RESEARCH ARTICLE -ENGINEERNG TECHNOLOGY

Effective Factors on the Use of Internet Banking Services by Customers with an emphasis on The Perceived Risk (Case Study: Saderat Bank of Guilan Province)

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Abstract.

In recent decades, the proportion of advances in information technology and its application in various fields, templates and models have emerged in the field of technology adoption. The results of previous studies show that these models in studying various technologies and their acceptance have different functions. With rapid growth in bank sphere of information technology and competitive market, we can see that the issue of adopting electronic banking customer, banks have been considered. One of the concepts used in the provision of electronic banking services is internet banking. The aim of this study is determining the effective factors on the use of internet banking services by Saderat Bank customers with an emphasis on the Perceived Risk.

Keywords: Internet banking, acceptance, perceived risk, Guilan province

Introduction

The advent of information technology to all aspects of human life and business has been so obvious that it does not need to be accentuated anymore.
The information technology has emerged is a comprehensive plan that information technology management professionals use to guide their organizations(S. and Ibrahim, 2014).Many organizations prefer to formalize their information technology strategy in a written document or balanced scorecard strategy map. The plan and its documentation should be flexible enough to change in response to new organizational circumstances and business priorities, budgetary constraints, available skill sets and core competencies, new technologies and a growing understanding of user needs and business objectives (Taleghani et al,2015). The 21st century will bring about an all-embracing convergence of computing, communications, information and knowledge. This will radically change the way we live, work, and think. The growth of high speed networks, coupled with the falling cost of computing power makes the past undreamed applications possible(Ghaffari et al, 2013).This explosion of technology changes the banking industry from paper and branch banks to' digitized and networked banking services. It has already changed the internal accounting and management systems of banks (Basher & Madhavaiah, 2015). It fundamentally changes the use of delivery systems banks to interact with their customers. All over the world, banks still struggle to find a technological solution to meet the challenges of a rapidly-changing environment. It is clear that this new technology changes the banking industry forever (Taleghani et al, 2015). Banks with the ability to invest and integrate

information technology will become dominant in the highly competitive global market. Bankers are convinced that investing in IT is critical and its potentials and consequences on the banking industry future are enormous.

Problem statement

Journal of Internet Banking and Commerce "(jibc) has provided statistics in which it checks the status of 14 Middle East countries in the field of non-financial and financial capabilities of the Internet and the operations conducted by the Internet. In the first issue which analogizes the capabilities of the Internet, the first rank goes to Lebanon among the other countries and Iran has received the twelfth ranking before Yemen and Palestine. This ranking clearly shows the weakness which is present in Iran's Internet services. In the field of non-financial operations with the use of the Internet as well as in this comparison, the country rated eighth with the same level as Qatar which is considerably different from the countries like Egypt, Lebanon and Turkey. But what is important is the status of Iran in the field of operations of this country in the field of financial operations by the Internet. Unfortunately, this indicates the fact that Iran has rated the lowest points as well as the lowest ranking among these 14 countries, showing the low use of Internet and its obvious financial services, namely Internet banking. Banks are one of the fastest growing sectors that accepted internet as a way to provide services (Laukkanen, 2007),despite many benefits of online banking (Liao et al, 1999; Sundarrag and Wu, 2005) and the high costs of investment banks, customers still do not use the online banking services as expected. (Chaouali, Ben Yahia & Souiden, 2016). Researchers hypothesize that considering the fact that 80% of the respondents have had at least one-year experience with the Internet and its services, regretfully only 34% of them have used the internet banking services (Martins, Oliveira & Popovich, 2014), as confirmed in many other studies, as well .On the other hand, encouraging people to use the ATMs has caused the long queuing up behind the counters of the banks to be transferred behind the ATM machines .Hence, it is quite evident that the use of paper money is still considered important and receives the first priority in the community. In this regard, although people prefer to use paper money in their transactions and business dealings, they can be guided to use a much easier mechanism, which is the Internet system (MT progeny, 1390).Unfortunately, despite all the advantages and the availability of this easy and effective technology, traditional banking system is still a main practice for transactions and banking operations in many countries and users are still reluctant to switch themselves with this alternative method. This complicated issue has caused considerable concern among the bankers which is still an unresolved issue on the table. The other matter of the prime importance is that the customers should have the willingness and inner desire to continue using the services offered by the Internet banking system which quite beneficial to both banks as well as clients. The main advantages of using such system is the purposes of saving costs for banks and convenience of accessing the banking services during 24 hours and 7 days a week rather than certain limited hours and days (Yoon & Steege, 2012). It can also be easy to access the required information, saving time, tailored services, reduction of costs through skipping physical presence (Nasri & Charfeddin, 2012), acceleration of the flow of economic exchange, proving opportunities for activities and expenditures in order to attract new sources of profitability, lowering costs of trading and transparency. For instance, costs of trading through internet could be minimized as much as around one third of the costs of the cashier. Portuguese Institute of Customer Support DECO studied the costs and benefits of using online

