

EXAMINING THE FACTORS AFFECTING WILLINGNESS TO USE ELECTRONIC BANKING: THE INTEGRATION OF TAM AND TPB MODELS WITH ELECTRONIC SERVICE QUALITY (CASE STUDY: EGHTESAD NOVIN BANK)

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ABSTRACT

Introduction: Understanding the factors that lead to the adoption of a technology and creating conditions under which information technologies are accepted are of the research studies. This means that the question of why people accept information technology and use it or, on the contrary, do not accept it and do not use it is of the most important issues. The aim of this study was to investigate factors affecting the willingness to use e-banking: the integration of TAM and TPB models with electronic service quality.

Model of the study: In this study, the combination of technology acceptance model and theory of planned behavior is used. Research also shows that technology has reaching impacts on quality of service, which means when customers are in direct interaction with technology; they have more control over their work and do their jobs more efficiently, and this is because they perceive services with more quality. If the quality of perception of e-services is not good, e-banking functions are not effectively exercised by the user or they do not have control over technology.

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Conclusion: The results showed that the quality of banking services and perceived behavioral control have significant impact on the willingness of customers to use e-banking services. Electronic banking service quality has had significant effect on perceived behavioral control in the use of electronic banking services. Perceived behavior control in the use of electronic banking services has had a significant effect on subjective norms and attitudes of customers. Customers' understanding of the ease of use of e-banking systems has a significant impact on perceived usefulness and their attitude had.

Keywords: electronic banking, electronic service quality, customer

1. INTRODUCTION

Due to the wave of globalization, many of the concepts and definitions in socioeconomic life of human today have changed. People in every society have access to information very easily. Changes due to the advent of the Internet and ICT in general in the life of every individual community have caused the speed of publishing concepts, new technologies and new services to increase significantly (Lee, 2009: 130). On the other hand, by competition in the financial services, some stresses were imposed on banks in line with the development and improvement of options and practices of providing financial services that led to introduction of new techniques in the field of financial and commercial transactions. Unlike traditional banking that banks only had the duty of care for goods and valuable commodities in a safe place, today, banks in addition to holding money and valuable items in a safe place have turned into the stores offering of a variety of services, transfer of resources, giving loans, payment, and trust services (Sheikhani, 1999: 25). Recent technological revolution has changed perceptual quality of service by customer and access to services. Information technology has widely entered many sectors including the banking sector (Rashid and Latif, 2011: 59) and has made, in the era of deregulation, intense competitive pressures at home and abroad, and in knowledge era, insightful wise customers expect excellent quality of banking (Yuvas and Benken Stein, 2007: 161).

In Iran, in the past decade, many efforts have been made in the area of electronic banking (Fatemi Ardakani, 2005: 67). However, it seems that these services have been welcomed by customers as they should (Mooghali, 2007: 82) and despite numerous investments in the field of information technology in banking, reports show that despite access some users do not use these technologies (Wang et al., 2003: 501).

In addition, understanding the factors that lead to the adoption of a technology and creating conditions under which information technologies are accepted are of the research studies. This means that the question of why people accept information technology and use it or, on the contrary, do not accept it and do not use it are of the most important issues (Yaghoubi and Shakeri, 2008: 22). In the banking sector this issue reveals the need to undertake research to identify the determinants of acceptance of electronic banking system by users (Wang et al., 2003: 501).

In general, although many studies have examined the factors affecting keeping customers in the electronic environment, few have addressed the issue of quality of service in this area (Dai et al., 2005: 1375) and especially little research has been done about the quality of services in the field of electronic banking (Aaron Soehn, 2006: 25). Moreover, no studies have examined the quality of services as an agent for the acceptance of e banking. Thus, as the basis for improving the quality of services, it is required that an understanding of how to assess the quality of electronic services be provided by customers (Zetimel, 2002: 135).

