

## An exploration study on factors influencing acceptance of electronic banking industry

Naser Azad\*, Seyed Mohsen Seyedaliakbar, Seyedeh Soroor Mousavirad and Seyedeh Nafiseh Mousavirad

*Department of Management, Islamic Azad University, South Tehran Branch, Tehran, Iran*

### CHRONICLE

*Article history:*  
Received January 18, 2013  
Received in revised format  
28 April 2013  
Accepted 1 May 2013  
Available online  
May 1 2013

*Keywords:*  
*Factor analysis*  
*Technology acceptance*  
*Banking industry*  
*Electronic banking*

### ABSTRACT

This paper presents an empirical investigation to detect important factors influencing on electronic banking adoption using factor analysis. The proposed study designed a questionnaire, distributed among 210 customers who were regular customers of four banks in city of Tehran, Iran named Saderat, Eghtesad Novin, Melli and Mellat. The questionnaire consists of 42 questions and since factor analysis is sensitive on skewness of data, we have decided to remove some of the questions and summarize it into 17 questions. Cronbach alpha was calculated as 0.80, which is well above the minimum acceptable limit and validates the results. The results of our survey indicate that four major factors including consistency, facilities, cost control and feasibility.

© 2013 Growing Science Ltd. All rights reserved.

## 1. Introduction

Electronic banking plays essential role in achieving electronic government. Electronic banking includes all banking services based on the implementation of electronic system. The history of electronic banking goes back to 1960s when computers were implemented in banks for the first time. The second round of electronic banking began at late 1970s named automation of the office where telecommunication services was also common in that period. The third round initiated in mid 80s by connection of customers to accounts using different features such as telephone, ATM, etc. Finally, fourth period was accompanied by uniting the systems and connecting the customer to all possible banking operations. The electronic banking in Iran was initiated over the period 1981-1991 and Tejarat bank issued the first bank card in 1991 and after that Sepah bank started established 7 ATM stands all over the country. In 1992, Iran joined Society for Worldwide Interbank Financial Telecommunication (SWIFT) international channel and it was connected to the channel in 1993 (Rasoulia & Safari, 2011).

\*Corresponding author.  
E-mail addresses: dr.naserazad@yahoo.com (N. Azad)

Tater et al. (2011) investigated the perception of Indian customers towards the implementation of technologies with respect to such factors as convenience, privacy, security, ease of use, real time accessibility, and accurate record of varied transaction that enable customer's adoption of Banking Technology. They also examined other factors including slow transfer speed, technical failure, frauds and unawareness among customers that make hindrance in adoption. They reported that demographic variables such as gender, age, qualification and income had a positive impact in adoption of banking technology. In their survey, all the banks were using information technology as a strategic vehicle to keep competitive against other banks. There was no significant difference between adoption rates of banking technologies by the customers of various private banks. They also reported that banking technology could help in increasing customer satisfaction, customer loyalty, improvised growth, and performance of the banks.

Woherem (2000) in other investigation surveyed the impact of information technology in the Nigerian banking industry. Selamat and Jaffar (2010) performed a comprehensive investigation on effects of information technology acceptance among Malaysian Bankers. Ahmadirezaei (2011) examined the impact of information technology in one of Iranian banks called Saderat bank. He collected the necessary data from both the customers and employees at the banks. The data were analyzed using percentage and five-point Likert scale to determine the impacts of IT on the banking, objectively. The findings revealed that IT could improve bank's performance in three ways by reducing operational cost, facilitating transactions among customers within the same network and saving the time, dramatically.

Rădulescu and Serbanescu (2009) compared the types of the electronic banking services in Romania comparative with other countries and their development in the recent years. They also investigated their benefits for banks and customers, their costs and risks and their risk management. Al Nahian Riyadh et al. (2009) investigated different factors, which influence SMEs' adoption of e-banking in Bangladesh. The study came up with an integrated model including seven variables including organizational capabilities, perceived benefits, perceived credibility, perceived regulatory support, ICT industries readiness, lack of financial institutions readiness and institutional Influence, which could possibly impact the adoption of e-banking by SMEs in developing countries.

