A Study of Mobile Banking Adoption among University Students Using an Extended TAM

Irene Govender

Walter Sihlali

University of KwaZulu-Natal
E-mail: govenderi4@ukzn.ac.za

Abstract

The increased use of mobile technology makes mobile banking services more engaging to explore among students who are becoming more technically knowledgeable. The aim of this paper is to investigate the factors that influence the adoption of mobile banking (m-banking) services by students. A quantitative approach was followed making use of questionnaires for the collection of data. The theoretical framework for this study was based on an extension of Technology Acceptance Model (TAM) – TAM for mobile services to explore the factors that influence IT students' adoption of m-banking. The constructs of TAM for mobile services used were Perceived Ease of Use (PEOU), Perceived Value (PV), Trust (T), Intention to Use (IU), Perceived Ease of adoption (PEOA) and Usage Behaviour (UB). Using multiple regression analysis, the results suggest that overall, the independent variables, trust, perceived value, perceived ease of use and social influence may account for 42% of the explanatory power for the dependent variable, intention to use m-banking. In addition, the results have shown some strong predictors (perceived value and trust) that influence students' intention to use m-banking, suggesting that IT students do indeed consider adopting m-banking. The students also have some form of trust as shown by their continued usage of m-banking facilities. Attitudes of students towards m-banking are positive which motivates them to adopt or continue using m-banking. The paper provides an understanding about the dynamics between the factors that influence students to adopt mobile banking.

Keywords: mobile banking, TAM, IT students

1. Introduction

Recent developments in Internet connectivity have led to a renewed interest in Internet banking among specific groups of working individuals. Moreover, with the rapid development of mobile and smart phones, Internet banking has become more conducive to many more individuals, since they can carry out their banking transactions anywhere and anytime via mobile banking (Lee & Chung, 2009). Mobile-banking (commonly referred to as M-banking), an extension of Internet banking, provides time independence, convenience, prompt response to customers and cost savings. These benefits serve as an opportunity for banks to increase consumer market through mobile services. Furthermore, mobile technologies, such as smart phones, PDAs, cell phones, and iPads have not only become ubiquitous, but also trendy among young adults. It would serve m-banking service providers well to understand what influences the intention to use or adopt m-banking innovations particularly among young adults who are likely to be future adopters and users of m-banking – a worthwhile service to generate revenue from m-banking investments (Munongo & Chitungo, 2013).

According to Yu (2013) despite the numerous perceived benefits for customers the actual usage of m-banking has not increased at a rate as initially anticipated. They further state that one of the main reasons for m-banking not being widely accepted, is the lack of trust in m-banking services. While there are 5 billion mobile users globally, only 200 million make use of m-banking services (Jeong & Yoon, 2013). Even in developed countries such as Sweden, USA and the UK, the ratio of mobile banking users and mobile phone users is low. Many people who reside in remote rural locations, where only some computers are connected to the Internet, may welcome the services offered by mobile banking as opposed to the limitation of Internet banking. Service providers are making investments into the m-banking infrastructure for effective provision of m-banking services to the low-income market in developing economies.

In this study we explore factors influencing the adoption of mobile banking by university students – a population that is most favourably placed in the adoption of innovations and technology.

The study is guided by the following research questions:
1.   What are the factors that influence students to adopt m-banking?
2.   What is the relative impact of each of the independent variables on the intention to use m- banking?

3.   How do these factors influence students?

2. Literature Review – Mobile Banking

While the use of branch-based retail banking is still very popular, banks have other ways of providing customers with financial management services and one of them is m-banking (Rammile & Nel, 2012). However, with all the benefits of m-banking, adoption is still low in youth markets and among other customers in general (Rammile & Nel, 2012). Hence it is necessary to investigate factors that lead to customers adopting or rejecting m-banking services. Although prior studies on m-banking adoption have provided background information on the adoption behaviour with regard to m-banking, studies that focus on the factors that influence students and youth markets to adopt m-banking services are limited. Understanding such factors will play a critical role in reducing the challenges associated with the use of m-banking.

