Investigating the Effect of Some Components of Electronic Banking on Liquidity Risk in Post Banks of Isfahan Province

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ABSTRACT

The present research has been designed and implemented with the purpose of reviewing the impact of selected variables of electronic banking on liquidity risk in the post bank of Isfahan province and in this respect, 25 branches have been studied as the statistical population of the research during years 2010 – 2013. By considering the fact that this number of branches existed only in Isfahan province which covers the required information of the present research; thus, no particular sampling method has been considered and the census method has been used. this research has been composed of a primary hypothesis and three secondary hypotheses which have been analyzed by using the multi-variable technique based on panel data and by using the EVIEWS6 software and the obtained results indicate that the number of ATM transactions, number of POS, gift card and debit card on affect liquidity risk but the number of ATM and POS transactions do not have an impact on liquidity risk.
KEYWORDS: Electronic Banking, ATM, POS, Gift Card, Debit Card, Liquidity Risk.

1. INTRODUCTION

When banking system structure drastically revolved and consequently the usage of payment methods and ATM's grew in 90's, using electronic file transfer or EFT, banks turned from institutes conserving physical files into information processing centers. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen. On the other hand, not only money became electronic, but cheques also underwent a revolution and banks began to use electronic cheques sending the scans instead of physical ones. Photographic technology was so progressed that banks could exchange information related to payments, without using paper documents. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen.

The changes that the banking industry has faced during the past two decades have led to the creation of some main changes in the form of money and interest transmission systems and some concepts with the title of electronic money and payment transmissions of automatic teller machine (ATM) have rapidly grown in 1990s by wide use of EFT, the banks as the depository institutions that maintain physical resources have turned to the centers of information processing. Money has changed from being a tangible concept to an intangible one in such way that money could be shown on the computer screen at any time. On the other hand, not only has money become electronic, but check has also faced the same fate and the banks have started using electronic checks by sending the image of checks instead of physical checks. Image technology has become so complex and improved that banks could exchange the information associated with the payment instructions among themselves without needing paper documents. In fact with this, the electronic exchange of information was used instead of paper document processing. Generally banks' duty are categorized into three groups: conserving customers' deposits, transference of deposits from one account to another, assigning loans to trusted customers who need it. Reduction of ethical investments in society causes formation of a convenient condition for extending social relations and with weakening these relations, the conditions required for creativity is going harsher, because there would be no time to think. While lots of organizations and their managers in various groups of society acknowledge the importance of creativity and innovation, and creative and innovative persons are lauded in society, innovation and creativity management is unknown in lots of societies and organizations. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen. What is shared in these three duties is concept "money". The revolutions banking is faced during two last decades caused general changes in money type and profit transition system and presented concepts such as electronic money and electronic transfer of sources. These two concepts in fact help building a new type of banking named electronic banking. In electronic banking, electronic delivery channels are used such as internet, telephone, wireless communication and

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ATM's [1]. Electronic banking has unique features with the motto of every one, everywhere, via every media, that's why it's followed by various risks which can increase this type of banking and risk level related to conventional financial services, special / operational/ legal approaches and credit risks. So detection of these kinds of risks and managing theme is necessary on the part of banks [2]. General risks of electronic banking are investigated in terms such as approach risk, reputation risk, operational risk (security and legal risk), credit risk, market risk and monetary risk. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen. Reduction of ethical investments in society causes formation of a convenient condition for extending social relations and with weakening these relations, the conditions required for creativity is going harsher, because there would be no time to think. While lots of organizations and their managers in various groups of society acknowledge the importance of creativity and innovation, and creative and innovative persons are lauded in society, innovation and creativity management is unknown in lots of societies and organizations. To reduce the risks, some approaches are suggested such as assurance, moving economic toward competition and fixing rules in long term spans. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches. The purpose of the current research is to answer the main question; does electronic banking has an impact on liquidity risk in post bank?

2. Theoretical principles and research background

Electronic banking is providing facility to present quick and efficient banking services in branch site and also inter – branch processes and interbank processes and providing hardware and software facilities to clients so that they can carry out their banking requirements not needing to be physically present at banks. E-banking has been around for some time in the form of automatic teller machines and telephone transactions. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen. More recently, it has been transformed by the internet, a delivery channel for banking services that benefits both customers and banks. Access is fast, convenient and available around the clock, whatever the customer's location. In this research, in order to achieve the main purpose of the research, the following hypotheses have been mentioned and tested. The primary hypothesis has been mentioned in the frame of three secondary hypotheses:

H1: electronic banking has an impact on liquidity risk.
H11: electronic banking has an impact on the ratio of cash supply to bank deposits.
H12: electronic banking has an impact on the ratio of facilities to the bank deposits.
H13: electronic banking has an impact on the ratio of long-term facilities to long-term bank deposits.