Ganguli and Roy (2011) identified the generic service quality dimensions of technology-based banking and investigated the impact of these dimensions on customer satisfaction and customer loyalty. They detected four generic service quality dimensions in the technology-based banking services – customer service, technology security and information quality, technology convenience, and technology usage easiness and reliability. They reported that customer service and technology usage easiness and reliability had positive and significant effect on customer satisfaction and customer loyalty. They also reported that technology convenience and customer satisfaction had significant and positive effect on customer loyalty.

Durkin et al. (2008) underlined the relative importance for banks to reach a customer-oriented balance between face-to-face relationship-managed activity and online enablement. Lee (2009) investigated different factors impacting the adoption of internet banking. Lee reported that the intention to implement online banking was adversely influenced mainly by the security/privacy risk, as well as financial risk and was positively influenced mainly by perceived benefit, attitude and perceived usefulness.

Pikkarainen et al. (2004) investigated consumer acceptance of online banking using an extension of the technology acceptance model. Nasri and Charfeddine (2012) performed an empirical investigation on factors influencing the adoption of Internet banking in Tunisia. They reported that Banks should improve the security and privacy to protect consumers' personal and financial information, which could increase the trust of users. Government should support banking industry by having a clear and solid law and Tunisian Banks should concentrate on those clients who already have a home PC,

access Internet and more educated and younger since they are the most likely to adopt Internet banking.

Guriting and Ndubisi (2006) performed a study on adopting the technology acceptance model by examining the factors, which determine intention to implement online banking in Malaysia Borneo. Wang et al. (2003) introduced “perceived credibility” as a new factor, which reflects the user's security and privacy concerns in the acceptance of Internet banking. The study also examined the impact of computer self-efficacy on the intention to use Internet banking. Based on a sample of 123 users from a telephone interview, the results strongly supported the extended technology acceptance method (TAM) in forecasting the intention of users to adopt Internet banking. The survey also demonstrated the significant impact of computer self-efficacy on behavioral intention through perceived ease of use, perceived usefulness, and perceived credibility.

Anandarajan et al. (2000) performed an investigation on technology acceptance in the banking industry in a less developed country. Kolodinsky et al. (2004) performed an investigation on the adoption of electronic banking technologies by US consumers. Alsajjan and Dennis (2010) performed a cross-market investigation on internet banking acceptance. Gikandi and Bloor (2010) performed an investigation on the adoption and effectiveness of electronic banking in Kenya. Finally, Kurnia et al. (2010) did similar job on the adoption of electronic banking in China.

## 2. The proposed study

The proposed study of this paper attempts to detect important factors influencing on electronic banking industry using factor analysis. The proposed study designed a questionnaire, distributed among 210 customers who were regular customers of four banks in city of Tehran, Iran named Saderat, Eghtesad Novin, Melli and Mellat. The proposed study of this paper uses factor analysis to extract important factors. The questionnaire consists of 42 questions and since factor analysis is sensitive on skewness of data, we have decided to remove some of the questions and summarize it into 17 questions. Cronbach alpha was calculated as 0.80, which is well above the minimum acceptable limit and validates the results. In addition, Kaiser-Meyer-Olkin Measure of Sampling Adequacy test was equal to 0.89 and Chi-Square was measured as 1671.161, which validates the overall questionnaire. Table 1 demonstrates the results of factor analysis.

**Table 1**

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.713	39.487	39.487	6.713	39.487	39.487	4.597	27.040	27.040
2	1.830	10.762	50.249	1.830	10.762	50.249	3.326	19.563	46.603
3	1.339	7.878	58.127	1.339	7.878	58.127	1.879	11.052	57.655
4	1.112	6.540	64.667	1.112	6.540	64.667	1.192	7.012	64.667
5	.930	5.469	70.136						
6	.747	4.395	74.531						
7	.622	3.660	78.191						
8	.553	3.255	81.446						
9	.510	2.998	84.444						
10	.472	2.777	87.221						
11	.397	2.335	89.556						
12	.364	2.139	91.694						
13	.329	1.933	93.627						
14	.315	1.854	95.481						
15	.277	1.631	97.112						
16	.268	1.575	98.687						
17	.223	1.313	100.000						

Extraction Method: Principal Component Analysis.

