areas needing enhancements, and promoting greater student involvement. This research seeks to offer higher education leaders practical insights to improve student satisfaction, loyalty, and institutional results via NPS. The net promoter score's importance for higher education was investigated using systematic and phenomenological approaches.

Introduction

In business, key objectives such as profitability, growth, and sustainability are principal. These goals serve as the driving forces behind prosperity and success for companies. Businesses that focus on these priorities grow, while those that overlook any one of them risk failure.

The growth path involves not only attracting new customers but also retaining existing ones and encouraging increased spending. It is well understood that customers and their engagement are essential drivers of profitable growth. While acknowledging this may be straightforward, effectively measuring and managing customer relationships is a more complex endeavour. So, businesses must monitor customer relations and identify unmet customer needs. Businesses must assess how customers genuinely feel and what actions they can take, as well as understand the business impact of these insights. One of the most effective methods for assessing this is through the use of various customer satisfaction metrics, among which the Net Promoter Score stands out for its simplicity. Customer satisfaction and loyalty have thus become critical concepts in modern management. In this context, Frederick Reichheld introduced the "Net Promoter Score" (NPS) in 2003 in the esteemed Harvard Business Review. He argued that this single index derived from customer surveys provides a sufficient foundation for measuring and managing customer loyalty profitably.

Consequently, the Net Promoter Score has become a widely adopted metric for measuring customer loyalty and satisfaction across various industries, including higher education. As the digital era continues to transform consumer behaviour, universities and colleges need to closely

monitor student satisfaction and their propensity to recommend the institution to others. NPS provides a straightforward approach to capturing this information, asking students a single question: "How likely are you to recommend our university to a friend or family member?" However, the implementation of NPS in higher education institutions is not without its challenges and criticisms. Furthermore, like other businesses, universities are also aiming to improve their performance in a highly competitive higher education environment. Driven by rapidly declining enrolments, higher education institutions are increasingly concentrating on attracting and retaining students, as education cannot take place without students enrolling in courses. Measurement of this metric is vital to comprehend and boost student satisfaction and loyalty. NPS provides a simple way to assess student opinions by measuring how likely they are to recommend the university to others. This feedback delivers important insights into the strengths and weaknesses of academic programs, support services, and the overall student experience.

As, with rising competition, students like other customers have many options, making it challenging for universities to identify what fosters loyalty. It is evident that a customer's willingness to recommend a company or brand to their social circle is one of the best indicators of loyalty. Thus, a loyal customer serves as an ideal sales representative. Loyal customers also make repeat purchases and influence others, helping the company reduce customer acquisition costs. From this perspective, the use of NPS in higher education can assist universities in identifying strategies that will both drive revenue and attract new customers, namely "students."

This research paper seeks to explore the potential benefits and drawbacks of incorporating NPS into the student experience assessment and quality enhancement strategies of higher education providers.

Understanding the net promoter score: a measure of customer loyalty and satisfaction

The Net Promoter Score (NPS) is a widely used metric in the fields of customer satisfaction and loyalty. There is a growing body of research supporting the effectiveness and relevance of NPS as a measure for assessing customer satisfaction and loyalty. Developed in 2003 by Frederick Reichheld and Bain & Company, this metric aims to gauge the likelihood of customers recommending a product or service to others. It is based on a single question: "How likely are you to recommend our company/product/service to a friend or colleague?"

Reichheld asserts that it is unnecessary to conduct extensive surveys or perform detailed statistical analyses. The single question, "How likely are you to recommend our company to a friend or colleague?" can determine customer loyalty and company profitability (Reichheld, 2003). According to Reichheld, a company's growth will be proportional to the number of "promoters" based on the above question. He suggests that the willingness to promote is a strong indicator of loyalty and, consequently, company growth, as customers put their reputation at stake when recommending a company, which they would only do if they were genuinely loyal. The question is answered by customers on a scale where ten means "extremely likely" to recommend, five means neutral, and zero means "not at all likely." There is no "don't know" category in the NPS, although that would be the standard recommendation in most business research textbooks (McDaniel and Gates, 2007).

The application of NPS is not limited to traditional business contexts; it has found relevance in sectors such as healthcare, where it is used to evaluate patient satisfaction and experience (Adams et al., 2022; Hamilton et al., 2014). The NPS serves as a valuable tool for healthcare providers to assess the likelihood of patients recommending their services, thereby offering insights into the quality of care delivered (Krol et al., 2014; Wilberforce et al., 2018). Moreover, the NPS has been adapted for various contexts, including internal customer satisfaction within organizations, demonstrating its versatility as a measurement tool (Yusmansyah, 2023; Rhamdani, 2021).

Furthermore, the abbreviation NPS can have two meanings: Net Promoter Score and Net Promoter System. In line with this new development, relying solely on a single question and its numerical response may not yield complete benefits; asking the follow-up "why" question after receiving a response, as well as planning subsequent actions based on these responses, forms a system-based approach. (Reichheld, Fred, and Rob Markey. 2011.)

On the other hand, NPS has been criticized as an insufficient metric for evaluating customer satisfaction and loyalty (Fisher and Kordupleski, 2019). Fisher and Kordupleski emphasized that a more comprehensive understanding of loyalty requires assessing various dimensions of customer experience—such as satisfaction with product quality, customer service, pricing, and company reputation. These factors collectively influence overall customer loyalty, and reducing them to a single number could obscure important differences in customer attitudes and behaviour. Their research warned that using oversimplified metrics such as NPS could lead organizations to misinterpret customer loyalty, leading to misguided strategies. For example, an organization may see a high NPS and assume that customers are loyal, when in fact, these customers may not make repeat purchases or could be easily swayed by competitors.

Nevertheless, despite such criticism, NPS continues to be widely accepted and used by Fortune 1000 companies as a measure of customer satisfaction and loyalty. Geoff Colvin (2020) noted in *Fortune* magazine that at least two-thirds of the companies on the *Fortune 1000* list were using Net Promoter Scores.

Originally designed to measure customer loyalty, NPS has since been widely adopted across various industries to assess stakeholder satisfaction and predict financial performance. Additionally, NPS not only measures customer satisfaction and loyalty but also provides valuable insights into the overall health and quality of companies, products, or service environments.

It is also important to note that the relationship between NPS and customer loyalty, as well as its predictive power for company growth, can be evaluated. Many researchers have concluded that focusing on customer loyalty and confidence can yield higher profitability and loyalty for companies.

Methodology for calculating the net promoter score: a framework for assessment

Initially, customers are asked the question, "How likely are you to recommend our company (product, service) to a friend or family member?" and are requested to provide a rating on a scale from 0 to 10. Based on this scale, customers are categorized as follows: those who rate between 0 and 6 are labelled as "Detractors," those who give a rating of 7 or 8 are considered "Passives" or

"Neutrals," and those who rate 9 or 10 are classified as "Promoters." The Net Promoter Score is then calculated by subtracting the proportion of Detractors (those who gave a rating of 0 to 6) from the proportion of Promoters (those who gave a rating of 9 or 10) among the total respondents. The result is expressed as a percentage (Reichheld, 2003).

$$\%NPS = \left[\frac{P}{T}x100\right] - \left[\frac{D}{T}x100\right] \quad (1)$$

P – Promoters

D – Detractors

T – Total number of respondents

This simple calculation yields a score that can range from -100 to +100, providing a clear indication of customer sentiment towards a brand or service (Adams et al., 2022; Hardianto, 2023). The NPS is widely recognized for its ease of use and interpretability, making it a favoured choice among organizations seeking to gauge customer loyalty and predict future growth (Korneta, 2018).

Based on this approach, those who answer with a score of 9-10, known as "promoters," are customers who have had positive experiences with the business, can easily recommend it to others, and may even act as advocates for the company. Customers who rate the product 7-8, referred to as "Passives," are satisfied with the product, but they are not particularly motivated to promote it and may switch to a competitor. Lastly, those who score between 0 and 6, i.e., "detractors," are customers who have had negative experiences with the business. These customers are unlikely to make repeat purchases and may even discourage others from using your product, potentially harming the brand with their dissatisfaction.

The NPS's utility extends beyond mere customer satisfaction; it is posited to correlate with business performance metrics such as revenue growth and customer retention. Research indicates that companies with higher NPS scores tend to experience better financial outcomes, as loyal customers are more likely to make repeat purchases and recommend the brand to others (Hardianto, 2023; Baehre et al., 2021; Mecredy et al., 2018). However, the relationship between NPS and actual business performance is complex and has been the subject of scrutiny. Some studies argue that while NPS can serve as a useful indicator of customer loyalty, its predictive validity regarding financial success is not universally accepted (Lewis & Mehmet, 2019; Dawes, 2023). Critics point out methodological issues and caution against over-reliance on NPS as a standalone metric for assessing customer sentiment or predicting growth (Lewis & Mehmet, 2019; Dawes, 2023).

Despite its widespread adoption, the NPS is not without its limitations. Some researchers argue that it oversimplifies customer sentiment by reducing it to a single question, which may not capture the nuances of customer experiences (Lewis & Mehmet, 2019; Bettencourt, 2023). Fisher & Kordupleski (2019) criticize the NPS logic of defining passives, classifying them as customers who do not recommend the brand. Seal & Moody (2008) indicate that the classification, in general, loses the "shades of difference in the strength of perception," as both 0 and 6 mean the same, whereas they do not necessarily show the same level of customer loyalty and respondent's perceived likelihood to recommend the company or product. Additionally, the interpretation of NPS scores can vary significantly across different customer segments, leading to potential misinterpretations if not contextualized properly (Raassens & Haans, 2017; Haan et al.,

2015). As such, while NPS can provide valuable insights into customer loyalty, it should ideally be used in conjunction with other metrics to form a comprehensive view of customer sentiment and business performance (Haan et al., 2015). Additional complexity is added by Stahlkopf (2019), who show that a person could be a promoter and detractor simultaneously - recommending the company to one friend but not another. Customers who have experienced this may struggle to find the "right" answer.

The importance of student loyalty and satisfaction for higher education institutions

Understanding student loyalty and satisfaction is a key focus in higher education research, as it influences student retention, academic performance, and the reputation of educational institutions. It is evident that university success now heavily depends on student loyalty and happiness. Satisfied students are more likely to suggest the school to others, return for more classes, and enhance the institution's reputation. Loyalty, closely linked to satisfaction, refers to the extent of students' attachment to their university, which in turn promotes both retention and advocacy.

Student satisfaction refers to the degree to which students feel their expectations are met during their academic experience. Key determinants include teaching quality, administrative support, campus facilities, and social environment (Alves & Raposo, 2007). Student loyalty and satisfaction have become crucial metrics for universities, as they are strongly linked to positive word-of-mouth, retention, and repeat business (Thomas, 2011). Service quality is a key driver of student satisfaction, and institutions must strive to deliver superior value to their students to maintain a competitive advantage. (Teeroovengadum et al., 2019).

As we see loyalty is defined as students' dedication to their educational institution, typically assessed by their willingness to re-enrol or recommend the institution to others. This loyalty develops as an emotional connection over time, fostered by positive educational experiences.

The potential benefits and drawbacks of adopting NPS for higher education.

The Net Promoter Score (NPS) has emerged as a pivotal metric in various sectors, including education, to gauge satisfaction and loyalty among students and educators. Originally developed as a tool for measuring customer loyalty in business contexts, the NPS has been adapted for educational environments to assess the quality of learning experiences and institutional effectiveness. This adaptation is particularly relevant in the context of higher education, where understanding student satisfaction is crucial for institutional improvement and retention strategies.

In the realm of medical education, studies have demonstrated that NPS can serve as an effective indicator of student satisfaction. Moschovis et al. reported an exceptional NPS of 92 for a remote global health education course, which significantly surpassed scores from renowned consumer brands, indicating a high level of student loyalty and satisfaction with the educational experience (Moschovis et al., 2022). This finding aligns with the broader trend observed in educational settings where NPS is utilized to evaluate the effectiveness of various teaching methodologies and learning tools. For example, Sanseau et al. utilized NPS to assess the

perceived effectiveness of a tele-simulation tool among medical students, further verifying the utility of NPS in measuring educational outcomes (Sanseau et al., 2021).

Moreover, the application of NPS in educational contexts is not limited to medical training. Lucero's exploration of NPS in continuing medical education highlights its role in evaluating educational programs, suggesting that NPS can provide valuable insights into the perceived quality and effectiveness of educational interventions (Lucero, 2022). This is echoed by Jastania et al., who employed NPS as a primary metric to assess student satisfaction, identifying key areas for improvement in the learning environment (Jastania et al., 2017). Such studies underscore the versatility of NPS as a tool for enhancing educational quality across various disciplines.

The methodology behind NPS involves a straightforward question: "How likely are you to recommend this course or institution to a friend or colleague?" Responses are categorized into promoters, passives, and detractors, allowing institutions to calculate a score that reflects overall student sentiment (Adams et al., 2022). This simplicity is one of the reasons for NPS's widespread adoption in educational settings, as it provides a clear and actionable metric for stakeholders. For instance, in a study focused on mobile learning integration, an NPS of 22.4 indicated moderate acceptance among teachers, highlighting areas for further development (Rebollo, 2023).

In addition to measuring satisfaction, NPS can also serve as a diagnostic tool for identifying specific issues within educational programs. For example, the findings from Jastania et al. revealed several areas of dissatisfaction among students, including inadequate support services and poor physical environments, which were critical for developing targeted improvement plans (Jastania et al., 2017). This diagnostic capability is essential for educational institutions aiming to enhance student experiences and outcomes.

Furthermore, the relevance of NPS extends beyond traditional educational settings. In higher education, Kara et al. emphasized the importance of NPS in understanding student loyalty and its implications for institutional marketing strategies (Kara et al., 2022). The ability to quantify student sentiment through NPS can inform decision-making processes, helping institutions to align their offerings with student expectations and preferences.

The Net Promoter Score (NPS) is gaining traction as a valuable tool for measuring student satisfaction and loyalty in higher education. Studies have demonstrated its effectiveness in identifying promoters, passives, and detractors among undergraduate business students (Kara et al., 2022). In the context of online education, NPS offers insights into perceived market value and quality, which is crucial as students have more options and can easily share their experiences through social media (Sandok, 2023).

There are several studies which applied NPS and tested a model aimed at identifying the factors that influence student experiences, which in turn affect NPS. This approach aligns with previous research, such as McKnight et al. (2019), who used NPS to explore ways universities can optimize their marketing return on investment (ROI). Similarly, Al-Zamil (2017) utilized NPS to assess advocacy levels among graduate students in Saudi Arabia, concluding that NPS provided valuable insights for college administrators.

It seems that NPS, being a measure of student satisfaction with the university, can provide an overview of their perceptions regarding its offerings. As Schmatz et al. (2015) suggest, these perceptions are shaped by factors like quality teaching, research, student services, and positive

interactions between current students and potential recruits.

In the context of higher education, student satisfaction refers to the positive assessments a student makes regarding various outcomes and experiences. Schmatz et al. (2015) reported a significant correlation between students' satisfaction and their willingness to recommend the university. University selection is a complex decision and requires extensive problem-solving processes for most prospective students. In the decision-making process, information and/or recommendations obtained from someone trusted by potential students could play an important role.

As stated in his initial article, Reichheld (2003) suggested monitoring NPS scores and comparing them to industry benchmarks. He also advised that companies should aim for a net promoter score of at least 75%-80%. This target would help managers enhance customer experience by identifying the underlying causes of differences between promoters and detractors. In 2022, CustomerGauge reported that the education and training industry had a calculated NPS of 69% (https://customergauge.com/benchmarks/industry/education), which is less than previous years. Training industry had a calculated NPS of 71% in 2020 (Kara et al., 2022).

On the other hand, when applying the Net Promoter Score (NPS) to higher education, some challenges can arise. For instance, universities do not focus on growth and profit like businesses do, and students are not traditional customers, as most do not make repeated purchasing decisions. Actually, their choice to attend a university is usually a one-time decision. But still, it can be an effective tool for gauging student satisfaction, and surely it can be improved by adding alternative questions to enhance students answers.

Nevertheless, these studies highlight the potential of NPS as a simple yet powerful metric for higher education institutions to measure and track student satisfaction, make data-driven decisions, and ultimately enhance their educational offerings and services.

Conclusion

To conclude, the Net Promoter Score is a widely utilized metric for measuring customer loyalty and satisfaction, characterized by its straightforward calculation and broad applicability across industries. While it offers valuable insights into customer sentiment and potential business outcomes, its limitations necessitate a cautious approach to its interpretation and application. Future research should continue to explore the relationship between NPS and various performance indicators, as well as the potential for integrating NPS with other customer feedback metrics to enhance its predictive capabilities. Its application across various educational contexts demonstrates its versatility and relevance. As institutions continue to seek ways to enhance learning experiences and outcomes, the integration of NPS into evaluation frameworks will likely play a crucial role in shaping future educational strategies.

Thus, the implementation of NPS in higher education institutions can provide several benefits, including:

- An easy and effective method for assessing student satisfaction and loyalty.
- Recognizing areas that need enhancement through student input.
- Benchmarking against other institutions and industry standards.

- Primarily an investment in student satisfaction and long-term loyalty (e.g., a bachelor's graduate choosing to pursue a master's degree at the same university can be seen as a decision to return).
- Highly satisfied students are likely to maintain contact after graduation, potentially showing loyalty by becoming advocates and supporters.
- Alumni who give the institution a high rating might promote it within their professional circles.
- To increase their NPS, college administrators could begin by creating strategies to turn detractors and passives into promoters.
- This feedback allows administrators to refine the interactions among students, faculty, and staff.
- By consistently monitoring NPS, universities can recognize possible problems before they worsen.
- Involving students in the NPS process allows them to influence the academic atmosphere.
- Consistent application of NPS can establish a feedback cycle that promotes a culture of ongoing enhancement within higher education institutions.

Given the importance of customer orientation for commercial enterprises, it makes sense to leverage their expertise and consider applying it within higher education. This has led to interest in the concept of the Net Promoter Score (NPS), a widely recognized metric for assessing customer satisfaction and loyalty in management, though it has rarely been utilized in higher education to date.

Overall, adopting NPS in higher education enables institutions to concentrate on the student experience, address issues efficiently, and improve their educational services.

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THE RELATIONSHIP BETWEEN JOB CRAFTING, JOB SATISFACTION AND LIFE SATISFACTION: A STUDY ON TEACHERS

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ABSTRACT

The aim of this study is to examine the relationship between teachers' job crafting, job satisfaction, and life satisfaction. This study is significant for understanding how the relationship between job crafting, job satisfaction, and life satisfaction contributes to enhancing the overall quality of life of teachers, who are key stakeholders in the education system. The literature highlights a strong relationship between job satisfaction and life satisfaction, emphasizing that the satisfaction individuals derive from their jobs positively influences their overall well-being. Aligned with the purpose of the study, Job Crafting Scale, Job Satisfaction Scale and Satisfaction with Life Scale were used. The results indicate that teachers' job satisfaction and cognitive job crafting have a significant and positive impact on their life satisfaction. However, the dimensions of task crafting and relational crafting were found to have no significant effect on life satisfaction. Also, the study revealed that female teachers exhibit higher levels of cognitive, relational, and task crafting compared to male teachers. Finally, the article, provide some suggestions and directions for future research.

7. Introduction

Work is not only an environment where individuals cultivate and develop themselves, but also a domain where they construct their identities and add meaning to their lives (Steger and Dik, 2010: 131). People spend a significant portion of their lives, approximately one-third, engaged in work-related activities (Wrzesniewski et al., 1997: 21). The organization and structuring of such a substantial part of life inevitably have a notable impact on their overall lives and psychological well-being or happiness (Tims et al., 2016: 44). Work serves not only as a source of financial income for individuals but also supports their identities and expertise, contributing to their efforts toward self-actualization. In this context, having sources of meaning that provide motivation in their work enables individuals to become more successful, competent, and happy (Alparslan et al., 2022: 16). The increasing significance and value of work for individuals (Scroggins, 2008: 68) can also allow them to perceive their jobs not merely as tasks to complete but as a means of self-expression.