Risk and privacy issues have been identified as major contributing factors for the slow uptake of mobile banking (Dupas *et al.*, 2012). However, Rammile and Nell (2012) revealed that students do not consider m-banking to be prone to risk. Students and youth in general are most likely to be familiar with the use of mobile technology hence perceptions of risk associated with m-banking maybe reduced. Risk and privacy are related to trust in the banking industry – which is especially important when banks are trying to increase their customer base and improve their services by introducing technological innovations(Dupas *et al.* (2012). Dupas *et al.* (2012) further suggests that most people are unaware of alternate possible banking options, as opposed to standard Internet banking using desktops and face-to-face banking. In a study that set out to determine the barriers to m-banking, Gross, Hogarth, Schmeiser (2012) found that consumers' current banking needs were satisfied without them having to change to m-banking. This finding concurs with what Monitise (2012) found – the greatest barrier to the adoption and use of m-banking are that many customers prefer Internet and traditional retail banking because they perceive their current banking needs to be satisfactory without having to expand their view of banking, and to a lesser extent consumers' perceived security concerns.

According to Lin (2011) customers who enjoy using wireless networks in their day-to-day activities even if it is not related to m-banking transactions are more likely to consider adopting m-banking because it suits their technology-driven lifestyle. Lin (2011) further suggests that m-banking providers need to ensure that their m-banking applications are compatible with the lifestyle and preferences of their target markets.

Yang (2009) found that the adoption of m-banking among Tawain university students is strongly influenced by the speed of transaction and low service fees. He further determined that m-banking was perceived to be less secured compared to retail banking. A more recent study by Bankole *et al.* (2011) suggests that m-banking adoption in Nigeria was influenced greatly by cultural background and values. It is of paramount importance that we consider issues related to trust in our study because of the diversity of population groups in South Africa. This diversity of population is further expanded by what Riquelme and Rios (2010) found in their study – male and female students do not perceive ease of use and perceived usefulness of m-banking in the same way.

According to Akturan & Tezcan (2012) attitudes of students towards adopting m-banking is the most important factor that influences them to adopt m-banking. Moreover, they discovered that these attitudes are affected by the perceived benefits of using m-banking, risks associated with performance, and social factors.

Dass and Pal's (2009) study, unlike other studies of similar context, state that customers are not ready for such technologies because of the lack of awareness from banking power houses. According to Amin (2007), it is imperative to create confidence about systems such as the Internet and m-banking among potential users by providing them with sufficient information about the systems and its benefits. He further states that electronic banking providers should provide sufficient training and support for users to continue embracing the technology.

In another major study, Luo, Zhang and Shim (2010) revealed that customers perceive the cost of the technology to be very high. This perception may be due to the lack of awareness about m-banking. In their study, Dass and Pal (2009) found that factors such as "demand for banking and financial services" and "hardship faced in existing channels… long distance to access retail bank offices", had a significant impact on whether students who are prospective customers will adopt m-banking services or not.

The study conducted by Gimun, Bongsik and Lee (2009) among university students suggest that potential users of m-banking are strongly motivated by their attitudes towards the technology. According to Luo, Zhang and Shim (2010) customers who use m-banking generally have some form of education, are among the youth market and perceive mobile applications to be easy to use as compared to other segments of the population. This claim emphasises the need for further investigation into the factors that influence university students in considering adopting and using m-banking as they are more familiar with the use of technology, particularly mobile phones. Gross, Hogarth and Schmieser (2012) found that only about 5% of people between the age of 18 and 24 years do not own a mobile phone, making m-banking

adoption among this group potentially the highest.

According to Monitise (2012) an increase in the use of smart phones will lead to an increase in the adoption of m-banking by most customers in the next few years . Therefore I believe that tertiary students in general are potential prospective users of m-banking services. According to Monitise (2012) most users of online banking are relatively young and possess an understanding of the use of computers and more importantly the Internet. These characteristics are typical of Information Systems students hence sooner or later they are likely to be customers of m-banking business, that is if they have not already adopted the technology. Not many studies have focussed on undergraduate students' adoption of m-banking. Monitise (2012) identifies the primary users of m-banking are aged between 25 and 34 years old, who generally place great value on the efficient use of time. Their experience in using a number of mobile applications gives them confidence regarding the security issues of m-banking.

