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Factors Influencing Mobile Banking Acceptance: A Study that Focus on Nigerian Students in Malaysia

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Abstract:
This paper aims to examine the factors that affect the acceptance of Mobile banking in Nigeria. Perceived usefulness, perceived ease of use, trust, and compatibility was examined to determine if they are factors affecting Mobile banking acceptance. A questionnaire was distributed to 400 respondents with 318 usable after data screening. Convenience sampling was utilized in the study and the study was conducted in Malaysia but the respondents are Nigerians only as the study is on Nigerian mobile banking. Statistical Package for Social Science and SmartPLS were employed for demographic data analysis and structural equation modeling respectively. The results showed that perceived ease of use, perceived usefulness, trust and compatibility are all significant. In future research, the model of this study can be applied to other aspects of e-commerce such as e-ticketing system and mobile shopping. Future research can also use the model to study the acceptance of Mobile banking in other cultural settings. The results allow banks' decision makers to build up strategies that can boost the acceptance of Mobile banking. Banks should also create features which are useful to users and make sure users are aware of these features. The findings vividly explain the factors that can influence the acceptance of Mobile banking in Nigeria.

Keywords: *Mobile banking, technology acceptance model, innovation diffusion theory, banks*

1. Introduction

In the past, banks have profited from utilizing distinctive service channels to reach their customers. Beginning from retail banking, services were offered through phone, automated teller machines (ATMs) and as of late by means through internet. Internet banking includes people utilizing the internet to get to their accounts to carry out banking activities. It is normally achieved either through a stationary PC or a laptop (Sathye, 1999). As an inseparable unit with the ascent of cell phones and tablets, mobile banking (MB) represents the next stride of financial organizations towards giving new services to clients and seizing innovative opportunities in terms of new business framework (Riquelme & Rios, 2010). To begin with, mobile banking must be set in a more extensive setting of online business (Rilling, 2015). It is clarified by (Zwass, 1996) as "sharing business information, maintaining business relationships and conducting business transaction by means of telecommunications networks" (p. 3). With regards to e-commerce, electronic transactions and internet banking, additionally called online banking, somewhat allude to a similar subject.

Contrasted with internet banking, mobile banking symbolize an expansion with its significant distinction in the gadgets used to conduct banking transactions. It is accessed with portable devices (e.g. cell phones or tablets) that are connected with the web via mobile data transmission or Wi-Fi hotspots (Zhou, Lu, & Wang, 2010). Georgi & Pinkl (2005) allude to mobile banking as the arrangement and use of an extensive variety of financial services, including financial data, accounting, as well as brokerage through portable devices. Mobile banking can be conducted through applications and mobile sites, where more often than not clients don't bear coordinate costs (Al-jabri & Sohail, 2012). Experts agree that portable web represents a principle development opportunity for banks and financial institutions (Deutsche Bank, 2012).

In spite of the previous moves, banks don't appear to profit as much from mobile banking regarding huge cost savings as from the relocation of conventional banking to online banking (Laukkanen, Sinkkonen, Kivijärvi, & Laukkanen, 2007). Stating that at first sight banks could not have solid motivations to propel MB, researchers contend that the future advancement of MB is profoundly reliant on the customer viewpoint (Koenig-Lewis, Palmer, & Moll, 2010; N Mallat, Rossi, & Tuunainen, 2004).

1.1. Problem Statement

From banks' perspective, technology, including e-banking is essential in six areas: enhancing profit pool, operational effectiveness, customer management, distribution and reach, product invention as well as efficient payment and settlement (Kamakodi, 2008). Consequently, it is imperative for banks to obtain the most beneficial attributes that technology presents to make it possible for them to accomplish their corporate and business objectives. This could be the reason behind the vast investment in information and communication technology by banks in Nigeria over the past decade. Presently, the entire banks in Nigeria have switched from

manual to automated systems by utilizing e-banking and e-payment platforms (Adesina & Ayo, 2010). However, irrespective of the substantial switch that has occurred within the Nigerian banking sector, customers still choose carrying cash and follow a long queue instead of completely accepting internet banking services (Aghaunor & Fotoh 2006). Although online banking has attained prominence in Nigeria, customers' behaviour and trust for the system is still low and requires to be changed (Adesina & Ayo, 2010). Lallmahamood (2007) stated that more than one third of those who have attempted using internet banking services tend not to become active users. Furthermore, from customers perspective Ezeoha (2006) asserted that the acceptance of internet banking especially mobile banking had been tremendously slow in Nigeria when compared with developed countries, a considerable number of African countries as well as other developing countries. In view of the foregoing, this study aims to examine the factors that influence the acceptance of mobile banking in Nigeria.

1.2. Research Objectives

The following are the research objectives of the study:

1. To investigate the relationship between perceived ease of use and mobile banking acceptance.
2. To find out whether perceived usefulness leads to mobile banking acceptance.
3. To explore the relationship between compatibility and mobile banking acceptance.
4. To examine the relationship between trust and mobile banking acceptance.

2. Literature Review and Hypotheses

Previous studies on understanding individuals' acceptance of mobile banking mainly relies on considering mobile banking as a technological innovation. The Technology Acceptance Model (TAM) and Innovation Diffusion Theory (IDT) could be considered as some of the popular theories that have attempted to explore factors that affects an individual to adopt an innovation or a new technology.

