Understanding the internet banking adoption factors in the Romanian market

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Abstract. Online banking services create a way to reduce costs, attracting new segments of population and growing the bank performance and improvement of services. Client's satisfaction is the main benefits of the banks. The aim of the paper is to investigate and to analyze the factors that influence the adoption of internet banking system in Romania. One of the problems faced by consumers using Internet banking is confidentiality. This makes security in transactions to be essential. For this, the main objectives are: identifying critical factors that contribute to the acceptance of internet banking system and the link between them and also identifying the demographic factors that influence the adoption of this system in Romania. The data collection was done by a quantitative research using the questionnaire method as a survey tool and it was made up of questions measured using the Likert scale. It contains variables based on the construct's relevance to Internet Banking. All assumptions about the relationship between dependent variables and independent variables are developed and tested using multiple reliability, validity, and regression. It was used a statistical software and with it were analysed 6 independent variables, named social influence, perceived ease of use, perceived usefulness, perceived risk, perceived confidence and intention to use Internet banking. The attitude toward using Internet banking system will be the dependent variable. To verify the acceptability model's validity, it was used the Structural Equations Model. The results are partly supported by the developed hypotheses and are presented after the reliability test where Cronbach's Alpha is calculated suggesting the internal reliability of the consistency for the scale. The significant effect that influences the attitude toward using Internet banking system is represented by the perceived usefulness, the perceived risk, the perceived confidence and the intention to use internet banking.

Keywords: online internet banking, e-banking acceptance research, digital transactions, technology acceptance model, internet banking in Romania.

Introduction

Banks are important links in an economy as they have a significant role in maintaining and encouraging the development of the economic sectors. It is useful to bring to the fore the IT&C technology available today by most banks. In the last few decades, Internet technology has grown more and more, reaching today's entire business environment. On the Internet there are almost all types of activities that are executed daily by employees in bank branches.

Currently the world is witnessing a migration of activities to the online environment, but this does not mean the disappearance of the usual economic activities. The main objective of this study was to find out if there are significant associations in the adoption of internet banking services between users and their friends. Secondly, this second study was also interested in identifying which of the constructs investigated so far are susceptible to such associations.

The paper aims to answer the questions *"What impact does the technology have on banking performance? Is there a real benefit for consumers in terms of using this payment system? What are the critical factors that influence the adoption of the Internet banking payment system?"*

The main advantages of internet banking are the effective reduction of the time for banking transactions, their costs, their easement, and above all, the attraction of new customers leading to a bigger part of a company's business.

Literature review and hypotheses

Internet – Banking Concept

It is important to note that the banks have invested in expanding their investment and lending to the banks. Otherwise, they are aware that they have been forced to deliver their services through a mud called intranet. By the introduction of the Internet in 1969, it was the sole responsibility of the computer and the computer to be a basic principle of communication.

Internet Banking: It is also known as Web Banking, PC-Banking or e-Banking. Easier accessibility to internet facility and availability of computer determine banks to provide its products and services through a new way of delivery, through internet (Georgescu-Golosoiu, 2003). Even if internet banking save time and money, it offers confort and acessibility and it has a positive impact concerning clients satisfaction (Thornton & White, 2001). The use of Internet banking has grown rapidly over the last decade, a long side the Internet. This has led to major changes in the functioning of banks, when the Internet has grown – and the number of services provided by banks (Chechen et al., 2016). The challenges facing today's industry are developing software more recently and faster, while struggling with maintaining security. The success of these new services is not only determined by the bank, but rather than acceptance by users (Oruca & Tatar, 2017). Of the bank's payment system benefit not only the clients, but also the bank itself. Online banking services create a way to reduce costs, attracting new segments of population and growing the bank performance and improvement of services. Client's satisfaction are the main benefits of the banks. Online Banking services create a way to reduce documents and human errors, which minimize disagreements, in addition to reducing commissions (Kiang et al., 2000).

