

An Investigation into Factors Adoption of Electronic Banking Services in Russia

Ragheed Yousef
Faculty of Economics
Hama University

Hama, Syria
ragheed.Y@hama-univ.edu.sy

Abstract—The purpose of this study is to investigate the factors that adopt electronic banking services. A conceptual framework is developed based on the technology acceptance model and several additional factors. After reviewing the literature, the factors that adopt electronic banking services from the point of view of customers of Russian banks were experimentally verified. For this purpose, a multiple regression model was used. The results show that Perceived usefulness, Trust, Perceived ease of use, and Technological Self Efficacy positively affect customers' adoption of electronic banking services in Russia. The researcher recommends the banks focus on the way of providing the service and its design. The electronic services provided should be easy to use and not have complicated procedures, so not all clients have the same level of technical skill. The banks should also be interested in developing the electronic services that they provide and keep abreast of everything new in this field.

Keywords—*electronic banking services, Russian banking customers, perceived usefulness, trust, perceived ease of use, technological self-efficacy*

I. INTRODUCTION

The information and communication technology revolution has led to the expansion of the use of various e-commerce technologies, especially in the banking sector [1]. This led to rapid developments in the banking services industry. Which imposed on banks the immediate response and orientation towards developing their technologies, services and strategies, to be able to face these changes [2]. As the development of electronic commerce and the growth of bank networks and various services have led to the emergence of new forms of banking services such as electronic banking services [1].

In the past years, electronic banking services were considered an important means of developing the banking sector and its importance is increasing in most of the banking markets. Due to its many advantages in cost-saving and expanding the customer base, they provide the opportunity to develop high-efficiency and low-cost services at the same time [3, 4, 5].

Many banks have developed their marketing strategies and the way they deal with their customers after the emergence of electronic banking. This is because the criterion for the success of electronic banking is the customers and the extent of their acceptance of it [6].

According to He, et al. [7], the electronic banking system is expected to fail if customers are not encouraged to use it, and therefore banks must constantly study and address customers' concerns. It is necessary to understand the factors that influence customers' adoption of electronic banking services.

Fliginskih, et al. [8] found that electronic banking services have a negative impact on the financial performance of Russian banks in the short term. Due to the weak customer acceptance of electronic banking services when they were established, this led to a decrease in the financial return of electronic banking services compared to the high cost of establishment. Here, the urgent need to study the factors affecting customers' adoption of electronic banking services, in order to help banks, develop appropriate development strategies according to customers' needs and orientations.

Through the review of previous studies, we find that most studies focus on a single service such as Internet banking [1, 2, 3, 4, 5, 9], or mobile banking [10, 11, 12, 13, 14]. In this study, we will examine the factors affecting the adoption of all electronic banking services. This study has an important comparative advantage, which is that it is the first study in the context of adopting electronic banking services from the point of view of bank clients in Russia.

The article aims to conduct an experimental study to identify the factors affecting the adoption of electronic banking by Russian customers. The technology acceptance model is the basis on which the more comprehensive model proposed by the study is built, after reviewing the results of previous studies and adding the factors that are expected to affect the ability of customers to adopt electronic banking in Russia..

II. THEORETICAL FRAMEWORK

A. Electronic banking services

According to the Basel I Committee, electronic banking services are defined as providing banking services and products of small value through electronic channels [15]. Zhang, et al. [16] defined electronic banking services, which is the ability of the bank to provide remote services to customers that meet their needs for banking services, using modern information methods for the service: personal computer, phone, mobile phone, the Internet, etc. As Fliginskih, et al. [8], they indicated that electronic banking services are the process of providing the bank to its

customers through electronic delivery channels with various services and innovative and traditional banking products, by making use of the latest banking innovations in this field. Thus, the concept of electronic banking services is known in several ways, but most of the definitions state that it is the provision of banking services using electronic means of communication. One of the key conditions for the successful development of banking activities is the policy of continuous innovation [24].

B. Factors affecting the adoption of electronic banking services

There are many studies that focus on some factors affecting the adoption of electronic banking services, such as the factor of trust and perceived risks [4, 12, 13, 17]. Other studies investigated various factors such as the design and ease of use of electronic banking services [3, 10, 16]. Several studies examined factors of Perceived usefulness, ease of use, reliability, and intention to use [1, 14]. Other studies add additional factors to the model of technology adoption as security, desire for change, accessibility, and culture [2, 6, 9, 18].