Sun and Chang in an article "comprehensive analysis of the effects of risk on bank efficiency: cases from emerging Asian countries", partly investigated the relation between operational, credit and bank market risks in Thailand with the efficiency of the branches on the basis of two approaches SFA and DEA and results showed a meaningful relation between risk and efficiency. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen. In addition, banks can provide services more efficiently and at substantially lower costs. Although e banking can provide a number of benefits for customers and new business opportunities for banks, it exacerbates traditional banking risk that is, operational risks, reputational risks, and legal risks, to mention only some of them. Seron et al found that even though considerable work has been done in some banks in adopting e-banking security measures and regulations, continuous vigilance and management will be essential as the scope of e-banking increases. Gonzales found that there is still a need to establish greater harmonization and coordination with the banks' business DEA objectives. The next section summarizes some of the research done in the area of organizational information security approaches [3]. Lee found that although a number of IS security approaches have been developed over the years whose value is evident such as checklists, risk analysis and evaluation methods, they ignore the wider organizational context and take into account the technical issues [4]. However, Khoshsima and Shahikitash found that in terms of information security behavior within organizations, security behavior can be seen as part of the organizational culture and may define how employees see the organization [5]. Similarly, Taherabadi et al. found that organizational culture is a system of learned behavior, which is reflected on the (ATM and POS) level of end-user awareness and can have an effect on the success or failure of the information security process [2]. Jama'at and Asgari found that in the context of information security, behavior can be considered as the perception of organizational norms and values associated with information security and so it exists within the organizations, not in the individual. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches [6]. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen. To this end, this research suggests that an effective communication process through which security messages are embedded and circulated positively among employees, will play an important role

in e-banking security planning and development. In a similar vein, risk communication could accurately be described as a subset of communications science. Though there are numerous definitions for the term communication, in this research, communication itself could be described as the attempt by one or more persons to send and receive messages with a clear object to provide an understanding of the context in which they apply providing an opportunity for some feedback. Risk communication is more complicated and difficult as it might appear. In particular, risk communication becomes difficult not only because the exchange of information among the involved parties is complicated, but also because the risk messages have to be formulated, embedded and circulated within the wider organizational and, more specifically, cultural contexts to which they apply. The evolution of practice in risk communication comes from an understanding that communication is more than just the transfer of knowledge. To this end, Azizi and Ramezanifard found that individuals with different backgrounds or at different levels in the organization may tend to describe the organization in similar way [1]. Abolhasani and Hasanimoghaddam found that security culture is used to describe how members perceive security within the organization [7]. Vazifedoust and Niknejad found that security is part of corporate culture and should be taken into consideration, as well as other elements of corporate culture such as the successful communication of security policies and procedures to the people involved [8]. In recent researches on banks and financial institutes, the focus is generally on electronic banking advantages and its positive effects on gain; but the matter on the effects of e banking on bank risk is neglected in researches. Also, money changed its concept from a tangible one into a more abstract and intangible concept in a way that money can be shown anytime on a computer screen. FallahShamsi and Tehrani (2005) found that as security and risk minimization are embedded into the organizational culture all employees, managers and end-users must be concerned of security issues in their planning, managing and operational activities. The meaningful relation between the proportions of loan takers and credit risk is confirmed using survey tests [9].

3. METHODOLOGY

The present research is operational purpose and in terms of researcher control is based on non experimental correlational-descriptive variables. In this study, the population is composed of all post bank branches of Isfahan during 4 years (from the beginning of 2010 to the end of 2013) due to the limited number of bank branches in this province. So there is no specific sampling and a survey approach is used. To analyze the research hypotheses we use the correlation between variables and regression multi variable equivalents with panel data approach via EVIEWS6 software. The required data from literature is extracted and collected from books and professional Persian and English articles retrieved from internet (library approach). Required data for analyzing the hypotheses are collected from bank reports (annual monetary reports and descriptive notes), post bank websites during 4 years (2010- 2013) and are saved in a data base to calculate the research variables.