Due to the quick changes in the information technology, banks are faced with specific risks associated with electronic bank and electronic coin activities. At this level, it seems that

operational risk, reputational and legal risks are the most important categories of risks, especially for international banks (Georgescu-Golosoiu, 2003). Online banking services offer a full range of services, including some services that are not offered in the physical branches. The greatest benefit of the online banking services is the fact that it is cheap or even free for customers. This thing allows customers to be more loyal to the electronic bank than the traditional bank customers (Mols, 1998).

Today's customers are demanding much more the online banking services. They are searching for new levels of comfort and flexibility, besides strong and easy-to-use financial management tools and products and services that the traditional retail bank could not offer (Birch & Young, 1997).

Technology Acceptance Model

The Technology Acceptance Model was proposed by Fred D. Davis in 1986 in his doctoral thesis, an adaptation of TRA (Theory of reasoned action). The model was developed to explain the use of new technologies by adopting a causal relationship between beliefs, perceptions, attitudes, intentions and behavior. The major constructs in Davis's TAM are perceived usefulness ("the degree to which a person believes that using a particular system leads to increased performance of his activities in an organizational context") and ease of use (the "degree that the use of a particular system is effortless") (Davis, 1989).

Even if TAM Model was introduced for the first time in 1989, it is still widely used. In spite of all this, many studies state that TAM is inadequate to explain users' decisions to adopt technology, so they use TAM as the basic model and extended the model by adding more variables by sucking the innovation theory, depending on the types studied technologies (Jeyaraj et al., 2006).

At present, the most important models of technology acceptance (TAMs) are models developed by Venkatesh et al. (2003), based on the Unified Theory of Technology Acceptance and Use (Venkatesh et al., 2003) and by Lowry et al. (2012), The Hedonic Motivation Model of Systems Adoption (Lowry et al., 2012). Both models have been updated to the latest versions in 2010 and both incorporate most of the relevant theories in the industry. Also, both models attempt to explain and predict the intention of users to accept, and ultimately, to use technology systems, ie technology acceptance (TA).

Regarding internet banking, older segments are even more attentive than usual, which, according to Nerme, Stenström, Darefelt and Søylen (2013), is due to the fact that it is new and unfamiliar. Thus, it is important for banks to study how quickly different segments adopt new technologies and innovations. These findings indicate that different segments need different information and targeting needs to be customized for each segment to ensure efficiency (Nerme et al., 2013).

The main difference between the two models is at the level of fundamental assumptions. For example, the unified theory of acceptance and use of technologies (UTAUT) is representative of so-called utility models, which stipulate that the main influential factor in the adoption of technologies is the utility of the system or their value related to productivity. Furthermore, from a historical perspective, the study of technology acceptance has started from investigative approaches to the adoption of production systems, such as systems used in logistics, accounting, etc. Lee, Tsai and Lanting (2011) made a comparison between TAM and consumer adoption of online banking services and found a correlation.

Their study confirmed that if users perceive Internet banking as useful and easy to use, they are more likely to use the service (Lee et al., 2011). Accepting this model offers more benefits, the most important being the creation of a global tool that measures the different perceptions in the adoption of Internet-based technologies (Yee-Loong Chong et al., 2010). As Hartwick & Barki found, even when users perceive the use of the system as organizational, intentions of use vary because some users are not willing to observe such mandates (Hartwick & Barki, 1994).