Because before offering any new services, investigations should be done in their being economic, adaptable to the needs of the community, and which system can offer customers the services the best way possible. Since usually in developing countries, by examining the services provided by the banking system in developed countries, banks emulate them and offer their services, and due to the lack of investigation required, these services are provide to the clients incomplete (Seyyed Javadein and Yazdani, 2005: 46), so conducting the present study in the banking sphere is important.

Due to the rapid growth of communication technology in our country and the new electronic banking system, the leading banks in this direction can provide huge benefits (Nezamzadeh, 2009: 4). Considering the shortcomings existing in this area of research, by using scientific methods and field studies, this research tries to answer this question: What are the factors affecting willingness to use e banking services?

2. A review of the literature

Banks as the largest financial institutions in each country play an important role in money and financial markets and in attracting and encouraging people to save and accumulate small capital for and to put them into operation in the fields of production (Shahroudi and Sayad Azeri, 2010: 1). In recent decades, like most major service providers, the banking system has turned quickly to

capitalize on new technologies to provide customer service, as a way to control costs, attract new customers and to meet the customers' needs (Joseph and Stone, 2003: 190).

2-1) E banking

In general, e banking is doing banking activities by customers and banks (in micro and macro levels) in cyberspace by PC, modem, Internet, mobile, applications, and so on. However, electronic banking is not only done the clients, but also automatic clearing between banks is placed in the area of electronic banking (Dejpasand and Rasoolinejad, 2009: 114).

2-2) Electronic service quality

This is the overall assessment and judgment of the quality and advantages of e-services offered in a virtual environment (Santos, 2003: 235). In his definition of quality of e services, Zitmahel has limited it to electronic services via the Internet: the extent to which a Web site increases effectiveness and efficiency of sales, purchase, and service delivery (Zitmahel, 2002: 132). In general, the quality of electronic services refers to all customer interactions with an organization that is Internet and network-based (Parasurman et al., 2005: 214).

2-3) Research history

In recent years, special attention has been paid to this approach. This has been raised in the form of external and internal investigations, which are discussed here:

Bemania et al. (2011) conducted a study entitled “Assessment of factors affecting the adoption of e-services using integrated information technology acceptance model (TAM) and theory of planned behavior (TPB).” The results indicated that the highest correlation between the variables of perceived usefulness and trust, understanding of confidence, attitude, confidence and attitude, and willingness to use. Moreover, the weakest correlation is between the variables of perceived ease of use and perception, perception and self-perception and willingness to use variables and perceived behavioral control.

In a study entitled “A comparative study of the quality of banking services in public and private banking services, Hadizadeh Moghadam and Shahedi (2008) compared the quality of services of public and private banks from the customer perspectives. The findings suggest that consumers believe that in the price of services, there is not much difference between the two banking systems, but in other aspects such as effectiveness, guarantee, accessibility, physical dimensions, diversity and reliability, there is a significant between public and private banking. Overall, the

survey results suggested that the quality of public banking services is unsatisfactory compared to private banking.

Qamal Abulmagad and Gaba (2013) have conducted study as “Mobile banks reception: a review of technology acceptance model and theory of planned behavior.” Results indicate that attitudes towards mobile banking services have a significant positive impact on the mobile reception banks. Importantly, the effects of behavioral control and usefulness were not important in the mobile banks reception. Regression analysis indicated that perceived usefulness has an effect on attitudes towards mobile banking, while the impact of the perceived ease of use on attitudes toward the bank was not verified.

In a study as “Students' evaluation of the scale of quality of electronic services in Uganda: ATM devices as sample,” and with the purpose of determining the dimensions of quality assessment of electronic services in emerging markets, especially electronic devices, Ketono (2011) checked the quality of their services. The findings in the study show that tangible factors, issues related to cards, credit and ATM devices places are the most important dimensions for assessing the quality of electronic services of ATM machines among Ugandan students.

In his doctoral thesis as “Participatory action research: checking e-banking adoption in Saudi Arabia,” Alajimi (2010) examined the acceptance of electronic banking. The results showed that banking executives in Saudi Arabia do not use service-based structural model. They do not seek to find a way for customers to accept electronic banking, and customers are not familiar with e-banking services. It is necessary to pay more attention to factors such as customer training in the use of e-banking services.