4. Data analysis

In this research, in order to determine the impact of electronic banking on the credit risk, firstly the primary hypothesis of the test and then the secondary hypotheses are tested separately. In order to test the research hypotheses, the correlation method between variables and multi-variable regression equations have been used through the panel data method.

4-1. Analysis of the first secondary hypothesis

Initially, by considering the model, sectional and temporal fixed impacts are tested. In combined data, the time and sectional impacts of the data and also their simultaneous impacts have been testes. In the test of all of the research hypotheses, by considering the Chow test statistic about the fixed sectional impacts whose probability is less than 0.05 and about the fixed temporal impacts whose probability is more than 0.05, the model of fixed sectional impacts is more preferable. After doing the Chow test and choosing the model of fixed temporal impacts, in order to select the method of testing data between the two method of fixed impacts and random impacts, the Hausman test has been used. In testing all of the research hypotheses at 95% confidence level, given than the probability associated with the test is less than 0.05, the random impacts method has been rejected and the fixed impacts one has been accepted.

The first secondary hypothesis has been mentioned about reviewing the existence of an impact between electronic banking and the ratio of cash supply on bank deposits and it is tested by using the following model:

$$\text{Deposits}_{it} = \alpha_i + \alpha_1 \text{ATM}_{it} + \alpha_2 \text{ATM}_{it} + \alpha_3 \text{POS}_{it} + \alpha_4 \text{POS}_{it} + \alpha_5 \text{GiftCard}_{it} + \alpha_6 \text{Debit card}_{it} + \varepsilon_{i,t}$$

In which,
ATM = automatic teller machine
POS = sales terminal
GIFTCARD = gift card
DEBITCARD = debit card
And Deposits = the ratio of cash supply to bank deposits. The results associated with the first secondary hypothesis have been provided in table 1.

Table 1. Analysis of the first hypothesis

Moderated determination coefficient	0.402598				
F-Value	13.11012				
Probability (Prob)	0				
Durbin-Watson statistic	1.819518				
Explanatory variable	Coefficient	Standard deviation	T statistic	Probability	Confidence level
Number of POS transactions	-6.44E-05	7.44E-05	-0.86546	0.3898	Meaningless
Number of ATM	-0.0034	0.000921	-3.69108	0.0004	99%
ATM transaction	2.85E-07	2.74E-07	1.04191	0.3011	Meaningless
Number of operational and installed POS machine	1.72E-07	4.81E-07	0.357384	0.7219	Meaningless
Number of gift card	1.72E-06	8.44E-07	2.035192	0.0457	95%
Number of debit card	6.58E-07	4.58E-07	1.435045	0.1558	Meaningless
C intercept	0.042327	0.002023	20.92184	0	99%

Given the f-value and probability associated with it, we can conclude that in 99% confidence level the regression equation is significant. The results associated with the Durbin-Watson statistic (lack of autocorrelation of error sentences) for the model indicates the relative independence of data.

Moderated determination coefficient of the model is indicative that the rate of relativity of the independent variables with dependent variable (ratio of facilities to the deposits). According to table 4-17, moderated determination coefficient of the model is 0.40. Therefore, averagely 40% of the changes of the dependent variable are explained by this model. Given the results of testing the model the probability associated with the *variables, variables of number of ATM and number of gift card have a probability less than 0.01,* thus this variable is significant at the 95% confidence level in the model. But the probability of the variables of *POS* transaction, *ATM* transaction, *number of installed and operational POS machines* and *number of debit card* has a more than 0.05 probability; thus these variables are not significant at 95% confidence level in the model. Thus given the significance of the *variables of number of ATM* and *the number of gift card* in the model, there is a relationship between the criteria of the electronic banking, the number of debit card and gift card and the ratio of cash supply to the deposits. Thus given the results of the model the first hypothesis will be confirmed.

4-2. Analysis of the second secondary hypothesis

This hypothesis has been mentioned about reviewing the existence of an impact between electronic banking and the ratio of facilities on bank deposits and it is tested by using the following model:

$$\text{Term deposits}_{it} = \alpha_i + \alpha_1 \text{ATM}_{it} + \alpha_2 \text{ATM T}_{it} + \alpha_3 \text{POS}_{it} + \alpha_4 \text{POS T}_{it} + \alpha_5 \text{GiftCard}_{it} + \alpha_8 \text{Debit card}_{it} + \varepsilon_{i,t}$$

In which,
ATM = automatic teller machine
POS = sales terminal
GIFTCARD = gift card
DEBITCARD = debit card
And Term deposits = the ratio of facilities to bank deposits. Table 2 shows the results associated with testing the second secondary hypothesis. Given the f-value and probability associated with it, we can conclude that in 99% confidence level the regression equation is significant. The results associated with the Durbin-Watson statistic (lack of autocorrelation of error sentences) for the model indicates the relative independence of data.