2.1. Technology Acceptance Model

Technology Acceptance Model (TAM), introduced by Davis (1989), is described as an adaptation of the Theory of Reasoned Action (TRA) specifically suited for modeling user acceptance of information systems. The main objective of TAM is to offer an explanation of the factors or determinants of information system acceptance that is general, which can be able to describe user behaviour over a wide range of end-user computing technologies and also user populations, whilst at the same time being equally economical and theoretically validated. Essentially one would prefer a model that is supportive not only for prediction but additionally for clarification, to ensure that researchers as well as enthusiasts will be able to determine reasons why a particular system might be unacceptable, and focus on apt corrective measures. A crucial objective of TAM, therefore, is to provide a foundation for tracing the effect of external factors on internal beliefs, attitudes, as well as intentions. TAM posits that two specific beliefs, perceived usefulness (PU) and perceived ease of use (PEOU) are the main specifications for computer acceptance behavior (Davis, 1989).

2.2. Innovation Diffusion Theory

Diffusion of Innovations introduced by Everett M. Rogers (1962) seeks to elucidate how innovations are usually taken up within a population. An innovation is described as an idea, behaviour, or object which is viewed as new by its potential users (Robinson, 2009). Researchers in the area of innovation diffusion have stated that literature in the field is going through pro-change bias i.e. the assumption that every innovation is an enhancement or upgrade on the current technology and should be adopted and used (Ram & Sheth, 1989).

The innovation diffusion theory (IDT) might be viewed as one of the first theories that try to investigate the factors influencing individuals to adopt a new technology or an innovation. The theory proposes five main beliefs that affect the adoption and acceptance of any innovation and they are: relative advantage, compatibility, complexity, observability and trialability (Hernandez, Mazzon, Mazzon, & Mazzon, 2007).

2.3. Perceived Usefulness

Davis (1989) defined Perceived Usefulness as "the degree to which a person believes that using a particular system would enhance his job performance" (p. 320). Shankar, Urban, & Sultan, (2002) state the similarities between Perceived Usefulness and Relative Advantage (IDT) and additionally Performance Expectancy. In mobile banking, it alludes to the accepted relative advantage contrasted with substitutes of MB, like branches, telebanking, ATMs or internet banking (Zhou et al., 2010). Customers would not have any desire to accept extra costs like learning and exchanging costs if MB did not offer prevalent performance (Zhou et al., 2010). Perhaps more essentially, just if the belief of mobile banking's usefulness is affirmed amid nonstop utilization, customers will bear on to utilize mobile banking benefits over time (Lin, 2011b). Perceived Usefulness is especially salient among the different facilitators that may encourage the selection of mobile banking (Cruz, Neto, Muñoz-Gallego, & Laukkanen, 2010; Koenig-Lewis et al., 2010; Kuisma, Laukkanen, & Hiltunen, 2007; Lin, 2011a; Wessels & Drennan, 2010). Past literature looks at the primary advantages that mobile technologies can offer compared to conventional banking channels. (1) Immediacy, (2) ubiquity, (3) limitation, (4) instant connectivity network, and (5) proactive usefulness are normally determined (Buse 2002; Tiwari and Buse 2007; Kemper and Wolf 2002). Instantaneousness and Ubiquity portray that services become accessible at any place and time and make explicit opportunities for time critical transactions (e.g. securities exchange transactions, blocking credit/debit card). In this, a quick and stable internet connection is a fundamental precondition for boundless acceptance of mobile banking (Kemper & Wolf, 2002; Tiwari & Buse, 2007).

Localization using GPS innovation offers new opportunities to decide the user's area and along these lines to tailor offers and correspondence better to client needs. As needs be, mobile banking enable banks to offer improved services (Tiwari & Buse, 2007). Rusu & Shen (2012) conducted a study on 183 bank users on e-banking acceptance in the United Arab Emirates and have found out that perceived ease of use is significant in accepting e-banking services. Safeena et al. (2011) in their research about Internet banking adoption in India found out that Perceived Usefulness and Perceive Ease of Use clearly have a positive effect on the use of online banking. Similarly, Hoang (2015) found that perceived ease of use significantly affects customer acceptance of internet banking in his study of the adoption of personal internet banking in Vietnam.
Due to the discussion above, the following hypothesis was developed:

- H1: There is a positive relationship between perceived usefulness and mobile banking acceptance.

2.4. Perceived Ease of Use

Perceived Ease of Use was initially presented by Davis' (1989) article introducing the TAM. He characterizes it as "how much a man trusts that utilizing a specific system would be free of effort" (p. 320). Rogers (2010) portrays the inverse "complexity" (p. 250) as intellectual effort in learning and utilizing another innovation. Many authors recognize the similarities between Perceived Ease of Use (TAM), Complexity (MPCU), and Effort Expectancy (F. Davis, Bagozzi, & Warshaw, 1989; Plouffe, Hulland, & Vandenbosch, 2001; Venkatesh & Davis, 2000).
Al-Jabri & Sohail (2012) explained that less customers will adopt/accept a new innovation that requires more mental struggle and is tedious or disappointing. A lot of empirical studies demonstrates the hindering impact of multifaceted nature on the user's aim to accept mobile technologies (Au & Kauffman, 2008; Niina Mallat, 2007; Ondrus & Pigneur, 2006). Moreover, research demonstrates that Perceived Ease of Use is a profoundly noteworthy element of mobile banking acceptance (Amin, Hamid, Lada, & Anis, 2008). In any case, different authors, for instance (Zhou et al., 2010) couldn't demonstrate a relationship between mobile banking acceptance and Effort Expectancy. Rather, Lee, Hsieh, & Hsu, (2011) depicts that Perceived Ease of Use have similarities with Perceived Usefulness. In spite of the equivocal outcomes from research, Shaikh & Karjaluoto, (2014) review shows a larger part of adoption/acceptance studies that apply Perceived Ease of Use (Chitungo & Munongo, 2013; Hanafizadeh, Behboudi, Abedini Koshksaray, & Jalilvand Shirkhani Tabar, 2014; Lin, 2011a; Sánchez-fernández, Luque-martı, & Sa, 2013; Zhou et al., 2010). Furthermore, in this study perceived ease of use is chosen due to its prominence in the technology acceptance and behavioral marketing field. Due to the discussion above, the following hypothesis was developed:

- H2: There is a positive relationship between Perceived ease of use and Mobile banking acceptance.

2.5. Compatibility

Compatibility is defined as the level to which a service is perceived as consistent with users' existing values, beliefs, habits and present and previous experiences (Chen, 2008). Compatibility is an imperative feature of innovation as conformance with user's lifestyle can propel a rapid rate of adoption (Rogers, 2003). Several studies have described that compatibility is a significant antecedent in determining users' attitude towards internet banking adoption (Ndubisi & Sinti, 2006). Compatibility has further been found to be influential in the adoption of virtual store (Chen et al. 2004), mobile payment (Chen 2008), as well as mobile banking (Koenig-Lewis et al., 2010; Lin, 2011a). Al-Gahtani, (2003) in his research found that compatibility had significant relationship with computer adoption and use in Saudi Arabia. Consequently, it is also likely that the relationship between compatibility and adoption will hold in the context of mobile banking. Equally, in terms of the needs of the potential adopters, the more the technology is seen as an expeditious tool for giving customers better opportunity to manage their multiple accounts (Tan & Teo, 2000), the more it is expected that individuals who may have many financial accounts and who subscribe to many banking services will be more attracted to adopting it. In view of the discussion above, the following hypothesis was developed:

- H3: Compatibility has a positive relationship with mobile banking acceptance.

2.6. Trust

Internet Banking transactions and activities comprise very sensitive information about customers (Gefen, 2000; Morgan & Hunt, 1994). People fear sharing sensitive information like financial details online, because of security issues and distrust of service providers (Suh & Han, 2002). The establishment of Trust and reliability plays an important role particularly when providing financial services (Barry, Palmer, & Bejou, 1994). Developing Trust (Cognitive Based Trust & Disposition Based Trust) prior to experience have a significant influence on customer intention towards internet banking acceptance. The issue of Trust is much more vital in the Online Banking environment than in the offline-banking environment (Ratnasingham, 1998). Trust as an idea gives the better ranking to others before experience and is extremely important right from the initial levels of a relationship. Reichheld & Schefter (2000) asserted that this feeling is essential when tinkering with new online customers.
In the case of online banking, a type of technology acceptance, Kim & Prabhakar (2004) avows that even though there exist one trustor (that is, the online banker), there exist two other trustees (that is, the Internet for being banking channel, and the banking institution offering the online banking services). A chain is often as strong and powerful as its weakest connection, and thus trust in both trustees has to be present for internet banking to thrive. Customer trust, acceptance, and use of internet banking technologies are quite possibly also based on the characteristics of the individual customer and of the particular technology used. For instance, trust and acceptance seemed to be as a result of a customer's socioeconomic along with demographic characteristics (e.g., income, age), views of particular technologies (for example TAM's perceived ease of use), as well as personal preferences (e.g., need to have control over

whenever a bill is paid) (Kolodinsky, Hogarth, & Hilgert, 2004) . Due to the discussion above, the following hypothesis was developed:

- H4: There is a positive relationship between trust and mobile banking acceptance.

2.7. Research Framework

A framework was developed in this study as a result of conceptualization from previous literature. The framework is shown in Figure 1 below:

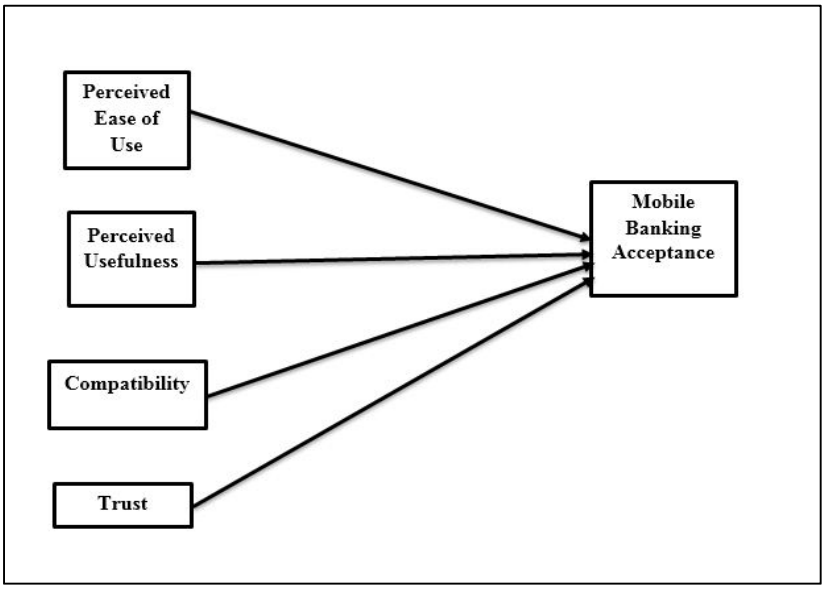

Figure 1: Research Framework

3. Research Method and Design

3.1. Data Collection

This paper is aimed to examine the factors affecting or influencing mobile banking acceptance. A self-administered questionnaire was utilized to target a convenient sample from both undergraduate and postgraduate Nigerian students in several Universities in Malaysia. With regard to mobile banking acceptance, student sample is appropriate since several studies have affirmed that a typical internet banking user is a relatively young and educated user (Cruz et al., 2010). A total 400 questionnaires were distributed. Out of the questionnaires distributed, 355 were returned giving a high response rate of 88%. Additionally, it is imperative to note that only three hundred and eighteen (318) collected questionnaires representing (**79.5%**) were valid and usable after data screening.

In general, there was an amazing response to the questionnaire survey. However, twenty-two (22) questionnaires with below five (5%) missing values as advised by (Graham, 2009) and Karen (2013) were retained and included in the final analysis after missing values were replaced using Expectation Maximization (EM). Based on Sliva (2011), Expectation Maximization technique is probably the greatest tips to address missing data. Therefore EM technique was applied to deal with missing value. Listwise Deletion is the major technique for dealing with omitted data in the majority number of statistical software packages. However, it was belittled because of biases (Karen & Khalil, 2013). It merely means not including from the evaluation any instances with data omitted from any variables included in the analysis.

3.2. Measures and Instruments

The survey instruments comprised of seven sections of demographic survey, scale of perceived ease of use, perceived usefulness, trust, compatibility and acceptance of Mobile banking. Most of the survey instruments were adopted from previous studies except the demographic survey. Perceived ease of use and Perceived usefulness were adopted from Chong et al. (2010), trust adopted from (Nguyen, Nguyen, & Singh, 2014), compatibility adopted from Al-Jabri & Sohail (2012), and Mobile banking acceptance adopted from Wu et al. (2014). The demographic survey includes the respondent's Age, Religion, Gender, Education level, Tribe and Type of bank account.

4. Data Analysis and Research Findings

This section provides analysis of the obtained responses. The researchers deployed several softwares to authenticate the obtained responses through data screening, to analyze the data for this study. The researchers used Statistical Package for the Social Sciences (SPSS v23) to analyze the descriptive statistics, normality, and also to remove outliers. On the other hand, the study used Partial Least Structural Equation Modeling (SEM) for the complete data analysis using SmartPLS software version 3.2.4 (Ringle, Christian, Wende, Sven, Becker & Jan-Michael. 2016).

4.1. Demographic Profile of the Respondents

The breakdown of the descriptive statistics of the respondent's demographic profile is depicted in the table 1 below:

Variable	Item	Frequency	Percentage
Gender	Male	239	75.2%
	Female	79	24.8%
Age	21-25	47	15.6%
	26-30	164	51.7%
	31-35	52	16.4%
	36-40	30	9.3%
	41-45	25	7.9%
Religion	Islam	273	85.8%
	Christianity	45	14.2%
Education Level	Degree	210	66.0%
	Masters	83	26.1%
	PhD	25	7.86%
Tribe	Hausa	232	73.1%
	Yoruba	32	10.2%
	Igbo	9	2.7%
	Others	45	14.0%
Type of Bank Account	Savings	257	80.7%
	Current	53	16.7%
	Both	8	2.5%

Table 1: Demographic Profile of respondents

4.2. Internal Consistency Reliability

Internal consistency reliability is defined as a type of reliability used to "judge the consistency of results across items on the same test. It determines whether the items measuring a construct are similar in their scores (i.e., if the correlations between the items are large)" (Hair et al. 2014 p.116). Another criterion assessed by the researchers as proposed by hair et al. (2014) was the reliability, to indicate the internal consistency of the data. The conventional criterion used for internal consistency is Cronbach's alpha, which offers an estimate of the reliability based on the inter-correlations of the observed indicator variables. Cronbach's alpha assumes that all indicators are evenly reliable (i.e., all the indicators have equal outer loadings on the construct). However, PLS-SEM prioritizes the indicators based on their individual reliability. Furthermore, Cronbach's alpha is sensitive to the number of components or items of the scale and usually tends to undervalue the internal consistency reliability. Therefore, it could be used as a traditional measure of internal consistency reliability. Because of Cronbach alpha's constraints within the population, it is appropriate to use a different measure of internal consistency reliability, and that is known as composite reliability. Table 2 below shows the result of both the Cronbach's Alpha and the Composite reliability of the re-specified model of the study. The results were obtained by running PLS Algorithm function in Smart PLS software.

Constructs	Cronbach's Alpha	Composite Reliability
Mobile Banking Acceptance (DV)	**0.850**	**0.892**
Compatibility (IV)	**0.922**	**0.961**
Perceived Ease of Use (IV)	**0.725**	**0.824**
Perceived Usefulness (MV)	**0.800**	**0.909**
Trust (MV)	**0.755**	**0.834**

Table 2: Results of Internal Consistency Reliability

4.3. Evaluating the Relationship between Independent variables and Dependent Variable

Hair et al. (2014 p.201), stated that direct effect "is a relationship linking two constructs with a single arrow between the two". By evaluating the direct effect between independent and dependent variables, the researchers seeks to establish the significance of the result. Bootstrapping in PLS-SEM analysis helps in the evaluation of the direct relationship significance after initial PLS algorithm analysis. All the direct effects were statistically significant in this research. Table 3 below depicts the findings for direct effect correlations.

