

## Investigation of Factors Affecting Mobile Banking Intention to Use: Extended Technology Acceptance Model

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### ABSTRACT

**Purpose**-With technological developments, people's use of smartphones and the internet has increased. This increase has enabled people to carry out many of their businesses through mobile applications. One of these things is banking. Thanks to the internet banking and mobile applications offered to their customers, banks enable them to carry out their banking transactions without going to the banks physically. In this context, it is important to determine the factors affecting people's adoption of mobile banking applications in order to increase the use of these applications. Therefore, the behavioral intentions of customers to adopt mobile banking were investigated in this study.

**Design/methodology/approach** – Research model has been proposed by adding subjective norms, trust, and perceived risk variables to the Technology acceptance model. In the study, the data obtained from 492 mobile banking application users were analyzed with the Structural Equation Model.

**Findings** –Attitude plays a key role in predicting users' intention to adopt mobile banking according to findings. In addition, the variables of subjective norms and perceived ease of use did not have a significant effect on the attitude toward mobile banking applications.

**Discussion** – A new research model was suggested along with the expansion of TAM by the addition of new variables in the study. So, the study made a contribution to the body of knowledge on mobile banking applications, mobile applications, and the technology acceptance model. The current study also serves as a guide for bank managers, decision-makers, and other pertinent parties.

## 1. INTRODUCTION

Technological developments affect every field. Institutions also try to be a part of these developments and innovations and benefit from these technological developments and innovations. Banks must quickly adapt to technological changes. These technological changes have also brought innovations in the banking sector. The use of personalized devices, improvement of network infrastructure, storage of data sources, ATMs, and electronic banking services are some of the innovations in banking (Jain & Popli, 2012; Shaikh & Karjaluoto, 2015). These technological innovations help banks a competitive advantage, minimizing costs, increasing customer satisfaction, and naturally retaining customers (Mullan et al., 2017). Therefore, banks want to direct their customers to these technological innovations they have developed.

One of the most important technological innovations in banking today is mobile applications. Banks have become more open to technological development due to the increasing number of electronic banking activities. Mobile devices, a part of everyone's daily life, have adapted to electronic banking services. Thus, the mobile banking concept has emerged. Mobile banking is a service for customers. With this service, bank customers can perform their financial transactions at the banks they are customers of by using the mobile application on their phones and tablets via the internet (Tam & Oliveira, 2017). In this way, customers can manage their time more effectively. In addition, they can perform their financial transactions faster with these devices wherever they are.

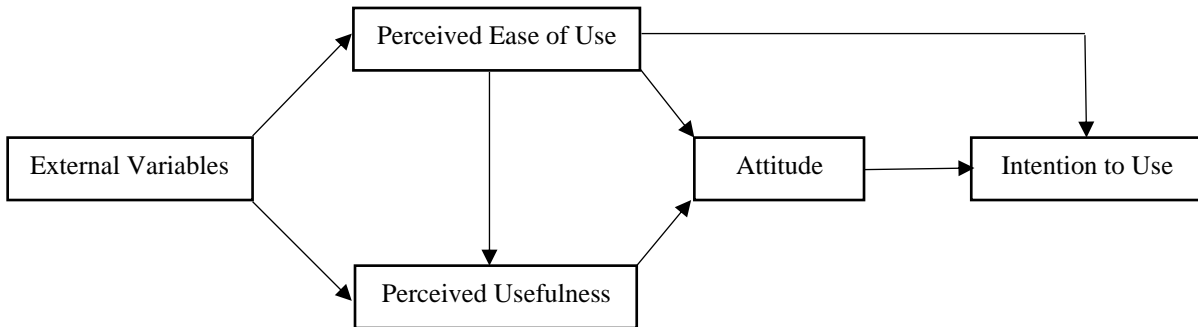
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Although mobile banking applications provide many advantages to their customers, they also contain some risks. Security is considered the most important risk (Goyal et al., 2012). Finding both advantages and disadvantages of mobile banking services creates a suitable environment for measuring the usage intentions of customers.

This study was conducted on the mobile banking application's adoption. The factors affecting the intention to use mobile banking applications were examined. The results obtained were shared and interpreted. Thus, a roadmap for the mobile banking adoption has been presented for banks providing mobile banking services and researchers interested in this subject. In addition, banks can generate new ideas for greater customer adoption of mobile banking services.