Clark (2012) found that there are three key ingredients that are likely to accelerate the success of m-banking in Africa. Firstly, there is a wide uptake of cell phones by all categories of the society. Secondly, there is an incredible amount of people without bank accounts and many people that do have accounts do not use them for various reasons, and lastly, a large population in Africa live in rural communities where there is limited or no banking infrastructure (Clark 2012).

In order to understand and further investigate the intention to adopt m-banking within the context of this South African University, a theoretical framework, based on a modified Technology adoption model, is used to underpin this research. The next section explains the framework.

3. Theoretical Framework

The TAM model has been used since the 1980s in research focused on uncovering the intentions of users in adopting and using new technologies (Lule, Omwansa & Waema, 2012). According to TAM perceived usefulness (PU) and perceived ease of use (PEOU) are the most important factors in determining whether the users adopt and whether they actually use the new technology being proposed (Davis 1989). PU is the degree to which an individual believes that using a certain technology will improve his or her performance. Moreover PEOU is defined as a measure to which an individual believes that using a particular technology will be free of effort (Davis 1989).

According to Kazi and Mannan (2013) TAM for mobile services is an extension of the original TAM which was proposed by Davis (1989); TAM for mobile services include additional constructs such as trust (T) , intention to use (I), perceived ease of adoption(PEOA), taking into use (TU), and usage behaviour(UB). Perceived ease of use (**PEOU**) is included in the original TAM; it is also part of the extended model. Kaasinen (2005) redefines the construct perceived usefulness (PU) as perceived value (PV) to the consumer.

Furthermore to move from intention to use to actual usage the user has to take the particular mobile service and put it to use. This movement is strongly influenced by the construct PEOA. The constructs, T, PV, SI and PEOA are expanded further below.

Trust **(T)** in mobile services refers to perceived reliability of the system and the service provider. Issues of risk and privacy are items that affect the construct trust in the system. Furthermore the user's confidence in his/her ability to use the service also influences their trust in the service (Kaasinen 2005).

Perceived value **(PV)** the modified construct of perceived usefulness from the original TAM (Davis, 1989) is defined as the belief that using the new mobile services will provide measurable value to the user (Kaasinen 2005). It is believed that PU does not embrace the full extent of motivation to accommodate mobile services (Kaasinen 2005).

Social influence (**SI**) is another construct that we believe could influence students to consider using m-banking. Most students are amenable to technological innovations and tend to be influenced by their peers regarding the use of phones with the numerous apps that are available on their phones.

Perceived ease of adoption **(PEOA)** is related to actual adoption and usage of m-banking. PEOA is added to the model when there is a need to move from intention to use the system to actual usage of the system. According to Kaasinen (2005), user characteristics and environmental standings affect how the user perceives the adoption of a mobile service. The extension of the Technology Acceptance Model was used to ground the study in Information Systems (Davis, 1989). The independent variables for the study include cell phone use, computer competency and knowledge of mobile banking, gender and race. The dependent variable for the study is the intention to use m-banking services technology.

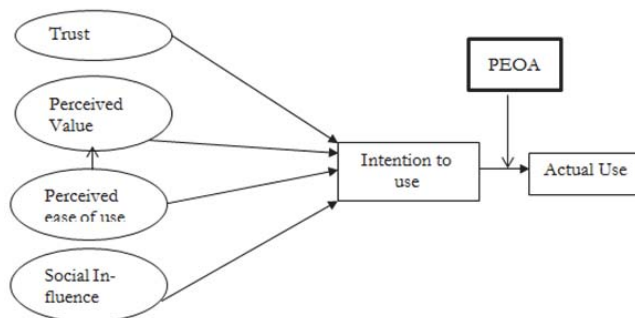Figure 1 below indicates the framework used in this study.

Figure 1: Technology Acceptance Model for Mobile Services as an extension and modification of TAM by Davis (1989)

4. Research Design

4.1 Population and sampling

The target population for this study was the university students. The study was conducted using a non-probability and convenience sampling method due to its convenience and economy of time and finance (Ary, Jacobs & Razavich, 2009). The sample was taken from final year information systems students. These participants were considered to be appropriate because they are most likely to be comfortable with the use of mobile technology and use the technology for activities such as gaming and GPR functionality in addition to simple communication. Furthermore, all participants have been exposed to the use of the Internet for at least two years. These students represent the population of interest as the potential prospective users of m-banking.

