

## Evaluation of the Factors Affecting the Implementation of e-Banking Adoption by Customers

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**Abstract:** The present study investigated the acceptance of e-Banking services by customers using Technology Davis's Acceptance Model proposed (ATM). In this study, the descriptive and correlational research method was used. Statistical population of the study included all clients who had a bank account at Mellat Bank in Zahedan City, Sistan and Baluchestan, Iran. Simple random sampling was conducted by selecting 200 customers of the Mellat bank branches. For data collection, a questionnaire was distributed among the participants and Pearson's correlation test was used for data analysis. In this study, the effects of variables of perceived usefulness, perceived ease of use, perceived risk, computer self-efficacy, quality of the internet and internet access, on e-Banking adoption by customers was examined.

**Key words:** e-Banking, perceived usefulness, perceived risk, technology acceptance model, Mellat bank

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### INTRODUCTION

Providing customer service via the internet is a growing phenomenon in banking and financial services industry (Ericksson *et al.*, 2005). Because customers must change their behavioral patterns to use e-Banking, the use of this technology can be extremely complex (Meuter *et al.*, 2000). e-Banking is providing banking services through a public computer network. In another definition, e-Banking can cover any banking services that do not limit customer in terms of physical presence in a particular location while banking services are carried out using electronic instruments (Liao and Cheung, 2002). e-Banking allows customers to use the bank's website for faster and low-cost electronic interactions compared to traditional bank branches, without time and space restrictions (Grabner-Krauter and Faullant, 2008). Among the most important electronic banking services are ATM machines, telephone banking, internet banking and so on. In recent years, advances in information technology have made fundamental changes in banking operations and customers can be in touch with daily banking activities (Sayar, 2007). Therefore, the adoption of online electronic banking in most countries has been rising while e-Banking communication rate in leading countries is over 50%. Despite benefits of e-Banking, many customers do not adopt this method for their banking activities (AbuShanab and Pearson, 2007). Therefore, the important point is customer acceptance and their compliance with

new banking technologies. Generally, two factors play a major role in adoption of any kind of innovation the first factor is related to the characteristics of the technology itself and the second factor is related to demographic variables. Obviously, the impact of each of these factors varies in different communities and cultures (Rastgar and Aghamohammadi, 2012). So identification of these factors can help banks to ensure timely response to these factors and use their marketing strategies to improve e-Banking in order to meet the customer's needs (Wang *et al.*, 2003). There are too many studies conducted on the investigation of factors that affect the adoption of the technology among consumers. Among these models, Davis' technology acceptance model is the most common one (Rastgar and Aghamohammadi, 2012). This model was developed by Davis in 1989, based on which the use of information technology by the intention of using a particular system is determined while the intention of using information technology is in turn determined by ease of use of the system and its usefulness (Hussein *et al.*, 2013). According to original model of Davis, these two assumptions play a fundamental role in acceptance of information technologies which in turn can be affected by external variables including perceived usefulness and perceived ease of use. These two beliefs inspire attitudes towards using an information system which in turn influences the tendency to use e-Banking and finally determines the actual level. Davis's original model of technology acceptance is shown in

Fig. 1. Perceived usefulness is defined as the degree to which a person believes that using a particular system would enhance his or her job performance. Moreover, perceived ease of use is defined as the degree to which a person believes that using a particular system would be free of effort (Davis, 1989). According to TAM model of Davis (Fig. 1), external variables are considered factors influencing perceived usefulness and perceived ease of use. Reviewing papers written on this topic, the present study will add other variables including perceived risk, computer self-efficacy, quality of the internet and internet access to this model. Therefore, according to what was described above, the research descriptive model is shown in Fig. 2.

In Iran, over the past decades, great efforts have been made in the field of electronic banking. But apparently this service is not very appreciated by customers. In fact, perceived usefulness and customer preferences of e-Banking services will be a big help for e-Banking industry. Therefore, this study uses technology acceptance model which seeks to answer this question what are factors influencing the adoption of e-Banking by customers?

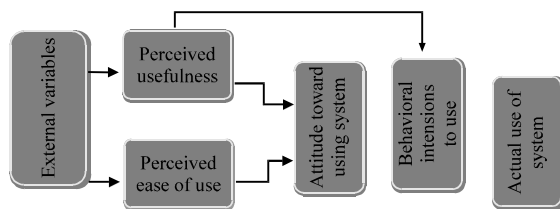


Fig. 1: Original model of Davis's Technology Acceptance (TAM)

e-Banking is a banking service that was first used in the US in 1995 and then spread rapidly across advanced countries (Wan *et al.*, 2005). Some tools such as electronic banking, electronic check, electronic wallet, different card types including debit cards, credit cards, charge cards, Automated Teller Machine (ATM) and Point of Sale system (POS) are used.