banking and concluded that if these services are used instead of the traditional services they can save more than 33 Euros per year. Customers' needs could be easily met by applying Internet banking or electronic banking services, using personal computers or other equipment with Internet access point .Profitable exploitation of an innovative service definitely relies on its acceptance by the community. The acceptance and continued use of a product is called service or idea of acceptance (Sayad Azeri, 2011). In this study, factors affecting the adoption of the Internet banking model have been proposed by Carolina Martinez, Thiago Oliveira and Alice Popovich in 2014 in Portugal. From their research, the behavior index (UB) was examined and it was concluded that the perceived risk factors affecting the Perceived Risk (PCR) were the measures that have multiple dimensions such as Overall Risk (OR), Privacy Risk (PR), Social Risk (SR), Time Risk (TR), Financial Risk (FR) and Performance Risk (PFR) (Martins & Oliveira & Popovich, 2014). The Performance risk mean screation of a sudden mistake by the web or the server which may bring about a lack of trust in the Internet banking on the part of the customers. Financial risk refers to a potential financial loss as a result of a mistake which may occur in a transaction. In the study of Martinez et al. (2014), Behavioral Intention (BI) with dimensions of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) play the mediating roles. Purpose of this study denotes this fact that users tend to use the system. Performance Expectancy is how much the person believes that the system will help him achieve his career goals. What the person thinks is that whether the social impact influencing the behavior of people is important or not. He should understand that he must use the new system to facilitate the degree to which the individual believes organizational and technical infrastructure to support the use of the system (Jacob, Avry,Yazdani and Shaker, 2010). Regarding the mentioned subjects, researcher is going to answer this fundamental question that whether the perceived risk of using internet banking services by the impact of behavioral intention and according to age, level of education and income is effective upon acceptance of this service, or not?

Literature Review

Usage Behavior

Davis defines it as the actual use of the system frequency and every use of it by the user. The operating frequency of the use of this technology by Aim et al (2011) has been introduced.

Performance Expectancy

Perceived usefulness or expected performance according to Venkatesh (2003) the extent to which a person believes that using a particular system adds to the level of his performance. The degree to which technology can cause the person takes better advantage of existing facilities on equal terms (Delafruz, 2014). It varies structures and activities beneficial to do things, do things faster, reduce the cost of commuting, etc. and acquisition of many positive results according to Venkatesh et al (2003).

Effort Expectancy

Effort expectancy and perceived ease of use: The extent to which the user expects to use the system, will require effort (Davis, 1979). This variable of operational structures of Venkatesh et al. (2003) includes transparency and understandability of the site, easy to master, easy working with the site.

Social influence

Users may be based on reasons that are based on the opinions of others or who made the decision to learn the use of subjective criteria, social influence of technology is thus known and perceived pressures of dominant individuals to make definitive decisions on the definition of behavior. The pattern of people's thinking (Venkatesh et al, 2003) increases their social credibility and dignity of the people, the acquisition of knowledge and information and working with Internet banking from the operational structures of the social impact which these structures are considered by venkatesh et al.

