

# **An Empirical Investigation of the Level of User's Acceptance of E-Banking among Some Customers of Banks in Iran**

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## **Abstract:**

With the high speed of advances in different aspects of technology, the use of electronic banking as a creative solution for various daily banking affairs has been disseminated around the world, simultaneously. Iran has not been the exception of this stream and the number of e-banking contracts seems to get increased in recent years. The purpose of this paper is to investigate the level of user's acceptance of electronic banking among some customers of banks in Iran. Extended TAM model was conducted as a conceptual framework in this paper. The survey instrument was employed to collect data. 188 questionnaires were analyzed based on correlation and regression analyses and independent sample t-test using the statistical package for social sciences (SPSS). Result has showed that customers have found e-banking system enjoyable, convenient, and easy to use; however, there is low level of reliability in the security measure of e-banking technology.

**Keywords:** Internet banking, Technology acceptance model, Customer attitude

## **1. Introduction**

As is clear for all, electronic and internet banking same as other technologies has experienced phenomenal growth in recent years. The trend of developing and expanding IT throughout the world, especially in a developed country on the one hand and commercial relationships between countries and nations on the other hand, have prompted Iranian banks to undertake widespread and extensive activities in line with applying computer systems in their banks in 1980s and 1990s (Sadeghi, 2010). Thus, the consumers' knowledge and awareness has been expanded regarding automated and online banking operations due to gradually expanding access to the Internet and use of it (Sadeghi, 2004). Customers now demand new levels of convenience and usefulness in addition to powerful and easy to use financial management tools, products and services that traditional retail banking cannot offer. Internet banking has allowed banks and financial institutions to provide these services by exploiting a comprehensive public network infrastructure (Yiu et al., 2007). Creating the infrastructure of electronic banking

employing integrated and extensive software and hardware systems seems to be first Activities for handling electronic banking services in each environment (Safarzadeh, 2009). Preparation a comprehensive integrated automation plan by banks indicates that they have realized the need to provide infrastructure with a pervasive and integrated automation system. Now, the importance of the creation an integrated, comprehensive automation plan is persuading the bankers to consider that more precisely in order to move toward developing modern banking. After implementing these plans, the banks will enjoy the readiness required for electronic banking. IT acceptance has been the subject of number of researches in the past decades. Several theories have been employed and extended to offer new insights into acceptance and use of e-banking. The technology acceptance model (TAM) has been given the most attention among these theories (Plouffe et al., 2001). Online banking acceptance will be studied from the information systems acceptance point of view referring to the idea that consumers are using online banking service directly and hence more knowledge on the factors that affect information systems adoption is needed in order to better understand and facilitate the acceptance (Tero et al.2004). In the line with this perspective, some previous studies have noticed to some external variables in TAM model, such as demographic variables, perceived credibility, perceived enjoyment and etc, intervening into the amount of technology acceptance, any way (Vincent et al., 2005; Pikkarainen et al., 2004; Adesina Aderonke et al., 2010). So the theoretical validity and empirical applicability of TAM still need to be extended to incorporate different technologies, users, and organizational contexts.

The objective of this study is to validate the TAM instrument in the context of electronic banking, examining the factors that influence users' acceptance of e-banking taking to consideration their attitude in the use of the system. The impact of perceived usefulness (PU), perceived ease of use (PEOU), perceived credibility (PC), Perceived Enjoyment (PE), Age/Income/Education (AIE) and customer attitude (CA) is sought to determine the level of users' acceptance of the e-banking services. The rest of this paper is arranged as follows: second part contains a literature review on electronic banking and Technology Acceptance Model (TAM). The third part presents the research model and hypotheses used in this work. The next part comprises of the research methodology, results and analysis. In this part the data is analyzed using a factor, regression and correlation analyses and one independent sample T test. The final part consists of the conclusions of the research.

## **2. Literature Review**

### **2.1. Electronic Banking**

There has been contrasting views with respect to electronic commerce, however it needs to be noted that Electronic commerce is a structured method with the use of different methods and technologies for undertaking the business activities in a global arena which includes different methods like business-to-business (B2B) and second more famous is business-to-consumer (B2C) (Seilina,1990). The dramatic increase in the usage of internet has enabled the development of different businesses like the banking, insurance; supermarkets and other related elements like hospitals have also integrated the information technology into different