From our point of view and through a deep study of the banking market in Russia, we find that there are many factors that can affect the decision for customers to adopt electronic banking services, as shown below.

1) Perceived usefulness

The researchers believe that the perceived usefulness is the amount of benefit the user expects when using electronic banking services. as the study of Shareef, et al. [14], showed that the perceived usefulness factor has an impact on the level of customer use of electronic banking services, this result confirmed by Arif, et al. [1] as he showed that perceived usefulness is one of the most influencing factors on increasing the level of use of electronic banking services, and thus more customers' use of those services.

Studies have shown that the user is looking for added value when using electronic banking services, and other studies have shown that users are looking for services that save cost, time, effort and ease of use [2].

2) Trust

Researchers suggest that in the early stages of adopting technological innovations, trust has an important influence on individual customer behavior [12]. Malaquias, et al. [13] emphasize the interdependence of the concept of perceived risk and trust, as it is considered one of the main obstacles to adopting electronic banking services.

Gaining customer trust in electronic banking services is important to the bank, and it is an ongoing process, as trust helps mitigate the perceived risks of adopting electronic banking services [19]. It is likely that customers will continue to use electronic banking services if there is trust in them [20]. Some studies have found that there is an indirect relationship between trust and the adoption of electronic banking services [21], it seems necessary to verify this factor and study its impact on clients' decision to adopt.

3) Technological Self Efficacy

There is a great disparity between users who deal with banks, whether with their traditional or electronic services, including differences in the level of education, differences in age and differences in the extent to which these customers use technology in their daily and practical lives [1], and

therefore there is a disparity in the level of knowledge of customers to use modern technologies, the Internet, and techniques of electronic banking services. Generally [22].

These factors have a great influence to some extent on the percentage of customers' use of electronic banking services, which depends on the type of service used. The skill required to use an automated teller machine differs from the skill required to deal with internet banking or mobile banking and the use of its various services.

4) Perceived Ease of use

Ease of use of electronic banking services refers to the extent of the customers' willingness to use the service so as to make the least effort possible [13]. Customers will see that online banking services are easy to use when they realize that they have the ability to use it in their banking transactions [23]. The researchers believe that the ease of use factor plays an important role in customers' adoption of electronic banking services, and one of the important things here is the design of the service, whether designing the service on the mobile phone or designing the website of the bank that provides the service [25], as the type of information provided by the electronic interface of the service and the language that it expresses. With the contents of the service and its design, it will affect customer satisfaction and thus the shift towards electronic methods of conducting banking transactions.

5) Awareness

The adoption or rejection of innovation begins when the consumer becomes aware of the product [26]. Al-Qahtani [26] stated that consumers will look for and educate those financial products that offer the best value for money. It is imperative that banks educate consumers about the availability of electronic banking services and how they add value to their other products or to their competitors. Where the researchers believe that this requires the bank to provide information about those services it provides on a permanent and continuous basis, whether through the website or mobile phone, or by sending brochures via e-mail to customers and using media channels to introduce customers to these services and how to use them and deal with them [11, 17].

C. Research model and hypotheses

Based on the previous conceptual framework, the following research hypotheses were formulated:

H1: Perceived usefulness has a positive impact on adopting electronic banking services.

H2: Trust has a positive impact on adopting electronic banking services.

H3: Technological Self Efficacy has a positive impact on adopting electronic banking services.

H4: Perceived Ease of use has a positive impact on adopting electronic banking services.

H5: Awareness has a positive impact on adopting electronic banking services.

The model used in this study is illustrated in Figure 1.

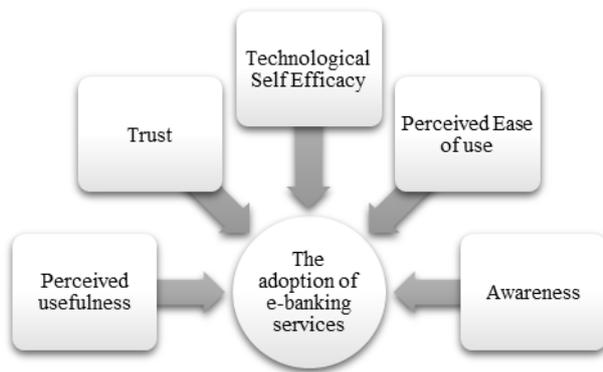


Fig. 1. Research model

III. RESEARCH METHODOLOGY

A. Population and sample

The study population is the clients of banks in Russia. In order to test the hypotheses of the study, a statistical survey method was chosen. In a random sample, the questionnaires were distributed. The total form of the distributed questionnaires was 329, of which 303 were retrieved. The sample was valid for statistical analysis 291 after deleting the incomplete or invalid questionnaires for analysis. Accordingly, the questionnaires valid for statistical analysis accounted for 88.4% of the total number of questionnaires.