Hypothesis 1: *Social influence is positively correlated with the intention to use online banking services*

Hypothesis 2: *Perceived ease of use of Internet Banking is positively correlated with perceived usefulness and attitude towards using system*

Hypothesis 3: *The perceived usefulness of the Internet is positively correlated with attitude towards using the system and with intention to use*

Hypothesis 4: *Attitude towards using the system positively influences the intention to use online banking services*

Hypothesis 5: *The intention to use is positively correlated with the perceived usefulness of the Internet Banking system*

Hypothesis 6: *The perceived confidence will positively influence the attitude towards using the system*

Hypothesis 7: *Perceived risk has a negative impact on attitudes towards using online banking services (Yee-Loong Chong et al., 2010)*

Methodology

The methodological part presents an individual model for the construction of the individual decision in the financial-banking field, which is tested on a sample of respondents over the age of 18. The data collection was done in almost five months, using the questionnaire method, which had 25 questions, and at the end of the session to complete the questionnaire, a total of 150 respondents were registered.

For the dissemination of the measurement tool, a web-based questionnaire developed using Google Forms was used. The link to the final questionnaire was disseminated to respondents via online social networks, such as Facebook/Linkedin, and by email. The first participants were students from the Faculty of Entrepreneurship, Engineering and Business Management. Subsequently, students were asked to disseminate the questionnaire link to their knowledge / friends and their families if they wanted to do so.

The construction of the questionnaire was conducted in such a way that the statements validated by other studies conducted internationally, but adapted to the economic and social environment in Romania, could result in the financial experience, the

influence of the behavioral factors, the confidence in their own decisions and the confidence of the Romanian individuals in the banks. For this, questions were grouped on these chapters, but randomly placed in the questionnaire.

The questionnaire is a list of statements of various forms that are written in order to collect information relative to a subject. The drafting of the questionnaire is a difficult issue, especially in the case of market studies, because there is no single formulation to produce a very good questionnaire. The Polling Tool contains variables based on the relevance of the construct to Internet Banking (Table 1). From this theory results a set of hypotheses that was expressed in the research. It was measured each construct to maintain the instrument's responsibility and used the Likert scale of points that ranged from "Total Disagreement" to "Total Agreement" as variants of response. Scoring scales typically ask the respondent to select the answer from a series of statements or verbal numbers. Variables that use verbal instructions include semantic differential scales and Likert scale (Dawes, 2008). Likert's scale, also called a summed scale, although it is only an orderly scale, is widely used in marketing research. This scale assumes the use of a set of affirmative or unfavorable statements about the object or phenomenon investigated. For the other questions, were used two other types of scales, namely the Proportional Scale and the Dichotomic Scale.

Table 1. The variables used for the construction of the questionnaire

Factor	Variable	Question	Item
Social Influence	SI1	Q4	People around me who use Internet banking have more prestige than those who do not use this system.
	SI2	Q5	The people around me who use this system have a higher status.
Perceived Ease of Use	PEU1	Q6	Interaction with the Internet banking system requires mental effort.
	PEU2	Q7	I appreciate the application being easy to use for what I want to do.
	PEU3	Q8	I think Internet Banking is flexible to interact with.
	PEU4	Q9	I think Internet Banking is easy to use.
	PEU5	Q10	I find it easy to get what I need from the Internet Banking system.
The Perceived Usefulness	PU1	Q11	Using Internet Banking can make it easier for you to perform tasks faster.
	PU2	Q12	Using Internet Banking can facilitate my tasks.
	PU3	Q13	Using the Internet Banking system can help you consult and / or make bank transactions.
	PU4	Q14	Using the mobile app has increased my effectiveness in advising and / or performing my bank transactions.
	PU5	Q15	I think Internet Banking is useful in my work.
Attitude towards Using System	AU1	Q16	I like to use the Internet Banking system.
	AU2	Q17	Using the mobile app for queries and / or banking is an effective method.
Intention to Use	IU1	Q18	I try to use Internet Banking in as many cases / occasions as possible.
	IU2	Q19	I intend to continue using Internet Banking in the future.
	IU3	Q20	Assuming you have access to the mobile app, you plan to use it.
Perceived Confidence	PC1	Q21	I think the internet banking system will maintain the terms and commitments assumed in relation to the mobile application.