segments of their operations. The precursor for the modern home online banking services were the distance banking services over electronic media from the early 1980s. The term online became popular in the late '80s and referred to the use of a terminal, keyboard and TV (or monitor) to access the banking system using a phone line. Online services started in New York in 1981 when four of the city's major banks (Citibank, Chase Manhattan, Chemical and Manufacturers Hanover) offered home banking services using the videotext system (Cronin et al, 2008). Electronic banking is beneficial to banks and customers both. Based on previous studies, two fundamental reasons are underlying online banking development and penetration. First, those banks get significant cost savings in their operation through e-Banking services. It has been proved that online banking channel is the cheapest delivery channel for banking products once established. Second, that banks have reduced their branch networks and downsized the number of service staff, which has paved the way to self-service channels as quite many customers felt that branch banking took too much time and effort (Pikkarainen et al., 2004). Through a review of the literature about e-banking usage, the degree to which internet banking as been adopted in countries of the world can be discussed. It is started with Taiwan which its commercial banks have tried to introduce internet-based e-banking systems to improve their operations and to reduce costs, for several years. Despite their efforts aimed at developing better and easier internet banking systems, these systems have remained largely unnoticed by the customers and certainly were underused in spite of their availability. In 2002, only about 33% of banking transactions in Taiwan were conducted via the Internet (Gerrad et al., 2006). The first internet bank in Estonia was introduced in 1996. Estonia has a relatively high penetration of personal computers and Internet access, with 45 percent of the Estonian population (Ages 15-74) being Internet users. In one of the most thorough comparisons of Internet penetration and Internet banking penetration conducted, Estonia and Scandinavian countries show similar patterns: 50% or more of internet users have adopted electronic banking (Ozdemir et al., 2009). Iranian commercial banks also consider electronic banking among their future planning, along with improving their methods and movement toward modern banking. Movement toward electronic banking is an ambiguous and unstable step without first creating its infrastructure in Iran. Electronic banking will only be able to move and secure a stable position with an integrated and comprehensive software and hardware system (Sadeghi, 2004). However, there are many reasons for not using electronic banking by some customers of banks; First, customers need to have an access to the Internet in order to utilize some e-Banking facilities such as Internet and Mobile banking facilities. Furthermore, most new online users need first to learn how to use the service. Second, nonusers often complain that online banking is incomprehensible, difficult to use and has no social dimension, i.e. the lack of face-to-face situation at branch (Karjaluo, 2001; Mattila et al., 2003). Third, customers are afraid of security issues (Ezeoha, 2005).

## **2.2. Technology Acceptance Model (TAM)**

To examine the amount of efficiency and effectiveness of a system by producers and developers, it is important to study the reasons why people decide to use or not to use an information system. Technology Acceptance Model (TAM) is an information system theory that models how users come to accept and use a technology. TAM offered by Davis (1989) is an

extension of Theory of Reasoned Action (TRA) and the Theory of Planned Behaviors (TPB). The goal of TAM is to explain what determines computer acceptance capable of explaining user behavior across a broad range of end-user computing technologies and user populations, while being both cost-conscious and theoretically justified. The Technology Acceptance Model explained the relationship between beliefs (perceived usefulness and perceived ease of an information system) and users' attitude, intentions, and actual usage of the system. The TAM posits these two theoretical constructs; perceived usefulness (PU) and perceived ease of use (PEOU) as fundamental determinants of user's acceptance of an information system. Number of research works had been carried out using TAM and introducing other variables which are validated as having impact on usefulness, ease of use, attitude, users' acceptance and intention (Hanudin, 2007; Muniruddeen, 2007; Pikkarainen et al., 2004). Davis sited that future research on technology acceptance should address the impact of other variables on usefulness, ease of use and user acceptance and intention. Validity of TAM can be increased by exploring the nature and specific influences of technological and usage-context factors that may affect user's acceptance. For instance, Hanudin (2007) concluded that credibility is the heart of Internet banking system and found computer self-efficacy as a major influence on perceived ease of use. To discuss about electronic banking usage, Muniruddeen (2007) employed the extended TAM to examine individual's perceived security and privacy of Internet banking in Malaysia. Jahangir et al. (2008) employed the extended TAM with attitude as defined by Theory of Reasoned Action to determine the customer adaptation of e-banking. Technology acceptance model also has been used and extended in Vincent' study considering demographic variables and analyzed by an invariance analysis (Vincent et al., 2005). Pikkarainen et al. (2004) have conducted TAM model by adding perceived enjoyment as an external variable.

So effectively, perceived ease of use and perceived usefulness alone may not fully determine the user's intention to adopt electronic banking, thus the need to examine additional factors that may better predict the acceptance of electronic banking. Computer self-efficacy, perceived credibility (security and privacy), perceived risk, quality of Internet connection, demographic variables and perceived enjoyment among others are external variables that have been introduced into TAM in extending its validity on examining user's acceptance of online banking usage.