B. Measurement development

A questionnaire was designed to measure the impact of several factors on customers' adoption of electronic banking services. The questionnaire was divided into two main parts. The first section dealt with the respondents' demographic information in terms of gender, age, education and income, in addition to information about the extent of using electronic banking services. The second section includes questions to measure the variables of the study, Perceived usefulness, Trust, Technological Self Efficacy, Perceived Ease of use and Awareness. The elements of the questionnaire were developed based on relevant previous studies to ensure the validity of the content. Using the five-dimensional Likert scale, all elements and questions of the second section of the questionnaire were measured.

The reliability coefficient was calculated by applying the Alpha Cronbach factor test to ascertain the reliability of the questionnaire. As shown in Table 1, all the reliability coefficients were higher than the acceptable minimum reliability of social studies questionnaires of 60%.

TABLE I. VALIDITY AND RELIABILITY OF THE STUDY VARIABLES

Variable	Cronbach's alpha
Perceived usefulness	0.78
Trust	0.83
Technological Self Efficacy	0.81
Perceived Ease of use	0.76
Awareness	0.71
e-banking services adoption	0.85

IV. RESULTS AND DISCUSSION

Table 2 shows the demographics of the respondents. The results indicated that 57.3% of the respondents were female, while 43.3% were male. The age group between 26-44 had the highest percentage of respondents, at 42.7%. These results are consistent with the general demographic characteristics of the population in Russia in terms of the

proportion of higher females and a relatively young society. The results also indicated that 45.2% of the respondents have a diploma. Regarding income, the results showed that more than 50% of the respondents had a monthly income ranging from 15 to 50 thousand rubles.

TABLE II. DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Items	N	Percentage (%)	
Gender	Male	126	43.3
	Female	165	56.7
Age	18-25	111	38.1
	26-44	124	42.7
	46-60	44	15.1
	60+	12	4.1
Education	High school or less	56	19.2
	Diploma	131	45.2
	Undergraduate degree	77	26.4
	Postgraduate degree	27	9.2
Monthly income *	Less than 15000 RUB	31	10.6
	15000-30000 RUB	72	24.7
	31000- 50000 RUB	96	32.9
	51000-70000 RUB	50	17.1
	70000 +	42	14.4

Note: (*) RUB (Russian Ruble) USD 1=RUB 75 as of 2020

Before starting the procedure of regression analysis to test the study hypotheses, it was confirmed that there is no high correlation between the independent variables (Multicollinearity) by using the variance inflation factor test (VIF), and the variance allowed test (Tolerance) for each variance of the study variables. Taking into account that the variance inflation coefficient does not exceed the value (10), and the Tolerance test value is greater than (0.05), and it was also ensured that the data were followed by the normal distribution by calculating the skewness coefficient, taking into account that the data follow the normal distribution if the value of the convolution factor was less than (1) as shown in Table 3 below.

TABLE III. VERIFICATION TESTS BEFORE PERFORMING MULTIPLE REGRESSION

Variable	VIF	Tolerance	skewness
Perceived usefulness	2.236	0.442	-0.651
Trust	2.578	0.358	-0.532
Technological Self Efficacy	3.032	0.247	-0.738
Perceived Ease of use	2.921	0.498	-0.459
Awareness	2.084	0.356	-0.371

To test the hypotheses of the study, a multiple regression analysis was performed. Table 4 shows the results of the regression analysis of the study variables. A large and statistically significant F value at 0.01% level indicates the validity of the multiple regression model. The regression analysis also shows that 59% of the electronic banking services adoption variance is explained by Perceived usefulness, Trust, Technological Self Efficacy, and Perceived Ease of use. From table 4 we find that the Perceived usefulness coefficient is positive and statistically significant at a significance level of 0.01%, meaning that the higher the Perceived usefulness, the positive effect on customers'

adoption of electronic banking services. Hence, Hypothesis H1 is supported. This result is consistent with the findings of Santouridis and Kyritsi [3], Alalwan, et al. [2] and Arif, et al. [1].