Relationships	T Values	P Values	Result
COMPATIBILITY -> ACC	11.02***	0.000	Supported
PEOU -> ACC	15.089***	0.000	Supported
PU -> ACC	11.978***	0.000	Supported
TRUST -> ACC	3.524**	0.014	Supported

Table 3: Result of Direct effect correlations
**P < .10. **P < .05. ***P < .01.*

5. Discussion

In this study, there were four hypotheses as earlier stated. The results of the study indicated that perceived ease of use has the strongest relationship with Mobile banking acceptance as it has T value of 15.089. The finding is also consistent with several researchers namely: (Fida Hussain Chandio, 2011), (Odumeru, 2012) as well as (M.D Mahatab Alam, 2012). This shows that the customers tend to use mobile banking platforms when they perceive it as easy and free of effort to use. The next most significant relationship in this study is the relationship between perceived usefulness and Mobile banking acceptance with T value of 11.978. This is in line with the initial Technology Acceptance Model (TAM) proposed by Davis (1989). The finding is also in accord with other researchers such as (Chong et al., 2010; Hakan, 2008; Kent & Nilsson, 2007; Sui-Cheung & Ming-Te, 2004). The finding further reveals that customers who identify that using mobile banking is quite useful tend to accept it regardless of the disadvantages it possesses.

The third most significant relationship is the relationship between compatibility and Mobile banking acceptance with T value of 11.02. This shows that compatibility is a factor that influences mobile banking acceptance. In simpler terms, this finding shows that customers look at their socio-cultural values and beliefs, previously introduced ideas when accepting mobile banking. Conversely, this is an interesting finding because it corresponds to the initial Innovation Diffusion Theory (IDT) introduced by (Rogers, 1983). In the initial IDT, it was stated that compatibility is a factor that influence technology adoption and continued usage. Additionally, compatibility is said to be a factor that influences internet/mobile banking acceptance in many studies such as (Moore & Benbasat, 1991; Tan & Teo, 2000; Taylor & Todd, 1995).

The fourth which happens to be the last is the relationship between trust and Mobile banking acceptance with the T value of 3.524. This shows that trust is an important factor to customers before they accept mobile banking. In simpler terms, customers or users are wary of how trustworthy a system is before they accept it.

5.1. Managerial Implication

Findings of this research have several managerial implications and might be of great interest to different stakeholders such as the bank managers as well as designers of the mobile banking system. By evaluating the factors that influence customer acceptance of mobile banking using the proposed model, bank managers and professionals can have full comprehension and understanding of the impact of factors such as perceived ease of use, perceived usefulness, trust as well as compatibility on mobile banking acceptance.

The extraordinary increase in the e-commerce and its benefits (e.g. communications, distribution, and online transactions) are convincing banks to develop systems that provide users access, anytime and anywhere, to perform online transactions using the internet. As a result of the huge investment in developing new information systems, an understanding of the factors influencing customers' acceptance of internet/mobile banking is vital for the banks so they can prioritize their resources in an effective way. For instance, perceived ease of use and perceived usefulness were found to be the most significant factors that have a strong effect on customers' acceptance of mobile banking. Furthermore, trust and compatibility were found to exert a significant impact on customers as well. Banks should not only emphasize on their profits, rather they should look into the needs and wants of their customers. In order to increase perceptions of trust, ease of use as well as usefulness among the customers, banks could organize motivational sessions and educate them about potential threats to the security and privacy of themselves as well as their transactions, and provide solutions to avoid such threats. This would help to strengthen users' trust in the banks and online banking as well. Furthermore, the findings of this research highlights that trust is important in customer acceptance of mobile banking. Hence, banks could help build users' trust by offering an undertaking for instance 'statement of guarantee: depending on the situation' that they would cover monetary losses incurred by any unauthorized access. This would increase customers' confidence in the banks and in online banking transaction channels as well as speed up the rate of acceptance of mobile banking and online banking at large.

5.2. Suggestion for Future Research

This study has developed an integrated model that provided systematic way to comprehend the factors influencing acceptance of mobile banking in Nigeria, therefore some beneficial areas for future research remain to be explored. For instance, results of current study are limited to mobile banking customers, future researchers could apply or replicate this study in other online domains such as online shopping or other e-commerce environments like e-ticketing system. This would be important in establishing the external validity of the research model. Furthermore, it will be interesting for future research to test and explore the model developed for this study in other cultural settings, like the Southeast or Southwest part of Nigeria, or other parts of West Africa like the neighboring Country Ghana. This will be crucial in providing evidence regarding the robustness of the research model and findings across different cultural settings. According to En Mao, (2010) , it is understood that "the robustness of the model may vary across different cultural settings and thus need to be empirically tested". Moreover, the data for this study was collected using convenient sampling and cross-sectional survey; future research might need to attain longitudinal data to examine what factors will influence individuals' perceptions in accepting mobile banking in Nigeria. Past literature like (Venkatesh and Davis, 2000; Davis et al., 1989) shows that individuals'

perceptions are formed with the passage of time, experience and continuous feedback from surroundings. Therefore, it is recommended that future research inspects the findings of this study with more in-depth investigations by using longitudinal data.