Factor	Variable	Question	Item
Perceived Risk	PC2	Q22	I think the mobile internet banking application is reliable.
	PC3	Q23	Generally, I trust the internet banking application.
	PR1	Q24	Others might know about my online transactions if I use this app.
	PR2	Q25	There is a significant risk when making banking transactions through the mobile internet banking application.
	PR3	Q26	I think doing queries and / or bank transactions with this app is a risky choice.

Source: (Gardner&Amoroso, 2004), (Lee, 2009) and (Lai&Li, 2005)

Results and discussions

This study uses several regressions and correlation analyzes using the statistical program IBM SPSS Statistics. The reason for using the multiple regression tests is to investigate the relationship between independent variables and dependent variables. There are 6 independent variables, namely social influence, perceived ease of use, perceived usefulness, perceived risk, perceived confidence and intention to use internet banking services. The attitude towards using the internet banking system will be the dependent variable. However, correlation analysis was performed to examine the relationship between the variables. The value of the correlation coefficient (r) is between 0.10 and 0.29, a variable considered to be mild, from 0.30 to 0.49 a variable considered to be average and from 0.50 to 1.0 a variable considered strong. The results of the research are presented after the reliability test if Cronbach's Alpha is calculated suggesting the internal reliability of the consistency for the scale with this sample. The predictive capacity of these variables, all facets of adoption behavior was measured using multiple regressions.

The demographic profile (shown in Table 2) shows a population quite young and well educated, 82.5% of respondents were under the age of forty years, while 62.0% of them have at least university. The majority of respondents are female, which is 65.3%, while men are the other respondents (34.7%).

Table 2. Demographic profile of respondents

	Attributes	Frequency	Percentage (%)
Gender	Male	52	34.7
	Female	98	65.3
Age	21-30 years	133	53.3
	31-40 years	10	29.2
	41-50 years	7	14.2
	51-60 years	0	3.3
Level of education	University studies	93	62.0
	Postgraduate studies	41	27.3
	Other	16	10.7

Source: Authors' own research

On the reliability test, the Cronbach Alpha values were calculated to evaluate the internal reliability of scale consistency. According to Table 3, the value of the correlation coefficient for the 18 variables structured in 7 factors in this study ranged from 0.232 to 0.502. The Cronbach Alpha coefficient is used to study the internal consistency of the items in a questionnaire, or it can be used as a method to reduce items. In this case, the Cronbach

Alpha value is 0.744, indicating an acceptable value for good. Furthermore, it indicates a high degree of internal consistency with regard to the specific sample.

Through the test of validity, it was improved Alpha coefficient. It was reduced the analysis of the 23 variables to an analysis of 18 variables, removing 5 of them by analyzing the correlation coefficient. Performing these operations, I obtained a value of 0.744 for the Alpha coefficient (seen in Table 4). Given that some of the correlated values of the elements are not very low (>200), their removal from the general questionnaire will not be considered.

The graph is useful for determining the number of factors to be retained (see Figure 1). The point of interest is where the curve begins to flatten. It can be seen this aspect between factors 8 and 9, and because of this fact, seven (7) factors are selected to rotate.

Figure 1. Determination of the number of factors to be retained

Source: Authors' own research.

Table 3. Validity test -Correlation coefficient factors

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation		Cronbach's Alpha if Item Deleted
Social Influence					
SI1	96.4333	148.180	.335		.733
SI2	96.3333	145.512	.412		.724
Perceived Ease of Use					
PEU1	95.4067	161.438	.266		.738
PEU2	95.5800	162.030	.254		.739
PEU3	95.7267	160.119	.280		.737
Perceived Usefulness					
PU1	96.0333	155.147	.256		.740
PU2	96.3467	154.470	.232		.743
PU3	95.7533	154.724	.427		.727
Attitude towards Using System					
AU1	95.5400	159.391	.327		.734
AU2	95.6267	161.027	.240		.739

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation		Cronbach's Alpha if Item Deleted
Intention to Use					
IU1	95.5400	153.700	.376		.729
IU2	95.4467	160.128	.343		.734
Perceived Confidence					
PC1	96.0867	157.247	.239		.740
PC2	95.5133	161.325	.324		.735
PC3	95.7000	161.366	.271		.738
Perceived Risk					
PR1	97.4000	149.074	.310		.736
PR2	97.7467	138.003	.490		.715
PR3	98.1600	137.142	.502		.713

Source: Authors' own research.