Table 1. Analysis of the second hypothesis

Moderated determination coefficient	0.538175				
F-Value	2.680237				
Probability (Prob)	0				
Durbin-Watson statistic	1.941235				
Explanatory variable	Coefficient	Standard deviation	T statistic	Probability	Confidence level
Number of POS transactions	-0.04807	0.021874	-2.1976	0.0313	95%
Number of ATM	-0.46534	0.320105	-1.4537	0.1506	Meaningless
ATM transaction	5.96E-05	0.0001	0.593431	0.5548	Meaningless
Number of operational and installed POS machine	0.000279	0.000121	2.309532	0.0239	95%
Number of gift card	-0.00096	0.000302	-3.15725	0.0024	99%
Number of debit card	4.84E-05	0.00011	0.43943	0.6617	Meaningless
C intercept	7.833577	0.451305	17.35761	0	99%

Moderated determination coefficient of the model is indicative that the rate of relativity of the independent variables with dependent variable (ratio of facilities to the deposits). According to table 2, moderated determination coefficient of the model is *0.54.* Therefore, averagely 54% of the changes of the dependent variable are explained by this model. Given

the results of testing the model the probability associated with the *variables, variables of number of ATM and number of gift card have a probability less than 0.05,* thus this variable is significant at the 95% confidence level in the model. But the probability of the variables of *POS* transaction, *ATM* transaction, *number of installed and operational POS machines* and *number of debit card* has a more than 0.05 probability; thus these variables are not significant at 95% confidence level in the model. Thus given the significance of the *variables of number of POS transaction, number of installed and operational POS machine* and *the number of gift card* in the model, there is a relationship between the criteria of the electronic banking, *number of POS transaction, number of installed and operational POS machine* and *the number of gift card* and the ratio of facilities to the deposits. Thus given the results of the model the second hypothesis will be confirmed.

4-3. Analysis of the third secondary hypothesis
This hypothesis has been mentioned about reviewing the existence of an impact between electronic banking and the ratio of facilities on bank deposits and it is tested by using the following model:

$$\text{Long} - \text{termfacility}_{it} = \alpha_i + \alpha_1 \text{ATM}_{it} + \alpha_2 \text{ATM T}_{it} + \alpha_3 \text{POS}_{it} + \alpha_4 \text{POS T}_{it} + \alpha_5 \text{GiftCard}_{it} + \alpha_6 \text{Debit card}_{i,t} + \varepsilon_{i,t}$$

In which,
ATM = automatic teller machine
POS = sales terminal
GIFTCARD = gift card
DEBITCARD = debit card
And Long – term facility = the ratio of long-term facilities to long-term paid bank deposits. The results associated with testing the third secondary hypothesis can be seen in table 3. Given the f-value and probability associated with it, we can conclude that in 99% confidence level the regression equation is significant. The results associated with the Durbin-Watson statistic (lack of autocorrelation of error sentences) for the model indicates the relative independence of data.

Table 1. Analysis of the third hypothesis

Moderated determination coefficient	0.504736				
F-Value	4.363113				
Probability (Prob)	0				
Durbin-Watson statistic	2.084501				
Explanatory variable	Coefficient	Standard deviation	T statistic	Probability	Confidence level
Number of POS transactions	-0.00172	0.001474	-1.16331	0.2487	Meaningless
Number of ATM	0.047597	0.029284	1.625379	0.1086	Meaningless
ATM transaction	-2.11E-05	7.12E-06	-2.9667	0.0041	99%
Number of operational and installed POS machine	1.80E-05	8.75E-06	2.05498	0.0437	95%
Number of gift card	-5.18E-05	2.51E-05	-2.05829	0.0433	95%
Number of debit card	2.41E-05	8.09E-06	2.977633	0.004	99%
C intercept	0.729682	0.038868	18.77347	0	99%