For the current academic year (2012), the school of information system and technology (IST) at the university had registered 95 students for their final year. According to Sekaran (2003), for a population of 95, the corresponding minimum sample size is 71. Hence a sample size of 71 IST students participated in the survey.

4.2 Data collection and capture

Questionnaires were used to capture the necessary data for the study. The questionnaire comprised sections A and B. Section A elicited demographic information such as age group, gender, race and computer/mobile phone knowledge, and Section B was designed based on previously validated questionnaires for the different constructs, using a 5-point Likert-type scale. The statements were modified to match the context of this study related to m-banking. Data from questionnaires was captured into Microsoft excel and imported into SPSS software for statistical analysis. For data consistency and completeness when students omitted some specific parts of the questionnaire, we found it appropriate to remove those questions from the analysis but retained responses from other questions. Reliability test was conducted to measure the accuracy of data.

5. Findings and Analysis

5.1 Reliability Test

According to Ary, Jacobs and Razavieh (2002) reliability tests are conducted to measure internal consistency of data and to test if the instrument used to collect the data and the data collected are reliable. The method that we adopted for checking internal data consistency is coefficient alpha, or Cronbach's alpha which is appropriate for instruments such as the 5 point Likert scale(Ary, Jacobs & Razavieh, 2002). We obtained 0.735 alpha score which indicate that the scale used has high internal consistency (reliability).

5.2 Demographic Analysis

The following table contain the demographics of the participants.

Table 1: Demographic information on subjects

Variable	Classification	Frequency	Percentage
Age	18-20	6	8.5
	21-24	56	78.9
	25 and above	9	12.7
Race	African	59	83.1
	Indian	12	16.9
Gender	Male	47	66.2
	Female	24	33.8
Computer/Mobile Knowledge	No understanding	3	4.2
	Average	23	32.4
	Good	21	29.6
	Excellent	24	33.8

In this study there was no significant difference in the variables gender and age regarding students' perceptions or acceptance of the use of m-banking systems. The majority of the participants (78.9%) were in the age group of 21-24. As far as the variable gender, is concerned, 60% of males and 50% of females indicated they would be inclined to use m-banking. However, the female participants constituted only half of the entire sample. Most students in both genders are equally exposed to all forms of digital media in the context of their specialisation and their perceived competency of computer/mobile knowledge was well over average for the majority of the participants. As far as race was concerned the majority (83%) of the participants were African. These demographic variables were not considered further in this study, as they did not contribute to the results in the analysis.

5.3 Analysis of the independent constructs

Table 2: One-Sample Statistics – Trust

	N	Mean	Std. Deviation	Std. Error Mean
I do Not Trust Using Phone For Banking	71	3.11	1.293	.153
I have serious Doubts About Banking Transaction Performed Using a Phone	71	3.41	1.141	.135
I am Afraid of The Inherent Fraud and Hacking Associated With M-banking	71	2.72	1.233	.146
I am Worried Other People May Access My account When using M-banking	71	2.87	1.218	.145
It is Risky To Store Banking Info On A mobile Device	71	3.48	1.186	.136

The scores for the items of trust were reverse coded. These items implied a negative attitude towards using mobile banking, but they were coded in this table in an opposite (positive) direction to facilitate response comparison across items and constructs.

Table 2 above reflects the perceived level of trust in m-banking among UKZN students, suggesting that students have some level of trust in using m-banking – the trust level mean is three (3) for most trust items, which indicate that students do not have any concerns regarding risks and privacy issues about using a phone to perform banking transactions one way or the other. It can be inferred that students do trust m-banking to some extent or they had not experienced issues with using m-banking or they do not perceive it to be risk prone. In addition students seem to have serious doubts about banking transactions performed using a mobile phone. This finding is contradictory to Rammile and Nell's (2012) findings, suggesting that students do consider m-banking to be prone to risk. However, their study was based on the general population of students, not just IT students. I believe this study provides a deeper understanding since it focuses on students who are more knowledgeable about risks associated with mobile technologies.

One can infer that there is sufficient evidence to suggest that students are not concerned that other people may access information when they are using m-banking and are not afraid of inherent fraud and hacking associated with m-banking. This is contradictory to Yang's (2009) claim that m-banking is perceived to be less secured compared to retail banking by students in Taiwan university. Again, his study was based on an entire population of students, not just students with the background in IT. IT students do not perceive m-banking to be less secure compared to retail banking.