Facilitate conditions

Facilitating conditions (FC), the impact of organizational and technical infrastructure to support the use of Internet banking use such knowledge, ability and resources (Venkatesh et al, 2003). The variable in terms of Venkatesh et al. (2003) with structures has the necessity to facilitie the knowledge as well as compatibility with other systems evaluated.

Perceived risk

The consequences of the costumers actions have led to an important concept in customer behavior and is called perceived risk.(Bauer , 1960).

Performance Risk

The possibility that results in performance as it is designed to provide benefits and doesn't obtain the desired result fails to recognize the risk function. (Featherman & Pavlou, 2003)

Financial Risk

It is called the possibility of losing money because of buying a product or service and maintenance of financial risk (Featherman & Pavlou, 2003).The possibility of losing money, fear of fraud and the possibility of accessing the accounts of organizations and structures that Featherman andPavlou (2003) considered for the operationalization of the variables considered.

Time risk

Risk occurs when a customer decides to buy poor crops, and research, and to learn how to use it to save the lost time (Featherman & Pavlou, 2003) .Wasting time due to the lack of awareness, wasting time for correcting mistakes and errors, all of them take time to learn and they have to be learned because of the time limitation of the client.

Social Risk

Social risk is the possibility of losing one's position in a social group because of the consequences of acceptance of a product or service (Featherman & Pavlou, 2003). Having a negative impact on others' thoughts and problematic operational structures vary among friends and relatives.

Privacy Risk

Privacy risk is the possibility of losing control of the personal information which includes information such as those kinds of people who aren't aware (Featherman & Pavlou, 2003). It's the possibility of losing control over the privacy of personal information without notification, likely accounts controlled by hackers operating concepts variables.

Behavioral Intention

Behavioral Intention expresses the intensity of a person's intention and determination to do his target behavior (Morris & Dillon, 1997).The use of this technology in the future months, other accounts controlled in this way and also plans to transfer between accounts in this way, these variables are presented as operational structures.

Research conceptual model

The model was used to investigate the factors influencing the adoption of Internet banking. Three variables affect the performance expectancy, effort expectancy and social impact on behavioral intention and the impact of behavioral intention and facilitating conditions on usage behavior were investigated. To test this model, variable risk and perceived risk dimensions were combined. Most aspects of perceived risk variable are included in most of the study have been shared. The impact of the variable effort expectancy on perceived risk analysis and the impact of perceived risk on performance expectancy and behavioral intention have been tested.
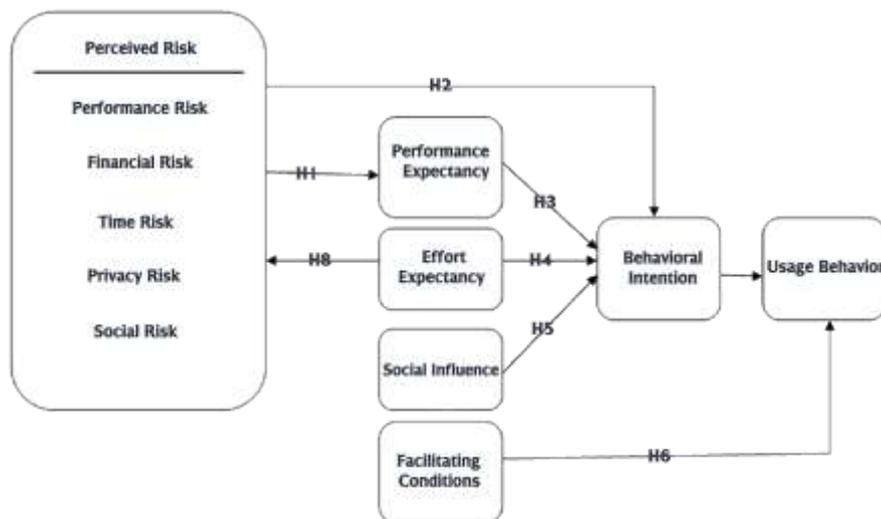
Fig(1):The research conceptual model (Martins , oliveira & popovic,2014)

Based on research conceptual model research hypotheses are written in the following form:

H1: Perceived risk has an impact on the performance expectancy of the customers.
H2: Perceived risk has an impact on behavioral intention of the customers.