TABLE IV. REGRESSION RESULTS

Independent variable	β	t-value	Sig. t
Perceived usefulness	0.272	9.723	0.000***
Trust	0.469	3.291	0.000***
Technological Self Efficacy	0.247	2.849	0.014**
Perceived Ease of use	0.131	2.354	0.048**
Awareness	0.090	1.132	0.278
R. squared	0.592		
F. Value	16.567		
Sig. F	0.000***		

According to the results of the regression, The Trust coefficient is positive and has a statistical significance of 0.01%. The Trust coefficient is the most coefficient that explains the variance in the adoption of electronic banking services. Clients are always looking for security in their financial transactions, and the higher trust in security and efficiency of these services has a positive impact in adopting these services. Hence, Hypothesis H2 is supported. This is consistent with the findings of Luo, et al. [19], Lin, et al. [20] and Hanafizadeh, et al. [12]. The Technological Self Efficacy coefficient is positive and has a statistical significance of 0.05%, and this is an expected result. The more technological knowledge, the positive impact on adopting electronic banking services. thus, hypothesis H3 is supported. The results of the regression also showed that the Perceived Ease of use coefficient is positive and statistically significant, thus, hypothesis H4 can be supported. It can be seen that the perceived ease of use is less influential than the Perceived usefulness in the decision to adopt electronic banking services for customers in Russia. The possible explanation for that is that electronic banking services are becoming more common and therefore the difficulty of using electronic services has become less important. This finding is consistent with Al-Smadi [6]. As for the awareness coefficient, the result of the regression showed that there is no effect on awareness of the decision to adopt electronic banking services, therefore Hypothesis H5 is not supported. This can be explained by the fact that customers in Russia have become sufficiently aware of electronic banking services and their features, and the decision to adopt will not be affected by the increased awareness of them. This result differs from Al-Qahtani [27] and [10].

V. CONCLUDING REMARKS

The aim of our research was to determine the factors of adoption of electronic banking services for bank customers in Russia. This supports the banks 'position to know the factors that limit customers' conversion to electronic banking services. In order to achieve this goal was to develop the study model based on previous experimental research's to be reliable and adequate validity. In light of the results of the study, the researcher recommends the importance of diversity in educating customers about the adoption and use of electronic banking services, in addition to providing them with the information and services they need to achieve this. With an emphasis on the need for banks to pay attention to the trust factor, as it is one of the factors that contribute

significantly to the adoption of electronic banking services. The researcher also recommends that the banks focus on the way of providing the service and its design. The electronic services provided should be easy to use and not have complicated procedures, so not all clients have the same level of technical skill. The banks should also be interested in developing the electronic services that they provide and keep abreast of everything new in this field.

