Mobile Banking Adoption in Nigeria

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Abstract

Several studies have affirmed that the adoption of Information and Communication Technology (ICT) is culturally inclined. Mobile banking is an ICT artifact considered to be of vital use among people in various countries which in turn have dissimilar cultural background. Research into the use and adoption of mobile banking has shown varied findings in different countries across the globe. This can be attributed to the diversity in the cultural landscape in different countries. The development of mobile banking in a country is likely to be determined by some characteristic factors which are unique to that country. This study conducted a cross-sectional survey through a judgmental sampling procedure. The respondents were mobile banking customers that consist of students and workers from diverse field of employment. A total of 231 questionnaires were collected from the sampled population of mobile banking customers.

This article explores the factors that influence adoption of mobile banking in Nigeria .The data were analysed through statistical methods.

The results show that culture is the most important factor bearing on the adoption and behaviour of users on mobile banking in Nigeria.

Keywords: Mobile Banking, Nigeria, Culture, user adoption and behavior, Information Communication Technology, Revised UTAUT Model

1.

2. 1. Introduction

The advent of mobile technology and its devices have brought about efficiency in the manner in which commercial and business activities are performed (Tiwari & Buse, 2007; UNCTAD, 2007). One such technology is mobile telephony. Mobile telephony serves as a platform for launching innovative mobile phone applications and services (UNCTAD, 2007). The utilization of mobile technologies for commercial activities brings about the concept of mobile commerce (m-commerce). There has been a record increase in the number of mobile phone subscribers in developed and developing countries (Boadi, Boateng, Hinson & Opoku, 2007; UNCTAD 2007). The mobile market is one of the fastest growing markets in the world (Gupta, 2005; UNCTAD, 2007). Financial institutions have since seized this opportunity to gain market advantage by offering a variety of value added services to customers through the use of mobile banking (Gupta, 2005).

Mobile banking (m-banking) is an application of mobile commerce that enables customers to bank virtually at any convenient time and place (Suoranta, 2003). It is the provision of banking and related financial services such as saving, fund transfer, stock market transaction among others on mobile devices (Tiwari & Buse, 2007). There has been unprecedented growth in m-banking market in many nations. For example in the United States, about 30 percent of households use their mobile phones to perform banking operations (MMA, 2009). This is also the case in European and Asian countries where 80 percent of households use mobile banking services (Gupta, 2005). In Africa, mobile phones are the most widely used form of communication technology (ITU, 2007). This has enabled the mobile market industry in Africa the fastest growing when compared to other continents in the world (ITU, 2007). Nigeria is one of the leading market players for m-banking applications in Africa (UNCTAD, 2007). This is attributed to the following factors:

- Nigeria has been described as the fastest growing telecommunication infrastructure nation in Africa and third in the World (Ayo, Uyinomen & Fatudimu, 2007)

- Nigeria is the most populous country in Africa with a population of over 150 million (Muganda, Bankole & Brown, 2008)

- Nigeria is the leading country in m-commerce usage in Africa (Muganda et al., 2008).

- Nigeria has the highest mobile subscriber base in Africa with about 70 million mobile subscribers (ITU, 2009, ICT works, 2010).

Furthermore, literature has indicated that the adoption of ICT applications such as mobile banking in a country is culturally inclined (Min, Ji & Qu, 2008). Cultural differences that exist in countries may affect their behaviour in the use and adoption of technology (Straub, Keil & Brenner, 1997). Though the adoption of mobile technology does not follow a single universal pattern. It can be ascribed to differences in mobile telecommunication infrastructure, types of services on offer, marketing strategies and the culture of the consumers (Harris, Rettie & Kwan, 2005).

Starting from these standpoints, this article investigates what factors influence the acceptance of mobile banking in Nigeria? While there has been a great deal of research on the application and implementation of ICT in Nigeria, there is a lack of empirical research on the adoption of mobile banking in Nigeria. Also studies that examine IT adoption from a cultural perspective in Nigeria are sparse and needed (Anandarajan,Igbaria & Anakwe,2002).

The remainder of this paper is organised as follows: Chapter two discusses the theoretical framework and related theories. Chapter three provides the methodological approach of the study. In Chapter four, data collection procedures are presented while chapter five provides the data analysis and results. Chapter six provides the discussion and conclusion. Chapter seven presents limitations and ideas for future research.

1.1 Related Studies on Mobile Banking in Nigeria.

Information systems researchers have proposed different user acceptance models most of which are based on social psychology and anthropology theories (Aggelidis & Chatzoglou, 2008). Several of these studies have been on the user acceptance of mobile technology applications such as m-banking. Few have been conducted in the context of Nigeria. The few studies conducted in Nigeria were on e-commerce applications such as electronic banking and payment systems, for example:

- Electronic Payment Systems and Tele-banking Services in Nigeria by Agboola (2006).
- The Adoption of Internet Banking in Nigeria: An Empirical Investigation by Chiemeke, Evwiekpaefe & Chete (2006).
- M-Commerce Implementation in Nigeria: Trends and Issues by Ayo, Ekong, Fatudimu & Adebiyi (2007).