Table 3: One-Sample Statistics – Perceived Value

	N	Mean	Std. Deviation	Std. Error Mean
I must Find M-banking Useful In My life	71	3.97	.971	.115
Using M-banking Must Improve My banking performance	71	3.86	1.073	.127
A mobile Phone Would Be Useful To Me For Banking	71	3.93	.976	.116
M-banking Is convenient Because I don't Have To Go to A branch	71	4.20	.980	.116
I can Avoid Long Queues At the Banks	71	4.38	.868	.103
M-banking Will Give Me Greater Control Over My Banking Transactions	71	3.31	1.237	.147

The results in table 3 indicate that students believe that for them to adopt or continue using m-banking, it must have value to them. For all items used to measure perceived value, a mean greater than 3 was captured, clearly indicating that students will adopt m-banking if it improves their banking performance, and enhances their banking needs. What is clearly a huge positive impact for m-banking, is the inconvenience of travelling to a bank or branch, and the avoidance of long queues, with both mean values of 4.20 and 4.38 respectively. Most of the respondents do believe that m-banking is valuable and it will give them greater control over their banking transactions.

Table 4: One-Sample Statistics –Perceived ease of use

	N	Mean	Std. Deviation	Std. Error Mean
I believe It Would Be Easy To Get A phone To Do M-banking	71	3.80	1.116	.132
It Would Be Easy For me To Remember How To Conduct Banking ON A Phone	71	3.92	.952	.113
Conducting Transactions On a Phone Would Be Easy To Do	71	3.79	.984	.117
I think Interaction with M-banking Does Not Require A lot of Mental Effort	71	3.80	.935	.111
M-banking Must Allow Me to Use Varied languages	71	3.93	.990	.118

The results in table 4 indicate that IT students at UKZN believe that it would be easy to use the phone to conduct m-banking transactions and to remember how to conduct m-banking. Furthermore they believe that using m-banking will not require a lot of mental effort and it allows for the use of varied languages. The means for all the above items are greater than 3 suggesting that most IT students generally perceive m-banking to be relatively easy. This finding concurs with Gimun, Bongsik and Lee's (2009) study which revealed that m-banking adoption by potential future users is strongly motivated by their attitudes towards the technology.

Table 5: One-Sample Statistics – Social Influence

	N	Mean	Std. Deviation	Std. Error Mean
Adopting mobile banking would make me prestigious among my peers	71	3.056	1.04	.132
It is trendy to use m-banking	71	3.242	1.17	.140
My friends and or family use m-banking	71	3.143	1.03	.135

A mean score 3.147 indicates that social influence is not as important as the other constructs in influencing students to use m-banking, unlike Yu's (2012) findings. This seemingly contradictory result suggests that initially social influence may be an important influence, but this changes as participants become more technically adept with technology and part of their daily life.

In order to determine to what extent each of the constructs contribute to the dependent variable, intention to use or continue using m-banking, we performed multiple regression analysis.

Hierarchical multiple regression was used to assess the ability of three control measures (Perceived ease of Use, Perceived Value, and Social Influence) to predict m-banking adoption intention (IU) after controlling for the influence of Trust (table 2). Trust was entered at step 1, explaining 16.8 per cent of the variance in intention to use mobile banking. After entry of the Perceived ease of Use, Perceived Value, and Social Influence at step 2 the total variance explained by the model as a whole was 45.9 %, $F(4, 66) = 13.991$, $p<0.00$ (table 6 below).

The control measures explained an additional 29% of variance in intention to adopt mobile banking (r squared change = 0.29, F = change (4, 66) = 11.84, p<0.001).