H3: Performance expectancy through its impact on behavioral intention has an impact on usage behavior of customers.

H4: Effort expectancy through its impact on behavioral intention has an impact on usage behavior of customers.

H5: Social influence through its impact on behavioral intention has an impact on usage behavior of customers.

H6: Facilitating condition has an impact on usage behavior of customers.

H7: Behavioral intention has an impact on usage behavior of customers.

H8: Effort expectancy has an impact on perceived risk of customers.

Methodology

This research regarding goal is applied and based on method is descriptive that describes features of sample and then generalizes these features to statistical society. It can be mentioned that method of this research is descriptive and surveying-correlation. Distinctly this research is based on structural equation modeling.

For data collection about theoretical principles and subject literature library studies and papers and for data collection for analysis questionnaire have been used. Statistical society of current research were all customers of Saderat Bank in Guilan province that have attempted to use internet banking services. Sampling method in the research is random and available improbable. In this form, first a number of 349 persons were chosen as a sample. Research questionnaire was standard that the questions were designed based on Venkatesh et al (2013), Fitherman and pavlou (2003) , Aim et al (2011) that after translation and localizing in the research they were used. Information related to the questions of questionnaire has been mentioned in table (1) regarding number of questions.

Table(1): information of research questionnaire

Model variables	No. of questions	No.
Performance Expectancy	4	1-4
Effort Expectancy	5	5-9
Social Influence	5	10-14
Facilitating Conditions	3	15-17
Performance Risk	5	18-22
Financial Risk	4	23-26
Time Risk	4	27-30
Social Risk	2	31-32
Privacy Risk	3	33-35
Behavioral Intention	5	36-40
Usage Behavior	2	41-42

Validity and reliability of questionnaire

In order to be able to be certain about result of measurement and the reliable data, we should have two features of credit and reliability. In this research by using cronbach's alpha reasonable

compatibility of Cronbach's alpha questions of questionnaire have been assessed. For assessing content validity, research questionnaire should be given to authorities and experts and in some session their considered reforms should be implemented on structure and content of questionnaire. After designing a writing questionnaire and confirming it by professors and specialties, researcher determined the degree of reliability of questionnaire. Therefore firstly a primary sample including 30 questionnaires was pre-tested and then by using obtained data of this questionnaire and through statistical software of SPSS degree of reliability coefficient was calculated through cronbach's alpha for this tool. Amount of cronbach's alpha for all indices of questionnaire and also amount of this coefficient for the whole questionnaire was more than 0.5.Theexact amount of this coefficient has been mentioned in table (2):

Table(2) The reliability coefficient of variables of questionnaire

Variables of model	Cronbach's alpha
Performance Expectancy	0/738
Effort Expectancy	0/818
Social Influence	0/735
Facilitating Conditions	0/806
Performance Risk	0/788
Financial Risk	0/759
Time Risk	0/742
Social Risk	0/869
Privacy Risk	0/714
Behavioral Intention	0/716
Usage Behavior	0/722

Data analysis

Information related to analyzing demography of members of questionnaire has been mentioned in the following table:

Age	Percent of respondent	No.	The cumulative percentage
Less than 25 years old	25.2	88	25.2
Between 25-35 years old	47	164	72.2
36-45	26.1	91	98.3

Over 46	1.7	6	100
Total	100	349	

Education	Percent of respondent	No.	The cumulative percentage
Diploma &Post-secondary	23.2	81	23.2
Bachelor	68.2	238	91.4
M.A	8.6	30	100
Total	100	349	

Income respondents	Percent of respondent	No.	The cumulative percentage
Less than 10000000 Rial	22.9	80	22.9
Between 10000000-30000000 Rial	66.2	231	89.1
Over 30000000 Rial	10.9	38	100
Total	100	349	