### **3. Research Model and Hypotheses**

According to the literature review TAM model can be an appropriate model for explaining the behavior of customers about using e-banking. In Addition to considering two main factors PU and PEOU, the model of this paper has been developed by four other factors referring to Perceived Enjoyment (PE), Perceived Credibility (PC), Age/Income/Education (AIE) and Customer Attitude (CA). The proposed model in this study is shown in figure 1.

### **Perceived usefulness (PU) and perceived ease of use (PEOU)**

As mentioned before, these two are the main factors derived from the TAM. By using Davis definition PU refers to “the degree to which a person believes that using a particular system would enhance his or her job performance” and PEOU is defined as “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989). By applying these to electronic banking context, two first hypotheses are:

H1: Perceived usefulness (PU) has a positive effect on customer attitude.

H2: Perceived ease of use (PEOU) has a positive effect on customer attitude.

### **Perceived Enjoyment (PE)**

Perceived enjoyment is another variable considered in this model referred to the extent to which the activity of using a computer is perceived to be enjoyable in its own right (Davis et al., 1992). Pikkarainen et al. (2004), Teo et al. (1999) and Igbaria et al. (1995) have noticed that PE significantly affects intentions to use computers. On this basis, it can be expected that PE affects the acceptance of e-banking:

H3: Perceived enjoyment (PE) has a positive effect on consumer attitude.

### **Perceived Credibility (PC)**

According to Adesina Aderonke et al. (2010) perceived credibility (PC) is defined as users’ perception of protection of their transaction details and personal data against unauthorized access. It consists of two important elements: privacy and security. Security refers to the protection of information or systems from unauthorized intrusions (Egwali, 2008). Number of studies (Adesina Aderonke et al., 2010, Muniruddeen, 2007, Karjaluoto, 2002) have tested and confirmed that PC has a significant effect on perceived ease of use and perceived usefulness. Therefore, for studying the effect of perceived credibility on user’s acceptance in Iranian electronic banking services, the following hypotheses are considered.

H4: perceived credibility (PC) has a positive effect on consumer attitude.

H5: perceived credibility (PC) has a positive effect on perceived ease of use.

H6: perceived credibility (PC) has a positive effect on perceived usefulness.

### **Age/Income/Education (AIE)**

Vincent et al. (2005) have noticed that old and young conceptualized the TAM construct in very similar ways, Considering new variables “level of income and education” in this model, another purpose of this study is to demonstrate whether customer attitude is affected by, Age, Income and Education (AIE). Based on this purpose next hypothesis can be:

H7: Age, Income and Education (AIE) have a positive effect on customer attitude.

## Customer Attitude (CA)

Researchers have noted attitude as the driver of consumer utility and it reveals the perceptions of usefulness, credibility and individual. Consumer's attitude is argued to have a strong, direct and positive effect on consumers' intention to actually use new information system (Jahangir, et al., 2007). With this understanding of consumer's attitude the following hypothesis is:

H8: Customer attitude has a positive effect on customer Intention to Use.

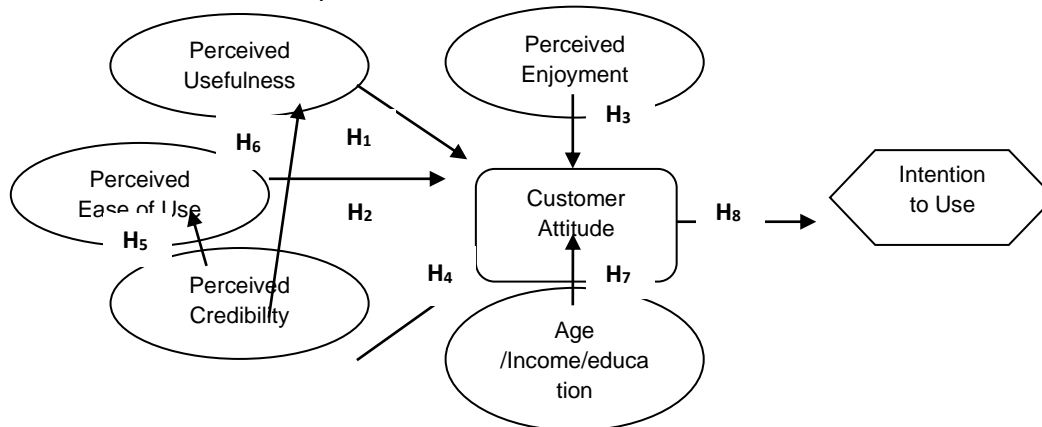


Figure 1: The research model

## 4. Research Methodology

Questionnaire is the survey instrument used in this study. A total of 220 questionnaire forms were delivered to respondents of which 188 were returned giving a response rate of 86 percent. The questionnaire consists of 26 questions, its validity was verified by some business professors and the reliability was measured by Cronbach's alpha test at 84%, indicating good reliability. Questionnaires were filled in different places, at banks among some customers, at schools among teachers, at hospitals among some employees and etc, during three working days. This resulted in a sample that was well distributed in terms of demographic information (e.g. age, income, and education).