Moderated determination coefficient of the model is indicative that the rate of relativity of the independent variables with dependent variable (ratio of long-term facilities to the long-term deposits). According to table 26-4, moderated determination coefficient of the model is *0.50*. Therefore, averagely 50% of the changes of the dependent variable are explained by this model. Given the results of testing the model the probability associated with the *variables, variables of number of ATM transaction, the number of debit card and number of installed and operational POS machines and number of gift card have a probability less than 0.05,* thus this variable is significant at the 95% confidence level in the model. But the probability of the variables of *POS* transaction, *ATM* transaction and *the number of ATM* has a more than 0.05 probability; thus these variables are not significant at 95% confidence level in the model. Thus given the significance of the *variables of number of ATM transaction, the number of debit card and number of installed and operational POS machines and number of gift card* in the model, there is a relationship between the criteria of the electronic banking, *number of ATM transaction, number of debit card, the number of installed and operational POS machine* and *the number of gift card* and the ratio of facilities to the deposits. Thus given the results of the model the third hypothesis will be confirmed.

Discussion and conclusion and presentation of recommendations
The first secondary hypothesis was mentioned about reviewing the existence of an impact between electronic banking and the ratio of cash supply on bank deposits. The results showed than among the indicator variables of electronic banking, the number of ATM machines and the number of gift card has respectively a diverse and direct impact on the risk of the ratio of cash supply to the bank deposit. The second secondary hypothesis was mentioned and

tested about the impact of electronic banking variables on the ratio of facilities to the bank deposits. The results showed than among the indicator variables of electronic banking, the number of POS transaction, the number of installed and operational POS machines and the number of gift card have respectively have a diverse, direct and diverse impact on the risk of facilities to bank deposits. The third secondary hypothesis was mentioned about the impact of electronic banking indicator variables on the ratio of long-term facilities to the long-term deposit. The results showed than among the indicator variables of electronic banking, the number of ATM transaction, the number of debit card, the number of installed and operational POS machines and the number of gift card have respectively have a direct, direct, direct and diverse impact on the risk of long-term facilities to long-term bank deposits.

The results show that the number of the installed ATM machines have a negative impact on one of the liquidity variables, also the number of ATM transactions also have a negative impact on another one of the variables of liquidity risk. Thus, it is recommended that the senior managers of the post bank, by considering the impact of ATMs and direction of this impact on the variables of risk in control, have the proper usage and exploitation of the ATM machines. Also the number of installed POS machines has a positive impact on two variables of liquidity risk including the ratio of long-term facilities to the deposits and the ratio of long-term facilities to the long-term deposits; thus it is recommended to the managers of the post bank to use the post bank machines for controlling the considered variables of liquidity risk and exploit these machines to improve the ratio of their consumptions. Also the number of the issued gift cards has various effects on liquidity variables, it is recommended to the managers of post bank to use various effects of these cards in controlling this considered type of risk. For example, the number of gift cars has a positive impact on the ratio of cash supply to the deposits, because these cards lead to the improvement of this ratio by increasing sources' deposition, so we can improve the ratio of liquidity by increasing the issuing of these cards.

REFERENCES

1. Azizi, I and Ramezanifard, M., E banking revolution path in Iran, 2009.

2. Taherabadi, A., Saleh pour, A and Saeid far, N, 2011. Examining the effects on e banking on Mellat bank function, 2003.

3. González, F., Bank regulation and risk-taking incentives: An international comparison of bank risk. Journal of Banking and Finance, 2005. 29, p. 1153- 1184.

4. Lee, E.J., Consumer adoption and diffusion of technological innovativeness: a case of electronic banking technologies, Jinkook Lee, Doctor of Philosophy, University of Tennessee, Knoxville, 2000. P. 142.

5. Khoshsima, R and Shahikitash, M., The effects of credit, operational and monetary risks on the efficiency of Iran banking system, 2012.

6. Jama'at, A and Asgari, F., Credit risk management in banking system, an investigation approach, 2010.

7. Abolhasani, A and Hassani, R., Examination of risk types and management approaches in Iran banking. Islamic economy journal. 2008. (30), p. 145-174.

8. Vazifehdoust, H and Niknejad, R., Assessment on internet banking effects on commitment, trust and attraction of using e bank: case study of Eghtesad e Novin bank, 2007.

9. Fallah, M. and Tehrani, R., Designation and appliance of credit risk model in Iran banking system. Social and human science journal of Shiraz University, 2005. (43).