Although e-Banking includes various levels, what separates it from other systems is its software and hardware systems and its processing of financial information (Kamel and Hassan, 2003). Due to the diversity of information and communication tools as well as available capacity and needs of the banking system, the required infrastructure for the development of e-Banking include communication infrastructure, financial and banking infrastructure, legal infrastructure, manpower infrastructure, infrastructure, software and security infrastructure, culture and education infrastructure (Memarzade and Sarfarazi, 2010). Sathye (1999)'s results indicated that security concerns and lack of awareness about online banking were obstacles to the adaptation of e-Banking. Moreover, what Pikkariainen *et al.* (2004) observed suggested that variables of perceived usefulness and level of customer information about online banking were the most influential variables to the acceptance of e-Banking.

Iran's status in the world in terms of exploitation of information and communication technology rank a developing country seeking for technologies. According to this definition it can be stated that Iran is still in the initial steps of the information and communication technology development. Development of suitable

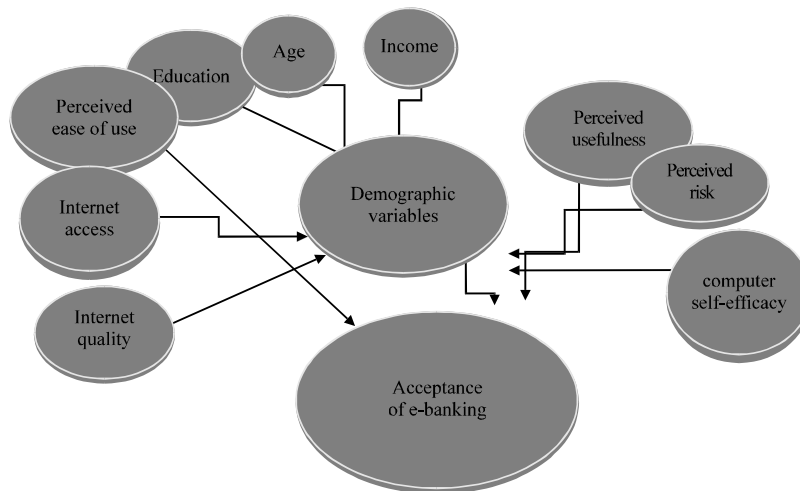


Fig. 2: Conceptual model of the study

communication infrastructures can be effective in integrating banking systems into electronic devices (Memarzade and Sarfarazi, 2010).

Eriksson *et al.* (2005) in a study on the acceptance of Internet Banking in Estonia, concluded that perceived ease of use of internet banking did not impact directly the increased use of internet banking, rather perceived ease of used increased perceived usefulness of Internet banking. Yazdani Far's thesis suggested that there is a direct relationship between perceived usefulness, perceived ease of use, computer self-efficacy and intention to use e-Banking.

Here, the definition of independent and dependent variables of the study given in Table 1 and 2 will be discussed.

#### Research hypotheses:

- Hypothesis<sub>1</sub>: perceived usefulness has a significant effect on customers' intention to use e-Banking
- Hypothesis<sub>2</sub>: perceived ease of use has a significant effect on customers' intention to use e-Banking
- Hypothesis<sub>3</sub>: perceived security has a significant effect on customers' intention to use e-Banking
- Hypothesis<sub>4</sub>: computer self-efficacy has a significant effect on customers' intention to use e-Banking
- Hypothesis<sub>5</sub>: internet quality has a significant effect on customers' intention to use e-Banking

Table 1: Definition of independent variables

Independent variables	Description
Perceived usefulness	The degree to which a person believes that using a particular system would enhance his or her job performance (Davis <i>et al.</i> , 1989)
Perceived ease of use	The degree to which a person believes that using a particular system would be free of effort in terms of mental activity (Husseini <i>et al.</i> , 2013)
Perceptual risk	The security and reliability of transactions over the internet (Sathye, 1999)
Computer self-efficacy	Individual ability to use computer (Husseini <i>et al.</i> , 2013)
Internet quality	High speed Internet for the ease of use web service
Internet access	Providing facilities for internet use (Husseini <i>et al.</i> , 2013)

Table 2: Definition of dependent variable

Independent variables	Description
Acceptance of e-banking	Public intention and demand of a group of users to use e-banking technologies for their job performance (Rastgar and Aghamohammadi, 2012)