5.3. Conclusion

Research on factors influencing customer acceptance of mobile banking was partly inspired by the remarkable advancement in information technology, which was considered as one of the most essential forces for change in the financial services sector. This includes the availability of online banking services in the retail banking sector. Together with innovative business thinking, information technology has transformed the ways in which personal financial services are designed and delivered. After the development of secure internet services, financial institutions such as banks started introducing internet banking to facilitate as well as complement their traditional service channels. The introduction of internet banking allowed customers to conduct a wide range of banking transactions via the internet, using sophisticated websites, at any time of day, anywhere, much faster, and in a cost-saving way compared to conventional banking services offered at the bricks-and-mortar branches of banks (Alsajjan, London, & Dennis, 2010; Pikkarainen, Pikkarainen, Karjaluoto, Pahnila, & Pikkarainen, 2004). Despite the fact that the potential benefits of electronic services in banking have been described in detail in previous researches, the underutilization of internet banking systems by the potential customer was still a major problem. Thus, it was important to understand why customers accept mobile banking. In order to understand the customers' perception of mobile banking, a survey data from 318 respondents was analyzed and it yielded vital findings that supported the research hypotheses.

6. References

i. Adesina, A. A., & Ayo, C. K. (2010). An empirical investigation of the level of users' acceptance of e-banking in Nigeria. Journal of Internet Banking and Commerce, 15(1), 1–13. https://doi.org/10.1007/978-3-531-92534-9_12
ii. AGHAUNOR, L., & FOTOH, X. (2006). Factors Affecting Ecommerce adoption in Nigerian Banks. JÖNKÖPING INTERNATIONAL BUSINESS SCHOOL, (June).
iii. Al-Gahtani, S. (2003). Computer technology adoption in Saudi Arabia : Correlates of perceived innovation attributes Computer technology adoption in Saudi Arabia : Correlates of perceived innovation attributes, (December). https://doi.org/10.1002/itdj.1590100106
iv. Al-Jabri, brahim M., & Sohail, M. S. (2012). Mobile banking adoption: Application of diffusion of innovation theory. Journal of Electronic Commerce Research, 13(4), 379–391.
v. Al-jabri, I. M., & Sohail, M. S. (2012). Mobile Banking Adoption : Application of Diffusion of Innovation Theory, 13(4), 379–391.
vi. Alsajjan, B., London, W., & Dennis, C. (2010). INTERNET BANKING ACCEPTANCE MODEL : CROSS-MARKET EXAMINATION Internet Banking Acceptance Model : Cross-Market Examination, 63, 1–19.
vii. Amin, H., Hamid, M. R. A., Lada, S., & Anis, Z. (2008). The adoption of mobile banking in Malaysia: The case of Bank Islam Malaysia (BIMB). International Journal of Business and Society, 9(2), 43–53.
viii. Au, Y. A., & Kauffman, R. J. (2008). The economics of mobile payments: Understanding stakeholder issues for an emerging financial technology application. Electronic Commerce Research and Applications, 7(2), 141–164. https://doi.org/10.1016/j.elerap.2006.12.004
ix. Bank, D. (2012). Sustainable Investing–Establishing Long-term Value and Performance. Deutsche Bank Climate Change Advisors.
x. Barry, W., Palmer, A., & Bejou, D. (1994). Using Neural Network Analysis to Evaluate Buyer-Seller Relationships. European Journal of Marketing.
xi. Chen, L. (2008). A model of consumer acceptance of mobile payment, 6(1), 2008.
xii. Chitungo, S., & Munongo, S. (2013). Extending the Technology Acceptance Model to Mobile Banking Adoption in Rural Zimbabwe. Journal of Business Administration and Education, 3(1), 51–79.
xiii. Chong, A. Y.-L., Ooi, K.-B., Lin, B., & Tan, B.-I. (2010). Online banking adoption: An empirical analysis. International Journal of Bank Marketing, 28(4), 267–287. https://doi.org/10.1108/02652321011054963
xiv. Cruz, P., Neto, L. B. F., Muñoz-Gallego, P., & Laukkanen, T. (2010). Mobile banking rollout in emerging markets: evidence from Brazil. International Journal of Bank Marketing, 28(5), 342–371. https://doi.org/10.1108/02652321011064881
xv. Davis, F. (1989). Perceived Usefulness, Perceived East of Use, and User Acceptance of Information Technology. MIS Quarterly, 13(3), 319–340. https://doi.org/10.1016/S0305-0483(98)00028-0
xvi. Davis, F., Bagozzi, R., & Warshaw, P. (1989). User acceptance of computer technology: a comparison of two theoretical models. Management Science.
xvii. En Mao, P. P. (2010). Testing an Extended Model of IT Acceptance in the Chinese Cultural Context, 37, 20–32.
xviii. Ezeoha, A. E. (2006). Regulating Internet Banking In Nigeria : Some Success Prescriptions – Part 2, (2001). Retrieved from http://www.icommercecentral.com/open-access/regulating-internet-banking-in-nigeria-some-success-prescriptions-part-1-12.pdf
xix. Fida Hussain Chandio. (2011). Studying acceptance of online banking information system: A structural equation model, (June), 253.
xx. Gefen, D. (2000). E Commerce: The role of familiarity and trust.
xxi. Georgi, F., & Pinkl, J. (2005). Mobile Banking in Deutschland.