A study as “Technology and quality of service in the banking industry: the importance and function of various factors associated with electronic banking services” was conducted by Ambati et al. (2010) to determine the relationship between service quality and technology in the banking industry in Kenya, Nair. The findings showed that safety of services is most important aspect of the quality of service in terms of customers and then, the appropriate place of ATMs devices, performance, ability to adjust the accounts, so that the customer can perform transactions promptly, accuracy in recording in the operation, user friendliness, ease of use, satisfaction (accountability) protests, and detailed operations of exchanges available 24 hours a day.

A study entitled “Factors Affecting the Adoption of Internet Banking: Combining TAM and TPB model with perceived benefits” was conducted by Lee (2009) to discover and integrate the

benefits of online banking to form a positive factor called perceptual profit. This means that increases in this risk reduces the intention to use internet banking services are profits perceived have positive impact on intention to use internet banking services. Moreover, the results showed that the perceived usefulness and ease of use of e-banking services have a positive impact, attitude, subjective norm, and perceived behavioral control have a significant direct impact on the intention use.

2-4) Conceptual model of the study

Today, the growing use of integrated model for measuring the use of information technology and electronic services acceptance show that the combined model has greater explanatory power than other models. Therefore, in this study, the combination of technology acceptance model and theory of planned behavior is used. Research also shows that technology has reaching impacts on quality of service, which means when customers are in direct interaction with technology; they have more control over their work and do their jobs more efficiently, and this is because they perceive services with more quality. If the quality of perception of e-services is not good, e-banking functions are not effectively exercised by the user or they do not have control over technology. Thus, we can say that there is a relationship between perceived quality and perceived behavioral control in the use of banking technology.

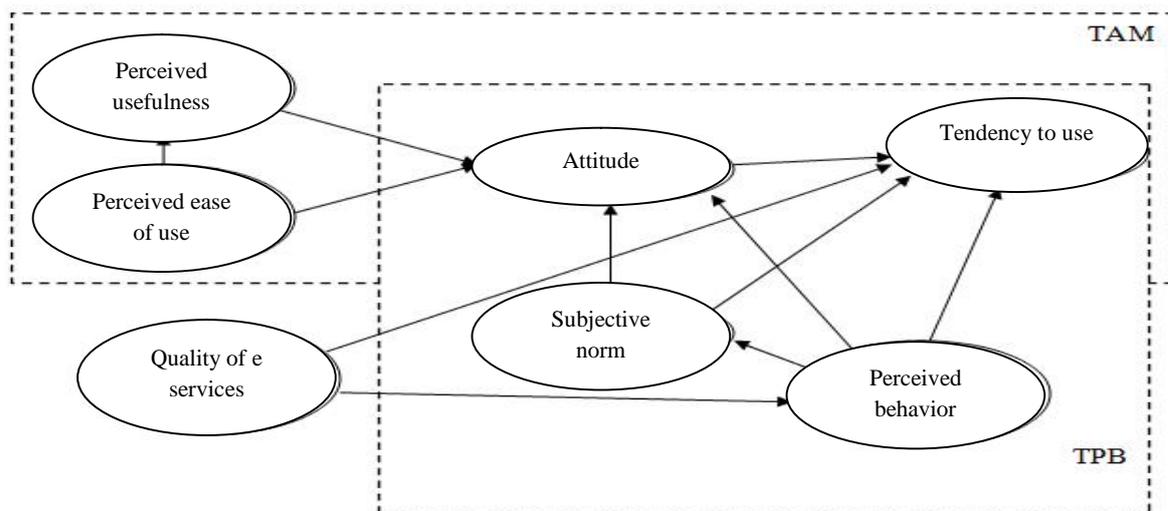


Fig.1. Conceptual model

- Model TPB (Theory of Planned Behavior)