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Aligned with this perspective, the efforts of individuals to transform and personalize their jobs in ways that allow them to express themselves are referred to as job crafting. Job crafting involves individuals making conscious changes on their own initiative to align their roles in the workplace more closely with their skills, interests, and values, thereby making their work more motivating and personalized. This approach suggests that individuals' perceptions of their work and their work identities can influence their job satisfaction and overall life satisfaction (Wrzesniewski and Dutton, 2001; Tims et al., 2016). Although it has been addressed in the literature from various dimensions (Leana et al., 2009; Berg et al., 2010; Tims and Bakker, 2010; Tims et al., 2012; Lichtenthaler and Fischbach, 2016), Wrzesniewski and Dutton (2001) conceptualized job crafting in three dimensions: task crafting, relational crafting, and cognitive crafting:

- *Task Crafting:* It refers to the modification of the scope, order, or form of tasks that individuals perform at work (e.g., a teacher diversifying their lessons by adding new and different activities beyond the curriculum).
- *Relational Crafting:* It involves reshaping the frequency and quality of social interactions related to work (e.g., a teacher adding a new dimension to their work by developing deeper and more meaningful relationships with students and parents).
- *Cognitive Crafting:* It refers to individuals changing their perceptions of their work and reinterpreting the meaning of their job (e.g., a teacher viewing their role not just as transferring knowledge but as touching and contributing to their students' lives).

Building on the idea of job crafting, job satisfaction becomes a key outcome when individuals successfully align their work with their skills, values, and interests. Job satisfaction emerges when the environmental conditions enabling an individual to say, "I am satisfied with my job," are fulfilled (Başol and Çömlekçi, 2020: 18). This is because job satisfaction refers to individuals' feelings about their jobs and the various aspects of those jobs (Spector, 1997: 2). It is the positive emotional orientation individuals have toward their work (Vroom, 1964: 99) and the degree to which their expectations from their job are met. Additionally, it reflects their attitudes toward the physical and social conditions of the organization they are part of (Schermerhorn, Hunt and Osborn, 2002: 162). Several factors influence an individual's attitude or satisfaction toward their job. These include salary and salary increases, promotion opportunities, supervisors, fringe benefits, coworkers, contingent rewards, working conditions, the nature of the job, and satisfaction with internal communication within the organization (Spector, 1997: 8). Therefore, individuals who are satisfied with their jobs are likely to have a positive perspective toward the organization they belong to, whereas those with low job satisfaction levels are more likely to have a negative outlook (Çetin, 2011: 84).

Extending beyond job satisfaction, life satisfaction provides a broader view of individuals' well-being. Life satisfaction is an individual's self-evaluation of their current or past life (Neugarten et al., 1961: 134). It reflects a positive attitude toward life (Haybron, 2007: 101). Factors influencing individuals' life satisfaction include work-related elements (e.g., the nature of the job, workload, salary), personal characteristics (e.g., age, personality traits, expectations), environmental conditions (e.g., opportunities to find alternative jobs), and societal aspects (e.g., social networks and relationships) (Özdevecioğlu and Aktaş, 2007: 8). Additionally, activities and conditions such as maintaining a healthy diet, exercising, being physically and mentally healthy, engaging in romantic/emotional relationships, experiencing a sense of belonging,

fishing, listening to music, parenting, enjoying freedom of expression, receiving or continuing education, achieving financial stability, holding social prestige, possessing intellectual capacity, being skilled at building social relationships, participating in volunteer activities, being active in non-governmental organizations, and meeting new people also significantly contribute to life satisfaction (Flanagan, 1978: 141; Veenhoven, 1996: 29).

Within this context, teachers hold a particularly important position as vital individuals in shaping and guiding the educational processes of future generations (Sonkur, 2021). They play a crucial role in a country's development, ensuring social harmony and peace, preparing individuals for societal life through socialization, and transmitting cultural values to younger generations (Karataş, 2020: 40). In this context, teachers' job crafting refers to their efforts to reshape their tasks, relationships, and perceptions of their work, making their jobs more meaningful and satisfying (Wrzesniewski and Dutton, 2001). By engaging in such proactive behaviors, teachers can add greater meaning to their work, enhancing their overall enjoyment of life. Accordingly, the purpose of this study is to examine the relationship between teachers' job crafting, job satisfaction, and life satisfaction.

8. Methodology

In this study, the survey technique, one of the quantitative research methods, was used. The data obtained from the participants, in line with the purpose of the study, were analyzed using the Jamovi 2.6.17 statistical software package. Initially, the data from 12 participants who answered the control question incorrectly in the survey form were excluded from the analysis. Following this, the validity and reliability of the measurement tools were assessed. Finally, t-tests, correlation, and regression analyses were conducted.

a. Participants

The participants of the study consist of 526 teachers working in schools affiliated with the Ministry of National Education of the Republic of Turkey. Among these teachers, 265 are women (50.38%), and 261 are men (49.62%). Additionally, 410 of the teachers are married, while 116 are single. The participants' average age is 40.7 years, and their average length of service is 16.3 years.

b. Procedure

The ethical approval for this study was obtained from the Süleyman Demirel University Social and Humanities Ethics Committee with the decision dated 30.07.2024 and numbered 151/5. The data for the study were collected during October and November 2024 through in-person distribution and via Google Forms. On the first page of both survey forms, written information about the purpose of the study was provided, and it was stated that participation was voluntary. Additionally, it was noted that participants could discontinue filling out the survey form at any time if they wished.

c. Measures

In line with the purpose of the study, three measurement tools consisting of a total of 37 items were used. These measurement tools were rated on a five-point Likert scale. Additionally, four questions (age, gender, marital status, and seniority) were included to determine the demographic characteristics of the participants. Basic information regarding the measurement tools used is provided below.

Job Crafting Scale was developed by Yavuz and Erdem-Artan (2019). During this process, the measurement tools developed by Slemp and Vella-Brodrick (2013), Dvorak (2014), and Niessen et al. (2016), as well as related literature, were utilized. This measurement tool comprises three dimensions (task crafting, cognitive crafting, and relational crafting) and 27 items.

Job Satisfaction Scale was developed by Brayfield and Rothe (1951). A short form of the scale was introduced into the literature by Judge et al. (1998). The Turkish adaptation of the short form was conducted by Keser and Öngen-Bilir (2019). This measurement tool consists of a single dimension (job satisfaction) with 5 items, 2 of which are reverse-coded.

Satisfaction with Life Scale was introduced into the literature by Diener et al. (1985). Its Turkish adaptation was carried out by Dağlı & Baysal (2016). This measurement tool consists of a single dimension with 5 items.

d. Data Analysis

In the study, the construct validity of the measurement tools used was tested. Accordingly, reverse-coded items were adjusted initially. One item each from the Job Crafting Scale and the Job Satisfaction Scale was excluded from the analysis as they did not meet the required factor loading threshold. Additionally, modifications recommended by the statistical software were made by considering the theoretical foundations of the measurement tools. The fit indices obtained because of the analyses were within the range of good and acceptable values. Furthermore, the factor loadings of the Job Crafting Scale ranged from .51 to .75, those of the Job Satisfaction Scale ranged from .53 to .90, and those of the Satisfaction with Life Scale ranged from .62 to .85.

Tablo 1. Goodness of Fit Indices of Measures

Measures	$\chi 2/df$	RMSEA	CFI	TLI	SRMR
Job Crafting Scale	2.470	.053	.919	.909	.053
Job Satisfaction Scale	1.218	.046	.995	.987	.016
Satisfaction with Life Scale	1.534	.035	.998	.995	.011

Following the confirmatory factor analysis, the normality and reliability of the data were examined. The skewness and kurtosis values of the variables under analysis were found to be within the range of -2 to +2. Thus, the variables satisfied the condition of normal distribution (George and Mallery, 2024: 114). Additionally, the Cronbach's Alpha (α) internal reliability coefficients for the variables demonstrated that the measurement tools used were highly reliable (Hinton et al., 2014: 359) (Table 3).

e. Results

Based on preliminary analyses, parametric tests were applied to the data. Initially, it was examined whether the variables differed by gender, and an independent samples t-test was conducted to test this (Table 2).

Tablo 2. Independent Sample t-Test in the Context of Gender

Variables	Male (N=261)		Female (N=265)			
	Mean	*S.D.*	*Mean*	*S.D.*	*p*	**Differences**
Task Crafting	3.97	.644	4.12	.664	*.019*	Female > Male
Relational Crafting	3.70	.699	3.86	.713	*.016*	Female > Male
Cognitive Crafting	4.31	.616	4.49	.569	*.002*	Female > Male
Job Satisfaction	4.03	.819	4.16	.855	.122	-
Life Satisfaction	3.52	.800	3.52	.907	.976	-

df (Degrees of Freedom) = 524

Upon examining Table 2, it was determined that only the variables of task crafting, relational crafting, and cognitive crafting showed significant differences in the context of gender. In this regard, it was observed that the mean scores for these variables were higher for women compared to men.

Following the independent samples t-test, a Pearson correlation analysis was conducted to examine the relationships among the variables (Table 3).

Tablo 3. Correlations Among Variables

	Variables	S./K.	Mean	S.D.	1	2	3	4	5
1	Task Crafting	-.597/.283	4.04	.657	*(.825)*[7]				
2	Relational Crafting	-.625/.729	3.78	.710	.647***	*(.876)*[10]			
3	Cognitive Crafting	-1.47/1.94	4.40	.599	.626***	.669***	*(.894)*[9]		
4	Job Satisfaction	-1.20/1.58	4.10	.839	.362***	.400***	.574***	*(.845)*[4]	
5	Life Satisfaction	-.494/-.013	3.52	.854	.275***	.315***	.405***	.470***	*(.873)*[5]

****p<.001 – (…): Cronbach Alpha – Exponentiation: Number of items included in the analysis – S./K.: Skewness and Kurtosis.*

Upon examining Table 3, it can be observed that the dimensions of job crafting and job satisfaction are positively and significantly related to life satisfaction. Moreover, the variable with the strongest significant relationship to life satisfaction is job satisfaction ($r = .470$; $p < .001$), while the variable with the weakest significant relationship is task crafting ($r = .275$; $p < .001$).

Following the correlation analysis, a regression model was established in line with the purpose of the study (Table 4).

Tablo 4. Regression Results for The Impact of Job Crafting and Job Satisfaction on Life Satisfaction

Independent Variables	*β*	*p*	S. E.	Model Statistics	
Task Crafting	.005	.944	.076		
Relational Crafting	.093	.208	.074	$R^2 = .261$	$p = .000$
Cognitive Crafting	.207	*.032*	.096	Adj. $R^2 = .254$ F = 36.5	Tolerance > 0.4 VIF < 2.5
Job Satisfaction	.383	*.000*	.053		

** Dependent Variable: Life Satisfaction*

Upon examining Table 4, the results indicate that cognitive crafting ($\beta = .207$, $p < .001$) and job satisfaction ($\beta = .383$, $p < .001$) significantly and positively affect life satisfaction.

9. Conclusion

This study examined the relationship between teachers' job crafting, job satisfaction, and life satisfaction. The findings indicate that teachers' cognitive crafting and job satisfaction have a significant and positive impact on their life satisfaction. This finding suggests that efforts to alter perceptions of work and reinterpret its meaning can help individuals achieve greater satisfaction and happiness in their lives. Cognitive crafting enables individuals to frame their work in a more meaningful context, allowing their work to contribute positively to their overall life. For instance, when a teacher views the teaching process not merely as transferring knowledge but as touching and contributing to students' lives, it can enhance their professional satisfaction while adding profound meaning to their personal life. Wrzesniewski and Dutton (2001) argue that cognitive crafting transforms individuals' work identities and the meaning they attribute to their jobs. Thus, when teachers perceive their profession not just as a duty but to serve society and add value to students, they are more likely to achieve higher life satisfaction. In emotionally demanding professions like teaching, cognitive crafting is believed to support individuals' professional and personal searches for meaning.

However, the study also found that task crafting and relational crafting dimensions do not significantly impact life satisfaction. This finding indicates that not all dimensions of job crafting have the same level of influence on life satisfaction in the context of teachers. According to Wrzesniewski and Dutton's (2001) conceptualization, task crafting involves altering the scope and nature of tasks, while relational crafting entails reshaping social interactions. The lack of significant effects of these behaviors on life satisfaction for teachers suggests that they may prioritize the meaning and identity associated with their work over other aspects of job crafting. This perspective helps explain why teachers may focus more on cognitive crafting and highlights the significant role of job satisfaction in influencing life satisfaction. Moreover, in emotionally intensive professions like teaching, reinterpreting the meaning of one's work can significantly enhance life satisfaction (Ghitulescu, 2006; Shi et al., 2022). Additionally, the study found that job satisfaction has a significant effect on teachers' life satisfaction. Therefore, a teacher who is satisfied with their job is likely to experience greater pleasure and enjoyment in life. For example, a teacher with a high level of job satisfaction is expected to demonstrate greater energy in the classroom, better communication with students, and overall improved performance in the educational environment. This improvement, in turn, can enhance the quality of education. Furthermore, satisfied teachers are more likely to dedicate additional time to lesson materials, develop innovative teaching methods, and focus more on the individual needs of their students. Consequently, this process contributes to students' individual success and positively impacts the education system.

In addition to the evaluated findings mentioned above, the study revealed that female teachers have higher levels of cognitive, relational, and task crafting compared to male teachers. Cognitive crafting encompasses the processes of altering individuals' perceptions of their work and reinterpreting its meaning. The higher levels of cognitive crafting observed among female teachers may be attributed to their skills in empathy, analytical thinking, and evaluating different perspectives, which enable them to make their work more meaningful. This suggests that their approach to touching students' lives, guiding them, and being not just knowledge transmitters

but also life shapers provides an indication of how effectively female teachers utilize this skill. Relational crafting refers to reshaping the frequency and quality of work-related social interactions. The higher relational crafting levels among female teachers may reflect their ability to establish and sustain stronger relationships in educational settings, contributing to their perception of work as more meaningful. Task crafting, on the other hand, involves efforts to alter the scope, sequence, or nature of tasks performed at work. Consequently, it can be inferred that female teachers exhibit greater effort than male teachers in diversifying lessons by incorporating extracurricular activities, restructuring according to student needs, and making classroom environments more engaging.

This study has certain limitations. Firstly, as the sample consists solely of teachers in Turkey, the generalizability of the findings to other professional groups is limited. Future research could expand these generalizations by examining the studied variables in other professional groups where job crafting is relevant. Additionally, the study was conducted using only quantitative research methods. Employing a mixed-methods approach in future studies could provide a more in-depth understanding of teachers' job crafting behaviors.

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ANALYSIS AND EVALUATION OF BANK PRODUCTS AND SERVICES IN AZERBAIJAN AND IN THE WORLD IN THE MODERN ERA

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ABSTRACT

The banking sector in Azerbaijan has undergone significant transformations, especially after the country gained independence. The regulatory framework is largely governed by the Central Bank of Azerbaijan, which has been shaping policies on interest rates, credit policies, and foreign exchange regulations. Currently, the major banks in Azerbaijan include both state-owned and private institutions that play a crucial role in the economy by providing essential banking services like savings accounts, personal loans, mortgages, and credit cards. On the global stage, banking services have increasingly shifted towards digitalization, with many customers opting for mobile banking, internet banking, and fintech solutions. Globally, the trend has also moved towards sustainability, with banks introducing green financing and socially responsible investment products, considering environmental, social, and governance (ESG) factors. With financial markets becoming more interconnected, Azerbaijan's banking system is starting to align with global financial frameworks, although there are still gaps in terms of offering advanced products and services compared to more developed markets. In Azerbaijan, traditional banking products are widely offered, but there is a growing shift towards innovative financial services, including digital banking platforms and contactless payment systems. The customer experience in Azerbaijan is steadily improving, although banks need to enhance accessibility, transparency, and reduce fees to keep pace with global customer expectations.

INTRODUCTION

In modern times, the field of analysis and evaluation of banking products and services in Azerbaijan and the world has been widely studied by various scholars. The opinions of a number of specialists in Azerbaijan on this topic are noteworthy. For example, Huseynov Vusal conducted research on the digitalization of banking products and services, especially the development of internet and mobile banking. He emphasized the impact of the development of modern banking services on the economy and the importance of evaluating these services.

Nasibov Tural extensively studied the modern analysis of the banking sector and the issues of evaluating banking services. He noted the importance of developing methodologies and indicators for evaluating banking products in accordance with customer requirements. Aliyeva Khadija offers various approaches to assessing the quality of banking products and customer satisfaction. In her opinion, it is important that evaluation and analysis methods meet modern requirements in order to ensure that banking services meet customer requirements. Rahimov

Elvin conducted research on the digitalization of banking services and the development of evaluation methods in this area. He emphasized the need to implement new approaches to increase customer satisfaction and make banking services more effective.

In the world, scholars such as Dieter Helm and Jonathan Batten have developed various theories on the evaluation of banking services and customer satisfaction. They have proposed new methodologies and approaches to evaluate banking products and ensure their suitability for the customer base. Helm has conducted economic analyses to regulate prices and increase customer satisfaction, especially in the energy and service sectors, and has also discussed its application to the banking sector. Batten, on the other hand, has proposed various theories and models on price and risk assessment in financial markets, and has put forward new methods for more accurate measurement of banking services and customer satisfaction.

In addition, other scholars such as Michael Porter and David S. Scharfstein have also put forward various theories in the field of banking services and customer satisfaction evaluation. Porter has presented new approaches to evaluate the quality of banking services and their market advantage based on competitive advantage and strategic analysis. Scharfstein, on the other hand, has examined how banking services affect customer experience and satisfaction and the economic consequences of this evaluation.

Scholars such as John Hull and James W. Kolari have delved deeper into the issues of assessing the risk and profitability of banking products. They have developed risk measurement models and new methodologies for assessing the relationship between customer service and financial outcomes. The approaches of these scholars play an important role in assessing not only the financial aspects of banking products, but also their suitability for the customer base and the quality of services.

Thus, the research conducted by these scholars in various fields around the world has provided the application of more accurate and comprehensive approaches in the field of evaluating banking services and increasing customer satisfaction.

ANALYSIS

The banking sector has always been at the heart of economic development, serving as the primary channel for financial transactions, investments, and savings. Over the past few decades, however, it has undergone a dramatic transformation, driven largely by advances in technology, changing customer expectations, and shifting global economic conditions. This evolution is not just limited to the introduction of new products but also extends to the way banks interact with customers, manage risks, and streamline operations. In Azerbaijan, the banking sector has experienced significant change, especially following the country's independence. While traditional banking products, such as savings accounts, loans, and credit cards, continue to dominate the market, there has been a growing shift towards digital banking, mobile payments, and fintech innovations. However, the Azerbaijani banking landscape is still in a developmental phase when compared to more mature global markets, where advanced technologies such as blockchain, artificial intelligence, and cryptocurrencies have already been widely integrated into banking services. This study aims to explore the evolution of banking products and services, focusing on a comparative analysis between Azerbaijan's banking sector and global trends. By examining the advancements and challenges faced by Azerbaijani banks, we can better understand the role of digital transformation in shaping the future of banking. Furthermore, we

will analyze the opportunities and risks involved in embracing global innovations, particularly in areas like financial inclusion, sustainability, and customer-centric banking. As Azerbaijan continues to modernize its financial sector, the lessons drawn from global banking trends will be crucial in identifying pathways for growth, innovation, and competition. This paper will assess how Azerbaijani banks can capitalize on emerging technologies to stay competitive, enhance customer experience, and contribute to the broader economic development of the country.

The rapid growth of digital technologies has transformed the banking landscape globally, with customers now demanding faster, more convenient, and personalized financial services. Mobile banking, contactless payments, artificial intelligence (AI), and blockchain technology are reshaping the way banks offer products and services. Financial institutions worldwide have responded by investing in digital platforms, fintech partnerships, and advanced data analytics to enhance operational efficiency and meet the evolving needs of tech-savvy consumers. In parallel, the rise of environmental sustainability concerns has prompted banks to adopt green finance initiatives, which focus on socially responsible investments and sustainable lending practices. Azerbaijan, while increasingly embracing these global trends, faces unique challenges and opportunities in its banking sector. The country's banking industry has witnessed significant growth, but it still lags behind developed markets in terms of digital infrastructure, regulatory frameworks, and the adoption of fintech solutions. However, recent efforts by Azerbaijani banks to digitize payment systems, expand mobile banking services, and introduce online lending options signal the beginning of a new phase of innovation. Azerbaijan's banking sector is also poised to benefit from the regional digital economy and cross-border financial services, further enhancing its integration into global financial markets. One key area where Azerbaijan's banks can draw inspiration from global trends is the focus on financial inclusion. Globally, fintech companies have revolutionized access to banking services, allowing underserved populations, particularly in remote areas, to participate in the financial system. Similarly, Azerbaijan's banks have the potential to offer digital solutions that can bridge gaps in financial services and improve access to banking for a larger portion of the population, especially in rural regions (Z. Mammadov.,2006:p.80).