xxii. Graham, J. W. (2009). Missing Data Analysis : Making It Work in the Real World. https://doi.org/10.1146/annurev.psych.58.110405.085530

xxiii. Hair, J. F. J., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014). Partial least squares structural equation modeling (PLS-SEM). European Business Review (Vol. 26). https://doi.org/10.1108/EBR-10-2013-0128

xxiv. Hakan, C. (2008). What determines Turkish customers' acceptance of internet banking? International Journal of Bank Marketing, Vol. 26 Iss: 5, pp.353 - 370. Retrieved from http://www.emeraldinsight.com/doi/abs/10.1108/02652320810894406

xxv. Hanafizadeh, P., Behboudi, M., Abedini Koshksaray, A., & Jalilvand Shirkhani Tabar, M. (2014). Mobile-banking adoption by Iranian bank clients. Telematics and Informatics, 31(1), 62–78. https://doi.org/10.1016/j.tele.2012.11.001

xxvi. Hernandez, J. M. C. J. M. C., Mazzon, J. A., Mazzon, J. A., & Mazzon, J. A. (2007). Adoption of internet banking: proposition and implementation of an integrated methodology approach. International Journal of Bank Marketing, 25(2), 72–88. https://doi.org/10.1108/02652320710728410

xxvii. Hoang, M. H. (2015). The Adoption of Personal Internet Banking in Vietnam. Silpakorn University Journal of Social Sciences, Humanities, and Arts, 15(2), 173–201. Retrieved from http://www.journal.su.ac.th/index.php/suij/article/viewFile/516/532

xxviii. Kamakodi, N. (2008). Looking beyond technology : a study of e-banking channel acceptance by Indian customers Basheer Ahmed Khan. International Journal of Electronic Banking, 1(1).

xxix. Karen, W., & Khalil, D. (2013). A Meta-Analysis of the Dimensions of a Learning Organization Questionnaire Looking Across Cultures, Ranks, and Industries, 15(2).

xxx. Kemper, H., & Wolf, E. (2002). Iterative process models for mobile application systems: A framework. ICIS 2002 Proceedings. Retrieved from http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1129&context=icis2002

xxxi. Kent, E., & Nilsson, D. (2007). Determinants of the continued use of self-service technology: The case of Internet banking. Retrieved from http://www.sciencedirect.com/science/article/pii/S0166497206001088

xxxii. Kim, K., & Prabhakar, B. (2004). Initial trust and the adoption of B2C e-commerce: The case of internet banking. Retrieved from http://dl.acm.org/citation.cfm?id=1007970

xxxiii. Koenig-Lewis, N., Palmer, A., & Moll, A. (2010). Predicting young consumers' take up of mobile banking services. International Journal of Bank Marketing. Retrieved from http://www.emeraldinsight.com/doi/abs/10.1108/02652321011064917

xxxiv. Kolodinsky, J. M., Hogarth, J. M., & Hilgert, M. A. (2004). The adoption of electronic banking technologies by US consumers. International Journal of Bank Marketing, 22(4), 238–259. https://doi.org/10.1108/02652320410542536

xxxv. Kuisma, T., Laukkanen, T., & Hiltunen, M. (2007). Mapping the reasons for resistance to Internet banking : A means-end approach, 27, 75–85. https://doi.org/10.1016/j.ijinfomgt.2006.08.006

xxxvi. Lallmahamood, L. (2007). An Examination of Individual's perceived security and privacy of the Internet in Malaysia and their intention to use E-commerce: Using an extension of the Technology Acceptance Model. PhD Dissertation, Malaysian Institute of Management.

xxxvii. Laukkanen, T., Sinkkonen, S., Kivijärvi, M., & Laukkanen, P. (2007). Innovation resistance among mature consumers. Journal of Consumer Marketing, 24(7), 419–427. https://doi.org/10.1108/07363760710834834

xxxviii. Lee, Y.-H., Hsieh, Y.-C., & Hsu, C.-N. (2011). Adding Innovation Diffusion Theory to the Technology Acceptance Model: Supporting Employees' Intentions to use E-Learning Systems. Educational Technology & Society, 14, 124–137.

xxxix. Lin, H. (2011a). An empirical investigation of mobile banking adoption : The effect of innovation attributes and knowledge-based trust, 31, 252–254. https://doi.org/10.1016/j.ijinfomgt.2010.07.006

xl. Lin, H. (2011b). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. International Journal of Information Management.

xli. M.D Mahatab Alam. (2012). Customer satisfaction measurement of internet banking.

xlii. Mallat, N. (2007). Exploring consumer adoption of mobile payments – A qualitative study. Working Papers on Information Systems. Sprouts, 6(2006), 1–14.

xliii. Mallat, N., Rossi, M., & Tuunainen, V. (2004). Mobile Banking Services. Communications of the ACM.

xliv. Moore, & Benbasat. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation.

xlv. Morgan, & Hunt. (1994). The commitment trust theory of relationship marketing.

xlvi. Ndubisi, N., & Sinti, Q. (2006). Consumer attitudes, system's characteristics and internet banking adoption in Malaysia. Management Research News. Retrieved from http://www.emeraldinsight.com/doi/abs/10.1108/01409170610645411

xlvii. Nguyen, L., Nguyen, D. T., & Singh, T. (2014). Effect of trust on customer intention to use electronic banking in Vietnam. Proceedings of Global Business and Finance Research Conference, 1–24.