3. 2. Theoretical Background and Related Theories

Many researchers have examined mobile banking as an emerging ICT artifact from the perspective of user adoption of information technology (IT) (Zhou, Lu & Wang, 2010). User adoption is one of the key requirements for realizing technology value and utilization (Min et al., 2008). The technology acceptance model (TAM), extended technology acceptance model (TAM2), theory of reasoned action (TRA) , theory of planned behavior and the unified theory of use an acceptance of technology (UTAUT) are the most commonly used theories in IT adoption (Venkatesh et al., 2003).. TAM and TPB have been used extensively in mobile banking studies to identify the factors affecting users' behavioral intention (Zhou et al., 2010). Factors such as perceived usefulness, perceived ease of use, credibility, self efficacy and financial cost, facilitating conditions and demographic characteristics have been recognized as influences (Luarn & Lin, 2005; Crabbe, Standing, & Karjaluoto, 2009, cited in Zhou et al., 2010).

The UTAUT model was proposed as an extension of the basic TAM model. The model incorporates four key factors, namely performance expectancy (e.g., perceived usefulness), effort expectancy (e.g., perceived ease of use), social influence and facilitating conditions (Venkatesh et al., 2003).

Recently, there has evolved a revised UTAUT model by Min et al. (20080, suitable for investigating mobile banking. This revised UTAUT model was used as the basis in this study by considering variables such as trust and privacy, convenience and cost, user satisfaction and culture in addition to the standard UTAUT factors. In this model, the performance expectancy factor of UTAUT model is replaced with utility expectancy, which is more appropriate for assessing mobile banking.

2.1 Introduced Constructs in Revised UTAUT Model

Trust and Privacy: Trust plays an important role in providing satisfaction and expected outcomes for m-commerce users (Li & Yeh, 2010). User trust and privacy including security are required by users to ensure their confidence in using m-banking services (Gu, Lee & Suh, 2009; Li & Yeh, 2010).

Convenience and Cost: The cost of technology is important especially when it is for personal use such as the use of mobile devices in m-banking. The user should be able to afford the cost of using such technology (Min et al., 2008).

User Satisfaction: User satisfaction (US) is a paramount construct in behavioural research in information systems (Delone & McLean, 2003). The user satisfaction construct has been widely used in evaluating system success.

Culture: National culture has very often been defined in terms of Hofstede's (1980) dimensions. He defined culture as being "the collective programming of the mind which distinguishes the members of one group or category of people from another" Hofstede, 1991, p.5), and operationalised it along four dimensions:

Power distance - Degree of inequality among people, which the population of a culture considers normal.

Uncertainty avoidance - Degree to which people in a culture feel uncomfortable with uncertainty and ambiguity.

Individualism - Degree to which people in culture prefer to act as individuals, rather than as members of a group.

Masculinity - Degree to which values like assertiveness, performance, success and competition prevail among people of a culture over gentler qualities like the quality of life, maintaining warm personal relationships, service, and care for the weak.

Whilst Hofstede (1980) used these measures to portray national culture, McCoy, Galletta & King (2005) contendented that "the assumption of homogeneity is not appropriate, particularly if the national constructs are to be integrated into IS models that reflect individual behavior…" (p. 214). They therefore argue for assessing the cultural values of individuals rather than a multitude, in recognition of the fact that people from the same nation or ethnic group may have different values (Srite & Karahanna, 2006). Culture may be viewed as a moderating construct which affects the level of significance of both independent and dependent variables in technology adoption models (Straub et al., 1997; Zakour, 2004; Srite & Karahanna, 2006; Min et al., 2008). On the other hand, culture has also been shown to having an indirect impact on adoption through its influence on user beliefs and attitudes towards the technology (Veiga, Floyd & Dechant, 2001). The latter is the stance adopted in this study.

2.2 Conceptual Model

In this article, we integrate the research work of Min et al. (2008), Srite &Karahanna (2006), Carlsson, Carlsson, Hyvonen, Puhakainen & Walden (2006), Veiga et al. (2001) and Zhou et al. (2010) to show the impact of trust and privacy, convenience and cost, user satisfaction, utility expectancy, effort expectancy and culture on user adoption of mobile banking. Prior research suggests that the use of ICT applications like

mobile banking services are influenced by different cultural dimensions (Anandarajan, Igbaria & Anakwe, 2002). Thus, a conceptual model was formulated in order to reflect these perspectives.