Additionally, the development of sustainable financial products, such as green bonds and environmentally focused investment opportunities, offers a significant opportunity for Azerbaijani banks to align with global standards. With the global financial community increasingly prioritizing sustainability, there is a growing demand for financial products that support environmental and social goals. By incorporating such initiatives into their portfolios, Azerbaijani banks can not only meet the expectations of global investors but also position themselves as responsible leaders in the financial sector. This paper will delve deeper into how Azerbaijan can harness global banking trends to reshape its financial services landscape. We will explore the potential of digital banking, innovations in customer experience, the adoption of sustainable finance practices, and the integration of new technologies to drive the future of banking in Azerbaijan. In doing so, we will highlight the challenges, opportunities, and strategies that can facilitate the growth of Azerbaijan's banking sector, ensuring it remains competitive in an increasingly globalized and digital financial ecosystem.

Table 1. "The Evolution and Future of Banking Products and Services:
A Comparative Analysis of Azerbaijan and Global Trends"

Year	Global Trends	Azerbaijan Banking Sector
2010	35% of the global population uses internet banking.	Internet and mobile banking services start to emerge in Azerbaijan.
2015	The fintech sector is valued at $100 billion.	Azerbaijani banks expand their credit portfolios and deposit bases.
2020	Global internet banking usage reaches nearly 70%.	Digital and mobile banking services expand in Azerbaijan.
2021	Fintech and digital banking services experience rapid growth.	The Central Bank of Azerbaijan starts developing regulatory frameworks for digital banking and fintech.
2023	Electronic payments and mobile apps grow rapidly.	Contactless payments gain popularity during the COVID-19 pandemic.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table provides a comparative analysis of the evolution and future trends in banking products and services, examining both global developments and the banking sector in Azerbaijan. In 2010, approximately 35% of the global population used internet banking. During this period, Azerbaijan began introducing internet and mobile banking services, marking the early stages of digital banking adoption in the country. By 2015, the global fintech sector was valued at $100 billion, reflecting rapid expansion in digital financial services. In Azerbaijan, commercial banks expanded their credit portfolios and deposit bases, signaling growth and modernization in the banking sector. By 2020, global internet banking usage reached nearly 70%, indicating widespread adoption of digital banking worldwide. In Azerbaijan, the banking sector also saw significant growth in digital and mobile banking services, which became increasingly popular among consumers. In 2021, global fintech and digital banking services saw accelerated growth, fueled by technological advancements and evolving customer demands (Mango D.,2023:P.66). In Azerbaijan, the Central Bank began developing regulatory frameworks for digital banking and fintech, paving the way for a more structured digital transformation in the sector. By 2023, electronic payments and mobile applications had seen rapid growth globally, with contactless payments becoming more common, especially during the COVID-19 pandemic. Azerbaijan mirrored this trend, as contactless payment adoption increased significantly

Table 2. "Key Indicators in Banking Products and Services: Global vs Azerbaijani Trends"

Year	Global Banking Indicators	Azerbaijan Banking Indicators
2010	35% of global bank customers used online banking.	First digital banking platforms introduced by major Azerbaijani banks.
2015	25% of global banks offered mobile banking services.	Around 60% of Azerbaijani banks offered mobile banking services.
2020	1.7 billion global mobile banking users.	80% of Azerbaijani banks provided mobile banking apps, reaching 3 million users.
2022	Global digital payments reach $6 trillion in transaction volume.	Azerbaijan's digital payment market grows to $3 billion in transaction volume.
2023	Fintech sector expected to reach $460 billion globally.	Azerbaijani fintech companies raised over $100 million in funding by 2023.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table compares key indicators in banking products and services between global trends and the banking sector in Azerbaijan. In 2010, 35% of global bank customers used online banking. During the same period, Azerbaijani banks introduced their first digital banking platforms, marking the start of their digital banking evolution. By 2015, 25% of global banks

offered mobile banking services, while around 60% of Azerbaijani banks had already implemented such services, showing the country's relatively rapid adoption of mobile banking. In 2020, mobile banking users globally reached 1.7 billion. In Azerbaijan, by that time, 80% of banks provided mobile banking apps, with approximately 3 million users adopting the service. By 2022, global digital payments had surged to $6 trillion in transaction volume (Arora N., Bohn J.R., Zhu F.,2015;p.139).Azerbaijan's digital payments market also experienced notable growth, reaching $3 billion in transaction volume, reflecting the growing role of digital payment solutions in the country. In 2023, the global fintech sector was expected to reach $460 billion, with Azerbaijani fintech companies raising over $100 million in funding, showcasing the country's increasing involvement in the fintech space. This analysis demonstrates both global advancements and Azerbaijan's progress in the digital transformation of banking, highlighting the adoption of mobile banking, digital payments, and fintech innovations in both regions (Z. Mammadov.,2006:p.80).

Table 3. "Digital Banking and Mobile Payments Growth: A Global vs Azerbaijani Comparison"

Year	Global Trends	Azerbaijan Trends
2010	35% of the global population had access to online banking.	First mobile banking services introduced by major banks.
2015	Global digital payment market size reached $2.1 trillion.	Mobile banking users in Azerbaijan reached 1.5 million.
2020	1.7 billion global mobile banking users.	80% of Azerbaijani banks offered mobile banking apps.
2022	Global digital payments reached $6 trillion.	Azerbaijan's digital payments market grows to $3 billion.
2023	70% of global banks integrated fintech solutions.	Azerbaijani fintech companies raised over $1

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

In 2010, 35% of the global population had access to online banking, and during this time, Azerbaijani banks introduced their first mobile banking services. By 2015, the global digital payment market reached a size of $2.1 trillion, while mobile banking in Azerbaijan had attracted around 1.5 million users. In 2020, there were 1.7 billion global mobile banking users. In Azerbaijan, 80% of the country's banks had introduced mobile banking apps, reflecting widespread adoption of mobile banking. By 2022, global digital payments reached $6 trillion in transaction volume. In Azerbaijan, the digital payments market also grew significantly, reaching $3 billion. By 2023, 70% of global banks had integrated fintech solutions, while Azerbaijani fintech companies raised over $100 million, showcasing the increasing growth of fintech in the country.

Table 4. "Impact of Technology on Banking: Global vs Azerbaijani Trends"

Year	Global Banking Technology Trends	Azerbaijan Banking Technology Trends
2010	Introduction of cloud banking and digital wallets.	Azerbaijani banks begin offering online banking services.
2015	40% of global banks adopted mobile banking apps.	55% of Azerbaijani banks launched mobile banking apps.
2020	Blockchain technology adoption grows, with 10% of banks using it.	Azerbaijan's banks begin exploring blockchain for payments.
2021	70% of global banks using artificial intelligence (AI) in customer service.	AI-driven chatbots and customer service systems emerge in Azerbaijan's banking sector.

2022	Global adoption of biometric authentication rises by 25%.	Azerbaijani banks integrate biometric security for digital banking.
2023	60% of global banks have implemented open banking platforms.	Azerbaijan introduces regulations for open banking, with the first open banking platform launched.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table compares the impact of technology on the banking sector, highlighting trends in both global banking and the Azerbaijani banking sector over time. In 2010, global banking saw the introduction of cloud banking and digital wallets, revolutionizing how customers interacted with financial institutions. During this period, Azerbaijani banks began offering online banking services, marking the beginning of digital transformation in the country's banking sector. By 2015, 40% of global banks had adopted mobile banking apps, responding to the growing demand for accessible and convenient banking. In Azerbaijan, 55% of banks launched their own mobile banking apps, indicating a strong alignment with global digital banking trends. In 2020, blockchain technology adoption grew worldwide, with 10% of banks implementing blockchain for payments and transaction security. Azerbaijani banks began exploring blockchain technology for payment systems, signaling a forward-looking approach to secure and efficient financial transactions. By 2021, artificial intelligence (AI) usage in global banking had reached 70%, particularly in customer service applications such as chatbots and automated assistance systems. Azerbaijan's banking sector followed suit, with the implementation of AI-driven customer service tools to enhance user experience. In 2022, the global banking sector saw a 25% increase in biometric authentication adoption, offering a more secure and convenient way for customers to access their accounts. Azerbaijani banks integrated biometric security measures into digital banking systems to improve security and customer convenience (Mango D.,2023:P.66).By 2023, open banking became a significant trend globally, with 60% of global banks implementing open banking platforms to foster greater financial transparency and innovation. Azerbaijan introduced regulations for open banking and launched its first open banking platform, further enhancing the country's digital banking infrastructure. This analysis shows how both global and Azerbaijani banks have adopted and integrated advanced technologies like mobile banking, blockchain, AI, biometric security, and open banking to enhance customer service, security, and innovation in the banking sector.

Table 5. "Adoption of Digital Financial Services and Consumer Preferences: Global vs Azerbaijani Trends"

Year	Global Trends	Azerbaijan Trends
2015	33% of global consumers preferred mobile payments over cash.	25% of Azerbaijan's population used mobile payment services.
2017	Global digital banking users reach 2 billion.	40% of Azerbaijani consumers used digital banking services.
2019	Global mobile payment volume exceeds $1 trillion.	30% increase in the use of mobile payments in Azerbaijan.
2020	55% of global consumers used digital wallets for payments.	50% of Azerbaijani consumers adopted digital wallets.
2022	65% of global consumers trust mobile payments over traditional banking methods.	55% of Azerbaijan's population uses mobile payments regularly.
2023	Digital banking adoption grows by 30% globally.	70% of Azerbaijan's population uses online or mobile banking services.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table compares the adoption of digital financial services and consumer preferences for mobile payments and digital banking, both globally and in Azerbaijan. In 2015, 33% of global

consumers preferred using mobile payments over cash, while in Azerbaijan, 25% of the population had already started using mobile payment services. This shows the early adoption of mobile payments globally, although Azerbaijan was still in the early stages of this trend. By 2017, global digital banking users reached 2 billion, indicating the rapid expansion of digital banking services worldwide. In Azerbaijan, 40% of consumers used digital banking services, showing that a significant portion of the population had embraced digital banking by this time. In 2019, global mobile payment volumes exceeded $1 trillion, a clear sign of the increasing reliance on mobile payment systems globally (Arora N., Bohn J.R., Zhu F.,2015;p.139). In Azerbaijan, mobile payment usage grew by 30%, reflecting a growing interest in digital payment options. By 2020, 55% of global consumers had adopted digital wallets for payments, showing a growing preference for digital wallets over traditional payment methods. In Azerbaijan, 50% of consumers adopted digital wallets, following the global trend of shifting away from cash payments. In 2022, 65% of global consumers trusted mobile payments more than traditional banking methods. This growing trust in mobile payments was also reflected in Azerbaijan, where 55% of the population regularly used mobile payments. By 2023, global digital banking adoption had increased by 30%, and 70% of Azerbaijan's population was using online or mobile banking services, indicating that the country had made significant progress in the digital transformation of its banking sector. This analysis shows the steady increase in the adoption of digital financial services and the growing consumer preference for mobile payments and digital banking, both globally and in Azerbaijan (Bashirov.R.A.,2014:p.11).

Table 6. "Digital Banking Security and User Experience Enhancements: A Global vs Azerbaijani Comparison"

Year	Global Trends	Azerbaijan Trends
2015	20% of global banks implemented two-factor authentication (2FA).	Azerbaijani banks begin offering basic online security features.
2017	40% of global banks use biometric authentication for logins.	30% of Azerbaijani banks adopt fingerprint and facial recognition for mobile banking.
2019	Global banks integrate AI-driven fraud detection systems.	Azerbaijani banks start using AI for fraud prevention and customer service.
2020	60% of global banks offer personalized financial advice through AI.	45% of Azerbaijani banks integrate AI-driven financial advice for customers.
2022	70% of global consumers prioritize security when choosing a digital banking platform.	60% of Azerbaijani consumers prefer banks with advanced digital security features.
2023	80% of global banks use machine learning for transaction monitoring and fraud detection.	Azerbaijani banks enhance fraud detection systems with machine learning.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table compares the evolution of digital banking features related to security and user experience, focusing on both global trends and those in Azerbaijan. In 2015, only 20% of global banks had implemented two-factor authentication (2FA) as a basic security measure. During the same period, Azerbaijani banks began offering basic online security features, starting their journey toward more secure digital banking platforms. By 2017, 40% of global banks had adopted biometric authentication, such as fingerprint and facial recognition, for secure logins. In Azerbaijan, 30% of banks had introduced biometric features for mobile banking, demonstrating a growing trend in user-friendly and secure authentication methods. In 2019, global banks began integrating AI-driven fraud detection systems, enhancing the ability to monitor and prevent fraudulent activities in real-time. Azerbaijani banks followed suit by starting to use AI technology for fraud prevention and improving customer service. By 2020, 60% of global banks offered personalized financial advice through AI, providing tailored recommendations for

customers (Z. Mammadov 2006:p.80).Azerbaijani banks had integrated AI-driven financial advice into their services, with 45% of the country's banks offering such features to customers. In 2022, 70% of global consumers stated that security was a top priority when choosing a digital banking platform. Similarly, 60% of Azerbaijani consumers preferred banks that offered advanced digital security features, reflecting the growing importance of security in user decision-making. By 2023, 80% of global banks were using machine learning for transaction monitoring and fraud detection. Azerbaijani banks had also strengthened their fraud detection systems by incorporating machine learning, aligning with global best practices for secure and efficient banking. This analysis shows the parallel development of security features and user experience improvements in global and Azerbaijani banking, with both regions adopting advanced technologies like biometric authentication, AI, and machine learning to enhance security, personalization, and customer satisfaction in digital banking services.

Table 7. "Adoption and Growth of Digital Payment Systems: A Global vs Azerbaijani Overview"

Year	Global Trends	Azerbaijan Trends
2015	10% of global banks implemented contactless payment systems.	Azerbaijani banks begin offering contactless payment cards.
2017	25% of global transactions were made via digital payments.	15% of transactions in Azerbaijan were made through digital payment systems.
2019	Digital payments volume worldwide reaches $1.3 trillion.	30% increase in the use of digital payments in Azerbaijan.
2020	50% of global consumers use mobile payment apps for purchases.	40% of Azerbaijani consumers use mobile payment apps regularly.
2022	80% of global consumers prefer digital payments over cash.	60% of Azerbaijani consumers prefer digital payments over traditional methods.
2023	Digital payment volume exceeds $6 trillion globally.	Azerbaijan's digital payment market reaches $3 billion.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table compares the growth and adoption of digital payment systems globally and in Azerbaijan over the years. In 2015, 10% of global banks had implemented contactless payment systems. In Azerbaijan, banks began offering contactless payment cards to facilitate quicker and easier transactions for consumers. By 2017, 25% of global transactions were made through digital payments, reflecting the growing preference for cashless transactions. In Azerbaijan, 15% of transactions were conducted using digital payment systems, showing early adoption in the country. In 2019, the global volume of digital payments reached $1.3 trillion, highlighting the rapid shift towards digital transactions worldwide. Azerbaijan experienced a 30% increase in the use of digital payments, signaling a steady adoption of these systems in the country. By 2020, 50% of global consumers used mobile payment apps for purchases, marking a significant milestone in the digital payment revolution. In Azerbaijan, 40% of consumers used mobile payment apps regularly, indicating growing reliance on mobile solutions for daily transactions. In 2022, 80% of global consumers preferred digital payments over traditional cash methods. Similarly, 60% of Azerbaijani consumers showed a preference for digital payments, suggesting a shift towards cashless solutions in the country. By 2023, global digital payment volume exceeded $6 trillion, demonstrating the widespread acceptance and use of digital payment methods. Azerbaijan’s digital payment market reached $3 billion, reflecting the increasing volume of digital transactions within the country. This analysis shows the parallel development of digital payment systems, with both global and Azerbaijani trends reflecting growing adoption of cashless and mobile payment methods. The data highlights the significant role that digital payments now play in financial transactions worldwide and in Azerbaijan (Mango D.,2023:P.66).

Table 8. "Growth of Mobile Banking and Financial Inclusion: A Global vs Azerbaijani Comparison"

Year	Global Trends	Azerbaijan Trends
2015	1.5 billion global mobile banking users.	800,000 mobile banking users in Azerbaijan.
2017	Global mobile banking penetration reaches 35%.	20% of the Azerbaijani population uses mobile banking services.
2019	2.5 billion global mobile banking users.	1.5 million mobile banking users in Azerbaijan.
2020	Global financial inclusion increases to 69%.	60% of Azerbaijan's population has access to mobile banking.
2021	3 billion global mobile banking users.	2 million mobile banking users in Azerbaijan.
2023	80% of global banks offer mobile banking services.	3 million mobile banking users in Azerbaijan.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table compares the growth of mobile banking adoption and financial inclusion both globally and in Azerbaijan over recent years. In 2015, there were 1.5 billion global mobile banking users, while Azerbaijan had around 800,000 mobile banking users, showing early adoption in the country. By 2017, global mobile banking penetration reached 35%, highlighting the broader shift towards digital banking services. In Azerbaijan, 20% of the population had started using mobile banking services, marking a key milestone in financial technology adoption. In 2019, the global number of mobile banking users grew to 2.5 billion. In Azerbaijan, the number of mobile banking users increased to 1.5 million, demonstrating a significant rise in the use of mobile financial services (Z. Mammadov.,2006:p.80).By 2020, global financial inclusion had reached 69%, as mobile banking helped bring financial services to underserved populations. In Azerbaijan, 60% of the population had access to mobile banking, indicating a strong push towards improving financial access in the country. In 2021, global mobile banking users reached 3 billion, continuing the rapid global expansion of digital banking services. In Azerbaijan, the number of mobile banking users had grown to 2 million, reflecting the country's increasing adoption of mobile financial services. By 2023, 80% of global banks offered mobile banking services, showing widespread integration of mobile banking across the financial industry. In Azerbaijan, mobile banking users had reached 3 million, demonstrating a continuous rise in the use of mobile banking services and furthering financial inclusion in the country. This analysis highlights the steady rise in mobile banking adoption and financial inclusion globally and in Azerbaijan. It shows that mobile banking has become a vital tool for improving access to financial services, with Azerbaijan following global trends in increasing the number of users and enhancing financial inclusion.

Table 9. "Growth of Internet Access and Digital Banking Infrastructure: A Global vs Azerbaijani Comparison"

Year	Global Trends	Azerbaijan Trends
2015	3.2 billion global internet users.	4 million internet users in Azerbaijan.
2017	50% of global internet users access banking services online.	30% of Azerbaijan's population accesses online banking.
2019	60% of global banks have fully digitized their services.	50% of Azerbaijani banks offer full online banking services.
2020	70% of global internet users use smartphones for banking.	65% of internet users in Azerbaijan use smartphones for banking.
2022	80% of global banks offer mobile banking apps.	70% of Azerbaijani banks offer mobile banking apps.
2023	5 billion global internet users.	6 million internet users in Azerbaijan.