xlviii. Odumeru, J. a. (2012). The Acceptance of E-banking by Customers in Nigeria Odumeru. World Review of Business Research, 2(2), 62–74.

xlix. Ondrus, J., & Pigneur, Y. (2006). Towards a holistic analysis of mobile payments: A multiple perspectives approach. Electronic Commerce Research and Applications, 5(3), 246–257. https://doi.org/10.1016/j.elerap.2005.09.003

l. Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., Pahnila, S., & Pikkarainen, K. (2004). Consumer acceptance of online banking : an extension of the technology acceptance model Consumer acceptance of online banking : an extension of the

technology acceptance model. https://doi.org/10.1108/10662240410542652
li. Plouffe, C. R., Hulland, J. S., & Vandenbosch, M. (2001). Research Report: Richness Versus Parsimony in Modeling Technology Adoption Decisions - Understanding Merchant Adoption of a Smart Card-Based Payment System. Information Systems Research, 12(2), 208–222. https://doi.org/10.1287/isre.12.2.208.9697
lii. Ram, S., & Sheth, J. N. (1989). Consumer resistance to innovations: the marketing problem and its solutions. Journal of Consumer Marketing, 6(2), 5–14. https://doi.org/10.1108/EUM0000000002542
liii. Ratnasingham, P. (1998). Trust in Web-based electronic commerce security. Information Management & Computer Security, 6(4), 162–166. https://doi.org/10.1108/09685229810227667
liv. Reichheld, F. F., & Schefter, P. (2000). E-Loyalty: Your Secret on the Web. Harvard Business Review, 78(4), 105–113. https://doi.org/10.1007/PL00012187
lv. Rilling, S. (2015). MOBILE BANKING ACCEPTANCE AMONG YOUNG CONSUMERS IN GERMANY : AN EMPIRICAL ANALYSIS Name of Supervisor : Debbie Harrison Name of Student :, (September).
lvi. 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. https://doi.org/10.1108/02652321011064872
lvii. Robinson. (2009). A Summary of diffusion of Innovations.
lviii. Rogers, E. M. (1983). Diffusion of Innovation.
lix. Rogers, E. M. (2003). Diffusion of Innovations Theory. New York: Free Press, 5th ed. https://doi.org/10.1111/j.1467-9523.1970.tb00071.x
lx. Rusu, R., & Shen, K. (2012). An Empirical Study on E-banking Acceptance in the United Arab Emirates (UAE). Journal Electronic Banking Systems, 1–9. https://doi.org/10.5171/2012.462904
lxi. Safeena, R., Date, H., & Kammani, A. (2011). Internet Banking Adoption in an Emerging Economy : Indian Consumer ' s Perspective, 2(1), 56–64.
lxii. Sánchez-fernández, F. M. T. L. J., Luque-martı, T., & Sa, J. (2013). How to improve trust toward electronic banking. https://doi.org/10.1108/14684521011099405
lxiii. Sathye, M. (1999). Adoption of Internet banking by Australian consumers: an empirical investigation. International Journal of Bank Marketing, 17(9).
lxiv. Shaikh, A. A., & Karjaluoto, H. (2014). Mobile banking adoption: A literature review. Telematics and Informatics, 32(1), 129–142. https://doi.org/10.1016/j.tele.2014.05.003
lxv. Shankar, V., Urban, G. L., & Sultan, F. (2002). Online trust: A stakeholder perspective, concepts, implications, and future directions. Journal of Strategic Information Systems, 11(3–4), 325–344. https://doi.org/10.1016/S0963-8687(02)00022-7
lxvi. Sliva, A. (2011). Scalable Techniques for Behavioral Analysis and Forecasting.
lxvii. Suh, B., & Han, I. (2002). Effect of trust on customer acceptance of Internet banking. Electronic Commerce Research and Applications, 1(3–4), 247–263. https://doi.org/10.1016/S1567-4223(02)00017-0
lxviii. Sui-Cheung, C., & Ming-Te, L. (2004). Understanding Internet banking adoption and use behaviour: A Hong Kong Perspective.
lxix. Tan, M., & Teo, T. (2000). Factors Influencing the Adoption of Internet Banking, 1.
lxx. Taylor, S., & Todd, P. A. (1995). Understanding information technology usage: A test of competing models. Information Systems Research. https://doi.org/10.1287/isre.6.2.144
lxxi. Tiwari, R., & Buse, S. (2007). The Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector. Hamburg University Press, Univerity of Hamburg, Germany.
lxxii. Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science, 46(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926
lxxiii. Wessels, L., & Drennan, J. (2010). An investigation of consumer acceptance of M-banking. International Journal of Bank Marketing, 28(7), 547–568. https://doi.org/10.1108/02652321011085194
lxxiv. Wu, M., Jayawardhena, C., & Hamilton, R. (2014). A comprehensive examination of internet banking user behaviour: evidence from customers yet to adopt, currently using and stopped using. Journal of Marketing Management, 30(9–10), 1006–1038. https://doi.org/10.1080/0267257X.2014.935459
lxxv. Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. Computers in Human Behavior, 26(4), 760–767. https://doi.org/10.1016/j.chb.2010.01.013
lxxvi. Zwass, V. (1996). Electronic Commerce: Structures and Issues. International Journal of Electronic Commerce, 3–23.