In addition, Table 2 shows details of our findings before and after rotation occurs.

**Table 2**

The results of principal component analysis before and after rotation

	Component Matrixa				Rotated Component Matrixa			
	1	2	Component 3	4	1	2	Component 3	4
VAR00017	.766				NVAR0011	.833		
VAR00007	.758				VAR00004	.823		
VAR00004	.750	-.376			VAR00026	.780		
NVAR0011	.747	-.410			VAR00020	.738		
VAR00024	.727				VAR00024	.709	.331	
NVAR0037	.712				NVAR0037	.708		
VAR00026	.705	-.334			VAR00017	.607	.414	
VAR00020	.672	-.422			VAR00007	.562	.528	
VAR00036	.650		-.366		VAR00035		.768	
VAR00031	.609				VAR00036	.731		-.340
VAR00027	.586				VAR00034	.721		.338
NVAR0038	.571	.378		-.418	NVAR0038	.615	.441	
VAR00034	.512	.590			VAR00031	.599		
VAR00035	.493	.588			VAR00027	.484		
VAR00003	.473		.709		VAR00002		.825	
VAR00002	.502		.609	-.341	VAR00003		.812	
NVAR0006			.332	.653	NVAR0006			.774

Extraction Method: Principal Component Analysis.  
a. 4 components extracted.

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser Normalization.  
a. Rotation converged in 5 iterations.

### 3. The results

The proposed study of this paper has determined four major factors using factor analysis and in this section, we present details of our findings.

#### 3.1. The first factor: Consistency

The first factor, “consistency” includes seven components including “Usefulness”, “Customer satisfaction”, “Users”, “Culture”, “Direct payment” and “Opportunity” and the results are summarized in Table 3.

**Table 3**

The summary of factors associated with consistency

Option	Factor weight	Eigenvalue	% of variance	Accumulated
Usefulness	0.833	6.713	39.487	39.487
Customer satisfaction	0.823			
Information	0.780			
Users	0.738			
Culture	0.709			
Direct payment	0.708			
Opportunity	0.607			

Cronbach alpha =0.897

It is evident from the results of Table 3 that “Usefulness” is number one priority followed by “Customer satisfaction”, “Information” and “Users”. Cronbach alpha has been calculated as 0.897, which validates the results of our survey.

#### 3.2. The second factor: Facilities

Facilities play important role for the success of any electronic banking. This factor includes four factors including “Technology for adjusting mistakes”, “Technical support”, “Bank presence prevention”, and “Speed” and the results of factor analysis are given in Table 4 as follows,

**Table 4**

The summary of factors associated with facilities

Option	Factor weight	Eigenvalue	% ofvariance	Accumulated
Technology for adjusting mistakes	.768	1.830	10.762	50.249
Technical support	.599			
Bank presence prevention	.484			
Speed	.528			

Cronbach alph =0.709

According to the results of Table 4, “Technology for adjusting mistakes” is the most important factor followed by “Technical support”, “Speed” while ““Bank presence prevention”” comes the last priority.

### 3.3. The third factor: Cost strategy

Cost strategy is the third important factor influencing electronic banking, which includes three factors including “Cost saving”, “Reduction on the number of branches”, and “Competition capability”. Table 5 demonstrates details of our survey where “Cost saving” plays essential role on electronic banking followed by “reduction on the number of branches”.

**Table 5**

The summary of factors associated with cost strategy

Option	Factor weight	Eigenvalue	% ofvariance	Accumulated
Cost saving	.825	1.339	7.878	58.127
Reduction on the number of branches	.812			
Competition capability	.441			

Cronbach alph =0.688

### 3.4. The fourth factor: Feasibility

Feasibility is the last factor, which influences electronic banking and it includes three factors summarized in Table 6 as follows,

**Table 6**

The summary of factors associated with Feasibility

Option	Factor weight	Eigenvalue	% ofvariance	Accumulated
Precision	.774	1.112	6.540	64.667
Technology used on debit card	.340			
The effect of government support	.338			

Cronbach alph =0.331

Based on the results of Table 6, “Precision” is the most important factor, which influences electronic banking.