Source: *Mango D. Applying Actuarial Techniques in Operational Risk Modeling. ERM Symposium, 2023, 21 p.*

The table compares the growth of digital banking infrastructure and internet access globally and in Azerbaijan, highlighting how increased internet connectivity has facilitated the rise of digital banking services. In 2015, there were 3.2 billion global internet users, while Azerbaijan had around 4 million internet users. This early data shows the beginning of widespread internet access in both regions. By 2017, 50% of global internet users accessed banking services online, reflecting the increasing shift towards digital banking worldwide. In Azerbaijan, 30% of the population used online banking services, indicating the country's initial adoption of online banking technologies. In 2019, 60% of global banks had fully digitized their services, offering a full range of online banking options. In Azerbaijan, 50% of banks had also implemented full online banking services, showing a parallel trend toward digitalization. By 2020, 70% of global internet users used smartphones for banking, underscoring the shift towards mobile-first banking experiences. In Azerbaijan, 65% of internet users accessed banking services via smartphones, demonstrating the country's adoption of mobile banking solutions. In 2022, 80% of global banks offered mobile banking apps, becoming the standard for accessing banking services. In Azerbaijan, 70% of banks provided mobile banking apps, showing that Azerbaijan was keeping pace with global trends in mobile banking services. By 2023, the number of global internet users had reached 5 billion, further expanding the digital landscape. In Azerbaijan, the number of internet users had grown to 6 million, reflecting the country's steady growth in internet penetration. This analysis highlights the parallel development of internet access and digital banking services in Azerbaijan and globally, with both regions witnessing significant growth in the adoption of online and mobile banking technologies. The data underscores the critical role of internet access in enabling digital financial services and driving financial inclusion (Arora N., Bohn J.R., Zhu F.,2015;p.139).

DISCUSSION OF THE RESULTS OBTAINED

The evolution of digital banking has been driven by advancements in internet infrastructure and the growing reliance on mobile devices for financial transactions. This transformation has been global, with countries like Azerbaijan also experiencing rapid growth in both internet penetration and digital banking services. In recent years, the number of internet users worldwide has steadily increased, creating a fertile ground for the expansion of online and mobile banking. By 2023, there were 5 billion global internet users, a milestone that significantly impacted the accessibility of digital financial services. As internet connectivity continues to improve, more people are able to access banking services directly from their smartphones and computers, bypassing the need for traditional brick-and-mortar branches. Azerbaijan's internet access has also grown considerably. In 2015, Azerbaijan had 4 million internet users, and by 2023, this number reached 6 million, showing a strong rate of adoption. The increased internet penetration in Azerbaijan has been accompanied by a surge in mobile banking adoption. By 2020, 65% of internet users in Azerbaijan were already using smartphones for banking, which was close to the global average of 70%. This trend shows that Azerbaijan is increasingly embracing mobile-first banking solutions, offering consumers greater convenience and accessibility. The rapid adoption of mobile banking is evident not only in the number of internet users but also in the digital infrastructure of banks. By 2022, 80% of global banks offered mobile banking apps, and Azerbaijan was not far behind, with 70% of its banks offering similar services. This indicates that Azerbaijani financial institutions are adopting digital banking solutions in line with global best practices (Z. Mammadov.,2006:p.80).

The digitization of banking services in Azerbaijan has been a crucial factor in improving financial inclusion. As more individuals gain access to online and mobile banking services, they are able to manage their finances, make payments, and access loans without the need for physical visits to banks. This has made banking more accessible to remote and underserved populations, which was previously a challenge. Furthermore, the integration of mobile banking apps and fully digitized banking services is helping reduce the dependency on cash-based transactions. With the increasing number of people adopting digital payments, both globally and in Azerbaijan, the shift towards cashless societies is gaining momentum. This move is not only more efficient but also contributes to greater transparency and financial security. As we look toward the future, the digital banking sector is poised for continued growth, fueled by technological advancements and changing consumer preferences. In Azerbaijan, the trends observed globally are expected to accelerate, particularly with the growing adoption of fintech solutions and the increasing popularity of digital wallets, cryptocurrency, and blockchain technologies.

The rise of fintech startups is one of the key drivers in shaping the future of banking. These companies are disrupting traditional banking models by offering innovative solutions that cater to the evolving needs of consumers. In Azerbaijan, we have already seen a few fintech firms emerge, providing services such as peer-to-peer lending, mobile payment systems, and even investment platforms. These services are gaining traction among younger consumers, who are increasingly looking for more flexible, accessible, and tech-savvy banking options. Cryptocurrency and blockchain technology are expected to play a pivotal role in the future of banking. With the rise of digital currencies like Bitcoin, Ethereum, and local alternatives, the financial landscape is becoming more decentralized. Azerbaijan has started to explore the potential of blockchain for enhancing transparency and reducing fraud in banking transactions. While the adoption of cryptocurrency remains in the early stages, it is clear that the country is keen to position itself as a hub for digital finance in the future. The government's willingness to explore this space is evident, as seen in its early initiatives to explore and regulate blockchain technologies. The growing trend of artificial intelligence (AI) and machine learning in banking is another important factor that will shape the future of financial services. AI is already being used in global banking to automate customer service, provide personalized financial advice, and enhance fraud detection. In Azerbaijan, banks are increasingly incorporating AI and automation into their operations, improving efficiency and customer satisfaction. AI-powered chatbots, for example, are already being used by Azerbaijani banks to provide real-time support and solve customer queries without human intervention. Cybersecurity will continue to be a central concern for the future of digital banking. As more banking activities move online, the risks associated with cyber threats, including hacking and data breaches, become more prominent. To address these challenges, banks in Azerbaijan and around the world will need to invest heavily in advanced cybersecurity solutions. Two-factor authentication, biometric security systems, and encryption are becoming standard practices to ensure the safety of digital banking users. Additionally, educating consumers about cybersecurity best practices will be essential in mitigating risks associated with online banking (Bashirov.R.A.,2014:p.11).

Another area of growth is open banking, a model that allows third-party developers to access financial institutions' data (with customer consent) to build new applications and services. This innovation fosters competition, driving banks to improve their offerings and create more customer-centric solutions. Open banking is gaining traction globally, and Azerbaijan is likely to

follow suit, allowing more consumer choice and promoting innovation in the financial services sector. Digital payment systems will continue to evolve and expand, with mobile wallets, contactless payments, and peer-to-peer (P2P) transfer services becoming even more mainstream. The global shift towards cashless societies will lead to more efficient, secure, and convenient payment methods. Azerbaijan is expected to further embrace these technologies, with banks and payment service providers offering seamless, cross-border payment systems, reducing barriers to international transactions and enhancing the financial inclusion of underserved populations. In summary, the future of banking in Azerbaijan and globally is characterized by digital innovation, with new technologies transforming the way financial services are delivered and consumed. The increased adoption of mobile banking, fintech solutions, cryptocurrency, AI, and open banking will redefine the financial landscape, making banking more accessible, efficient, and secure. As Azerbaijan continues to embrace these trends, it has the potential to position itself as a leader in digital finance, benefiting both consumers and businesses in the long term. The combination of strong internet infrastructure, digital payment adoption, and regulatory support will ensure that the future of banking is both inclusive and forward-looking (Arora N., Bohn J.R., Zhu F.,2015;p.139).

CONCLUSION

In conclusion, the evolution of digital banking has brought about significant changes in the financial landscape, both globally and in Azerbaijan. The key drivers of this transformation—technological advancements, increased internet access, and the growing adoption of mobile banking solutions—are reshaping how financial services are delivered and consumed. Azerbaijan has made impressive strides in improving internet penetration and mobile banking adoption, positioning itself as a rapidly advancing market for digital financial services. Globally, the shift towards digital banking is driven by the widespread use of smartphones, the rise of fintech innovations, and the increasing preference for cashless transactions. These trends are reflected in Azerbaijan, where mobile banking usage and online financial services have been steadily growing. Azerbaijani banks are increasingly digitizing their services to meet the needs of a more connected, tech-savvy consumer base. Additionally, the adoption of digital payment systems, along with emerging technologies like blockchain and artificial intelligence, will continue to drive the future of banking in Azerbaijan. However, challenges such as cybersecurity risks and the need for regulatory frameworks to support innovation remain. The future of banking in Azerbaijan will depend on how well the sector can navigate these challenges while embracing new technologies. The country's continued efforts to enhance digital banking infrastructure, combined with growing financial literacy and adoption of mobile-first solutions, will play a crucial role in ensuring that digital banking becomes more inclusive and efficient. In summary, the future of banking in Azerbaijan looks promising, with the potential to further align with global trends in digital financial services. The ongoing development of digital infrastructure, alongside regulatory support and consumer adoption will pave the way for a more accessible, secure, and innovative banking system. As Azerbaijan continues to modernize its financial sector, the country stands to benefit from increased financial inclusion, economic growth, and greater global connectivity in the digital age.

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LEADERSHIP IN STRATEGIC MANAGEMENT: THEORETICAL APPROACH

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ABSTRACT

Leaders can make significant contributions to the functioning of the firm, regardless of their time and position. Leadership with effective strategies can provide a fundamental foundation for the effective use of the strategic management process. Leaders who follow strategies can accelerate the growth of relevant strategic activities and determine how to implement them. These activities serve as a gateway to higher average results and strategic competitiveness. Managers working in various organizations are fully aware of the need to create a strategic plan for the future of their organizations and participate in the effective adoption of these well-planned plans. In strategic management, the leader assumes various roles. He/she creates the conditions for change. Secondly, he/she selects key players from the organization and in the third stage, he/she creates a leadership team by shaping the vision and strategy through a visionary process that breaks down the existing hierarchy and clarifies the strategy that the entire organization can understand.
Taking into consideration above mentioned facts, the article focuses on theoretical background of the topic. Scientific literature has been used in order to shred light into the topic.

1. Introduction

There are many companies that are growing rapidly in modern times. Companies facing this competition need a competitive advantage in order to maintain business continuity and compete in the competitive business world (Anggraeni et al., 2023).

The presence of leaders in organizations is effective in motivating employees, making them more motivated and committed to their jobs. Therefore, companies need leaders who support and guide individuals. It is not important to try to achieve goals by controlling employees with orders and instructions. What is important for leaders is to work with high motivation and bring the team together.

In general, there are four main elements common to all definitions of leadership. These elements can be listed as follows:

Leader: An organization member who can influence the members of the group.

Followers (members): People who accept the influence of the leader.

Purpose: Consists of goals, interests, and needs that bring group members together.

Environment: A basic element consisting of factors such as the competence of the members, the level of relationship, goal achievement, and the level of motivation.

Leadership is a set of behaviors that enable people to express the goals of the organization and then motivate them to contribute together to achieve the goals of the organization. Basically, the leader plays a significant role in making decisions that will ensure the effectiveness (efficiency) and success of the organization. A leader should support his subordinates to lead. He should treat everyone equally without any discrimination. He should value everyone's participation. The leader is responsible for building strong relationships both vertically and horizontally within the organization. A leader needs to involve everyone in the strategic management process because this is positively related to overall performance.

It is the leader's commitment to help achieve the strategic vision. Most importantly, in order to be a champion, the leader's goals must be integrated with the strategic goals and objectives of the organization. For this, the leader's power must be used correctly, honestly and with conviction. A leader must have a clear mental approach to the need for change and the capabilities of the organization (Bajwa et al., 2011). The effectiveness of the organization depends on the strategies used to realize the company's vision. Management adopts the strategy with a vision that will enrich the firm's ability to perform well or when needed. Today's business environment is changing rapidly and leaders often try to adopt agile and process-enhancing strategies to enable the organization to respond to change. Management has influenced all decision-making processes and decision-making is the foundation of the strategic management process. It facilitates the entire process from conceptual framework to evaluation for strategy formulation. In particular, strategy implementation is completely dependent on effective decision-making.

2. The Meaning of Leadership Term

Leadership is the activity of a group of people who direct the activities of the group to achieve the goals of the group (Ogbeidi, 2012). Leadership is an understanding related to management rather than the leader of a company or organization. Leadership is defined as a dynamic process of working in groups in which a person freely invites and influences other group members to commit to group goals or common goals within a certain period of time and in a certain organizational context (Abeguki et al., 2014). As can be understood from here, elements such as purpose, leader, target audience, environment and conditions are very important in the leadership process. Leadership occurs as a result of a person perceived as a leader influencing their actions and behaviors by supporting them rather than using power over their followers. The right to leadership is a privilege that group members grant to the person or persons they accept as leaders. For leadership, there is a need for common goals that will bring the members of the organization together, a leader who will influence and motivate these members, a target audience that will support this leader and accept him as a leader, and an environment that will enable all of these to happen. When these conditions are met, it is possible to talk about leadership. According to Stogdill (1974), leadership is generally defined from two different perspectives. One of these defines leadership in terms of process, and the other in terms of characteristics. The leader is known as the person who directs the activities of the members of the organization in accordance with the organizational goals and organizes their activities. It is

defined as the person who has the characteristics that can successfully influence the members of the group (Ivancevich and Matteson, 2002: 425). Some definitions of leadership are given below:

- Leadership is the act of maintaining interaction and agreement in order to mobilize and develop the company (Hambrick and Mason, 1984).
- Leadership is a role that organizes those who strive to achieve their goals according to the situation and answers their questions (Dessler, 1980).
- Leadership is all the behaviors of an individual to direct the behavior of a group to a common goal (Ülgen, 2013).
- Leadership is a directed interpersonal interaction process in an environment where the communication process takes place in order to achieve predetermined goals (Eren, 2005).
- Leadership is the activity of influencing human behavior in an organized group to achieve a specific goal (Dinçer, 2007).

There are three different theories discussed in the scientific literature about leadership (Yukl, 1999):

- ◎Trait theories (1930-1950);
- ◎Behavioral theories (1950-1960);
- ◎Situational leadership theories (1960-1970).

Trait theories

According to this theory, the characteristics of the leader are considered the most important factor determining the effectiveness of the leadership process. The main reason why a person is seen (accepted) as a leader in a certain group and leads this group is the characteristics of this person. According to this theory, a leader is different from others in terms of physical and personality characteristics. Physical, intellectual, emotional and social characteristics make individuals leaders. According to research, these differences are as follows (Bass, 1990):

1. Emotional characteristics: Self-control, passion, sense of trust, perception, liking and satisfaction, high sense of achievement, etc. are included here.
2. Social characteristics: Friendship and camaraderie, self-acceptance, sociability, etc. are included here.
3. Physical characteristics: Gender, height, sympathy, speech, race, influence, power, age, activity, etc. are included here.
4. Mental characteristics: Knowledge, talent, attention, initiative, intelligence, determination, foresight, responsibility, realism, persuasion, etc. are included here.

When it is possible to identify individuals with these characteristics among group members, it will be easier to find and train individuals who will lead groups. By paying attention to individuals with these characteristics in personnel selection, they can be trained as future managers and leaders. However, some researchers do not find it appropriate to associate leadership only with the characteristics of individuals. Because, according to them, the list of characteristics is endless and it is difficult to define and measure them. Studies have shown that sometimes effective leaders do not have the same characteristics. Sometimes, it has been

observed that there are individuals among group members who have more characteristics than the leader characteristics but do not appear to be leaders. This situation is the exact opposite of the trait theory (Kirkpatick and Locke, 1991).

Behavioral Theories

The main purpose of behavioral leadership theories is to reveal certain and similar behaviors of leaders and thus try to explain leadership in terms of behaviors. The leader should support the efforts of group members, exhibit behaviors that observe personal values and clearly state organizational processes. The benefit of this theory is that it reveals behaviors and informal leaders as well as formal leaders and creates conditions for individuals to acquire leadership behaviors through training (Schriesheim and Bird, 1979).

There are enough behavioral leadership theories. We present a few of them to your attention:

1. Ohio State University Research

The first research on behavioral leadership was conducted at Ohio State University (started in 1945). The main purpose of the research was to determine how an effective leader is defined. At the beginning of the research, various definitions were created that showed the behaviors exhibited by leaders and then these definitions were subjected to factor analysis to determine the factors that explain the behaviors of leaders. As a result of this study, two main dimensions were determined that determine leadership behaviors. These are: Consideration of people (focus on human relations) and initiative (focus on work) (Shartle, 1979).

The factor of consideration of people refers to the leader's behavior of creating trust and respect in followers and developing friendship with them. It is thought that a leader who considers people will be able to communicate more effectively with followers and will be more effective in achieving goals because he/she is closely interested in their demands and needs (Likert, 1979).

The initiative factor is the factor in which the leader determines the goal, group members, communication system, work-related times and instructions in order to complete the tasks related to the goal on time. It is believed that leaders who consider work will influence group members to do more and better work because they put all their energy and attention into the work. In recent years, it has been observed that there are leaders who display both types of behaviors in organizations.

2. Blake and Mouton's Management Style Matrix

The management style matrix, created by Robert Blake and Jane Mouton in 1964, was created to determine the behaviors of leaders. They proposed a two-dimensional management style matrix, "interpersonal orientation" and "production orientation", when evaluating leadership behaviors. They suggested that the most effective leadership style could be obtained when the interpersonal and production orientation dimensions were evaluated together. In the interpersonal orientation, the leader is interested in the human dimension of the job. He/she provides the necessary production conditions and requirements for the motivation of everyone in the group. The production-oriented leader is interested in the production and quality of the product. In the management style matrix, these two different factors, considered as interpersonal and production orientation, are placed in a matrix and different leadership behaviors are

explained according to their positions in this matrix (Blake et. Mouton, 1985).

There are 5 different types of leaders in this matrix:

Type 1: Ineffective leader: He/she makes the least effort to complete the work required to stay in the organization.

Type 2: Club leader: The leader emphasizes thoughtful, relaxed, and friendly relationships, but has minimal interest in the task.

Type 3: Task leader: The leader uses his authority to ensure efficiency and has little interest in human relations.

Type 4: Organizational leader: A compromise type who tries to balance the amount of work to be done with the morale of the employees.

Type 5: Team leader: This is the most effective leader type in the matrix. He is most effective with people who are dedicated to the task and achieve high productivity.

Mutual trust and respect are at their highest. Everyone is aware of their interdependence.

Therefore, a manager who understands the management style thoroughly can change it through various training programs.

3. Research at the University of Michigan

The purpose of the research conducted by Rensis Likert at the University of Michigan was to examine successful groups and determine the leadership behaviors in these groups. Here, low productive and high productive employees in groups from different organizations were analyzed and the difference between an effective leader and another was analyzed and four main factors were determined as a result (Likert, 1979:148):

- Support: Behaviors that increase the attention given to the personal feelings of group members are important and measure individual behaviors.

- Facilitating relationships: Behaviors that support the development of close and mutually satisfying relationships among group members are important.

- Goal Emphasis: Motivational behavior is important in achieving group goals and achieving high performance and measures work-oriented behaviors.

- Facilitating work: Behaviors that facilitate the achievement of goals by providing resources such as tools and technical information are important and measure work-oriented behaviors.

The first two of these factors measure personal behaviors, while the other two measure work-oriented behaviors. If a leader values people, he will support group members and give priority to interpersonal relationships. He will increase the satisfaction of group members on the basis of delegation, try to improve working conditions and pay attention to the individual development of employees. This is extremely important for increasing morale and motivation in the team. Such leaders support the development of the team by delegating their authority and ensure that members are satisfied with the effective working conditions within the organization. If a leader values work, he will emphasize the person's purpose and the facilitation of work. He will monitor the work of group members according to predetermined principles and methods and will punish them using formal authority. The leaders' behavior based on command and

obedience creates conditions for group members to feel under pressure, which negatively affects their morale and motivation.

➢ *Situational Leadership Theories*

These theories rely on the current situation and conditions to explain the behavior of leaders. As researchers continue their work to develop the concept of leadership in different organizational structures, they have encountered very different results. In some cases, individual-focused leadership behaviors have been found to be very effective, while in other cases, task-focused leadership has been found to be more effective. This has developed the concept of leaders adapting to the situation (Fiedler, 1954:381). The understanding that there is no single type of leadership that can be defined as "best" and that the most effective leaders are those who can adapt their leadership approaches to the situation is the main idea of situational theories. The general assumption of situational leadership theories is that different situations require different leadership styles. Leaders emerge according to the characteristics and demands of the environment. Individual characteristics are not taken into account, only environmental characteristics are relevant. According to this theory, a leader motivates employees by showing different behavioral patterns depending on the situation of the job. Situational leadership theories state that the most appropriate leader behavior will change depending on the situation (Fiedler, 1958).

According to this theory, the main factors that determine the effectiveness of a leader are as follows:

- Characteristics of the organization in which the leadership is established;

- Past experiences of the leader and followers;

- The nature of the goal to be achieved;

- Skills and expectations of followers (group members).

The leader is responsible for developing strategies to achieve the vision. Basically, creating a strategy means providing a roadmap, and this roadmap must be clear and focused. It is the responsibility of the leadership to connect the strategy process to the vision. It should encourage a learning culture by providing a clear set of values for the organization (Fiedler, 1967). Values guide the behavior of the organization and direct it in the right direction. Both the vision and strategies should reflect these values. When a leader understands the importance of values, the process of creating and implementing strategies becomes easier. The most important role of leadership is to integrate people into the strategic management process. It should include everyone to ensure sensitivity to change (Azhar et al., 2013).