In the research, a study was conducted on the adoption of mobile banking. In studies on adoption, the Technology Acceptance Model developed by Davis (1989) is generally used. Figure 1 shows the original version of the developed model by Davis (1989). Subjective norms, trust, and perceived risk were added to the technology acceptance model and a research model was proposed.



**Figure 1.** The original version of technology acceptance model by Davis (1989)

This study consists of six chapters. The first chapter is the "Introduction". In this chapter, it is mentioned what the study is about, briefly. In the second chapter, the concept of "Mobile Banking" is explained in detail. In the third chapter, "Conceptual Framework and Research Hypotheses" are included. While forming the research hypotheses, similar studies in the field of mobile banking were examined. In the fourth chapter, the "Method" of the study is explained in detail. In the fifth chapter, "Results" are given. In this section, information about each hypothesis is given and it is explained whether the hypotheses were accepted or not. In the last section, the study was completed by giving place to "Discussion and Conclusion".

## 2. MOBILE BANKING

Nowadays, one of the business sectors that benefit most from technology is banking. Electronic banking is at the forefront of the service advantage that technology provides to banks. Banks have increased their emphasis on electronic banking activities in recent years. In this way, they try to retain their customers by providing a competitive advantage (Angelakopoulos & Mihiotis, 2011).

Akpınar (1993) defined electronic banking as; the application and development of technological opportunities for banking activities and the products and services obtained as a result of these studies, taking into account the objectives such as reducing costs, meeting the demands of the information society, providing a competitive advantage, and making effective decisions at the strategic and tactical level.

Electronic banking consists of two parts. These parts are internet banking and mobile banking. First of all, internet banking includes banking transactions made via personal computers and laptops (Özcan et al., 2019). On the other hand, mobile banking is generally defined as a channel where the customer interacts with the bank via mobile phone and personal digital assistants (Barnes and Corbitt, 2003).

According to the report published by the Turkish Banks Association; the total number of active digital banking customers (individual and corporate) in the January-March 2022 period was 80 million 927 thousand people. Of this number, 2 million 667 thousand people made "only internet banking" transactions, while 69 million 493 thousand people made "only mobile banking" transactions. The number of users performing internet and mobile banking transactions is 8 million and 767 thousand. According to the related report, the number of

people using digital banking services is constantly increasing. A large part of this increase is due to mobile banking (Turkish Banks Association, 2022).

The importance of mobile banking is increasing with the increase in the number of mobile banking users. For this reason, it is crucial to analyze the factors that affect customers' intention to use mobile banking.

### **3. CONCEPTUAL FRAMEWORK AND RESEARCH HYPOTHESES**

#### **3.1. Attitudes and Behavioral Intentions**

Attitude is regarded as the product of a mental process as thought and emotion (Zhang et al., 2022). Attitudes are considered positive or negative thoughts about a behavior (Erkan, 2004). These positive or negative behaviors play an active role in whether people perform this behavior or not (Ajzen, 1991). These attitudes of people will naturally affect the results they hope to achieve. According to Davis (1989), the more positive the person's attitude towards a behavior, the higher the intention to exhibit that behavior. In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between attitude and behavioral intention toward mobile banking (Ho et al., 2020; Maduku, 2014; Rehman & Shaikh, 2020; Shanmugam et al., 2014). Based on this information, the following hypothesis has been proposed:

*H1: There is a significant and positive relationship between attitude and behavioral intention towards mobile banking.*

#### **3.2. Perceived Usefulness and Behavioral Intention**

The Technology Acceptance Model (TAM), designed by Davis to measure consumer intention to use, also reveals how perceived usefulness affects attitude. Perceived usefulness refers to the degree to which a person believes that the use of a system will improve job performance (Davis, 1989). In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between perceived usefulness and behavioral intention toward mobile banking (Gu et al., 2009; Ho et al., 2020; Jeong & Yoon, 2013; Luarn & Lin, 2005). Based on this information, the following hypothesis has been proposed:

*H2: There is a significant and positive relationship between perceived usefulness and behavioral intention towards mobile banking.*

#### **3.3. Subjective Norms and Behavioral Intention.**

Subjective norms express the individual's perception of whether or not a behavior is done by being influenced by the environment (Fishbein and Ajzen, 1975; Huda et al., 2012). Subjective norms, in short, refer to the social effects on behavior. In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between subjective norms and behavioral intention toward mobile banking (Aboelmaged & Gebba, 2013; de Luna, 2019; Okocha, & Adibi, 2020; Tan & Teo, 2000; Teo et al., 2012). Based on this information, the following hypothesis has been proposed:

*H3: There is a significant and positive relationship between subjective norms and behavioral intention towards mobile banking.*

#### **3.4. Perceived Risk and Behavioral Intention**

Perceived risk is defined as the degree of uncertainty consumers feel before and after purchasing a product/service. Consumers' perceptions of risk are considered to be product-related evaluations, selection decisions, and the focal point of behavior (Campbell & Goodstein, 2001). Littler and Melanthiou (2006) identified six main aspects of perceived risk associated with the consumer's decision to adopt internet banking services. These perceived risks are financial, performance, time, social, psychological, and security (Chen, 2013; Kaur & Arora, 2020). In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between perceived risk and behavioral intention toward mobile banking. (Chen, 2013; Koenig-Lewis et al., 2010; Wessels & Drennan, 2010). Based on this information, the following hypothesis has been proposed:

*H4: There is a significant and positive relationship between perceived risk and behavioral intention towards mobile banking.*

#### **3.5. Subjective Norms and Attitude**

Individuals demonstrate an appropriate motivation to adapt to the choices presented to them by those who are important to them (Fishbein & Ajzen, 1977; Hoehle et al., 2012). Vuong, Hieu & Trang (2020) explained that people who are particularly important to an individual play an important role in determining whether or

not to use a new technological system. In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between subjective norms and attitudes toward mobile banking (Elhajjar & Ouaida, 2019; Mohammadi, 2015). Based on this information, the following hypothesis has been proposed:

*H5: There is a significant and positive relationship between subjective norms and attitude towards mobile banking.*

### **3.6. Perceived Ease of Use and Attitude**

Perceived ease of use refers to the degree to which a person believes using a particular system will be effortless (Davis, 1989; Kazi & Mannan, 2013). Davis (1989) emphasized that perceived ease of use affects an individual's attitude through the mechanisms of self-efficacy and instrumentality. Bandura (1982) explained the term self-efficacy as the easier the system is to use; the greater the user's sense of efficacy should be. On the other hand, according to instrumentality, since the user will have to spend less effort with an easy-to-use tool, they will be able to spend less effort on performing other tasks (Davis, 1985; Alsamydai, 2014). In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between perceived ease of use and attitude toward mobile banking (Alsamydai, 2014; Glavee-Geo et al., 2017; Indarsin & Ali, 2017; Prastiawan et al., 2021). Based on this information, the following hypothesis has been proposed:

*H6: There is a significant and positive relationship between perceived ease of use and attitude towards mobile banking.*

### **3.7. Perceived Usefulness and Attitude**

Bank customers prefer mobile banking applications considering the benefits they will gain. If mobile banking services are more advantageous than other banking services, customers will prefer to use mobile banking services. Hence, it is thought that perceived usefulness has directly an effect on the customer's attitude (Prastiawan, 2021). In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between perceived ease of use and attitude toward mobile banking (Alsamydai, 2014; Chau & Lai, 2003; Prastiawan et al., 2021; Sakala & Phiri, 2019). Based on this information, the following hypothesis has been proposed:

*H7: There is a significant and positive relationship between perceived usefulness and attitude towards mobile banking.*

### **3.8. Trust and Attitude**

According to Kramer (1999), trust can be defined as a psychological condition marked by an individual's sense of susceptibility or exposure arising from their uncertainty concerning the motives, intentions, and anticipated behaviors of others on whom they rely. Trust has an important role in mobile banking applications, as it decreases unreliability (Malaquias & Hwang, 2016). Therefore, it is important for the bank to establish a relationship of trust with the customers in the first place (Zhou, 2012). The customer's innovativeness, job characteristics, social impact, and risk perception are among the factors that affect the customer's trust in mobile banking (Malaquias & Hwang, 2016). In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between perceived ease of use and attitude toward mobile banking (Chakiso, 2019; Deb & Lomo-David, 2014; Lin, 2011; Silva et al., 2013). Based on this information, the following hypothesis has been proposed:

*H8: There is a significant and positive relationship between trust and attitude towards mobile banking.*

### **3.9. Perceived Ease of Use and Perceived Usefulness**

Davis et al. (1989) stated that perceived ease of use is related to perceived usefulness. In addition, according to the related study, perceived ease of use was accepted as an antecedent of perceived usefulness (Hanudin et al., 2007). In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between perceived ease of use and attitude toward mobile banking (Chin & Ahmad, 2015; Lai, 2016; Sakala & Phiri, 2019; Wang, 2003). Based on this information, the following hypothesis has been proposed:

*H9: There is a significant and positive relationship between perceived ease of use and perceived usefulness towards mobile banking.*

### **3.10. Trust and Perceived Usefulness**

Ability, integrity, and benevolence form the basis of trust (Benamati et al., 2009; Indarsin & Ali, 2017; Poon, 2013). Ability means that banks providing mobile banking services have sufficient knowledge and equipment in mobile banking services (Maroofi et al., 2013). Integrity, on the other hand, means that institutions providing

mobile banking services keep their promises and do not deceive their customers (Mayer & Davis, 1999; Svare, 2020). Benevolence, moreover, means that banks providing mobile banking services will also protect the interests of their customer (Lleo de Nalda, 2016). It is thought that trust can affect perceived usefulness. In this context, when the studies on mobile banking are examined, there is a significant and positive relationship between perceived ease of use and attitude toward mobile banking (Gu et al., 2009; Maroofi et al., 2013). Based on this information, the following hypothesis has been proposed:

*H10: There is a significant and positive relationship between trust and perceived usefulness towards mobile banking.*

### 3.11. Trust and Perceived Risk

Using an application or technology requires taking risks before trust can be formed (Chang & Chen, 2008). If the feeling of trust is higher than the perceived risk, the person becomes eager to use the application. When the studies in the literature are examined, it has been stated that there is a significant relationship between trust and perceived risk in the study of Park et al. (2019). However, in the study conducted by Kesharwani and Bisht (2012), it was emphasized that there was no significant relationship between trust and perceived risk. In the studies on mobile banking in the literature, it is seen that a general judgment about the relationship between trust and perceived risk is not fully formed. Based on this information, the following hypothesis has been proposed:

*H11: There is a significant and positive relationship between trust and perceived risk towards mobile banking.*

## 4. METHOD

### 4.1. Suggested Research Model

In this study, the factors affecting the attitudes and behaviors of individuals using mobile banking applications were investigated. In this context, the model was expanded by adding subjective norms, trust, and perceived risk variables to the Technology Acceptance Model developed by Davis (1989). Figure 2 shows the research model.