Table 6: Model Summary[c]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.409[a]	.168	.156	.874505891635689	.168	13.894	1[a]	69	.000
2	.677[b]	.459	.426	.720957649703795	.291	11.840	3[b]	66	.000

a. Predictors: (Constant), Trust
b. Predictors: (Constant), Trust, PV, SI, PEOU
c. Dependent Variable: IU

Table 7: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.230	.414		5.381	.000
	Trust	.475	.128	.409	3.728	.000
2	(Constant)	-.247	.558		-.443	.659
	Trust	.325	.115	.280	2.831	.006
	PEOU	.064	.143	.054	.444	.659
	PV	.499	.157	.381	3.170	.002
	SI	.232	.091	.253	2.553	.013

The independent variables are positively correlated with the dependent variable – trust, perceived value, perceived ease of use and social influence, are positively associated with the intention to use m-banking. The significant independent variables are shown in table 7. From the four independent (predictor) variables considered together, it appears only that perceived value and trust matter in contributing to the overall positive influence in using m-banking. Both these predictors have an absolute t-test value of greater than one (large) and their corresponding p-values are very small (less than 0.05).

In the final model, only two control measures was statistically significant, with the perceived value recording a higher beta value (beta = 0.381, $p< 0.01$) than the Trust recording a beta value (beta = .280, $p<0.01$). In this case perceived value made a unique, and statistically significant, contribution to the prediction of the dependent variable, intention to adopt mobile banking.

There seems to be a willingness from the students to adopt or continue using m-banking in the future, this is not in-line with the fact that other alternative banking methods such as retail banking and internet banking are becoming a barrier to the usage of m-banking. While the results indicate that the current adoption rate of m-banking among IT students at UKZN is (57.7%), students are willing to adopt or continue using m-banking services in the future. Overall, there is a clear majority of IT students who adopt or continue using m-banking services in the future. The results support the initial motivation for considering IT students as key potential future users of m-banking because of their technology driven lifestyle. The results of this study confirms the claim made by Lin (2011) that customers who enjoy using wireless networks in their day-to-day activities are likely to adopt m-banking because it suits their technology driven lifestyle . We also note from the results above that, students at the university do not believe that using m-banking will make them prestigious or trendy among their peers.

6. Conclusion

The study provides an understanding of the factors that influence students' intention to adopt m-banking, by extending TAM to TAM for mobile services which incorporate additional constructs such as PV, PEOA, and T.

The results further show that perceived ease of use has a positive influence on perceived value and on the intentions of users to adopt or continue using m-banking services.

The adoption of m-banking among IT students is 57.7% - suggesting that customers who enjoy using wireless networks in their activities will consider adopting m-banking because it suits their technology driven lifestyle as claimed by Lin (2011).

The resulting data gathered proved useful in showing that while many factors independently, positively affected their intention to use m-banking, together they have less impact. It was found using regression analysis that the main two

predictors – perceived value and trust- significantly impacted one's behavioural intention (to use m-banking). While trust as a whole was positive, the risk of fraud and hacking as well as privacy issues was of concern to the participants.

Other factors such as gender, age and race do not seem to be significant in the decision of students to adopt or continue using m-banking. The attitude of students towards m-banking is one of the factors that motivate them to adopt or reject it. IT students have a positive attitude towards m-banking. This supports the suggestions made by Akturan & Tezcan (2012) that the attitude of students towards the adoption of m-banking is the most important influencing factor in their decision to adopt this form of banking service. The study provides valuable insights for m-banking providers in terms of identifying the factors that influence students (who may be the prospective user of m-banking) to adopt m-banking. In particular, m-banking service providers need to enhance authentication mechanisms to avert fraudulent activity and allay fears of privacy issues in order that Trust may be increased and hence m-banking adoption rates increase.

7. Potential Limitations of the Study

This study has some potential limitations. Firstly, the study was conducted among university students who are familiar with the use of technology. This does not represent the full population of students or youth market who are potential m-banking adopters. Prospective research on young people (and even those that are not in the university) will be of greater validity, and a wider investigation of the findings should be evaluated. The youth market of students are majorly familiar with technological innovations hence it is easier for them to adopt m-banking. This limitation can be tackled by extending future studies to non-technological students and other youth markets – providing further factors that influence young adults to adopt m-banking. Another potential limitation of the study is that only the quantitative approach was followed. To improve the validity of the findings future researchers may employ both qualitative and quantitative research approaches.

References

Akturan, U. & Tezcan, N. (2012). Mobile Banking Adoption of the Youth Market: Perceptions and Intentions. *Marketing Intelligence and Planning*, 30(4), 444-459.

Amin, H. (2007). Internet BankingAdoption Among Young Intellectuals. *Journal of Internet Banking and Commerce*, 12(3), 1-13.