The main mechanism of TPB is based on the premise that behavior is influenced by his desires. According to TPB, human behavior and beliefs are directed by three categories: behavior, requirement, and control. TPB claims that the main factors that determine the behavioral tendencies are the attitude toward the behavior, subjective norm and perceived behavioral control. According to TPB, the actual behavior of the individual depends on his willingness to do that behavior, which in turn is influenced by factors such as individual attitude towards the subject, his subjective norms, and perception of the control he can have over his behavior. In the conceptual model, TPB variables include:

- 1- Subjective norms (understanding of a person from social pressure to engage in behavioral targeting) or (the person's perception of important people's views for or against the behavior of the person refers).
- 2- Attitude (general feeling of people about being or not being about an issue or a particular behavior).
- 3- Perceived behavioral control (perceptions of easy and difficult person's behavior and perceptions of skills, resources and opportunities needed in order to conduct the show).
- 4- Tendency to use the technology (about loving or not wanting to use the information system by the user as the final behavior).

- TAM Model (Technology Acceptance Model)

TAM is one of the models widely followed to explain technology adoption for more than two decades in the past. It claims that perceived usefulness and perceived ease of use are jointly the most important determinants of behavioral intention to use the technology. Behavioral tendency refers to the power and a desire to perform a particular behavior is expected to lead to actual use of the system. This model assumes that as users imagine the use of the system useful and simple, they will have a better attitude toward it. Degree of seeing useful and relevant attitude leads to increase in behavior willingness and thus a user tends to the actual use of the system. In the conceptual model, TAM variables include:

1. Understand the ease of use (the degree to which the individual expects the technology to be free of any effort).
2. The perception of the usefulness (subjective probability that the use of a specific technology will increase the work efficiency).

3. Willingness to use the technology (about loving or wanting to use the information system as of end-user)

4. Attitude (general feeling of people about an issue being or not being good or a particular behavior).

- The quality of electronic services

Quality of electronic services refers to the quality of all customer interactions with the organization that is network-based and Internet (Parasorman et al., 2005: 214). In this research, the quality of electronic services refers to all electronic banking services offered by the system, and here measured by structures accessibility, being personal, performance, and running.

3) Methodology

Based on the classification, this study is applied in terms of purpose, and in terms of the method is a descriptive-correlational study. The population of the study is the customers of Eghtesad Novin Bank (ENB) in Tehran branches that by using Cochran formula, it was determined as people. The instrument used to collect data in this study included a questionnaire. In this study, after examining the validity of survey questionnaires, the questionnaires were distributed among customers and collected. Moreover, by using Cronbach's alpha, the reliability of the questionnaire was calculated using an average Cronbach's alpha obtained from the survey questionnaires (standard questionnaires of perceived quality of e-banking services Parasuraman (2005) and questionnaire of the combined model variables TAM and TPB by Ming et al (2009)), respectively -and-. Given that this value is more than 0.7, reliability was confirmed. Statistical analysis in this study was both descriptive analysis and inferential analysis and SPSS and Lisrel was used for data analysis.

3-1) Research hypotheses

1. Quality of electronic banking services has an impact on the willingness of customers to use electronic banking services.

2. Quality of electronic banking services has an impact on perceived behavioral control in the use of electronic banking services.

3. Perception of the customers of the ease of use of electronic banking services has an impact on perceived usefulness.

4. Perceived usefulness in electronic banking services has an impact on customer attitudes towards the use of electronic banking services.

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5. Customers perception of the ease of use of electronic banking services has an impact on their attitude toward the use of electronic banking services.
 6. Perceived behavioral control in the use of electronic banking services has an impact on subjective norms on the use of electronic banking services of customers in the use of e-banking services.
 7. Perceived behavioral control in the use of electronic banking services has an impact on customers' attitudes towards the use of electronic banking services.
 8. Customers subjective norms regarding the use of electronic banking services affect their attitude toward the use of electronic banking services.
 9. The customers' attitude towards the use of electronic banking services has an impact on their willingness to use e-banking services.
 10. Customers subjective norms regarding the use of electronic banking services has an impact on the willingness to use e-banking services.
 11. The perceived behavioral control has an effect on the willingness of customers to use e-banking services.
 12. There is a significant difference between the quality of e-banking services in the public and private banks from the customers point of view.