3. Strategic Leadership

A company's competitive advantage can be affected by the strategy implemented by the company's management. Managers play an important role in aligning the company's goals as leaders in the implementation of the company's operational activities. According to (Jooste and Fourie, 2009), strategic leadership is the ability of leaders to foresee, envision, maintain flexibility, and empower others to create the strategic changes the organization needs. The leader should be able to define the company's goals, vision, and mission and develop the human resources it has.

Strategic leadership is defined by Ireland and Hitt (2005) as the ability to see the future, create a vision, maintain flexibility, think strategically, and work with others to initiate change that will create a meaningful future for the organization. Accordingly, a company gains competitive advantage when its strategic leadership processes are difficult for competitors to understand and imitate. Faced with the challenges of a global economy, without effective strategic leadership, a firm is unlikely to achieve superior levels or even satisfactory performance.

Rowe (2001) defines strategic leadership as the ability to voluntarily influence others to make daily decisions that will increase long-term sustainability while maintaining short-term financial stability.

According to Sullivan and Harper (1997), strategic leadership is the management and control of logical and well-thought-out actions such as purpose, culture, strategy, core identities and critical processes that constitute the organization in its most basic sense. Strategic leadership is not only about performing well today, but also about providing deep, long-term change and transformation at the heart of the organization. According to the authors, when the management dimensions are examined in a Venn diagram, strategic leadership is at the center of creation, team building and management clusters. Guillot (2003) defines strategic leadership as the ability of a wise, experienced general manager to create a vision and make important decisions in a complex and uncertain strategic environment. According to the author, the purpose of strategy is to connect the results to be achieved, the paths and methods, while the purpose of strategic leadership is to define the goals, choose the best ways and implement the most effective methods. When strategy is seen as a plan, strategic management thinks and decides to develop and implement the plan.

Cannella (2001) emphasizes two differences between leadership and strategic leadership. First, strategic leadership refers to people at the highest level of an organization, while leadership refers to leaders at all levels of an organization. Second, leadership focuses primarily on the relationship between leaders and followers, while strategic leadership does not deal with these relationship activities on a macro scale, but also focuses on strategic activities. Of course, the important role of senior managers in strategic leadership does not mean that managers at other levels are excluded from strategic leadership processes. Middle managers, in particular, are not only primarily responsible for implementing strategies, but can also help determine certain strategic directions (Swayne et al., 2006:201). Ülgen and Mirze (2004) also give strategic leadership an important place in the strategic management process and consider it one of the soft elements of the strategic management process. According to the authors, strategic analysis and rational decision-making constitute the hard elements of the process, while business opportunities, corporate culture and strategic leadership represent the soft elements of the strategic management process, which include human issues necessary for the success of the organization. Strategic leadership focuses on the characteristics and behaviors of managers and leaders who have strategic management knowledge and who know what is happening and how to act.

4. Characteristics of a Strategic Leader

Although there are different views in the literature on the characteristics that an effective strategic leader should have and the activities he/she should carry out, these views are often

similar. According to Wheelen et al. (2018), an important responsibility of senior managers who are accepted as strategic leaders is to determine the life climate of the entire organization. The employees of the organization see their strategic leaders as mentors and managers and want a vision that will show them the direction they should work. Strategic leaders will give this direction to the employees. Such leaders have three basic characteristics. First, they define the higher purpose of the organization. The vision put forward by the head of the organization transforms the activities and conflicts within the organization into a new perspective. This gives all employees the feeling that they are up-to-date about their work-related activities, while at the same time allowing them to see the impact of their work on the entire organization instead of getting stuck on the details of their work. The second characteristic of a strategic leader is that they are a role model for their followers. The leader sets an example with his/her behavior and clothing. The leader's attitude and values towards the goals and activities of the organization are expressed very clearly and are often revealed through speech and actions. The third characteristic is that the strategic leader sets high performance standards and trusts his followers to meet them. Here, the leader's coaching role is of great importance.

Swain et al. (2006) summarize the characteristics that a strategic leader should have as follows:

- Creates and communicates a compelling vision of the future.
- Ensures the participation of people from all levels of the organization and from different backgrounds in strategic management processes.
- Manages tomorrow, not today.
- Spends time with his people, tries to understand their problems and talks to them regularly (manages by walking around).
- Allows people to make mistakes. Products, Services and Management Innovations in process depend on people taking risks. People sometimes make mistakes, but success is achieved by trying.
- Trains leaders throughout the organization. Senior managers encourage their followers to take responsibility for managing the organization and motivating people.
- Trusts others in the organization to make the best decisions, rather than trying to control every detail.
- Gives time to solve cases.
- Sets an example with his behavior.
- Empowers employees to solve problems.

All these characteristics of the strategic leader can be grouped as follows (Ireland and Hitt, 2005: 68-72):

- Determining the purpose and vision of the organization.
- Determining and maintaining the core competencies of the organization.
- Developing human resources.
- Maintaining an effective organizational culture.
- Emphasize ethical standards.
- Establishing balanced organizational control.

Strategic leaders are also responsible for developing the organization's human resources. As a critical resource, human resources represent people's knowledge, skills and abilities and reflect people's education, experience and special distinctive talents (Hitt and Duane, 2002: 4-5). The most important investment that can be made in human resources is training programs that will enable them to reach their full potential and to raise a well-educated workforce (Ireland and Hitt, 2005: 70). Effective strategic leadership is also important for the development of human resources. Strategic leaders need to acquire the necessary skills to facilitate the development of human resources in their areas of responsibility (Hitt et al., 2007: 375). Another important characteristic of a strategic leader is to maintain an effective organizational culture. Organizational culture is the important beliefs and values that members of an organization generally share (Pearce and Robinson, 2007: 372). On the one hand, organizational culture affects leaders and their work, and on the other hand, the activities of strategic leaders shape organizational culture (Hitt et al., 2007: 24). A leader must express the basic values, beliefs and expectations that guide the organization more than many other people in the organization. In other words, he must shape the organizational culture. your leader

One of the basic tasks of an organization is to create a culture in which employees will live in relation to the organization's basic values and beliefs and to determine the climate of the organization. When the culture becomes institutionalized, it will guide all employees (Dessler, 1986: 361).

Strategic leaders should also pay particular attention to ethical practices, the moral filters that help distinguish right from wrong and guide actions within the organizational culture. Senior managers are generally thought to have a significant impact on the ethical practices and performance of the organization (Ireland and Hitt, 2005: 71). Organizational members observe the work styles of their leaders and then reflect these styles in their own work and in their values and beliefs within the organization. This increases the value of leaders and places an important role on the leader in determining and organizing the ethical standards of the organization (Pearce and Robinson, 2007: 366). Strategic leaders also need to establish a balanced organizational control mechanism within their own organizations. Organizational control is the formal and informal processes that strategic leaders use to establish, maintain, and change the boundaries of organizational action (Ireland and Hitt, 2005: 72). Control is necessary for organizations to achieve desired results. They help strategic leaders build trust, demonstrate the importance and value of their strategies to corporate stakeholders, and support strategic change. Controlling not only defines the necessary corrective actions, but also defines the parameters within which strategies should be implemented (Hitt et al., 2007: 382).

5. Conclusion

In recent years, there has been renewed interest in leadership studies. In addition to investigating the personality traits of leaders, the literature also investigates their physical, social, and work-related characteristics. However, these characteristics do not exist alone. Effective leaders usually have a variety of characteristics, but no leader has all the characteristics that enable them to turn every challenge or problem into an opportunity. In addition, characteristics that are generally considered positive can sometimes lead to negative outcomes, while characteristics that are generally considered negative can also lead to positive outcomes. For example, optimism is a highly desirable trait in a leader. Research has shown that optimism is the most common trait among senior executives. Leaders must be able to see opportunities

where others see problems and instill hope in others for a better future. However, optimism can silence leaders, causing them to miss danger signs and underestimate risks. The financial services crisis of 2007-08 has been attributed in part to leaders who were overconfident and led their organizations astray. Optimism, another characteristic of successful leaders, always demands that reality be tested and honesty be emphasized. So the best leaders recognize and develop their strengths rather than simply understanding their own characteristics. Strengths are natural skills and talents, supported and enhanced by acquired knowledge and skills, that provide each individual with the best tools for success and fulfillment.

Around the same time, research at the University of Michigan compared the behaviors of effective and ineffective leaders by examining task- and people-oriented behaviors. The most effective leaders were those who set high performance goals and displayed supportive behaviors toward their subordinates. They were called employee-centered leaders. Less effective leaders were called task-oriented leaders; they were more concerned with meeting schedules, keeping costs low, and achieving production efficiency than with meeting goals and human needs. University of Chicago researchers observed CEOs in restructuring situations, where companies typically had high debt and pressure to improve results quickly, and found that hard, task-oriented traits, such as analytical skills, a focus on efficiency, and setting high standards, were more common. Leadership skills are valued more highly than relational skills, such as good communication, listening, and teamwork. A relationship-oriented leader performs better in moderately favorable situations because interpersonal skills are essential to achieving high group performance. In these cases, the leader may be moderately liked, have some power, and be able to manage tasks that involve some uncertainty. A leader with good interpersonal skills can create a positive group atmosphere that improves relationships, clarifies task structure, and establishes positional authority. Therefore, in order to use Fiedler's contingency theory, a leader must know two things. First, he must know whether a leader has an attitude-oriented or task-oriented style. Second, the leader must diagnose the situation and determine whether the leader's relationship with members, position structure, and position authority are positive or negative. Fiedler believed that adapting a leader's style to the situation could yield great benefits in terms of profit and productivity.

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AN ANALYSIS OF THE IMPACT OF DIGITAL BANKING ON THE FUTURE USE OF OPEN BANKING: A TODA-YAMAMOTO CAUSALITY ANALYSIS IN THE CONTEXT OF AZERBAIJAN

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ABSTRACT

This study provides detailed statistical results on the use of digital banking and digital payments in Azerbaijan, highlighting a high level of usability. However, consumer adoption of open banking remains very low despite the implementation of relevant legislation and security standards. This study aims to assess the impact of digital banking on the use of open banking in Azerbaijan. Using the Toda-Yamamoto causality method and data covering the years 2022-2024, the variables "Bank accounts", "Bank customers", "Digital banking Number", and "Instant Payment System Number", where open banking operations will be carried out, were used in the econometric model. Based on the Toda-Yamamoto causality between "Digital Banking Number" (lnDBN) and "Instant Payment System Number" (lnIPSN), carried out for the main purpose of the research, digital banking will have a positive effect on the future use of open banking, and there is a bidirectional relationship. Additionally, while there is a causal relationship between "Bank Accounts" (lnBA) and "Instant Payment System Number" (lnIPSN), no causal relationship was found between "Bank Customers" (lnBC) and "Instant Payment System Number" (lnIPSN). Factors such as ease of use, usefulness, reliability, and a sense of psychological ownership will play crucial roles in the rapid adoption of open banking.

1. INTRODUCTION

Digital banking refers to the ability for users to access innovative services that expand upon traditional banking operations. This is made possible through the digitization of processes using the internet and modern electronic devices, allowing transactions to be conducted anytime and anywhere. In another form, digital banking is defined as a financial service that includes transactions, trading, advisory services, transaction history visualization, and cross-selling of products through mobile and digital means (Baptista & Oliveira, 2015). "Digital banking is a contemporary financial economic concept that is based on digitizing all bank activities and operations" (Tiong, 2020). Digital banking, as a part of digital finance (Məmmədov, 2022), has become a part of our daily lives, and the process of carrying out financial transactions has become much simpler.

Open banking, as opposed to digital banking, involves the sharing of customer financial information with TPPs through secure channels. Open banking involves the acquisition and exchange of services and products offered by other banks and TPPs as a result of the secure sharing of financial information of individual and legal customers with TPPs (Gozman &

Hedman, 2018). The Bank of International Settlements and Organization for Economic Co-operation and Development defines the concept of open banking as follows "Open banking is defined as the sharing and leveraging of customer-permissioned data by banks with third party developers and firms to build applications and services, including for example those that provide real-time payments, greater financial transparency options for account holders, marketing and cross-selling opportunities." (Bank for International Settlements [BIS], 2019, p.4). "Open banking is a driving force of innovation in the banking industry, enabling customers to securely share their financial data with other financial institutions" (Sharmin, et al., 2024).

Open banking is like digital banking in terms of access to services and products, except for the payment system associated with financial services. Also, there is the concept of open banking, the approach of acceptance as "Digital banking + Open API = Open Banking" (Principe, 2021). Open banking provides account information and payment initiation services by encompassing the features included in digital banking. However, explicit consent, sharing of financial data with TPPs, and access to financial services and products using various applications require a richer user experience, awareness, and responsibility. In addition, digital banking has a positive effect on the formation of new habits and skills for customers to conduct transactions digitally. It also enhances (Mbama & Ezepue, 2018) and enriches the customer experience by providing ease of use (PwC, 2018). Open banking has the potential to fundamentally change customer-bank relationships (Frei, 2023). The adoption of open banking is likely to lead to an increase in customer reliance on fintech companies, while potentially reducing the usage of traditional digital banking apps provided by banks. With open banking in place, customers will use fintech to access banking services, but the actual operations and transaction processes will still be handled by the banks.

The importance of Third-Party Providers (TPPs) is anticipated to grow as the adoption of open banking continues. As financial institutions integrate open banking practices, TPPs will play a crucial role in enabling greater access to banking services and promoting innovative solutions that can enhance customer experiences. This evolving landscape offers a unique opportunity for collaboration between banks and TPPs, fostering a competitive atmosphere that prioritizes the needs and preferences of consumers. Engaging TPPs in this journey will be instrumental in realizing the full potential of open banking, benefiting both financial institutions and their customers alike.

Research on the direct impact of digital banking on open banking is limited. The similarity of the features of using digital banking and open banking and the statistical high of digital banking and digital payments in Azerbaijan have led to the idea that digital banking will impact the use of open banking. This study primarily examines the similarities between digital banking and open banking, as well as the characteristics that influence their usage. By analyzing the similarities and user-related characteristics, the study investigates in detail how factors such as ease of use, usefulness, trust, and psychological factors affect users' adoption of open banking and their intention to use it. To evaluate how digital banking influences the adoption of open banking, a thorough analysis was conducted on the statistical results related to Instant Payment System transactions, digital banking, and digital payments in Azerbaijan over the past few years. Finally, Short-term Toda-Yamamoto causality between the variables was investigated to test whether users of digital banking will also use open banking.

1.1. The Influence of Digital Banking on the Adoption of Open Banking and Its Similarities

Digital banking and open banking are banking models that offer customers access to financial products and services through digital channels. Key factors such as accessibility, usefulness, ease of use, trust, security, and service quality are crucial for both digital banking and open banking. The reasons that drive the use of digital banking also affect the adoption of open banking, reflecting similar usage trends in both models.

Features that will influence digital banking users to use open banking:

- User Perceptions: Factors such as perceived ease of use, perceived usefulness, perceived security, and trustworthiness play a critical role in user adoption of these systems (Almuraqab & Cruz, 2024).
- Convenience: The convenience of managing finances and making payments anytime and anywhere is a strong motivator for users to adopt digital banking and open banking.
- Consumer Behavior: Shifts in consumer behavior, particularly the increasing preference for online and mobile transactions, contribute to the widespread adoption of digital banking and open banking.
- Cost Efficiency: The cost savings associated with digital transactions, compared to traditional banking methods, encourage financial institutions and consumers to adopt these systems (Ananda, Devesh, & Al Lawati, 2020).
- Regulatory Environment: The legal and regulatory framework surrounding digital banking and open banking can either facilitate or impede their adoption. Supportive regulations promote innovation and ensure consumer protection (Beals, 2024).

Increasing the use of open banking via digital banking applications and platforms can be accomplished through the following steps:

- Enhancing user adaptation to open banking by regularly educating them through digital banking, utilizing engaging marketing tools within the app and platform.
- Integration of APIs and interoperability with digital banking applications allows users to access open banking services provided by third-party providers (TPPs).
- The presence of a user-friendly interface for providing open banking services within a digital banking platform can enhance the adoption and satisfaction of open banking.
- Banks acting as data custodians for open banking services (van Zeeland & Pierson, 2021; Abbasov, 2024) can increase trust in using open banking.

The process of making payments in open banking is carried out through the Instant (or Faster) Payment System of each country. "Fast payments are defined as payments in which the transmission of the payment message and the availability of final funds to the payee occur in real time or near real time and on as near to a 24-hour and 7-day (24/7) basis as possible." (BIS, 2016). All payments related to open banking in Azerbaijan will be made through the Instant Payment System (IPS) created on September 26, 2018. Examples of faster payment systems in various countries include the Faster Payment System in the United Kingdom, Pix in Brazil, FAST in Turkey, and SPB in Russia. The integration of the Fast Payment System (FPS) into digital

banking will positively impact the adoption of open banking payments and transfers. Benefits to be gained by promoting the use of open banking services by integrating Fast Payment Systems into Mobile banking applications:

- Fast Payment Systems integrated into mobile banking applications include real-time direct payments and transfers to users. The Instant Payment System has been integrated into the mobile application of 15 banks across Azerbaijan, and the service of making transfers is currently provided (Ali Kerim, 2024).
- The integration of FPS with mobile banking enhances the user experience by providing a convenient and efficient way to manage finances on-the-go. Users can perform transactions anytime and anywhere, using features like mobile wallets and in-app payment options.
- Regulatory frameworks often support the integration of FPS with mobile banking to promote financial inclusion and improve payment efficiency (World Bank, 2021a).
- The interoperability of FPS with mobile banking apps allows for seamless transactions across different banks and financial institutions (World Bank, 2021b).

2. ADOPTION OF OPEN BANKING

Adopting open banking depends on various factors and directly influences usage formation. The adoption process involves the customers' existing skills, awareness, and intention regarding the innovative approach. The open banking model includes the same features as digital banking in the requirement of common usability. However, compared to digital banking, open banking features financial data sharing, data control and management, explicit consent giving, and third-party communication features increase customer responsibility. In the face of this responsibility, the following factors significantly affect the expansion of the use of open banking and the adoption of open banking within society.

Ease of use and usefulness - The usefulness of using electronic payment systems is considered one of the most important factors (Ozkan, Bindusara, and Hackney, 2010). Ease of use has a positive effect on adaptation to electronic payment systems (Riskinanto, Kelana, and Hilmawan, 2018). Ease of use is perceived as a driver of the adoption of an innovative service or product (Agyapong et al., 2017; Davis et al., 1989; Masoud & AbuTaqa, 2017). The concept of perceived ease of use is considered as the degree of ease of understanding and using any innovation (Zeithaml et al. (2000). Perceived usefulness, ease of use, and trust influence the intention to use digital payments (Giri & Ghimire, 2020). Perceived ease of use and usefulness continuously influence the use and adaptation of technology (Okocha & Awele Adibi, 2020).

According to research, the perceived usefulness factor significantly influences a user's intention to use a new e-payment system (Kelly & Palaniappan, 2023). Perceived ease of use has been noted as one of the main factors influencing Saudi Arabian users' use of electronic payment systems (Alyabes & Alsalloum, 2018). According to a study conducted in Turkey, ease of use significantly influences the adoption of digital banking (Celik, 2008). Ease of use, compatibility, familiarity, and habit strongly influence the adoption of digital banking, according to a study in Nepal Nepal, S., & Nepal, B., 2023). According to another study, perceived usefulness is more important than perceived ease of use and has a greater influence on the intention to adapt to digital banking (Wamai and Kandiri, 2015; Ifoenu and Rupert, 2015). Perceived ease of use has a

significant impact on the adoption of mobile banking (Hosseini et al., 2015) and mobile payment services (Mun et al., 2017). Also, perceived usefulness significantly influences trust in mobile wallet payment services (Chang et al., 2018; Bashir and Madhavaiah, 2015). A survey conducted among 562 participants in Azerbaijan revealed that digital banking significantly enhances the quality of life, with the ease of use emerging as the most influential factor contributing to this phenomenon (Rəhimli, 2024).