## 4. Discussion and conclusion

In this paper, we have presented an empirical investigation using principal component analysis to detect important factors influencing electronic banking. The results of our survey have revealed four major factors including consistency, facilities, cost control and feasibility. In terms of the first factor, consistency, “Usefulness” is number one priority followed by “Customer satisfaction”, “Information” and “Users”. In terms of the second factor, facilities, “Usefulness” is number one priority followed by “Customer satisfaction”, “Information” and “Users”. In terms of cost strategy, our survey indicates that “Cost saving” plays essential role on electronic banking followed by “reduction on the number of branches”. Finally, in terms of feasibility, “Precision” is the most important factor influences electronic banking.

## References

- Al Nahian Riyadh, M., Akter, S., & Islam, N. (2009). The adoption of E-Banking in developing countries: A theoretical model for SMEs. *International review of business research papers*, 5(6), 212-230.
- Alsajjan, B., & Dennis, C. (2010). Internet banking acceptance model: cross-market examination. *Journal of Business Research*, 63(9), 957-963.
- Ahmadirezaei, H. (2011). The effect of information technology in Saderat banking system. *Procedia-Social and Behavioral Sciences*, 30, 23-26.
- Anandarajan, M., Igbaria, M., & Anakwe, U. P. (2000). Technology acceptance in the banking industry: A perspective from a less developed country. *Information Technology & People*, 13(4), 298-312.
- Durkin, M., Jennings, D., Mulholland, G., & Worthington, S. (2008). Key influencers and inhibitors on adoption of the internet for banking. *Journal of Retailing and Consumer Services*, 15(5), 348-357.
- Ganguli, S., & Roy, S. K. (2011). Generic technology-based service quality dimensions in banking: Impact on customer satisfaction and loyalty. *International Journal of Bank Marketing*, 29(2), 168-189.
- Gikandi, J. W., & Bloor, C. (2010). Adoption and effectiveness of electronic banking in Kenya. *Electronic Commerce Research and Applications*, 9(4), 277-282.
- Guriting, P., & Ndubisi, N. O. (2006). Borneo online banking: evaluating customer perceptions and behavioural intention. *Management Research News*, 29(1/2), 6-15.
- Kolodinsky, J. M., Hogarth, J. M., & Hilgert, M. A. (2004). The adoption of electronic banking technologies by US consumers. *International Journal of Bank Marketing*, 22(4), 238-259.
- Kurnia, S., Peng, F., & Liu, Y. R. (2010). Understanding the adoption of electronic banking in China. In *System Sciences (HICSS), 2010 43rd Hawaii International Conference on* (pp. 1-10). IEEE.
- Lee, M. C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, 8(3), 130-141.
- Nasri, W., & Charfeddine, L. (2012). Factors affecting the adoption of Internet banking in Tunisia: An integration theory of acceptance model and theory of planned behavior. *The Journal of High Technology Management Research*, 23(1), 1-14.
- Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahnla, S. (2004). Consumer acceptance of online banking: an extension of the technology acceptance model. *Internet research*, 14(3), 224-235.
- Rasoulilian, M., & Safari, M. (2011). The reasons to lack of electronic banking achievement in Iran. *International Journal of Managing Information Technology*, 3(3), 51-60.
- Rădulescu, M., & Serbanescu, L. (2009). Development of the electronic banking services in Romania. *Communications of the IBIMA*, 8, 42-51.
- Selamat, Z., & Jaffar, N. (2010). Information Technology Acceptance: From Perspective of Malaysian Bankers. *International Journal of Business and Management*, 6(1), p207.
- Tater, B., Tanwar, M., & Murari, K. (2011). Customer Adoption of Banking Technology in Private Banks of India. *International Journal of Banking and Finance*, 8(3), 83-88.
- Wang, Y. S., Wang, Y. M., Lin, H. H., & Tang, T. I. (2003). Determinants of user acceptance of internet banking: an empirical study. *International Journal of Service Industry Management*, 14(5), 501-519.
- Woherem, E. E. (2000). *Information technology in the Nigerian banking industry*. Spectrum Books Ltd.