4. Analysis of the results and findings

4-1) Testing hypotheses

Structural equation modeling

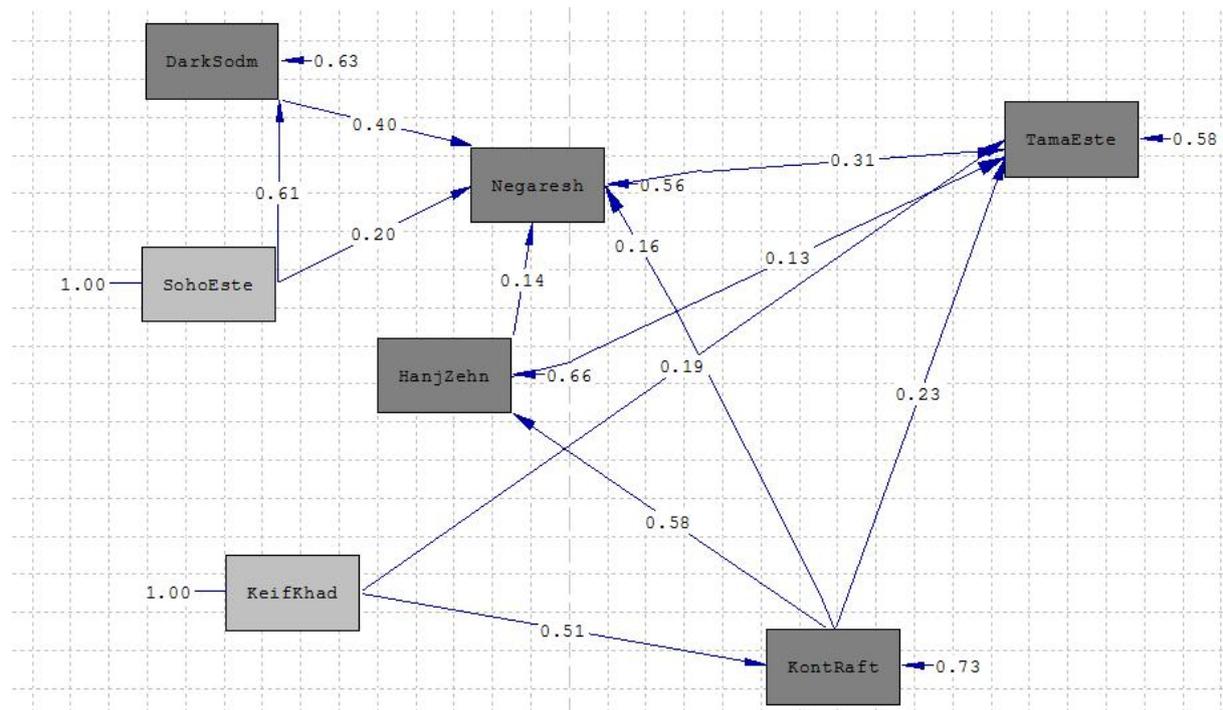


Fig.2. The final research model

Other research model values are shown in the table below:

Table 1. Research model values

	The standardized value	standard error	T value	The amount of variance explained (R ²)	Significance level	Result
1. Quality of electronic banking services has an impact on the willingness of customers to use electronic banking services.	0.19	0.058	3.07	0.42	P<0.01	Hypothesis confirmed
2. Quality of electronic banking services has an impact	0.51	0.029	9.09	0.27	P<0.01	Hypothesis confirmed