These are factors that have a positive effect on the implementation of digital payments, as well as open banking payments. Using the TRAM model, a survey-based study was conducted across India to study the intention to use open banking, and based on the results, perceived usefulness, and perceived ease of use have a positive effect on using open banking, and discomfort and insecurity have a negative effect on the use of open banking (Sivathanu, 2019). Also, a survey-based open banking adoption study conducted among young university students in Brazil found that perceived ease of use did not affect open banking adoption, while lack of trust had a negative effect on adoption. It was emphasized that the problem of trust should be solved by the central bank in the formation of customers' use of open banking (Valarini & Nakano, 2022). Perceived usefulness (PU) plays a critical role in the adoption of fintech and open banking, according to a study conducted with the TAM model, including Social Influence (SI) and Initial Trust (INT), two key elements of the UTAUT model. Perceived ease of use (PEOU), on the other hand, indirectly influences the adoption of fintech and open banking. Perceived ease of use in the initial adoption of technology does not play a significant role in behavioral adoption, and the reason for this is related to the lack of use or the lack of opportunity to use the introduced innovation (Venkatesh, 2000). SI influences Behavioral Intention more than perceived usefulness in the adoption of open banking services, and INT is one of the important factors. (Briones & Cassinello,2023). According to another study, ease of use plays a minor role in the adoption of open banking (Briones, et al., 2022).

Trust - As the open banking approach is new, it is important to gain customer trust. The initial trust model is important in innovation adoption (Gao & Waechter, 2017) and High level of trust is also important in the formation of adaptation to electronic payment systems (Indrawati & Putri, 2018). However, open banking has certain challenges related to privacy, data leakage and authentication process (Mansfield-Devine, 2016). Overall, based on the conducted survey, 7 out of 10 participants have concerns about using the collected information for other purposes (Coiera & Clarke, 2004).

Trust is the most crucial and key factor that motivates customers to engage with digital banking (Letamendia & Poher, 2020: Keskar and Pandey (2018). Trust is considered as a variable that directly and indirectly affects intention to use digital banking, but also affects perceived ease of use, perceived usefulness, perceived risk and security (Esendemirli, et al., 2024). Həmçinin, güvən yeni electron ödəniş sistemlərindən istifadənin formalaşmasına təsir edir Also, trust influences the use of new e-payment systems (Drakpa, et al., 2024)

This is one of the factors that negatively affect the use of open banking. UTAUT model Perceived risk negatively affects the use of open banking account information services. There is no direct relationship between effort expectations and account information service in open banking. Also, security is considered a more critical factor in open banking account information services than in traditional Internet banking operations (Rosati, et al. 2022). However, the legislation and security standards adopted by Open Banking countries for payment transactions

are the main factors affecting the formation of customer trust. In addition, the users' full understanding of the risks involved in the innovation has an important influence on the adoption decisions of the innovation. (Claudy, Garcia & O'Driscoll, 2015). Gaining customer trust and respect for customer data by service providers are the main factors in achieving the results related to adaptation to open banking (Polasik & Kotkowski, 2022). According to a study carried out using the TAM model on 410 Spanish citizens, performance expectations and social influence play a crucial role in the adoption of new technologies, but trust plays a very important role in determining behavioral intention to adopt open banking (Briones, & Cassinello). Intuitively, gaining users' trust affects the willingness to share data on open banking (Babina, et al., 2024).

Psychological - Based on open banking, customers act as the owner of their financial data. "The psychological ownership of data is being considered as important in the context of open banking" (Scassa, 2019) and "psychological ownership, can develop a great feeling of attachment to the object" (Pierce et al., 2003). The concept of psychological ownership has the potential to increase positive attitudes about open banking services and products, also, having customers feel ownership over their financial data can make it easier to use open banking services and products (Marzouk, 2021). Customers who use open banking services will further reduce their use of traditional banking services once they gain psychological comfort. Open banking is not only about psychological ownership; it also offers customers a wide range of banking services and products to choose from freely. This will influence the competition within the current sector.

There are certain similarities and differences in the adoption of digital banking and open banking. It is possible to note that in the adoption of open banking, the experience of using digital banking will significantly reduce the difficulty of a customer using open banking for the first time. Digital banking applications and platforms also have the potential to facilitate and promote the use of Fast Payment Systems (BIS, 2024), which will lead to an increase in the use of open banking.

3. DIGITAL BANKING AND DIGITAL PAYMENTS IN AZERBAIJAN

Since 2020, the growth rate of the number of transactions carried out under the Instant Payment System has been observed in Graph 1. In general, during the 45 months, the number of operations increased by 13.5 times, and the volume of operations increased by 5.8 times. CMGR[1] transaction number was 6%, and transaction volume was 4%.

[1] CMGR - Compound Monthly Growth Rate

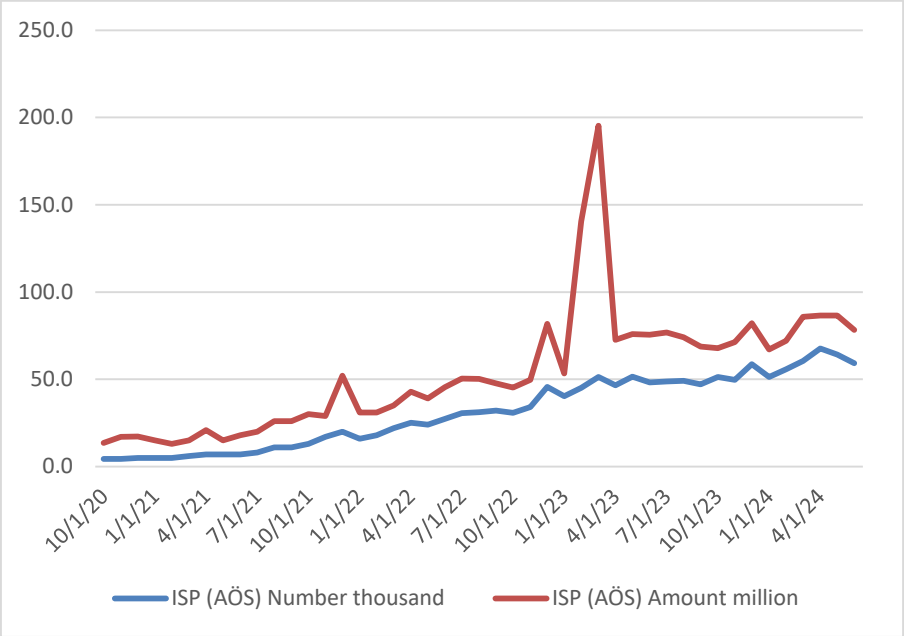


Chart 1. The Number and Volume of Transactions Carried out in 2020-2024 Under The Instant Payment System

Source: *Central Bank of the Republic of Azerbaijan - Central Bank of the Republic of Azerbaijan - Payment system indicators (cbar.az)*

In addition to taking several steps to open banking in Azerbaijan starting in 2021, there are opportunities for open banking on the Instant Payment System (Məmmədov, 2023). As payment transactions related to open banking will be carried out through the Instant Payment System, it will directly affect the statistical indicators related to the use of open banking.

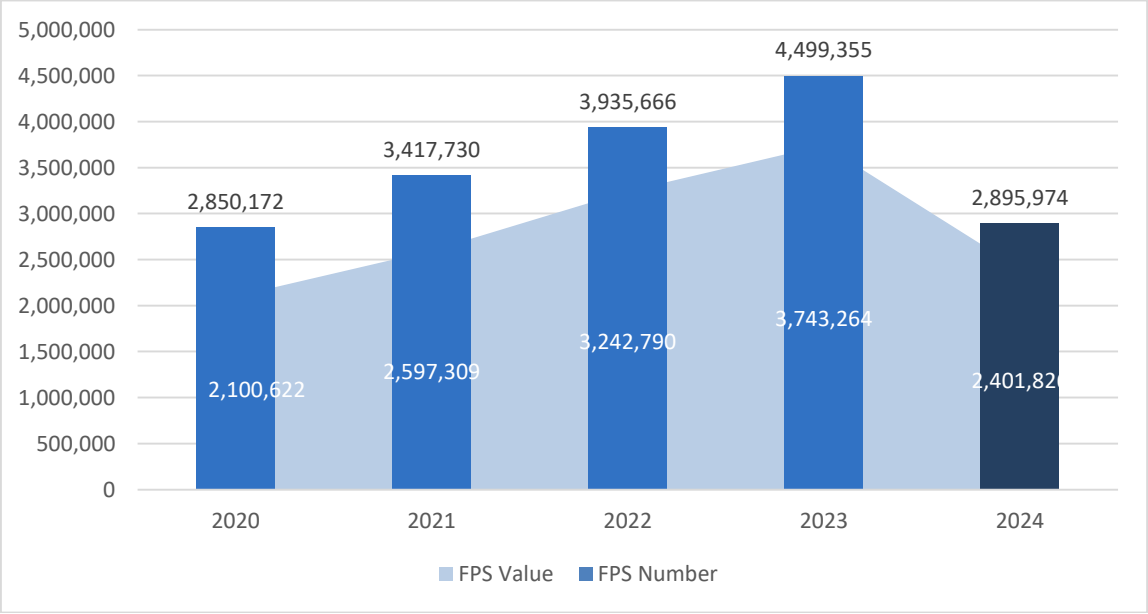


Chart 2. Number and Value of Payments Made Under The Faster Payment System in The United Kingdom 2020-2024.

Source: *Pay.UK - https://www.wearepay.uk/what-we-do/payment-systems/payment-statistics-overview/*

Note: 7-month results for the 2024 Faster Payment System are reflected.

- Payment number result – billion
- Payment value result – trillion

When comparing Azerbaijan's Instant Payment System with the United Kingdom's Faster Payment System, there is a significant difference in both the number of transactions and the volume of transactions. In Azerbaijan, the number of payments made with IPS was 359 thousand in the last 6 months, while in the United Kingdom, this result was 2 billion 895 million in 7 months. In terms of transaction volume, these results were 477 million manats for Azerbaijan, and 2 trillion 401 billion pounds for the United Kingdom. The number of open banking users in the United Kingdom reached 10 million by 23 July 2024 and continues to grow. The number of customers using open banking in the United Kingdom[2] is already equal to the population of Azerbaijan.

Service fee rates applied to participants for use of the IPS system:

- No service fee is required for customer transfers between individuals.
- A service fee of 0.01% of the amount, with a minimum of 0.01 Azn and a maximum of 4 Azn, is required for sales points, e-commerce, cashing, and account deposit operations.

Table 1. Comparison of Payment Service Charge Interest Rates Across POS/MPOS, IPS, and Payment Institutions

Type	**POS and MPOS (Banks)**	**IPS (AÖS)**	**Payment Institutions**
Markets	1.5-3%	0.3%	2.5-3% Apple Pay/ Google Pay – 2.8%
Gas stations		0.1%	
Pharmacy		0.1%	
Transportation		0.05%	
Other		0.35%	
Gamble		1.2%	
Ecommerce		0.3%	

Source: Author

Depending on the M-POS and POS terminal turnover limit[3]:

- for markets and pharmacies 2.2-2.3%
- for gas stations 1.7-1.6%
- for restaurants and general 2.5-2.4%

Interest rates on payments made on electronic commerce:

- Depending on the circulation limit on Epoint[4]:
  - for direct payments 2.5-3%
  - Apple Pay/ Google Pay – 2.8%
- Odero M-POS/ QR and link payments 3%[5]
- Pasha Bank 2% on e-commerce[6]

[2] https://www.openbanking.org.uk/news/open-banking-marks-major-milestone-of-10-million-users/

[3] M-POS and POS terminal tariffs are listed based on the information provided by Rabita Bank - Rabit-bankASCninFizikiv-Hquqi-xsl-r-Gst-ril-nXidm-tl-r.pdf (rabitabank.com)

[4] https://epoint.az/en/prices

[5] https://odero.az/

Service fees related to Faster Payment Systems for other countries:

Russia[7]:

- No service fee is required up to 100000 rubles per month, but if this limit is exceeded, 0.5% per transaction or a maximum of 1500 rubles is charged.
- 0.7% for business entities (0.4% for certain business entities)
- 0.05-3.0 rubles are required for payments made by banks.

Türkiye[8]:

- As of April 4, 2024, FAST transactions were raised from 50,000 TL to 100,000 TL, and the FAST-TR QR code-based transaction limit was raised from 100,000 TL to 250,000 TL (Central Bank of the Republic of Türkiye [CBRT], 2024).
- In FAST transfers, the commission varies between 4.22-105.52 TL[9].

United Kingdom[10]:

- Limit on payouts up to £1 million, but limit requirements are subject to change by participants[11]
- There is no fee for individuals.
- Business entities are charged £0.50 per payment[12]

The advantages of the Instant Payment System, the service fee interest rates required for payments, and the possibility of making payments in an instant will encourage the use of open banking services. In Türkiye, Russia, and the United Kingdom, customer transfers made through the Fast Payment System are more efficient for customers. In general, the Instant Payment System and similar systems of other countries play a key role in the implementation of open banking operations and lead to the reduction of additional costs for payments. In addition, "Fast payments and open banking services are natural complements, and their integration generates synergies that can enable the more rapid adoption of both" (World Bank Group [WBG], 2023).

The presence of lower service fees compared to POS terminals and debit/credit card payments will directly influence the increase in the use of open banking. In general, the commission on average payments for M-POS and POS terminal services for local cards offered by banks operating in Azerbaijan is in the range of 1.5-3%. As a negative, we can note that even though banks digitally share information about the acquisition, advantages, and use of M-POS and POS terminals, the level of accessibility of information about service fees or commissions is low. It leads to the restriction of the selection activity of the business entity, or the client based on independent research and the formation of a physical application to the banks, and as a result, additional time loss occurs.

[6] Pasha Bank provides a 2% commission for local cards and e-commerce for payments made at the POS terminal - Tariflər | PASHA Bank

[7] https://www.cbr.ru/eng/psystem/sfp/

[8] https://fast.tcmb.gov.tr/wps/wcm/connect/fast/anasayfa

[9] https://www.isbank.com.tr/urun-ve-hizmet-ucretleri#h1i2s4

[10] https://www.wearepay.uk/what-we-do/payment-systems/faster-payment-system/

[11] https://www.wearepay.uk/what-we-do/payment-systems/faster-payment-system/transaction-limits/

[12] https://www.atlar.com/guides/bank-payments-in-the-uk

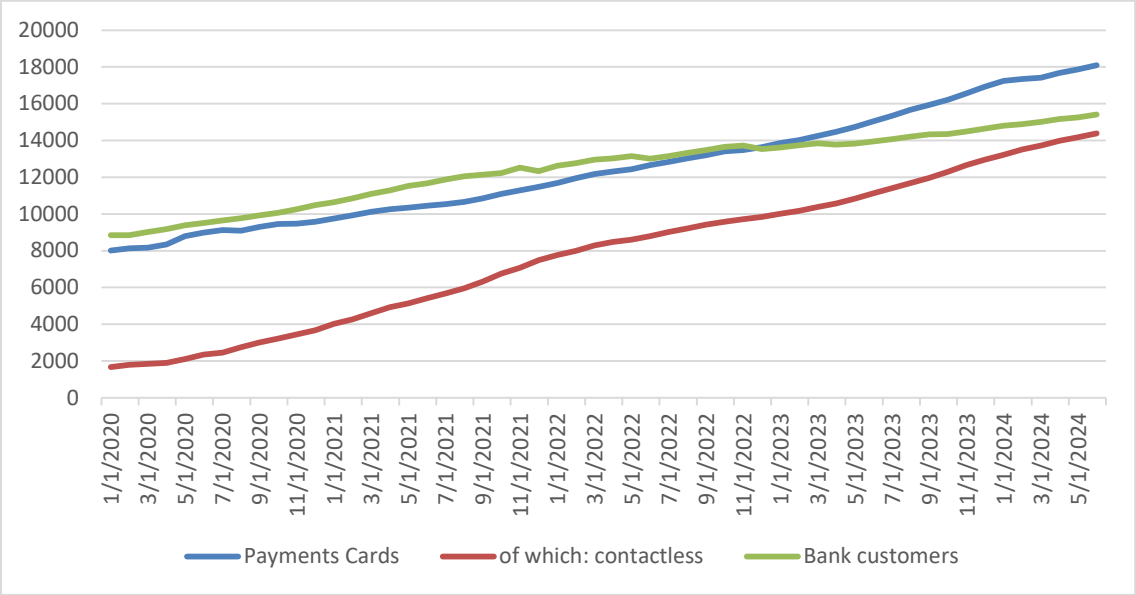


Chart 3. The Number of NFC-Enabled Payment Cards and Bank Customers in Azerbaijan, 2020-2024

Source: *Central Bank of the Republic of Azerbaijan - Central Bank of the Republic of Azerbaijan - Payment system indicators (cbar.az)*

In addition to the number of payment cards owned by the population exceeding 18 million as of June 2024, the use of cards for contactless payments by society is increasing significantly, and the total number of bank customers has exceeded 15 million. In addition, the number of contactless cards has reached 14.4 million. According to the study, the growth in bank cards in Mexico, Costa Rica and Thailand has led to an increase in the use of the Fast Payment System (Suominen, 2024), which will also affect the adoption of open banking. Based on the number of bank customers, we can note the high potential customer base due to the use of open banking. In 2023, 67.5 million payments worth 1.9 billion manats were made through Apple Pay, 39.6 million payments worth 813.2 million manats were made through Google Pay, and 1 out of every 4 cashless payments made at POS terminals was made with this type of payment (CBAR, 2023).

Based on these statistical results, the adoption of digital payment behavior will lead to the easy implementation of payments on QR codes and M-POS/POS terminals in open banking. Making payments with the online payment option Apple Pay/Google Pay during e-commerce will play a role in increasing the use of the "pay by bank" payment type. However, at this time, the payment that will be made with the "pay by bank" payment option offered by open banking must provide a safer, faster, and better service quality than other payment methods, so that it is always chosen by clients.