Table 3: Cronbach's alpha coefficients of the independent variables

Variables	Cronbach's alpha	Number of questions
Perceived ease of use	87	1-4
Perceived usefulness	81	5-9
Perceived security	75	10-12
Internet access	79	13
Internet quality	77	14-16
Computer self-efficacy	75	17-20
Total variable	81	

- Hypothesis<sub>6</sub>: frequency of internet access has a significant effect on customers' intention to use e-Banking

## MATERIALS AND METHODS

In the present study, a descriptive correlational method was used for data collection. Statistical population of the study included customers of Mellat bank branches in Zahedan City, Sistan and Baluchestan, Iran. Based on Cochran's sampling formula, 200 individuals were selected as the study sample. Stratified random sampling procedure was used to avoid selection of a particular class of income and education level. Standardized questionnaire used in a similar research was used for data collection. First part of the questionnaire included common questions such as age education and income, while the second part included 20 questions related to measurement of variables.  $\chi^2$ -test and Pearson correlation test were used to examine the relationship between demographic variables and intention to use e-Banking and data analysis, respectively. The study's validity was approved by university professors and its reliability, presented in Table 3 was determined using Cronbach's alpha coefficient for each variable.

## RESULTS AND DISCUSSION

Table 4 shows the investigation of relationship between each of the demographic variables and intention of customers to use e-Banking. It can be observed that there is a negative relationship between variables of age and the use of e-Banking. It shows that population of older people tend use e-Banking less than young population. Moreover, investigations show that there is no relationship between the intention to use e-Banking and income. However, there is a positive relationship between variables of and intention to use e-Banking because highly educated people are more likely to use e-Banking. Results of the analysis of study's hypotheses using Pearson's correlation test are illustrated in Table 5.

Today in many countries, it is very common to use e-Banking to such an extent that people rarely refer to banks for banking affairs. However, e-Banking does not have along background in Iran and this system is not well-known among people although, e-Banking has numerous advantages compared to the traditional banking system. Considering these discussions and the results of hypotheses testing in this study revealed the following results:

Table 4: Relationship between demographic variable and intention to use e-Banking

Demographic variables (independent)	Dependent variable	Correlation coefficient	Significance level	Results
Age	Intention to use e-Banking	-0/208	0/002	Negative relationship
Education		0/197	0/009	Significant positive relationship
Income		-0/06	0/571	Negative relationship

Table 5: Results of research hypotheses testing

Independent values	Dependent variable	Correlation coefficient	Significance level	Results
Perceived usefulness	Customers intention	0/509	0/000	Hypothesis is confirmed
Perceived ease of use	to use e-Banking	0/268	0/000	Hypothesis is confirmed
Perception security	services	0/471	0/001	Hypothesis is confirmed
Computer self-efficacy		0/143	0/015	Hypothesis is confirmed
Internet quality		0/258	0/000	Hypothesis is confirmed
Internet access		0/301	0/000	Hypothesis is confirmed

- First hypothesis with a correlation coefficient of 0.509 is confirmed and a significance level of 0.000 is approved. Therefore, when customers become aware of usefulness of e-Banking, more areas will be provided for further application of this theory
- Second hypothesis with a correlation coefficient of 0.268 and significance level of 0.000 was confirmed. Thus, ease use of e-Banking helps better implementation and effectiveness of this model
- Third hypothesis with a correlation coefficient of 0.471 and significance level of 0.001 is confirmed. Therefore, this model would be more practical if it considers more the e-banking security of users and owners of bank accounts
- Fourth hypothesis with a correlation coefficient of 0.143 and significance level of 0.015 is confirmed. Therefore, to the extent that the owners of bank accounts use computer and consequently e-banking services easily, e-Banking will be easier to use
- Sixth hypothesis with a correlation coefficient of 0.258 and significance level of 0.000 is confirmed. As a result, better quality of internet facilitates the use of the application of this model
- Seventh hypothesis with a correlation coefficient of 0.301 and significance level of 0.000 is confirmed. Therefore, the more owners' have access to bank accounts, the more facile the application of the model will be

## CONCLUSION

Findings showed that factors of perceived usefulness, ease of use and quality of internet had the greatest impact on the acceptance of e-Banking services by customers.

## SUGGESTIONS

Given the above mentioned issues and obtained results, the following suggestions can be provided to

improve e-Banking adoption by customers (owners of bank accounts) using the technology acceptance model proposed by Davis:

- To persuade bank account owners about the perceived usefulness of e-Banking
- Facilitate the use of e-Banking services for all owners of bank accounts
- Provide internet access for owners of bank accounts.
- Provide government support for the implementation of this model
- Persuade e-Bank account owners about the perceived security of e-Banking services
- Implement banking operations free-of charge for those who use e-Banking
- Consider these clients "special"

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