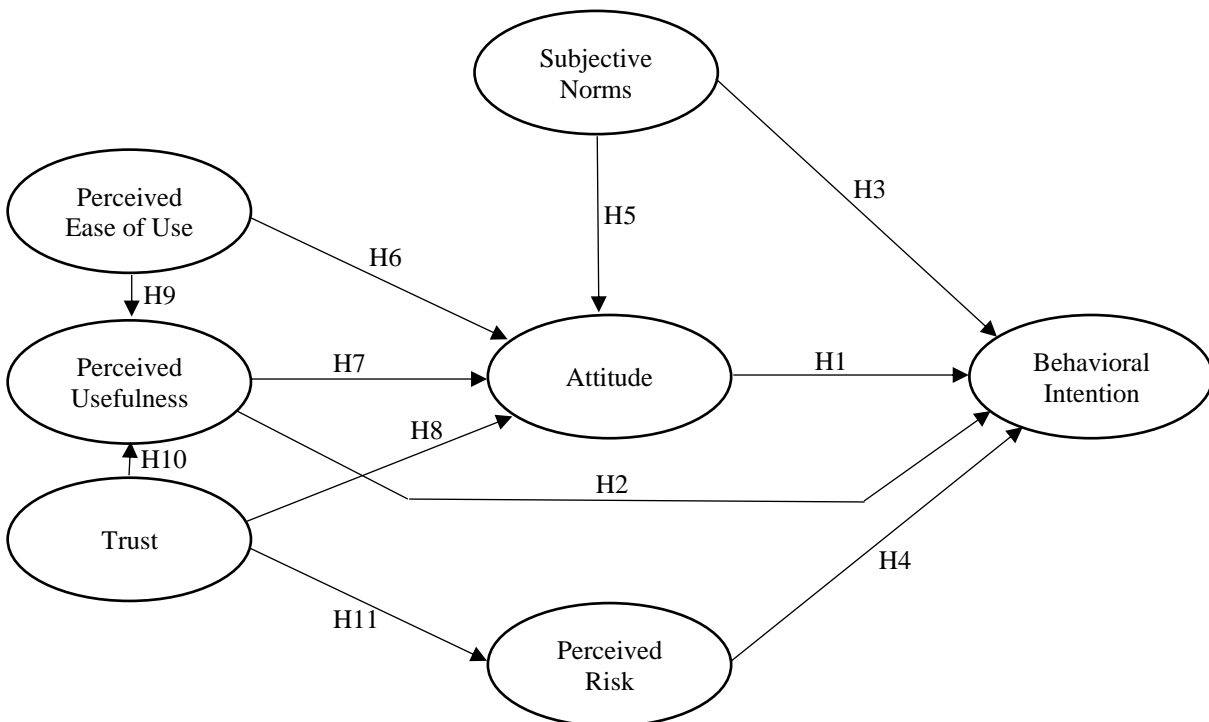


Figure 2. Research Model

### 4.2. Sampling and Procedure

A questionnaire was used as a data collection technique. For this, an online survey form was created on Google Forms. In the beginning of the questionnaire, the purpose of the study and it was conducted by whom were stated. In the first part of the questionnaire, questions were asked to understand the demographic characteristics of individuals participating in the study. In the second part of the questionnaire, expressions belonging to the scales of perceived ease of use, perceived usefulness, trust, perceived risk, subjective norms,

attitude, and behavioral intention were included. The universe of the study consists of retail banking customers using mobile banking. The convenience sampling method was used to determine the sample of the study. The survey link was delivered to the individuals who participated in the study through social media accounts, websites, and blogs. Before starting the study, we applied to the Bartın University Ethics Committee to obtain an Ethics Committee Report on the study. As a result, the Ethics Committee issued an "ETHICS COMMITTEE APPROVAL" document for the application numbered 2023-SBB-0005 at the meeting numbered 01, dated 18.01.2023.

### 4.3. Scales Used in the Research

In the current study, the questionnaire expressions were obtained by adapting from previous studies that tested the validity and reliability of mobile banking and internet banking acceptance. Perceived ease of use, perceived usefulness, subjective norms and attitude from Lee (2009), trust from Chong et al. (2010), the perceived risk from Hanafizadeh et al. (2014), and behavioral intention from Teo et al. (2012) are adapted. Response categories of the items in all scales in the questionnaire were prepared according to a 5-point Likert scale as "1=strongly disagree, ..., 5=strongly agree".

## 5. DATA ANALYSIS AND RESEARCH FINDINGS

Analysis of demographic data, confirmatory factor analysis, and structural equation model analysis were performed with the R program. The reason why R is used in this study is that it is an open-source, powerful, and user-friendly program (Çelik et al., 2018). The SPSS 18 was used to create the correlation matrix and reliability of the study scales.

Table 1 shows the frequency-percentage distribution of the demographic data of the participants. Accordingly, 51.8% (n=255) of the participants were male and 48.2% (n=237) were female. 61.6% (n=303) of the participants were between the ages of 18-22, 25.8% (n=127) were between the ages of 23-27, 3.9% (n=19) were between the ages of 28-32, 8.7% (n=43) is over 32 years old. When the participants were examined in terms of their educational status, 50% (n=246) were high school graduates, 13.8% (n=68) were associate degree graduates, 34.3% (n=169) were undergraduate graduates, 1.8% (n=9) were found to be graduates. 55.7% (n=274) of the participants used mobile banking applications several times a day, 36.8% (n=181) several times a week, and 7.5% (n=37) several times a month. 9.8% (n=48) of the participants are less than one year, 21.5% (n=106) are between 1-2 years, 18.7% (n=92) are between 2-3 years, 50% (n = 246) are over than three years stated that they have been using mobile banking applications.

**Table 1. Demographic information of the participants**

		Frequency	Percentage (%)
<b>Gender</b>	Male	255	51.8
	Female	237	48.2
<b>Age</b>	18-22 years	303	61.6
	23-27 years	127	25.8
	28-32 years	19	3.9
	>32	43	8.7
<b>Education</b>	High School	246	50
	Associate Degree	68	13.8
	Bachelor's Degree	169	34.3
	Postgraduate	9	1.8
<b>Frequency of using mobile banking</b>	Several times a day	274	55.7
	Several times a week	181	36.8
	Several times a month	37	7.5
<b>Mobile banking usage time</b>	Less than 1 year	48	9.8
	Between 1-2 years	106	21.5
	Between 2-3 years	92	18.7
	More than 3 years	246	50
<b>Total</b>		492	100

The fit indices used to examine the goodness of fit values of the data obtained in the study are as follows: Chi-square/degree of freedom, CFI-Comparative Fit Index, TLI -Tucker-Lewis Index, NNFI-Non-normed Fit Index, NFI- Normed Fit Index, IFI- Incremental Fit Index, RNI- Relative Noncentrality Index, RMSEA-Root Mean Square Error of Approximation.