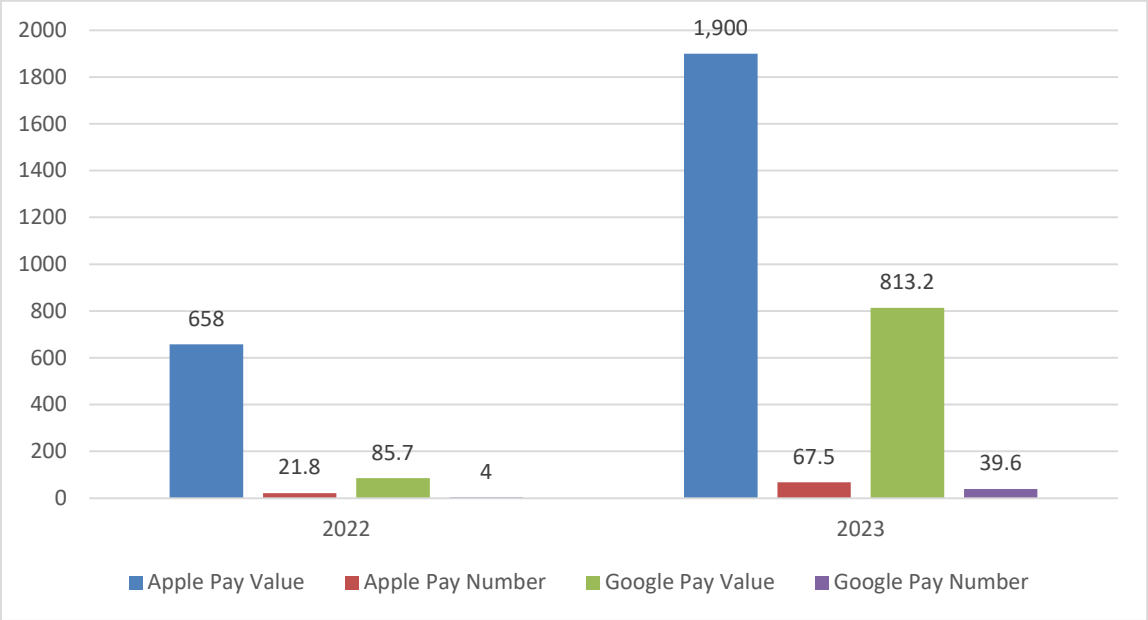


Chart 4. Number and Volume of Apple Pay and Google Pay Payments in 2022 and 2023

Source: *Central Bank of the Republic of Azerbaijan - Azərbaycan Respublikasının Mərkəzi Bankı - Rəqəmsal ödənişlər icmalı (cbar.az)*

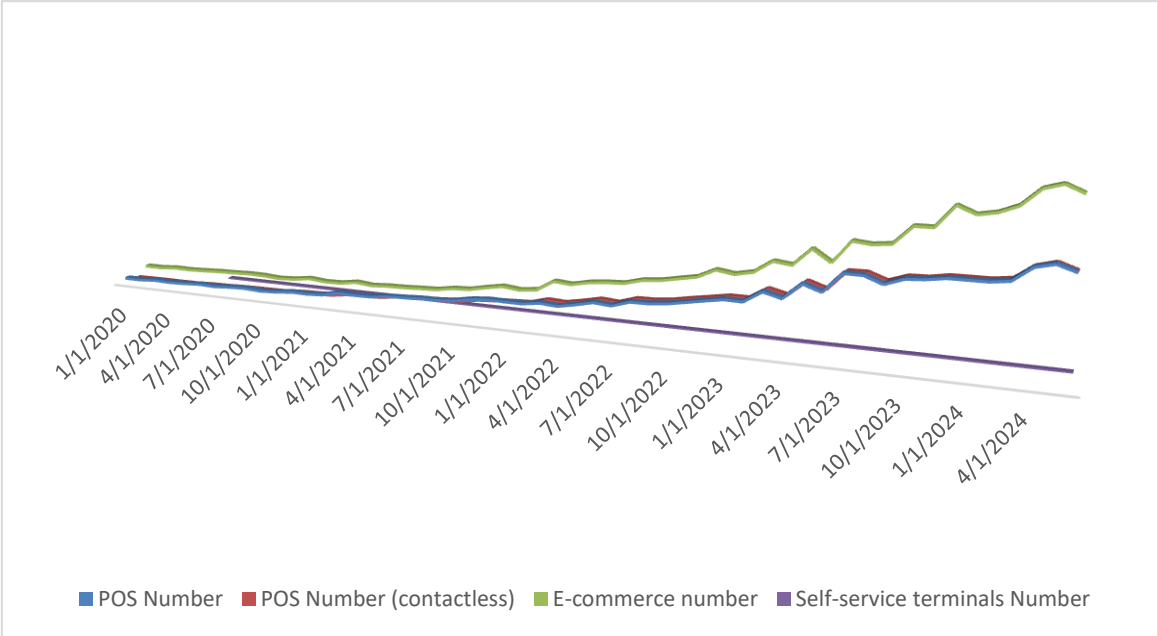


Chart 5. Number of POS and Contactless, E-commerce Payment, Payment at Self-service Terminals in 2020-2024

Source: *Central Bank of the Republic of Azerbaijan - Central Bank of the Republic of Azerbaijan - Payment system indicators (cbar.az)*

A significant increase in the number of cashless payments made through e-commerce and POS terminals is observed and continues to rise. The number of POS terminals increased 16 times, and the number of contactless POS terminals increased 57 times in parallel. However, in terms of transaction volume, e-commerce contains more volume than POS terminals. Since 2020, after the COVID-19 pandemic, the volume of e-commerce has increased by 17.2 times, and this result has increased by 7.2 times for the POS terminal. Both the number and the volume of transactions performed through self-service terminals show steady slow growth.

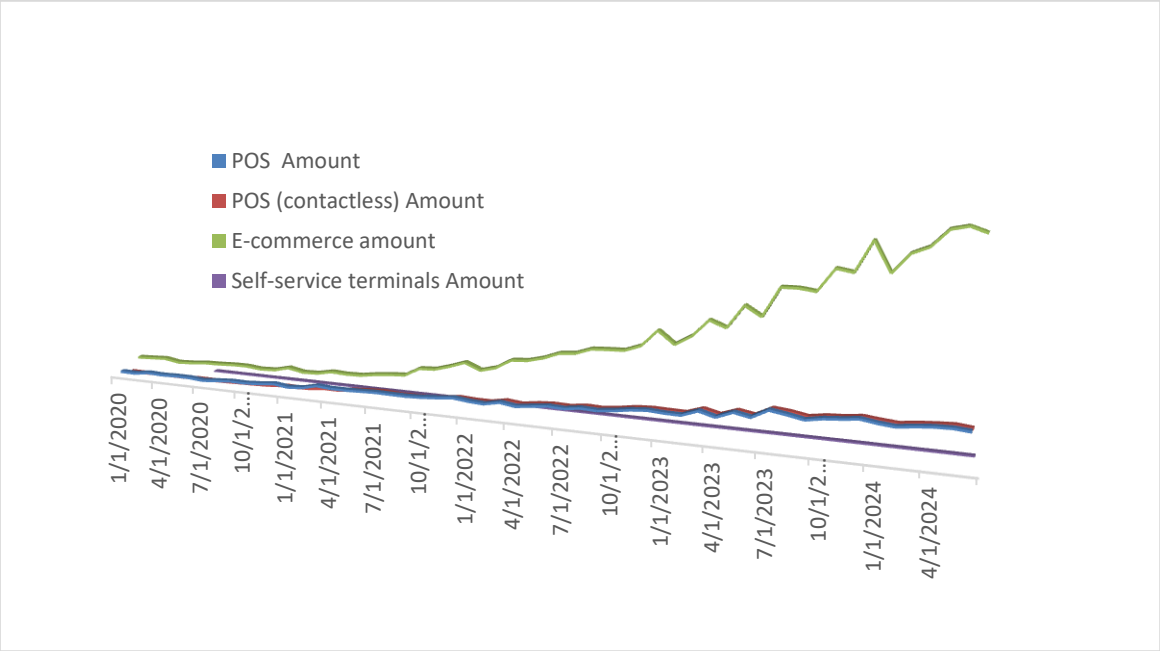


Chart 6. POS and Contactless, E-commerce payment, Self-service Terminals Payment Volume in 2020-2024

Source: *Central Bank of the Republic of Azerbaijan - Central Bank of the Republic of Azerbaijan - Payment system indicators (cbar.az)*

According to the mentioned graphs, it is possible to note the existence of possible conditions for the introduction of open banking and preparation for its use by society and the possibility of further increasing the current level of the growth rate of use of the Instant Payment System through open banking. In June 2024, the total number of transactions carried out with various payment service networks (payment service network) was 144.5 million, and the volume was 9.7 billion AZN. As digital payments made using open banking will be made through the Instant Payment System, the statistical results of the payment service networks will decrease.

Although the transaction volume of payments made on POS terminals in the country is small when compared to e-commerce, the use of open banking services during payment will lead to a decrease in additional costs, commissions, and interest rates paid for acquiring services on POS terminals. ABB has introduced a service where entrepreneurs can receive QR payments through AniPay with an ABB POS terminal (ABB-dən biznes sahibləri, 2024). As a result, the commission and service fees are lower than those of the traditional POS terminal, and this transaction is carried out through the Instant Payment System.

Although the Central Bank of Azerbaijan has not provided detailed information on the share of e-commerce payments by payment systems and payment service networks, with open banking, digital payments with the "pay by bank" option on the Instant Payment System will reduce additional costs and will provide the opportunity to make payments in a safe, easy and instantly.

The main issue is to make the numerical price difference of the payments made using open banking noticeable compared to other digital payments during the digital payments made by society for products and services. In addition to simply making the price difference in products and services open banking, providing customers with easy account management, sharing, and management of financial information will have a direct impact on increased usage.

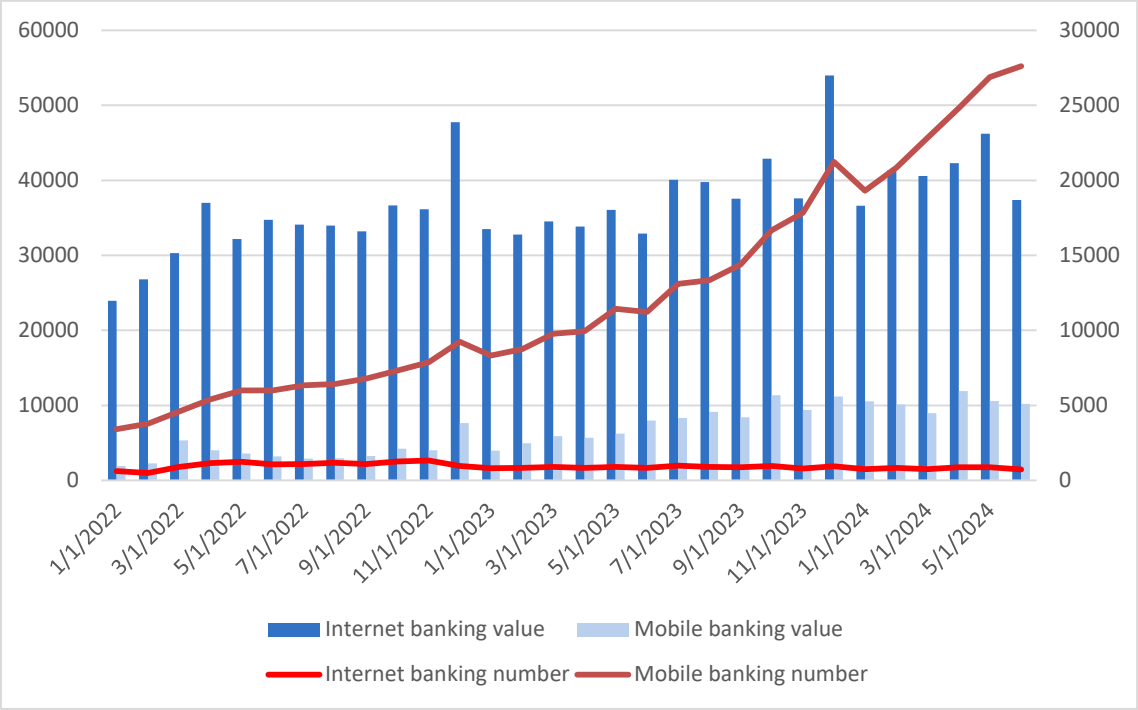


Chart 7. Number and Volume of Internet and Mobile Banking Transactions 2022-2024

Source: *Central Bank of the Republic of Azerbaijan - Central Bank of the Republic of Azerbaijan - Payment system indicators (cbar.az)*

In digital banking, the number of transactions conducted using mobile banking shows a sharp increase compared to internet banking, but the volume of transactions carried out by internet banking is many times higher than that of mobile banking. According to the statistical results of the last six months of 2024, 274.8 million transactions were conducted on mobile banking, and this result was 108.7 million in the first six months of 2023, which was a 153% increase when compared. The number of Internet banking transactions in the first 6 months of 2024 was 9.6 million. Compared to the first 6 months of 2023, there was a slight decrease.

A significant increase in the use of digital banking and the number of bank accounts in Azerbaijan in recent years will lead to a rise in the use of open banking soon. High accessibility, use, and adoption of innovations in digital banking by society are expected to achieve high results in open banking. The formation of the ability to use digital banking services within society will lead to a faster increase and adaptation of open banking.

4. METHOD AND DATA

A significant increase in the volume of digital banking and digital payments in Azerbaijan during the period 2020-2024, taking steps related to the introduction of open banking by the Central Bank of the Republic of Azerbaijan, and obtaining a license for TPPs that include open banking services will lead to an increase in the use of open banking services. The similarity between the current use and adoption of digital banking and open banking led to this study. The main purpose of the research is to clarify the existence of the potential for future use of open banking by users who use digital banking. Due to the high potential of society to use digital banking and digital payments, it was decided to investigate the potential of digital banking on future open banking with Toda-Yamamoto causality and the relationship between the following variables will be investigated.

1. Analyze casuality between digital banking transaction numbers and instant payment system transaction numbers in Azerbaijan;
2. Analyze casuality between bank accounts and instant payment system transaction numbers in Azerbaijan;
3. Analyze casuality between bank customers and instant payment system transaction numbers in Azerbaijan;

Statistical results of the Instant Payment System, where open banking operations will be carried out, were used to study the potential of using open banking. The data used in the econometric analysis were obtained from the Central Bank of the Republic of Azerbaijan. Within the analysis, bank customers were marked as "BC," bank accounts were marked as "BA," digital banking transaction numbers were marked as "DBN," and instant payment system transaction numbers were marked as "IPSN." In this analysis covering January 2022 and July 2024 (32 months of observation) - ADF (Augmented Dickey-Fuller Test) (Dickey and Fuller, 1979), PP (Philips-Perron, 1988) unit root tests, VAR Residual Serial Correlation Lagrange Multiplier (LM) Tests and Inverse Roots of AR Characteristic Polynomial, and the Toda-Yamamoto causality test (Toda and Yamamoto, 1995) were calculated using EViews 12 lite software.

Table 2. Variable definitions and data sources

Variables	Symbol	Definition	Source
Instant Payment System Numbers (IPSN)	lnIPSN	The number of payment transactions made through the instant payment system.	Central Bank of the Republic of Azerbaijan
Digital Banking Numbers (DBN)	lnDBN	Digital Banking Number - the number of payment transactions made through Internet and mobile banking.	Central Bank of the Republic of Azerbaijan
Bank Customers (BC)	lnBC	Bank Customer - total number of banks customers.	Central Bank of the Republic of Azerbaijan
Bank Accounts (BA)	lnBA	Bank Account - the total number of bank accounts belonging to customers.	Central Bank of the Republic of Azerbaijan

Note: Instant Payment System Numbers, Digital Bank Numbers, Bank Customers and Bank Accounts variables were used in natural logarithmic form.
Source: Author

5. EMPIRIC RESULTS AND DISCUSSION

"Todo Yamamoto" causality was analyzed between the number of digital banking transactions, bank customers, bank accounts, and the number of Instant Payment System transactions where open banking transactions will be carried out, to clarify that the use of digital banking will affect the use of open banking in the future due to the rapid rise of digital banking in recent years. Before performing the "Todo Yamamoto" test, the Augmented Dickey-Fuller and Phillips-Perron unit root tests of the variables were first performed. Based on these test results, the following hypotheses are accepted and rejected:

- H0: The series has a unit root (is non-stationary)
- H1: The series has no unit root (is stationary)

Table 3. ADF Unit Root Test - Intercept

Variables	Augmented Dickey- Fuller (ADF) Unit Root Test Intercept			
	I(0)		I(1)	
	t-statistic	critical value / [p-value]	t-statistic	critical value / [p-value]
lnBA	0.769285	-3.689194 **[0.9916]**	-4.405173	-3.689194 **[0.0017]**
lnBC	0.002993	-3.670170 **[0.9516]**	-4.938540	-3.679322 **[0.0004]**
lnDBN	-1.163365	-3.679322 **[0.6762]**	-6.615097	-3.679322 **[0.0000]**
lnIPSN	-2.963833	-3.679322 **[0.0504]**	-6.902714	-3.679322 **[0.0000]**

Note: According to Mac Kinnon (1996) critical values, it indicates stationarity at 1% significance level.

Table 4. ADF Unit Root Test – Trend and Intercept

Variables	Augmented Dickey- Fuller (ADF) Unit Root Test Trend and Intercept			
	I(0)		I(1)	
	t-statistic	critical value / [p-value]	t-statistic	critical value / [p-value]
lnBA	-2.369846	-4.3098224 **[0.3863]**	-4.476680	-4.323979 **[0.0070]**
lnBC	-1.912855	-4.296729 **[0.6230]**	-4.889028	-4.309824 **[0.0025]**
lnDBN	-3.652188	-4.296729 **[0.0420]**	-6.632049	-4.309824 **[0.0000]**
lnIPSN	-2.990994	-4.296729 **[0.1511]**	-7.560170	-4.309824 **[0.0000]**

Note: According to Mac Kinnon (1996) critical values, it indicates stationarity at 1% significance level.

Table 5. PP Unit Root Test – Intercept

Variables	Phillips-Perron Unit Root Test Intercept			
	I(0)		I(1)	
	t-statistic	critical value / [p-value]	t-statistic	critical value / [p-value]
lnBA	0.504766	-3.670170 **[0.9840]**	-4.155625	-3.679322 **[0.0031]**
lnBC	0.514156	-3.670170 **[0.9844]**	-6.490247	-3.679322 **[0.0000]**
lnDBN	-1.327918	-3.670170 **[0.6033]**	-6.939344	-3.679322 **[0.0000]**
lnIPSN	-3.268566	-3.670170 **[0.0256]**	-6.980244	-3.679322 **[0.0000]**

Note: According to Mac Kinnon (1996) critical values, it indicates stationarity at 1% significance level.

Table 6. PP Unit Root Test – Trend and Intercept

Variables	Phillips-Perron Unit Root Test Trend and Intercept			
	I(0)		I(1)	
	t-statistic	critical value / [p-value]	t-statistic	critical value / [p-value]
lnBA	-1.687203	-4.296729 **[0.7320]**	-4.823928	-4.309824 **[0.0030]**
lnBC	-1.939319	-4.296729 **[0.6094]**	-7.632362	-4.309824 **[0.0000]**
lnDBN	-3.622695	-4.296729 **[0.0447]**	-6.852116	-4.309824 **[0.0000]**
lnIPSN	-2.973808	-4.296729 **[0.1557]**	-8.301674	-4.309824 **[0.0000]**

Note: According to Mac Kinnon (1996) critical values, it indicates stationarity at 1% significance level.

Based on the stationary results of the variables obtained in Augmented Dickey-Fuller and Phillips-Perron unit root test, the maximum integration degree $d_{max} = 1$, which is the initial stage of the Todo Yamamoto causality test, was obtained. The second step is to build the VAR model and find the optimal lag length k (optimal lag length). "While the Toda-Yamamoto method does not require the series to be integrated at the same degree, it also does not require the existence of a cointegration relationship between these series" **(**Çalışkan, Karabacak ve Meçik, 2017, s.50**).**

Table 7. Optimal lag length for the VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	192.8172	NA	2.60e-11	-13.02187	-12.83328	-12.96281
1	326.3155	220.9628	7.97e-15	-21.12521	-20.18225*	-20.82989
2	349.5213	32.00793*	5.21e-15*	-21.62216*	-19.92483	-21.09057*

* Optimal lag lengths selected by LR test statistic (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), Hannan-Quinn Information Criterion (HQ)

Table 7. shows the optimal length results based on LR test statistic, Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hannan-Quinn Information Criterion (HQ). Based on the results, the optimal lag length is **2** for LR, FPE, AIC, and HQ and **1** for SC. The most appropriate delay length is taken as $k = 2$. It is necessary to determine the stability and autocorrelation problem of the VAR model constructed with a suitable lag length.

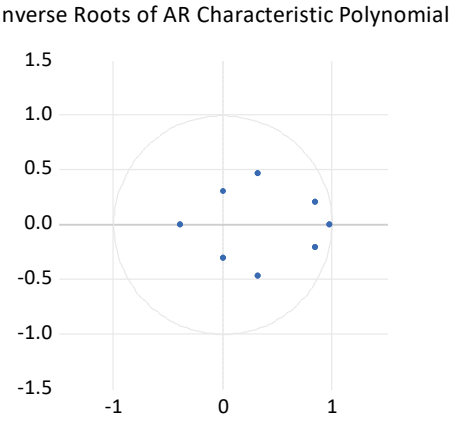
Table 8. VAR Residual Serial Correlation LM test

Lag	LRE*stat	df	Prob.	Rao F-stat	df	Prob
1	23.49464	16	0.1011	1.620175	(16, 40.4)	**0.1074**
2	11.21310	16	0.7961	0.673858	(16, 40.4)	**0.8015**
3	14.24895	16	0.5802	0.885463	(16, 40.4)	**0.5891**
Null Hypothes is: No serial correlation at lag h						
Lag	LRE*stat	df	Prob.	Rao F-stat	df	Prob
1	23.49464	16	0.1011	1.620175	(16, 40.4)	**0.1074**
2	35.59368	32	0.3029	1.134948	(32, 34.8)	**0.3565**
3	48.01319	48	0.4723	0.867945	(48, 21.3)	**0.6673**
Null Hypothes is: No serial correlation at lags 1 to h						

Table 8. Based on the most suitable delay length $k = 2$, the probability result is ***0.8015***. By evaluating the results of the autocorrelation test, it is possible to note that we cannot reject hypothesis H0, there is no autocorrelation problem in the variables.