Table 4. Reliability statistics - Cronbach Alpha

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.744	.764	18

Source: Authors' own research.

Finally, the Rotated Components Matrix (see Table 5) shows the factor loads for each variable. I went over each row and highlighted the factor that each variable loaded strongly. Based on these factors loads, the factors are: Factor 1 - Attitude towards using system, Factor 2 - Perceived Ease of Use, Factor 3 - Perceived Risk, Factor 4 - Perceived Usefulness, Factor 5 - Social Influence, Factor 6 - Intention to Use and Factor 7 - Perceived Confidence. **Table 5. Rotated Components Matrix**

	Factors						
	1	2	3	4	5	6	7
Social Influence							
SI1					.877		
SI2					.788		
Perceived Ease of Use							
PEU1		.894					
PEU2		.902					
PEU3		.881					
Perceived Usefulness							
PU1				.921			
PU2				.895			
PU3				.745			
Attitude towards Using System							
AU1	.888						
AU2	.827						
Intention to Use							
IU1						.609	
IU2						.827	
Perceived Confidence							
PC1							.711

	Factors						
	1	2	3	4	5	6	7
PC2							.365
PC3							.861
Perceived Risk							
PR1			.843				
PR2			.899				
PR3			.868				
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 7 iterations.							

Source: Authors' own research.

Using the Multiple Regression Test, Table 6 shows a significant pattern of regression between Social Influence, Perceived Ease of Use, Perceived Use, Intention to Use, Perceived Confidence and Perceived Risk. As we can see, the power of each predictive variable, suggesting the dominance of the largest ones, is the scale of intent to use ($t = 7.368$), the perceived usefulness scale ($t = 2.082$), the scale of perceived confidence ($t = .955$) and perceived risk scale ($t = -1.143$). The value of the R^2 effect value identifies the portion of the variation represented by the independent variables, so about 62% of the Attitude towards Using the System is represented by Social Influence, Perceived Ease of Use, Perceived Usefulness, Intention to Use, Perceived Confidence and Perceived Risk. To verify the validity of the model, it was used the Structural Equations Model using the IBM SPSS AMOS program (see Figure 2). The verification of the hypotheses studied is presented in Table 7.

Figure 2. The TAM model on the acceptance of the Internet-Banking system

Source: Authors' own research.

Table 6. Multiple regression tests

	Attitude towards Using System		Significance	
Variables	B	β	t	Sig (p)
Constant	1.454		1.766	.080
Social Influence	-.023	-.038	-.495	.622
Perceived Ease of Use	-.050	-.038	-.550	.583
Perceived Usefulness	.127	.154	2.082	.039
Intention to Use	.664	.547	7.368	.000
Perceived Confidence	.096	.077	.995	.321
Perceived Risk	-.044	-.079	-1.143	.255
R ² = .619 (61.9 %)				

Source: Authors' own research.

Table 7. Verifying the hypotheses studied

Hypothesis	Coefficient β	Error	Validation / Invalidation of Hypothesis
H1: Social influence is positively correlated with the intention to use online banking services	.025	.182	VALIDATE
H2: Perceived ease of use of Internet Banking is positively correlated with perceived usefulness and attitude towards using system	-.014 -.015	.110 .054	INVALIDATE
H3: The perceived usefulness of the Internet is positively correlated with attitude towards the use of the system and with intention to use	.172	.046	VALIDATE
H4: Attitude towards using system positively influence the intention to use online banking services	.655	.054	VALIDATE
H5: The intention to use is positively correlated with the perceived usefulness of Internet Banking	.582	.136	VALIDATE
H6: The perceived confidence will positively influence the attitude towards using the system	.101	.064	VALIDATE
H7: Perceived risk has a negative impact on attitude towards using the internet banking system	-.116	.028	VALIDATE

Source: Authors' own research.