The good fit values are shown in Table 2. Accordingly, all the examined good fit values showed acceptably. This shows the data collected with the proposed research model are compatible.

**Table 2.** Values of goodness of fit

Fit Index	Value	Good fit values	Acceptable fit values	Result
Chi-square/degree of freedom	3.11	<3	<5	Acceptable
CFI	0.940	>0.95	>0.90	Acceptable
TLI	0.928	>0.95	>0.90	Acceptable
NNFI	0.928	>0.95	>0.90	Acceptable
NFI	0.915	>0.95	>0.90	Acceptable
IFI	0.940	>0.95	>0.90	Acceptable
RNI	0.940	>0.95	>0.90	Acceptable
RMSEA	0.066	<0.050	<0.080	Acceptable

Table 3 shows the Cronbach Alpha Reliability Coefficient, AVE (Average Variance Extracted) values, CR (Composite Reliability) values, and the correlation matrix between the variables for all scales. Accordingly, the Cronbach Alpha coefficient of all scales took values between 0.738 and 0.904. As a result of the research, the Cronbach Alpha reliability coefficient should be higher than 0.7 (Nunnally, 1978; Iacobucci & Duhaček, 2003). The findings show that the reliability of the scales is quite high.

**Table 3.** Cronbach Alpha, AVE, CR values and correlation matrix

	$\alpha$	AVE	CR	1	2	3	4	5	6	7
1- PU	0.852	0.593	0.853	(0.770)						
2- PEU	0.738	0.529	0.767	.622**	(0.727)					
3- PR	0.855	0.606	0.860	.556**	.618**	(0.778)				
4- ATT	0.873	0.633	0.873	.737**	.636**	.681**	(0.795)			
5- SN	0.904	0.761	0.905	.485**	.493**	.541**	.542**	(0.872)		
6- TR	0.844	0.679	0.864	.542**	.539**	.756**	.660**	.596**	(0.824)	
7- BI	0.869	0.690	0.869	.684**	.581**	.627**	.747**	.552**	.684**	(0.830)

$\alpha$ : Cronbach Alpha, AVE: Average Variance Extracted, CR: Construct Reliability, Values in parentheses are the square root of AVE values, PU: Perceived Usefulness, PEU: Perceived Ease of Use, PR: Perceived Risk, ATT: Attitude, SN: Subjective Norms, TR: Trust, BI: Behavioral Intention, \*\*p<0.01

For convergent validity, AVE must be greater than 0.5. Also, CR must be greater than AVE (Hair et al., 2010; Fornell and Larcker, 1981). Table 3 shows that the AVE values of the structures are higher than 0.5 and values between 0.529 and 0.761. All constructs included in the study provide convergent validity. The CR values of all constructs were higher than the AVE values. In this context, the validity of the scales is quite high. In addition, the discriminant validity of the constructs of the scales was examined. To ensure discriminant validity, the square root of the AVE values should be higher than the correlation value of the relevant variable with other variables. Table 3 shows that the square root of the AVE values for each structure is greater than the correlation between the structures. This shows that discriminant validity is provided (Hair et al., 2010).