Scheme 1. Dynamic stability of the model

Root	Modulus
0.980946	0.980946
0.844295 – 0.210743i	0.870199
0.844295 + 0.210743i	0.870199
0.322329 – 0.464362i	0.565268
0.322329 + 0.464362i	0.565268
-0.384515	0.384515
0.008340 – 0.302020i	0.302136
0.008340 + 0.302020i	0.302136



According to the results of **Scheme 1**, all inverse root modulus values of the AR characteristic polynomials are less than 1, thus supporting our stationarity results. Finally, all the mentioned results confirm the model's suitability for investigating causality and $k + d_{max} = 3$.

The VAR model of Toda and Yamamoto causality will be as follows:

$$y_t = \mu_0 + \left(\sum_{i=1}^{k} a_{1t} y_{t-i} + \sum_{i=k+1}^{d_{max}} a_{2t} y_{t-i}\right) + \left(\sum_{i=1}^{k} \beta_{1t} x_{t-i} + \sum_{i=k+1}^{d_{max}} \beta_{2t} x_{t-i}\right) + \varepsilon_{1t} \quad \textbf{(1)}$$

$$x_t = \varphi_0 + \left(\sum_{i=1}^{k} \gamma_{1t} x_{t-i} + \sum_{i=k+1}^{d_{max}} \gamma_{2t} x_{t-i}\right) + \left(\sum_{i=1}^{k} \delta_{1t} y_{t-i} + \sum_{i=k+1}^{d_{max}} \beta_{2t} y_{t-i}\right) + \varepsilon_{2t} \quad \textbf{(2)}$$

Table 9. Toda Yamamoto Causality

Direction of Causality	$k+d_{max}$	Chi-square (X^2)	Prob.	Results (Causality)
lnDBN → lnIPSN	2+1	10.62827	0.0139	**H_1 - Yes**
lnBC → lnIPSN	2+1	0.819658	0.8448	H_0 - No
lnBA → lnIPSN	2+1	8.952471	0.0299	**H_1 - Yes**
lnIPSN → lnDBN	2+1	8.522623	0.0364	**H_1 - Yes**
lnBC → lnDBN	2+1	5.209828	0.1571	H_0 - No
lnBA → lnDBN	2+1	35.06416	0.0000	**H_1 - Yes**
lnIPSN → lnBC	2+1	5.255100	0.1540	H_0 - No
lnDBN → lnBC	2+1	7.814106	0.0500	H_0 - No
lnBA → lnBC	2+1	4.685516	0.1963	H_0 - No
lnIPSN → lnBA	2+1	5.478888	0.1399	H_0 - No
lnDBN → lnBA	2+1	5.056632	0.1677	H_0 - No
lnBC → lnBA	2+1	19.50555	0.0002	**H_1 - Yes**

If the probability of causality between the variables is lower than 5%, the hypothesis H0 is rejected and H1 is accepted, and the existence of a causal relationship is recorded. If it is above 5%, the H0 hypothesis is not rejected and there is no causal relationship.

Based on the results obtained based on the analysis, a causal relationship between the dependent variable "Digital Banking Numbers" (lnDBN) and the independent variable "Instant Payment System Numbers" (lnIPSN) was obtained. As a result, the high and rising number of digital banking usage will affect the usage of open banking. Based on this short-term study, we can note the existence of a bidirectional relationship. According to a study by Polasik and Kotkowski (2022), card-based mobile and NFC payments have a positive correlation with the adoption of open banking services, although mobile banking has a more significant effect than NFC. Customers using mobile banking and NFC technology may adopt open banking.

For other variables, there exists a causal relationship between the dependent variable “Bank Accounts” (lnBA) and the independent variable “Instant Payment System Numbers” (lnIPSN). It is undeniable that there is a relationship, as transactions within both open banking and the instant payment system are conducted directly through bank accounts. Additionally, a causal relationship has been identified between “Bank Accounts” (lnBA) and “Digital Banking Numbers” (lnDBN). Utilizing digital banking services requires a bank account and the integration of these accounts into payment service networks. Additionally, there is a relationship between “Bank Customers” (lnBC) and “Bank Accounts” (lnBA), with each customer leading to the opening of a new bank account.

6. CONCLUSIONS AND RECOMMENDATIONS

Statistical data on the use of digital banking and digital payments in Azerbaijan has shown significant growth since 2020. From 2022 through the first six months of 2024, the total number of digital banking service transactions in Azerbaijan reached 743 million. Specifically, Apple Pay and Google Pay recorded 132.9 million transactions in 2022 and 2023. Additionally, there were 2.5 billion transactions conducted by customers across various platforms, including POS terminals, self-service terminals, and e-commerce, during the same period from 2020 to the first half of 2024. Based on the statistical results, it is possible to encourage users of digital banking to

adopt open banking through proper information and promotion. This study indicates that the similarities between digital banking and open banking such as ease of use, usefulness, trust, and efficiency will positively influence the rapid adoption of open banking among users.

In this study, the impact of digital banking on the use of open banking in Azerbaijan, and the short-term relationship between the number of transactions in digital banking and the number of transactions in the Instant Payment System was analyzed. A causality result was obtained in a study using the Toda-Yamamoto causality method. This analysis indicates that there is a potential link between customers using digital banking and their likelihood of adopting open banking. Additionally, the study found a causal relationship among bank accounts, bank customers, and the number of digital banking transactions.

Enhancing awareness of open banking in Azerbaijan will significantly elevate its adoption among consumers. As acceptance of the open banking concept increases, a corresponding decrease in the volume of digital banking transactions for domestic purposes can be anticipated. Furthermore, the implementation of open banking QR payments at point-of-sale (POS) terminals and "Pay by bank" payment type within the e-commerce sector is expected to witness substantial growth.

Further analysis using the main statistical results of transactions made through digital banking and payments via open banking services will effectively reveal the impact of digital banking on the adoption of open banking. Conducting a survey-based study on the intention to use open banking among digital banking users will provide valuable insights into the current situation. The limited adoption of open banking services by society, along with the challenges related to data accessibility, highlights the need for both short-term and long-term re-evaluation of the relationship between digital banking and open banking.

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INSTRUCTIONS FOR AUTHORS

1. "The Baku Engineering University Economics and Administration" accepts original unpublished articles and reviews in the research field of the author.
2. Articles are accepted in English.
3. File format should be compatible with **Microsoft Word** and must be sent to the electronic mail (**journal@beu.edu.az**) of the Journal. The submitted article should follow the following format:

- Article title, author's name and surname
- The name of workplace
- Mail address
- Abstract and key words

4. The title of the article should be in each of the three languages of the abstract and should be centred on the page and in bold capitals before each summary.
5. **The abstract** should be written in **9 point** type size, between **100** and **150** words. The abstract should be written in the language of the text and in two more languages given above. The abstracts of the article written in each of the three languages should correspond to one another. The keywords should be written in two more languages besides the language of the article and should be at least three words.
6. . **UDC** and **PACS** index should be used in the article.
7. The article must consist of the followings:

- Introduction
- Research method and research
- Discussion of research method and its results
- In case the reference is in Russian it must be given in the Latin alphabet with the original language shown in brackets.

8. **Figures, pictures, graphics and tables** must be of publishing quality and inside the text. Figures, pictures and graphics should be captioned underneath, tables should be captioned above.
9. **References** should be given in square brackets in the text and listed according to the order inside the text at the end of the article. In order to cite the same reference twice or more, the appropriate pages should be given while keeping the numerical order. For example: [7, p.15].

Information about each of the given references should be full, clear and accurate. The bibliographic description of the reference should be cited according to its type (monograph, textbook, scientific research paper and etc.) While citing to scientific research articles, materials of symposiums, conferences and other popular scientific events, the name of the article, lecture or paper should be given.

Samples:

a) ***Article:*** Demukhamedova S.D., Aliyeva İ.N., Godjayev N.M.. *Spatial and electronic structure af monomerrik and dimeric conapeetes of carnosine üith zinc,* Journal of structural Chemistry, Vol.51, No.5, p.824-832, 2010

b) ***Book:*** Christie ohn Geankoplis. *Transport Processes and Separation Process Principles.* Fourth Edition, Prentice Hall, p.386-398, 2002

c) ***Conference paper:*** Sadychov F.S., Aydın C., Ahmedov A.İ.. Appligation of Information – Commu-nication Technologies in Science and education. II International Conference."*Higher Twist Effects In Photon- Proton Collisions", Bakı, 01-03 Noyabr, 2007, ss 384-391*

References should be in 9-point type size.

10. The margins sizes of the page: - Top 2.8 cm. bottom 2.8 cm. left 2.5 cm, right 2.5 cm. The article main text should be written in Palatino Linotype 11 point type size single-spaced. Paragraph spacing should be 6 point.
11. The maximum number of pages for an article should not exceed 15 pages
12. The decision to publish a given article is made through the following procedures:

- The article is sent to at least to experts.
- The article is sent back to the author to make amendments upon the recommendations of referees.
- After author makes amendments upon the recommendations of referees the article can be sent for the publication by the Editorial Board of the journal.

YAZI VƏ NƏŞR QAYDALARI

1. "Journal of Baku Engineering University-İqtisadiyyat və İdarəetmə"- əvvəllər nəşr olunmamış orijinal əsərləri və müəllifin tədqiqat sahəsi üzrə yazılmış icmal məqalələri qəbul edir.
2. Məqalələr İngilis dilində qəbul edilir.
3. Yazılar **Microsoft Word** yazı proqramında, (**journal@beu.edu.az**) ünvanına göndərilməlidir. Göndərilən məqalələrdə aşağıdakılara nəzərə alınmalıdır:

- Məqalənin başlığı, müəllifin adı, soyadı,
- İş yeri,
- Elektron ünvanı,
- Xülasə və açar sözlər.

4. **Məqalədə başlıq hər xülasədən əvvəl** ortada, qara və böyük hərflə xülasələrin yazıldığı hər üç dildə olmalıdır.
5. **Xülasə** 100-150 söz aralığında olmaqla, 9 punto yazı tipi böyüklüyündə, məqalənin yazıldığı dildə və bundan əlavə yuxarıda göstərilən iki dildə olmalıdır. Məqalənin hər üç dildə yazılmış xülasəsi bir-birinin eyni olmalıdır. Açar sözlər uyğun xülasələrin sonunda onun yazıldığı dildə verilməklə ən azı üç sözdən ibarət olmalıdır.
6. Məqalədə UOT və PACS kodları göstərilməlidir.
7. Məqalə aşağıdakılardan ibarət olmalıdır:

- Giriş,
- Tədqiqat metodu
- Tədqiqat işinin müzakirəsi və onun nəticələri,
- İstinad ədəbiyyatı rus dilində olduğu halda orjinal dili mötərzə içərisində göstərməklə yalnız Latın əlifbası ilə verilməlidir.

8. **Şəkil**, **rəsm**, **grafik** və **cədvəllər** çapda düzgün, aydın çıxacaq vəziyyətdə və mətn içərisində olmalıdır. Şəkil, rəsm və grafiklərin yazıları onların altında yazılmalıdır. Cədvəllərdə başlıq cədvəlin üstündə yazılmalıdır.
9. **Mənbələr** mətn içərisində kvadrat mötərizə daxilində göstərilməklə məqalənin sonunda mətn daxilindəki sıra ilə düzülməlidir. Eyni mənbəyə iki və daha cox istinad edildikdə əvvəlki sıra sayı saxlanmaqla müvafiq səhifələr göstərilməlidir. Məsələn: [7,səh.15].

Ədəbiyyat siyahısında verilən hər bir istinad haqqında məlumat tam və dəqiq olmalıdır. İstinad olunan mənbənin biblioqrafik təsviri onun növündən (monoqrafiya, dərslik, elmi məqalə və s.) asılı olaraq verilməlidir. Elmi məqalələrə, simpozium, konfrans, və digər nüfuzlu elmi tədbirlərin materiallarına və ya tezislərinə istinad edərkən məqalənin, məruzənin və ya tezisin adı göstərilməlidir.

Nümunələr:

a) ***Məqalə:*** Demukhamedova S.D., Aliyeva İ.N., Godjayev N.M.. *Spatial and electronic structure af monomeric and dimeric complexes of carnosine with zinc,* Journal of structural Chemistry, Vol.51, No.5, p.824-832, 2010

b) ***Kitab:*** Christie ohn Geankoplis. *Transport Processes and Separation Process Principles*. Fourth Edition, Prentice Hall, 2002

c) ***Konfrans:*** Sadychov F.S., Aydın C., Ahmedov A.İ.. Appligation of Information-Communication Technologies in Science and education. II International Conference. "*Higher Twist Effects In Photon- Proton Collisions", Bakı, 01-03 Noyabr, 2007, ss 384-391*

Mənbələr 9 punto yazı tipi böyüklüyündə olmalıdır.

10. **Səhifə ölçüləri:** üstdən 2.8 sm, altdan 2.8 sm, soldan 2.5 sm və sağdan 2.5 sm olmalıdır. Mətn 11 punto yazı tipi böyüklüyündə, **Palatino Linotype** yazı tipi ilə və tək simvol aralığında yazılmalıdır. Paraqraflar arasında 6 punto yazı tipi aralığında məsafə olmalıdır.
11. Orijinal tədqiqat əsərlərinin tam mətni bir qayda olaraq 15 səhifədən artıq olmamalıdır.
12. Məqalənin nəşrə təqdimi aşağıdakı qaydada aparılır:

- Hər məqallə ən azı iki ekspertə göndərilir.
- Ekspertlərin tövsiyələrini nəzərə almaq üçün məqalə müəllifə göndərilir.
- Məqalə, ekspertlərin tənqidi qeydləri müəllif tərəfindən nəzərə alındıqdan sonra Jurnalın Redaksiya Heyəti tərəfindən çapa təqdim oluna bilər.

YAZIM KURALLARI

1. "Journal of Baku Engineering University- Ekonomi ve Yönetim" önceler yayımlanmamış orijinal çalışmaları ve yazarın kendi araştırma alanın-da yazılmış derleme makaleleri kabul etmektedir.
2. Makaleler İngilizce kabul edilir.
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- Makalenin başlığı, yazarın adı, soyadı,
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4. **Özet** 100-150 kelime arasında olup 9 font büyüklüğünde, makalenin yazıldığı dilde ve yukarıda belirtilen iki dilde olmalıdır. Makalenin her üç dilde yazılmış özeti birbirinin aynı olmalıdır. Anahtar kelimeler uygun özetin sonunda onun yazıldığı dilde verilmekle en az üç sözcükten oluşmalıdır.
5. Makalede UOT ve PACS tipli kodlar gösterilmelidir.
6. Makale şunlardan oluşmalıdır:

- Giriş,
- Araştırma yöntemi
- Araştırma
- Tartışma ve sonuçlar,
- İstinat Edebiyatı Rusça olduğu halde orjinal dili parantez içerisinde göstermekle yalnız Latin alfabesi ile verilmelidir.

7. **Şekil, Resim, Grafik** ve **Tablolar** baskıda düzgün çıkacak nitelikte ve metin içerisinde olmalıdır. Şekil, Resim ve grafiklerin yazıları onların alt kısımda yer almalıdır. Tablolarda ise başlık, tablonun üst kısmında bulunmalıdır.
8. **Kullanılan kaynaklar**, metin dâhilinde köşeli parantez içerisinde numaralandırılmalı, aynı sırayla metin sonunda gösterilmelidir. Aynı kaynaklara tekrar başvurulduğunda sıra muhafaza edilmelidir. Örneğin: [7,seh.15].

Referans verilen her bir kaynağın künyesi tam ve kesin olmalıdır. Referans gösterilen kaynağın türü de eserin türüne (monografi, derslik, ilmî makale vs.) uygun olarak verilmelidir. İlmi makalelere, sempozyum, ve konferanslara müracaat ederken makalenin, bildirinin veya bildiri özetlerinin adı da gösterilmelidir.

Örnekler:

a) ***Makale:*** Demukhamedova S.D., Aliyeva İ.N., Godjayev N.M.. *Spatial and Electronic Structure of Monomerik and Dimeric Conapeetes of Carnosine Üith Zinc,* Journal of Structural Chemistry, Vol.51, No.5, p.824-832, 2010

b) ***Kitap:*** Christie ohn Geankoplis. *Transport Processes and Separation Process Principles.* Fourth Edition, Prentice Hall, p.386-398, 2002

c) ***Kongre:*** Sadychov F.S., Aydın C., Ahmedov A.İ. Appligation of Information-Communication Technologies in Science and education. II International Conference. "*Higher Twist Effects In Photon- Proton Collisions", Bakı, 01-03 Noyabr, 2007, ss 384-391*

Kaynakların büyüklüğü 9 punto olmalıdır.

9. **Sayfa ölçüleri**; üst: 2.8 cm, alt: 2.8 cm, sol: 2.5 cm, sağ: 2.5 cm şeklinde olmalıdır. Metin 11 punto büyüklükte **Palatino Linotype** fontu ile ve tek aralıkta yazılmalıdır. Paragraflar arasında 6 puntoluk yazı mesafesinde olmalıdır.
10. Orijinal araştırma eserlerinin tam metni 15 sayfadan fazla olmamalıdır.
11. Makaleler dergi editör kurulunun kararı ile yayımlanır. Editörler makaleyi düzeltme için yazara geri gönderilebilir.
12. Makalenin yayına sunuşu aşağıdaki şekilde yapılır:

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- Makale, uzmanların eleştirel notları yazar tarafından dikkate alındıktan sonra Derginin Yayın Kurulu tarafından yayına sunulabilir.

13. Azerbaycan dışından gönderilen ve yayımlanacak olan makaleler için,(derginin kendilerine gonderilmesi zamani posta karşılığı) 30 ABD Doları veya karşılığı TL, T.C. Ziraat Bankası/Üsküdar-İstanbul 0403 0050 5917 No'lu hesaba yatırılmalı ve makbuzu üniversitemize fakslanmalıdır.

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- Место работы
- Электронный адрес
- Аннотация и ключевые слова

4. **Заглавие статьи** пишется для каждой аннотации заглавными буквами, жирными буквами и располагается по центру. Заглавие и аннотации должны быть представлены на трех языках.
5. **Аннотация**, написанная на языке представленной статьи, должна содержать 100-150 слов, набранных шрифтом 9 punto. Кроме того, представляются аннотации на двух других выше указанных языках, перевод которых соответствует содержанию оригинала. Ключевые слова должны быть представлены после каждой аннотации на его языке и содержать не менее 3-х слов.
6. В статье должны быть указаны коды UOT и PACS.
7. Представленные статьи должны содержать:

- Введение
- Метод исследования
- Обсуждение результатов исследования и выводов.
- Если ссылаются на работу на русском языке, тогда оригинальный язык указывается в скобках, а ссылка дается только на латинском алфавите.

8. **Рисунки, картинки, графики и таблицы** должны быть четко выполнены и размещены внутри статьи. Подписи к рисункам размещаются под рисунком, картинкой или графиком. Название таблицы пишется над таблицей.
9. **Ссылки** на источники даются в тексте цифрой в квадратных скобках и располагаются в конце статьи в порядке цитирования в тексте. Если на один и тот же источник ссылаются два и более раз, необходимо указать соответствующую страницу, сохраняя порядковый номер цитирования. Например: [7, стр.15]. Библиографическое описание ссылаемой литературы должно быть проведено с учетом типа источника (монография, учебник, научная статья и др.). При ссылке на научную статью, материалы симпозиума, конференции или других значимых научных мероприятий должны быть указаны название статьи, доклада или тезиса.

Например:

a) ***Статья:*** Demukhamedova S.D., Aliyeva I.N., Godjayev N.M. *Spatial and electronic structure of monomeric and dimeric complexes of carnosine with zinc,* Journal of Structural Chemistry, Vol.51, No.5, p.824-832, 2010

b) ***Книга:*** Christie on Geankoplis. *Transport Processes and Separation Process Principles.* Fourth Edition, Prentice Hall, 2002

c) ***Конференция:*** Sadychov F.S, Fydin C,Ahmedov A.I. Appligation of Information-Communication Nechnologies in Science and education. II International Conference. *"Higher Twist Effects In Photon-Proton Collision",* Bakı,01-03 Noyabr, 2007, ss.384-391

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