The Questionnaire items are related to background studies (Adesina Aderonke et al., 2010, Jahangir et al., 2008, Pikkarainen et al., 2004). Likert five point scales ranging from "strongly agree" to strongly disagree" were used as a basis of questions. The collected data was analyzed based on correlation and regression analyses and independent sample t-test using the statistical package for social sciences (SPSS).

## 5. Results

Explaining about the results of the study can be done in three parts. First part is about demographic profile of respondents shown in the Table 1 below. One hundred and eighty eight questionnaires were analyzed. The percentage of male respondent to female respondent is

almost equal. 42.6% of respondents are females while 57.4% are males. Majority of respondents are aged between 35 and 45 years and the minority of them are under 25 year-old. Close to 68% of respondents have bachelor degree, 27% are in master & above group. Most of respondents fell into middle income level (5000000-10000000 Rials per month) and this seems to show that the sample is well-organized in aspect of income factor.

**Table 1: Demographic Profile**

Gender			Age			Education			Income(1000 Rial)		
groups	frequency	percentage	groups	frequency	percentage	groups	frequency	percentage	groups	frequency	percentage
Male	80	42.6	Under 25	8	4.3	under	9	4.8	less 5000	29	15.4
Female	108	57.4	25-35			bachelor			5000-		
			35-45	26	13.8	bachelor	127	67.6	10000	140	74.5
			45& above	127	67.6	master&	52	27.7	10000&		
				27	14.4	above			above	19	10.1

In the second part correlation analysis is discussed. A correlation analysis was conducted on most variables to explore the relationship between them. Table 2 shows all positive figures suggesting that correlations are positive and significant at the 0.01 level between customers' attitude towards perceived ease of use, perceived usefulness, perceived credibility, perceived enjoyment and intention to use electronic banking system.



**Table 2: Correlation Analysis**

\*\* Correlation is significant at the 0.01 level (2-tailed).

		PU	PEOU	PE	PC	CA	ITU
PU	Pearson Correlation	1	.307**	.480**	.093	.383**	.529**
	Sig. (2-tailed)		.000	.000	.204	.000	.000
	N	188	188	188	188	188	188
PEOU	Pearson Correlation	.307**	1	.081	.135	.399**	.264**
	Sig. (2-tailed)	.000		.270	.064	.000	.000
	N	188	188	188	188	188	188
PE	Pearson Correlation	.480**	.081	1	.357**	.591**	.579**
	Sig. (2-tailed)	.000	.270		.000	.000	.000
	N	188	188	188	188	188	188
PC	Pearson Correlation	.093	.135	.357**	1	.419**	.468**
	Sig. (2-tailed)	.204	.064	.000		.000	.000
	N	188	188	188	188	188	188
CA	Pearson Correlation	.383**	.399**	.591**	.419**	1	.465**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	188	188	188	188	188	188
ITU	Pearson Correlation	.529**	.264**	.579**	.468**	.465**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	188	188	188	188	188	188

The last part is explaining about hypothesis testing and its results. Single linear regression analysis is used for most hypotheses. H1 is confirmed, this indicates that perceived usefulness



has a significant effect on customer attitude. H2 is also supported, which means perceived ease of use has a positive effect on customers' attitude to use e-Banking. The result is consistent with previous studies conducted by Adesina Aderonke et al. (2010) and Muniruddeen (2007). Statistical information about these two hypotheses is presented in Table 3 below.

**Table 3: Regressions**

Variables	Constant	Beta	t	p-value	R <sup>2</sup>
PU-CA	1.493	0.383	5.655	0.000	0.147
PEOU-CA	1.749	0.399	5.940	0.000	0.159
PE-CA	2.252	0.591	10.005	0.000	0.350
PC-CA	3.175	0.419	6.302	0.000	0.176
PC-PEOU	4.212	0.135	1.863	0.064	0.018
PC-PU	4.117	0.093	1.274	0.204	0.009
AIE-CA: Age Education Income	3.273	0.071 0.255 0.032	0.909 3.504 0.413	0.365 0.001 0.680	0.068

Table 3 shows that perceived enjoyment is significantly associated with customer attitude (H3). It suggests that perceived enjoyment can be considered as a remarkable factor affecting on customer attitude (R<sup>2</sup>=0.35, Beta=0.591).