The use of the Internet	Percent of respondent	No.	The cumulative percentage
Weekly	6.9	24	6.9
Less than half an hour a day	6.3	22	13.2
Half an hour a day	31.8	111	45
Half-one hour a day	39.5	138	84.5
One-Two hour a day	15.5	54	100
Total	100	349	

Confirming factor analysis

In this section two important outputs of Lisrel software that are model in standard solution and meaningfulness coefficient are presented:

The model in the mode of standard solution

Regarding fig(1) we can observe that factor load of each question of the research. The amount of determination coefficient is a number between 0-1 that as it closes to 1, amount of variance becomes more.
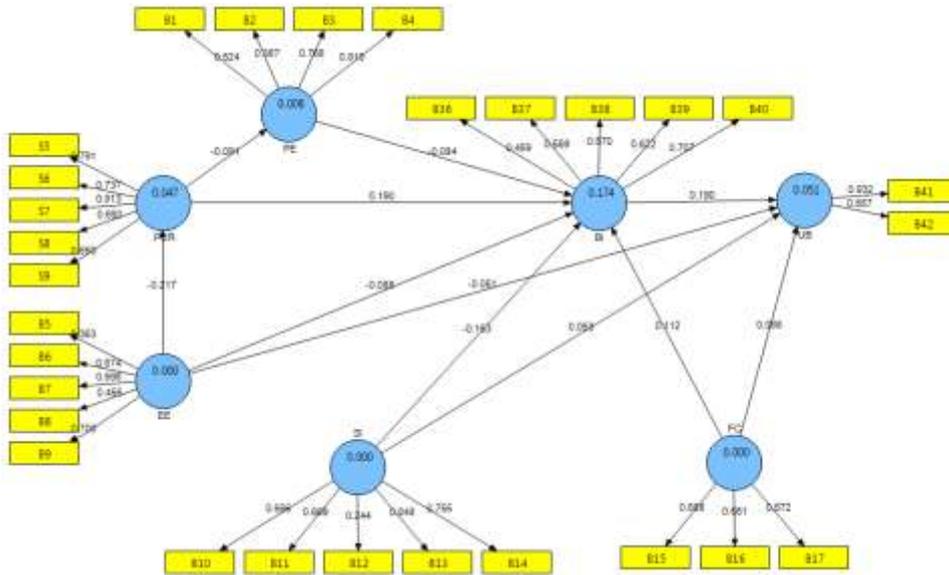
Fig(2)The research model in standard solution mode

Model in T-value mode

Fig(2) shows the meaningfulness of coefficient and parameters obtained from the model that all obtained coefficient has been meaningful. The basis of confirming or rejecting hypothesis of research considers meaningfulness coefficient.
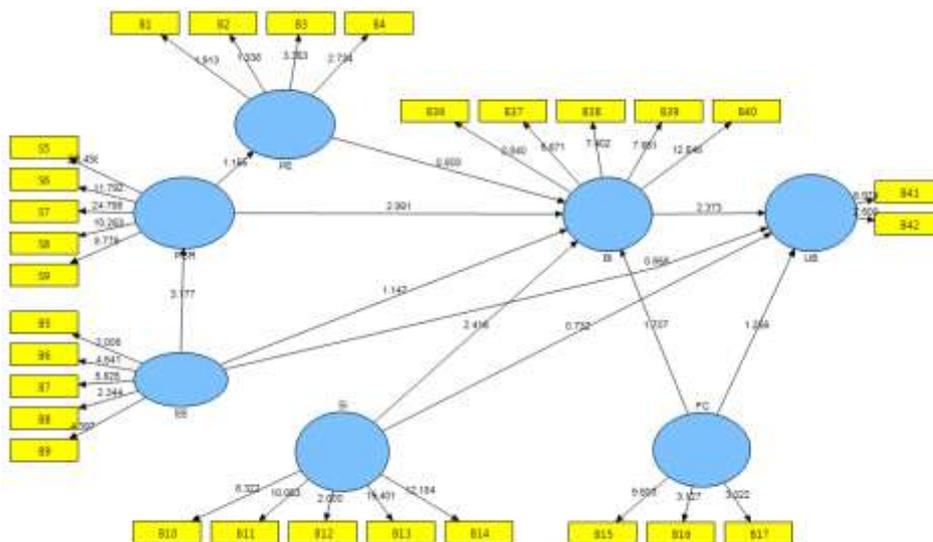
Fig(3):research model in meaningful coefficient mode