on perceived behavioral control in the use of electronic banking services.						
3. Perception of the customers of the ease of use of electronic banking services has an impact on perceived usefulness.	0 . 61	0 . 11	. 71 11	0 . 37	P<0.01	Hypothesis confirmed
4. Perceived usefulness in electronic banking services has an impact on customer attitudes towards the use of electronic banking services.	0 . 2	0 . 04	3 . 16	0 . 44	P<0.01	Hypothesis confirmed
5. Customers perception of the ease of use of electronic banking services has an impact on their attitude toward the use of electronic banking services.	0 . 4	0 . 088	6 . 45	0 . 44	P<0.01	Hypothesis confirmed
6. Perceived behavioral control in the use of electronic banking services has an impact on subjective norms on the use of electronic banking services of customers in the use of e-banking services.	0 . 58	0 . 054	. 75 10	0 . 34	P<0.01	Hypothesis confirmed
7. Perceived behavioral control in the use of electronic banking services has an impact on customers' attitudes	0 . 16	0 . 079	2 . 55	0 . 44	P<0.05	Hypothesis confirmed

towards the use of electronic banking services.						
8. Customers subjective norms regarding the use of electronic banking services affect their attitude toward the use of electronic banking services.	0 . 14	0 . 076	2 . 25	0 . 44	P<0.05	Hypothesis confirmed
9. The customers' attitude towards the use of electronic banking services has an impact on their willingness to use e-banking services.	0 . 31	0 . 084	5 . 56	0 . 42	P<0.01	Hypothesis confirmed
10. Customers subjective norms regarding the use of electronic banking services has an impact on the willingness to use e-banking services.	0 . 13	0 . 12	2 . 02	0 . 42	P<0.05	Hypothesis confirmed
11. The perceived behavioral control has an effect on the willingness of customers to use e-banking services.	0 . 23	0 . 13	3 . 27	0 . 42	P<0.01	Hypothesis confirmed

Standard factor loading estimated values calculated using maximum likelihood method is shown in Figure 2. These values commonly called are used standard to estimate the latent variables scores in the analysis of SEM and these values are comparable values. In addition, the standard error estimates represent factor loading estimation of error where smaller values (close to zero) represent precise estimates and smaller confidence intervals.

T values derived by dividing factor loading to the standard error represent significance of estimation of factor loadings (significant different of factor loadings with zero). T values between 1.96 and -1.96 the lack of significance between latent variables. T values between 1.96 and 3

show the significant effect of more than 95% confidence between latent variables. T values equal to or greater than 3 indicate a significant effect with more than 99% confidence between the latent variables. Therefore, as is seen in T column in the above table, the effects of variables on each other can be confirmed with more than 99% confidence.

4-2) Model fit:

Model fit means that the variance-covariance matrix observed or variance-covariance matrix predicted by the model should have a value close to one another or so-called have fitness. As the values in the matrix are close to each other, model estimations can be trusted when it has enough fit.

Table 2. Final model fit indices

Index	Accepted range	t value	Result
χ^2/df ¹	$\leq 3 \chi^2/df$	2.96	Model approved
RMSEA ²	RMSEA<0.09	0.000	Model approved
GFI ³	GFI>0.9	0.94	Model approved
CFI ⁴	CFI>0.90	0.93	Model approved
IFI ⁵	IFI>0.90	0.94	Model approved

All fit indicators used show that the model has good fit. Thus, we conclude that the model has a high ability to measure the main variable.

4-4) Suggestions based on the results of hypothesis testing:

- Suggestions based on the results of the first and second hypotheses: The results showed that the perception of quality of banking services has a direct effect on perceived behavioral control and tendency to use it. Thus, according to electronic banking aims, to reduce the in person reference of people in the bank, the banking system officials should be involved in enhancing the quality of electronic services to increase customers' interest to use e-banking systems. In order to improve the quality of electronic services, the following suggestions are offered:

¹Chi square divided to degree of freedom

²Root mean square error of approximation

³Goodness of fit index

⁴Comperation fit index

⁵Incremental fit index

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- By understanding rush hours of customer visit to branches, Bank, ATM, etc., system according to the needs of the customers should be provided.
 - Suitable communication systems should be developed to enhance the speed and efficiency of the systems.
 - Recommendations based on the results of the third and fifth hypothesis: Due to the effect of perceived ease of use on the usefulness and attitude, it is recommended:
 - Options in the banking system should have the necessary clarity, so that customers with any level of education and age can use it easily.
 - Applied training on how to use by customers through radio and television and other media available for more serious.
 - Recommendations according to fourth hypothesis: this hypothesis examined the impact of perceived usefulness in the use of electronic banking services on customer attitudes towards the use of electronic banking services and confirmed. Therefore, it is suggested that the advantage of this approach is underlined and trained. The advantages are as follows:
 - The cost and time affectivity compared to other methods
 - Reducing errors banking transactions errors
 - Recommendations based on the results of the sixth hypothesis: this hypothesis shows the effect of controlling behavior on subjective norm, so in order to create the appropriate mental norm in relation to electronic banking services one can improve perceived behavioral control. Therefore, in this regard, the following suggestions are offered:
 - Standardization of banking software for easier communication between electronic banking systems
 - For quick access to customer account information, in the dissemination of information use the means available to them.
 - Recommendations based on the results of the seventh hypothesis:

This hypothesis has studied the effect of perceived behavioral control on subjective norms. Due to the significant impact, it is suggested that the advantages of this method, including easy learning to work with e-banking even alone, increased control through this account be emphasized.

 - Training how to use this method in advertising.

- Recommendations based on the results of the eighth and tenth hypothesis: these hypotheses, respectively, show positive effect of subjective norm on the attitude and willingness to use. Thus, in order to improve attitudes towards the use of banking services and increase the willingness of customers to use this service, the following is suggested:

- Use of modern banking culture through TV and advertising programs
- Creating programs that professionals and experts explain the advantages and disadvantages of electronic banking for customers.

- Recommendations based on the results of the ninth hypothesis:

With regard to the impact of attitude of customers on the willingness to use the service, it is suggested that advantages such as speed in transactions and banking operations, increased controls on finance, banking and accounts and the services provided be made clearer by training and more emphasis be placed on them.

Recommendations according to the eleventh hypothesis:

This hypothesis has investigated the relationship between perceived behavioral controls on the willingness of customers to use electronic banking services and has been confirmed. Therefore, it is recommended that the following actions be made.

Designing applications with simple features so that the users work autonomously

Providing the necessary training for customers to use e-banking services

5. CONCLUSION

With the rapid development of information and communication technology, traditional methods of providing banking services have been questioned and the necessity of revising and re-planning work processes in the banking industry is felt more than ever. Reduction in costs and customer satisfaction are as of the benefits that have led the banks to make massive investments in infrastructure and expansion of their electronic banking and consider applying it as one of the important strategies. The aim of this study was to investigate factors affecting the willingness to use e-banking: the integration of TAM and TPB models with electronic service quality.

The results showed that the quality of banking services and perceived behavioral control have significant impact on the willingness of customers to use e-banking services. Electronic banking service quality has had significant effect on perceived behavioral control in the use of electronic banking services. Perceived behavior control in the use of electronic banking services has had a

significant effect on subjective norms and attitudes of customers. Customers' understanding of the ease of use of e-banking systems has a significant impact on perceived usefulness and their attitude had.

Perceived usefulness in the use of e-banking services and subjective norms of the customers have a significant impact on customer attitudes, and finally customer's attitudes and subjective norms have a significant impact on their willingness to use e-banking services.

Given the importance of electronic banking as a new and growing technological field that is in progress with high speed and that it has not been welcomed by customers as it should, and taking into account the results of this study and similar studies that showed that people are more likely to refer to the bank for banking operations, the following topics are proposed for research in this area:

- Examining the Role of the media in encouraging customers to use e-banking services
- Identifying and prioritizing the factors affecting the quality of electronic services from banks customers' perspective
- Identifying and ranking the factors that lead to the reluctance of customers to use e-banking services.

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