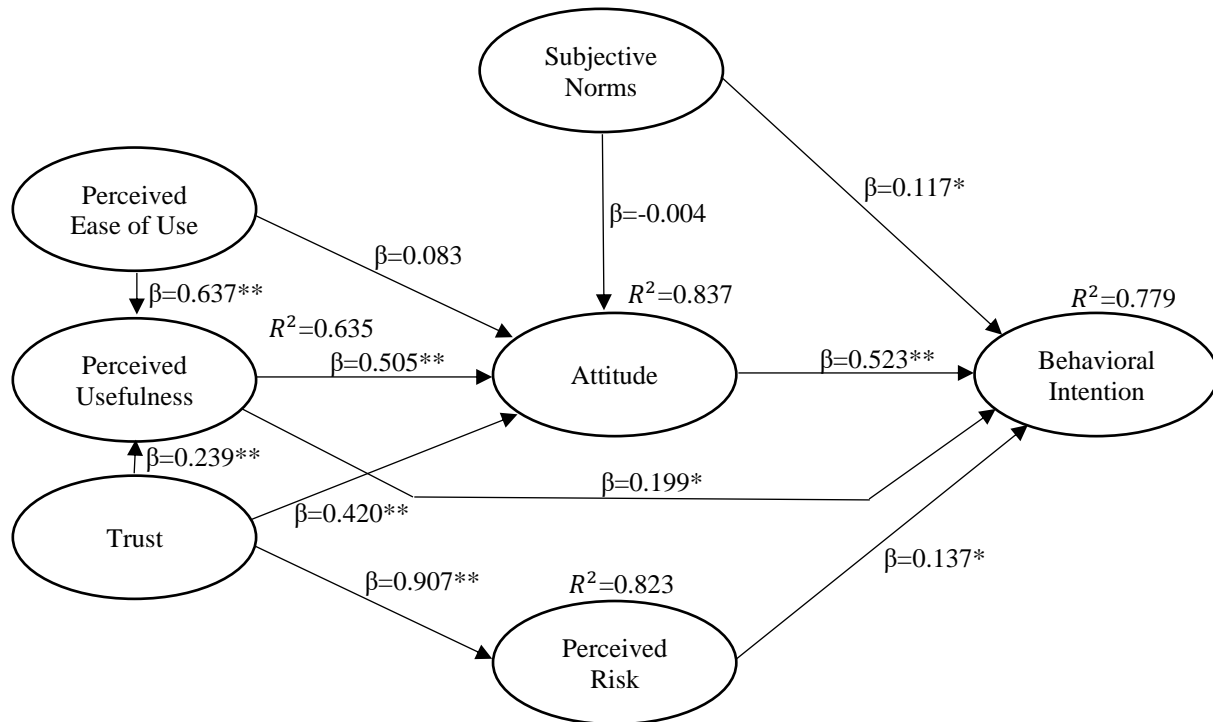
Correlation analysis was performed to show the relationships between the variables. As a result of the analysis, there was a significant ( $p<0.01$ ) and positive relationship between all variables. The strongest relationship between the constructs was between Perceived Risk and Trust ( $r=0.756$ ,  $p<0.01$ ). On the other hand, the weakest relationship was between Subjective Norms and Perceived Usefulness ( $r=0.485$ ,  $p<0.01$ ).

As a result of the structural equation model analysis, the supported and unsupported hypotheses are shown in Table 4. Accordingly, H5 and H6 were not supported. On the other hand, other hypotheses were supported.

**Table 4.** Structural Equation Model Analysis

Hypotesis	Std. Error	z-value	p-value	Std. $\beta$	Supporte d?
H1: Attitude → Behavioral Intention	0.093	4.808	0.000	0.523	Yes
H2: Perceived Usefulness → Behavioral Intention	0.103	2.486	0.013	0.199	Yes
H3: Subjective Norms → Behavioral Intention	0.091	2.741	0.006	0.117	Yes
H4: Perceived Risk → Behavioral Intention	0.052	2.343	0.019	0.137	Yes
H5: Subjective Norms → Attitude	0.106	-0.082	0.935	-0.004	No
H6: Perceived Ease of Use → Attitude	0.170	1.218	0.223	0.083	No
H7: Perceived Usefulness → Attitude	0.116	6.497	0.000	0.505	Yes
H8: Trust → Attitude	0.167	6.212	0.000	0.420	Yes
H9: Perceived Ease of Use → Perceived Usefulness	0.141	7.150	0.000	0.607	Yes
H10: Trust → Perceived Usefulness	0.108	3.659	0.000	0.239	Yes
H11: Trust → Perceived Risk	0.214	10.048	0.000	0.907	Yes

The  $\beta$  coefficients and  $R^2$  values among the variables and their significance levels are shown in Figure 3.



**Figure 3.** Standardized  $\beta$  coefficients and  $R^2$  values between structures (\*\* $p < 0.01$ , \* $p < 0.05$ )

## 6. DISCUSSION

Recently, the adoption of information technologies in various sectors and behavioral studies related to this have attracted the attention of many researchers. One of these information technologies is mobile banking applications. Mobile banking applications are applications that provide many advantages to both banks and users and their usage is increasing day by day. In this context, it is considered as an important issue to investigate the factors affecting the adoption of mobile banking applications. In this study, the factors affecting



the behavioral intentions of individual users using mobile banking applications towards mobile banking applications were examined by adding subjective norms, trust and perceived risk variables to TAM. In the study conducted using the original TAM, 40 percent of the behavioral intention of people to accept or reject new technologies in the field of computer technologies can be explained (Venkatesh & Davis, 2000). It is important that the model proposed in the present study can explain approximately 78% ( $R^2=0.779$ ) of the change in behavioral intention towards mobile banking use. This situation supports the appropriateness of using the research model proposed in the current study by adding new variables such as subjective norms, trust and perceived risk to TAM in order to determine the factors affecting mobile banking usage intention, and expanding the technology acceptance model.