Regression 4 is related to H4 confirmed that perceived credibility has a positive and significant effect on customer attitude (Table 6), nevertheless, H5 and H6 are not proved by the result displaying in Table 3. This means that perceived credibility is not an important factor determining perceived ease of use and perceived usefulness (p-valuePEOU=0.064, tPEOU=1.863; p-valuePU=0.204, tPU=1.274). This is not following the result of previous study conducted by Adesina Aderonke et al. (2010), presenting the important effect of perceived credibility on perceived ease of use and perceived usefulness.

The result of multiple regression analysis for three demographic variables; age, income and education indicates that only education level of respondents has a significant positive effect on customer attitude (p-valueEducation=0.001, BetaEducation=0.255). Therefore H7 is confirmed just for one of its independent variables, education. Table 3 shows this result, too.

Finally the result of the last single linear regression between customer attitude and behavioral intention testing H8 proved that customer attitude has a positive effect on intention to use e-banking ( $t = 7.159$ ,  $\text{Beta} = 0.465$ ,  $p\text{-value} = 0.000$ ).

To complete analyzing, independent samples T test for equality of means between males and females has been done. The result of the test shows that there is no significant difference between men and women in attitudes about using electronic banking services with the five percent level ( $t = 1.831$ ,  $p\text{-value} = 0.069$ ). This result is in the similar way with previous study conducted by Vincent et al. (2005). Other statistical information is presented in Table 4 and 5 below.

**Table 4: Group Statistics**

gender	N	Mean	Std. Deviation	Std. Error
female	108	4.1265	.61770	.05944
male	80	3.9958	.35378	.03955

**Table 5: Independent samples test for equality of means**

t	p-value	95% confidence interval for the differences	
1.831	0.069	lower	upper
		-0.01019	0.27161

Based on statistical results of this study which was conducted among some customers of banks in Iran and some prior studies (e.g. Adesina Aderonke et al. 2010; Muniruddeen L. 2007 etc.), it can be concluded that there are some other factors except two main factors in TAM (PU and PEOU) which can affect on customer attitudes and their intention to use electronic banking services. As expected, the significant effect of PEOU and PU on customer attitude (CA) was verified in the study. Unexpectedly, the result illustrated that perceived enjoyment (PE) is an important variable toward customer attitudes and should be given more attention. However, the relationship between perceived credibility (PC) and customer attitudes was positive and highly significant; PC had no remarkable effect on PEOU and PU. The items of perceived credibility and how serious these are paid attention and answered in the questionnaire showed that privacy of data and security measures of the e-Banking technology are the issues that bother the minds of bank users.

The results presented that intention to use (ITU) is significantly influenced by customer attitude. This study also conducted with demographic variables consist of age, income and

education (AIE) to analyze whether they relate statistically to customer attitude or not; and the result presented the importance of educational level of respondents on their attitudes, only. This can be meant that those with less education use the bank's electronic services less than the educated people do and this result is consistent with related prior study done in Iran (Sadeghi et al., 2010). Moreover, the findings hint that there is no statistically significant difference between males and females at the five percent level in attitudes about using electronic banking services and it is also following the results of previous researching e.g. Sadeghi et al. (2010) and Vincent et al. (2005).

## **6. Discussion**

These findings support prior researches showing that TAM is a useful model for evaluating intention and actual use of IT. One of the interesting and different results in this study hinted the importance of perceived enjoyment as a critical factor influencing the acceptance. It provides managers information about the planning of online banking web sites and service selection. In the development of online banking services, software developers and designers should pay more attention to the beauty and joyfulness of the environment surrounding web sites and service options to make electronic banking usage more pleasant and attractive for users.

By proving the influence of being educated to amount of using e-banking, bankers must be careful about disseminating information and its benefits for expanding online banking services which is an important factor influencing the acceptance of technology like electronic banking. Banks should now concentrate in their advertising more to informative issues rather than in building only brands with less informative advertisements. Moreover, increasing people's awareness about its usefulness and ease of use through advertizing can affect on enhancing the degree to which consumers use these services and how frequently they do it as well.

The results also clearly reflects this fact that in spite of finding e-banking system useful, convenient, and easy to use by customers, There is low level of trust in the security measure of e-banking technology and the ability of e-Banking systems to protect privacy. Based on this point, advertising and personal promotion of e-banking should emphasize the trustworthiness and reliability of the web site in its message. It should illustrate the security features of the e-banking web site that will allow customers to use it securely.

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