Following the completion of the study, the following hypotheses were validated: **H1:** *Social influence is positively correlated with the intention to use online banking services*, **H3:** *The perceived usefulness of the Internet is positively correlated with attitude towards the use of the system and with intention to use*, **H4:** *Attitude towards use positively influence the intention to use online banking services*, **H5:** *The intention to use is positively correlated with the perceived usefulness of Internet Banking*, **H6:** *The perceived confidence will positively influence the attitude towards using the system* and **H7:** *Perceived risk has a negative impact on attitude towards using the internet banking system*.

H2: *Perceived ease of use of internet banking is positively corresponding to attitude to using the system was not validated*. The young generation is much more intelligent when compared to the elderly generation and their attitude to adopt the online bank. Generally, when it is found that a system is easy to use, users will intend to use the system. This factor is defined as the extent to which the use of Internet banking by customers is perceived as mild or effortless. Although the current young generation is more intelligent and more open to new technologies, they also have a certain degree of skepticism about electronic banking transactions due to the associated risks. Analyzing the result, the ease of perceived use does not have a significant negative influence, which is to some extent demonstrated by the above. It can be said that not all people are useful in this way, but prefer to move to a bank's branch for safety.

Conclusion

The study on the implementation of the Internet - Banking payment system was based on the analysis of the factors of the Technology Acceptance Model (TAM), using the SPSS statistical program. The need for this research was essentially connected to extremely rapid impact of the technology on human life and increasing the digital bank's interactions and their role in human life.

This model is based on the analysis of constructs, their fundamental theory, and the relationships between these constructs that are related to Internet Banking applications. This tool, which includes all original TAM constructions (including attitudes towards use), can now be used to investigate how consumers adopt and accept applications based on Internet Banking. The development process has also helped to clarify and refine definitions used by a variety of researchers using the technology acceptance model.

Each construct was measured to maintain the instrument's responsibility and was used the seven-point Likert scale ranging from "Total Disagreement" to "Total Agreement" as variants of response. To measure the existing tools, I chose the appropriate items, reviewed the elements, and made a development process. The tool includes TAM constructions and additional variables that can be used to investigate how consumers are adopting Internet Banking applications.

The significant effect that influences the attitude in the use of on-line banking services is the perceived usefulness, perceived risk, the perceived confidence and the intention to use internet banking services. If this service grows as high as possible, then these services can be deployed with the final customer choice. The measure of Internet quality is reflected by the degree of usability of the online system. For individuals, the Internet banking system is based on payment cards, which have a high security system, and legal entities use Internet banking based on transactions in accounts. This is an exploratory research and it was done to identify the adoption rate of internet banking systems. The research is relevant to understand the sample respondents' experience but is not representative for the population that is using internet banking solutions. It doesn't specifically address the types of devices used (for example, mobile vs. desktop), and can be a key element in the adoption of these banking solutions. The variables obtained from the questions in the questionnaire represent the stated perception of the respondents, not necessarily what they think, being a problem frequently encountered. Research could not include analysis before using the application and after the user uses it, to see if there is a cognitive dissonance phenomenon.

In addition, this topic has never been studied in Romania nor the topic of internet banking adoption, despite its importance and timeliness, nor the models of technology acceptance have been investigated so deeply and thoroughly in the Romanian socio-cultural context. Studies of electronic payment systems adoption were realized in many developed and western countries. Thus, this study has tried to investigate factors that can influence the acceptance of online banking services by costumers in Romania.

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