As a result of the research, it was seen that attitude plays a key role in predicting users' intention to adopt mobile banking. This finding is consistent with many studies in the literature (Çelik, 2022; Rehman et. al., 2020; Özcan et. al., 2019; Yadav et. al., 2015). In this context, the more positive thoughts users have toward using mobile banking applications, the higher the adoption of these applications will be.

Perceived usefulness was found to be the second most important factor in predicting mobile banking adoption intention and had a strong influence on attitude. This finding is similar to many studies in the literature (Akturan & Tezcan 2012; Yu, 2012, Çelik, 2022). Accordingly, it is possible to say that if users' perceptions of what kind of benefits they can gain from using mobile banking applications are improved, their attitudes and adoptions towards using mobile banking applications will increase. In this context, it is recommended to inform users that using mobile banking will enable them to do their jobs faster, facilitate their banking-related work, and provide many advantages to users. In addition, if users perform some banking transactions through mobile applications, their attitudes and adoption towards mobile applications can be improved by giving discounts or by campaign organizers.

As a result of the study, there is a significant relationship between the users' adoption of mobile banking applications and perceived risk. Accordingly, individuals using mobile banking applications are affected by the level of risk they perceive to adopt these applications. In this context, the fact that these applications reduce the perceived risk by building trust will positively affect the adoption of these applications. For this, security measures should be increased, passwords should be changed frequently, and ways to communicate with the bank should be opened quickly and easily in case of the slightest risk.

The perception of ease of use variable did not have a significant effect on attitude. Nowadays, using mobile applications has become routine for many people. For people who use many different mobile applications every day, the ease of use of a mobile application does not affect their attitude. Users are not worried or forced to use mobile banking applications.

In addition, while subjective norms have a significant effect on the adoption of mobile banking applications, they do not have a significant effect on attitude. In this case, factors other than the subjective norm are effective. Users, on the other hand, are influenced by their environment while adopting these applications.

Trust has been found to have a significant effect on Attitude. If service providers offer a secure mobile application to users, the adoption of these applications will increase. When the literature was examined, it was determined that many studies were similar to the findings of the current study (Deb & Lomo-David, 2014; Lee et al., 2015; Çelik & Taş, 2021). Accordingly, when users think that all their information, especially personal information of users, is safe, they will develop a positive attitude toward using these applications.

Trust has a strong effect on perceived risk. This finding shows that when users associate mobile banking applications with high risk, their confidence in applications will decrease. For this reason, mobile banking applications need to reduce the perceived risk by gaining the users' trust. In this context, the trust level of customers will increase if banks reduce the risks such as the theft of personal data for mobile applications and the possession of bank account information by third parties.

The perceived ease of use variable has a strong effect on perceived usefulness than the trust variable. Accordingly, the fact that users see a mobile banking application as safe and easy to use affects the perceived usefulness positively.

This study examines the factors that predict mobile banking application users' intention to adopt and use these applications. In the study, TAM was expanded by adding new variables and a new research model was proposed. In this way, the study contributed to the literature on mobile applications, mobile banking applications, and the technology acceptance model. In addition, the present study is a guide to bank managers, policymakers, and relevant people. The findings obtained from the study give an idea to the people responsible for mobile banking applications on which subjects they should focus more. Accordingly, it is suggested to develop mobile banking applications and increase the adoption level of users. On the other hand, banks need to struggle to build trust with users, facilitate mobile banking operating services, and make customers more aware of the benefits of mobile banking. In addition, banks are recommended to minimize perceived risk factors. Banks should plan awareness-raising campaigns by explaining their benefits and advantages through other traditional channels, especially to minimize customers' risk perceptions and increase their trust in the system.

### Limitations of the Study and Suggestions for Future Studies

This study provides theoretical and practical contributions, but it has some limitations. Initially, the research was conducted only on users in Turkey, so the findings may lack generalizability. Future studies can be conducted in different countries and the results can be compared. In addition, the present study was carried out with a small number of participants. The representation of the results can be increased by using larger samples in future studies. The current study, it was carried out only on individual users. In future studies, commercial users can be examined and the results obtained can be compared. Finally, the scope of the research can be expanded by adding different variables to the research model.

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