In Table (4) The result of considered hypothesis of research has been mentioned briefly:

Research hypothesis	B	t	Result
Perceived risk has an impact on the performance expectancy of the customers	-0.091	1.155	Not accepted
Perceived risk has an impact on behavioral intention of the customers	0.190	2.991	accepted
Performance expectancy through its impact on behavioral intention, has an impact on usage behavior of customers	0.106	3.173	Not accepted
Effort expectancy through its impact on behavioral intention, has an impact on usage behavior of customers	-0.051	0.658	Not accepted
Social influence through its impact on behavioral intention, has an impact on usage behavior of customers	0.053	0.732	accepted
Facilitating condition has an impact on usage behavior of customers	0.086	1.256	Not accepted
Behavioral intention has an impact on usage behavior of customers	0.190	2.373	accepted
Effort expectancy has an impact on perceived risk of customers	-0.217	3.177	accepted
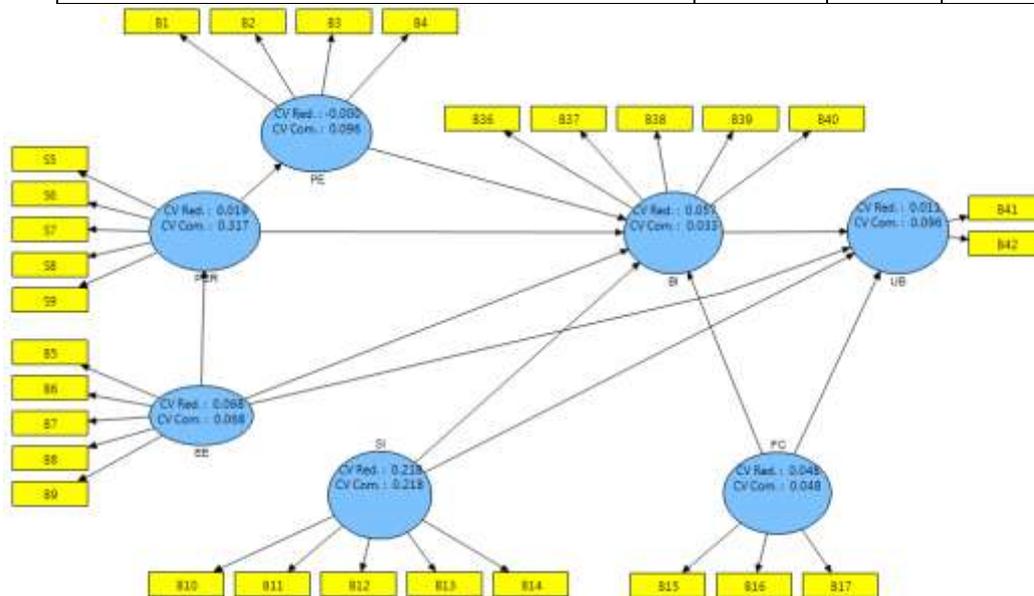
Fig(4):research model in fitting indices

Fit indices of research model

Regarding fig(4) , In table (5) indices related to fit model have been mentioned by its favorable amount. In compared amount of research model and favorable amount, this subject becomes apparent; the research model is located in favorable mode regarding all indices.

Table(5): fit indices of research model

Model variables	CV Com	CV Red
Behavioral Intention	0.033020	0.056546
Effort Expectancy	0.067887	0.067887
Facilitating Conditions	0.048047	0.048047
Perceived Risk	0.316635	0.018875
Performance Expectancy	0.096247	0.000256
Social Influence	0.217578	0.217578
Usage Behavior	0.095698	0.011413

Friedman test

The following table shows the results of Friedman test for measuring social capital. As seen in the table(6), the significant level is zero. In table(7)Effort expectancy is ranked first with an average of 8.53.