Ary, D., Jacobs, L. C., & Razavieh (2002). *Introduction to Research in Education*. USA, Belmont Thomson Learning.

Bankole, F. O., Bankole, O. O., Brown, I. (2011). Mobile Banking Adoption in Nigeria. The Electronic Journal of Information Systems in Developing Countries (*EJISDC*), 47(2), 1- 23.

Clark, V. (2012). Africa sprints ahead with mobile banking. Retrieved from http://www.bizcommunity.com/Article/410/78/70701.html.

Dass, R. & Pal, S. (2011). Exploring The Factors Affecting The Adoption Of Mobile Financial Services Among The Rural Under-Banked. European Conference on Information Systems, *ECIS 2011 Proceedings*, paper 246.

Davis, F. (1989). Perceived Usefulness, Persived Ease to User, and User Acceptance of Inormation Technology. *Management Information Systems Research Center, University of Minnesota* 13(3), 319-340.

Dupas, P., Green, S., Keats, A., & Robinson, J. (2012). Challenges in Banking The Rural Poor:Evidence from Kenya's Western Province. National Bureau of Economic Research

Gimun, K., BongSik, S., & Lee, H.G. (2009). Understanding dynamics between initial trust and usage intentions of mobile banking. *Information Systems Journal*, 19(3), 283-311.

Gross, M. B., Hogarth, J.M., & Schmeiser, M.D. (2012). Consumers and Mobile Financial Services. Retrieved from http://www.federalreserve.gov/econresdata/mobile-devices/2012-preface.htm

Riquelme, H.E., Rios, R.E. (2010). The moderating effect of gender in the adoption of mobile banking. *International Journal of Bank Marketing*. 28(5), 328-341.

Jeong, B.-K., & Yoon, T. E. (2013). An Empirical Investigation on Consumer Acceptance of Mobile Banking Services. *Business and Management Research, 2*(1), 31-40.

Kazi, A. K., & Mannan, M. A. (2013). Factors affecting adoption of mobile banking in Pakistan: Empirical Evidence. *International Journal of Research in Business and Social Science, 2*(3), 54-61.

Kaasinen, E. (2005). User acceptance of mobile services value, ease of use, trust and ease of adoption. V*TT Publications 566*, 1-222.

Lee, K.C. & Chung, N. (2009). Understanding factors affecting trust in and satisfaction with mobile banking in Korea: A modified DeLone and McLean's model perspective. *Interacting with Computers*, 21(5-6), 385-392.

Lin, H.-F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. *International Journal of Information Management*, 31(3), 252-260.

Lule, I., Omwansa, T. K., & Waema, T. M. (2012). Application of Technology Acceptance Model (TAM) in MBanking Adoption in Kenya. *International Journal of Computing and ICT Research*, 6(1), 31-43.

Luo, X., Li, H., Zhang, J., & Shim, J.P. (2010). Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services. *Decision Support System*, 49(2), 222-234.

Jeong, B.-K., & Yoon, T. E. (2013). An Empirical Investigation on Consumer Acceptance of Mobile Banking Services. *Business and*

Management Research, 2(1), 31-40.

Monitise. (2012). *Emerging Trends in Mobile Banking.* Retrieved from Future Foundation: http://www.monitise.com/upload/assets /docs/money-on-the-move/chapter 4

Munongo,S & Chitungo,S.K. (2013). Extending the Technology Adoption Model to Mobile Banking Adoption in Rural Zimbawbe. *Journal of Business Administration and Education,* 3(1): 51-79.

Rammile, N. & Nel, J. (2012). Understanding resistance to cell phone banking adoption through the application of the technology acceptance model (TAM). *African Journal of Business Management*, 6(1), 86-97.

Sekaran U, Bougie R 2010. *Research Methods for Business* (5th ed.). East Lothian, Great Britain: Scotprint.

Yang, A. S. (2009). Exploring Adoption Difficulties in Mobile Bakning Services. *Canadain Journal of Adminstrative Science*, 1(26), 136-149.

Yu, CS. (2012). Factors Affecting Individuals to Adopt Mobile Banking: Empirical Evidence from the UTAUT Model. *Journal of Electronic Commerce Research*, 13(2), 104-121.