REFERENCES

- [1] I. Arif, W. Aslam, and Y. Hwang, "Barriers in adoption of internet banking: A structural equation modeling - Neural network approach," *Technology in Society*, vol. 61, 2020.
- [2] A. A. Alalwan, Y. K. Dwivedi, N. P. Rana, and R. Algharabat, "Examining factors influencing Jordanian customers' intentions and adoption of internet banking: Extending UTAUT2 with risk," *Journal of Retailing and Consumer Services*, vol. 40, pp. 125-138, 2018.
- [3] I. Santouridis and M. Kyritsi, "Investigating the Determinants of Internet Banking Adoption in Greece," *Procedia Economics and Finance*, vol. 9, pp. 501-510, 2014.
- [4] R. Sharma, G. Singh, and S. Sharma, "Modelling internet banking adoption in Fiji: A developing country perspective," *International Journal of Information Management*, vol. 53, 2020.
- [5] V. Wang, H. Nnaji, and J. Jung, "Internet banking in Nigeria: Cyber security breaches, practices and capability," *International Journal of Law, Crime and Justice*, vol. 62, 2020.
- [6] M. O. Al-Smadi, "Factors affecting adoption of electronic banking: An analysis of the perspectives of banks' customers," *International journal of business social science* vol. 3, 2012.
- [7] D. He, C.-Y. Ho, and L. Xu, "Risk and return of online channel adoption in the banking industry," *Pacific-Basin Finance Journal*, vol. 60, 2020.
- [8] T. N. Fliginskii, O. V. Vaganova, L. V. Usatova, N. E. Solovjeva, N. I. Bykanova, and Y. Ragheed, "The impact of e-banking on performance of banks: Evidence from Russia," *Journal of Advanced Research in Dynamical and Control Systems*, vol. 12, pp. 231-239, 2020.
- [9] S. A. Al-Somali, R. Gholami, and B. Clegg, "An investigation into the acceptance of online banking in Saudi Arabia," *Technovation*, vol. 29, pp. 130-141, 2009.
- [10] W. Chaouali, N. Souiden, and R. Ladhari, "Explaining adoption of mobile banking with the theory of trying, general self-confidence, and cynicism," *Journal of Retailing and Consumer Services*, vol. 35, pp. 57-67, 2017.
- [11] H. Hamidi and M. Safareeyeh, "A model to analyze the effect of mobile banking adoption on customer interaction and satisfaction: A case study of m-banking in Iran," *Telematics and Informatics*, vol. 38, pp. 166-181, 2019.
- [12] P. Hanafizadeh, M. Behboudi, A. Abedini Koshksaray, and M. Jalilvand Shirkhani Tabar, "Mobile-banking adoption by Iranian bank clients," *Telematics and Informatics*, vol. 31, pp. 62-78, 2014.
- [13] F. Malaquias, R. Malaquias, and Y. Hwang, "Understanding the determinants of mobile banking adoption: A longitudinal study in Brazil," *Electronic Commerce Research and Applications*, vol. 30, pp. 1-7, 2018.
- [14] M. A. Shareef, A. Baabdullah, S. Dutta, V. Kumar, and Y. K. Dwivedi, "Consumer adoption of mobile banking services: An empirical examination of factors according to adoption stages," *Journal of Retailing and Consumer Services*, vol. 43, pp. 54-67, 2018.
- [15] Basel, "Risk management for electronic banking and electronic money activities," Basel1998 1998.
- [16] Y. Zhang, Q. Weng, and N. Zhu, "The relationships between electronic banking adoption and its antecedents: A meta-analytic study of the role of national culture," *International Journal of Information Management*, vol. 40, pp. 76-87, 2018.
- [17] H. Chemingui, "Resistance, motivations, trust and intention to use mobile financial services," *International Journal of Bank Marketing*, 2013.
- [18] W. A. Alkhowaiter, "Digital payment and banking adoption research in Gulf countries: A systematic literature review," *International Journal of Information Management*, vol. 53, 2020.

- [19] X. Luo, H. Li, J. Zhang, and J. Shim, "Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services," *Decision support systems*, vol. 49, pp. 222-234, 2010.
- [20] J. Lin, B. Wang, N. Wang, and Y. Lu, "Understanding the evolution of consumer trust in mobile commerce: a longitudinal study," *Information Technology and Management*, vol. 15, pp. 37-49, 2014.
- [21] H. Karjaluoto, N. Koenig - Lewis, A. Palmer, and A. Moll, "Predicting young consumers' take up of mobile banking services," *International journal of bank marketing*, 2010.
- [22] S. Laforet and X. Li, "Consumers' attitudes towards online and mobile banking in China," *International journal of bank marketing*, 2005.
- [23] A. Salihu, H. Metin, E. Hajrizi, and M. Ahmeti, "The effect of security and ease of use on reducing the problems/deficiencies of electronic banking services," *IFAC-PapersOnLine*, vol. 52, pp. 159-163, 2019.
- [24] A.V. Seraya, and N.E. Solovjeva, "Prospects for the Development of Modern IT Technologies in the Banking Sector", *Actual Problems of Development of Economic, Financial and Credit Systems : Collection of Materials of the VII International Scientific-Practical Conf.*, Belgorod, 12 Sept. 2019, Belgorod, pp. 169-172, 2019.
- [25] A. Goode, "Biometrics for banking: best practices and barriers to adoption," *Biometric Technology Today*, vol. 2018, pp. 5-7, 2018.
- [26] E. M. Rogers and F. F. Shoemaker, "Communication of Innovations; a cross-cultural approach," 1971.
- [27] M. E. Al-Qahtani, "An investigation of the internet banking (IB) adoption, use, and success in Saudia Arabia (SA)," *University of Hull*, 2014.