Table(6): Friedman test

x2 / df	Degree of Freedom	The significance level	No.
659.708	**10**	**0/0**	**349**

Table(7): Friedman test - Average rating

Model variables	Average	Rate
Effort Expectancy	8.53	1
Performance Expectancy	8.65	2
Social Influence	6.88	3
Facilitating Conditions	5.71	4
Usage Behavior	5.57	5
Social Risk	4.54	6

Privacy Risk	5.17	7
Time Risk	4.86	8
Performance Risk	5.26	9
Financial Risk	5.02	10
Behavioral Intention	5.80	11

Conclusion and suggestion

By developing information technology in the twenty-first century, all aspects of human life have been changed fundamentally. CT has caused a significant change in the provision of banking services not only in developed countries; but also in developing countries has created structural changes in the banking system. On the Internet, physical distance is even less than a hindrance to the real-time communicative activities of people, and therefore social spheres are greatly expanded by the openness of the web and the ease at which people can search for online communities and interact with others who share the same interests and concerns. Therefore, this technology fosters the idea of a conglomerate that unifies global community. Regarding subject and result of this research it can be stated that nowadays internet banking services is one of the most profitable part of the bank activities. The technology not only provides banking services according to the needs, preferences and changing consumer preferences but also has become the means to achieve competitive advantage by making more efficient banks. Researcher for improvement of situation of internet banking in the direction of obtained result presents some suggestions as below:

1. As the results showed "Effort expectancy " has the highest average response based on the "Friedman test" and "social risk" has the highest impact on "Behavioral intention" and as "Effort expectancy" with its significant impact on perceived risk could increase Behavioral intention and presents that the famous people have a profound impact on the behavior of their followers, in the use of online banking services is a small role in society. Hence it is recommended that individuals should use this technology in a more prominent way. So it practically confirmed their acceptance.

2. After social risk, Performance risk and Financial risk have the greatest impact, so as to reduce the risk of performance and financial risk, we should explain internet banking customers that when connection is slow and operation is running slowly, they should avoid these risks to stop the operation and to optimize internet speed and then continue.

3. The variables that were considered as factors influencing on adoption of Internet banking, based on the UTAUT model didn't confirm. It seems that it's because of the influence of unrealistic advertising that makes customers' demands very high, so the technology is not consistent with reality. It is suggested that the ads are designed and presented in order to prevent excessive expectations and lead customer's demands to the reality and possibility of the Bank.

4. In order to reduce the risk of privacy resulted from operation, it is recommended that the correct address sites should be mentioned in Indexed TAN manual. Also, Customers should do the bank's operations only through the sites that mentioned in the manual.

Limitation of research

1- Some respondents' unwillingness to cooperate
2- Challenges in the distribution of questionnaires in a random way

3- Bank security procedures that cause slow running of performance.
4- Environmental factors that have been dominated at that moment influence customers to response to the questionnaire.
5- The lack of access to some basic theories and old papers, such as perceived risk theory (1971) by Roselius and social cognitive theory (1986) by Bandura

Future suggestion for doing research

It is recommended:

1. Using interview instead of questionnaire

2. In the study, as Hernandez and Mason (2007) stated it's frequently observed that "Behavioral Intention" affected by external factors and "Usage Behavior" in addition to "Behavioral Intention", are influenced by internal factors and personality. In this context, and also repeating this research in organizations, different cities and countries, due to cultural differences, it's suggested that the dimensions of Hofstede's cultural dimensions as well as the GLOBE study (House) such as ambiguity aversion (uncertainty avoidance), individualistic or collectivist, performance-oriented, forward-looking and altruism and internal factors on the usage behavior of external factors on the use of innovation and new technologies are examined.

3. Research on the factors influencing the adoption of Internet banking in a group before and after the comprehensive training and implementation and comparison of these factors in these two states can be separated.

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