2.3 Hypotheses Development

A null hypothesis H_0 is returned when there is no significant association between the factors in the stated hypotheses. Otherwise, the hypotheses remain valid. The hypotheses are stated as follows:

1. Banking may be perceived as very much an individual activity (Veiga et al., 2001). Mobile banking allows for this individual activity to take place in privacy, anywhere, anytime, hence it will be perceived as of great value to those with individualist cultural traits. Thus we hypothesize:

H_{1a}: Individualism is positively associated with utility expectancy of mobile banking

2. Cell phones are designed to be used by individuals, as the small interface does not facilitate group usage activity (Veiga et al., 2001). Hence, those who prefer individual activity (individualist cultural traits) will perceive mobile banking as easier to use that those with collectivist traits. Thus, the hypothesis supported is:

H_{1b}: Individualism is positively related to effort expectancy (perceived ease of use) of mobile banking.

3. In high uncertainty avoidance cultures, trust is of importance when making use of new technology (Brown, Field, Hill, & Wessels, 2006; Grabner-Krauter & Kaluscha, 2003). In order to counter feelings of uncertainty and ambiguity associated with mobile banking, greater beliefs will be attributed to the mobile banking service provider amongst those with high uncertainty avoidance. Thus, the hypothesis is:

H_{2a}: High uncertainty avoidance is positively associated with trust in mobile banking

4. With high uncertainty avoidance cultures, activities that are highly structured, and reduce ambiguity will be perceived as valuable (Hassan & Ditsa, 1999 cited by Veiga et al., 2001). Mobile banking provides this structure for bank customers through the menu of services offered. The convenience of being able to perform banking anywhere anytime provides reassurance and reduces anxiety and uncertainty about financial affairs. Thus, the hypothesis supported is:

H_{2b}: High uncertainty avoidance is positively associated with utility expectancy of mobile banking

5. In high uncertainty avoidance culture, users prefer technology that provides highly structured and specific functions and features (Hofstede, 2001; Veiga et al., 2001). Mobile banking services are typically well-defined and structured into pre-defined menus, hence will be viewed favourably by those with high uncertainty avoidance traits. Therefore the following hypothesis is proposed:

H_{2c}: High uncertainty is positively associated with effort expectancy (perceived ease of use) of mobile banking

6. In high masculinity cultures, users exhibit characteristics such as assertiveness and materialism. The adoption of a new technology such as mobile banking in such a culture is perceived as yielding to a high degree of value (Srite & Karahanna, 2006; Wei et al., 2008). Hence we hypothesize:

H_{3a}: High masculinity is positively associated with utility expectancy of mobile banking

7. In high masculinity cultures users display characteristics such as the desire the to accomplish and achieve. When faced with adoption of technologies such as mobile banking, this will translate into the belief that the technology is easy to use, more so than those with low masculinity traits (Bagchi et al., 2003; Srite & Karahanna, 2006). Thus the hypothesis:

H_{3b}: High masculinity is positively associated with effort expectancy (perceived ease of use) of mobile banking

8. The higher the user satisfaction derived from the use a technology, the higher the user's perceived efficacy (Min et al., 2008). Thus, this hypothesis:

H_{4a}: The higher the user satisfaction towards mobile banking services, the higher the utility expectancy

9. Explicitly, it is believed that the higher the user satisfaction, towards a technology, the higher the user's belief of the technology's ease of use (Min et al., 2008). Therefore, the hypothesis supported is:

H_{4b}: The higher the user satisfaction towards mobile banking services, the higher the effort expectancy

10. In circumstances when users feel that mobile banking is easy to use and does not require much effort they will have high expectations towards acquiring the expected performance (Zhou et al., 2010). Therefore we hypothesize that:

H_{5a}: Effort expectancy positively influences utility expectancy

11. Mobile banking allows users to make convenient payments and reduces time and effort invested into banking. Effort expectancy significantly affects user adoption of mobile banking (Carlsson et al., 2006; Zhou et al., 2010). Hence the hypothesis:

H_{5b}: Effort expectancy (perceive ease of use) positively influences behavioural intention to use mobile banking services

12. There is a significant relationship between trust and privacy, and adoption of mobile commerce applications (Bhattacherjee, 2002 cited by Min et al., 2008). Where is lack of trust in a technology it will not be adopted. The ensuing hypothesis is:

H_{6}: Trust and privacy positively influences behavioural intention to use mobile banking services

13. When a user perceives that mobile banking provides fast, convenient, anytime and anywhere transactions, it improves derived satisfaction and performance. Therefore the user adopts mobile banking services (Carlsson et al., 2006; Zhou et al., 2010). Thus, the hypothesis:

H_7: Utility expectancy positively influences behavioural intention to use mobile banking services

14. The influence of social factors such as the opinions of user's friends, relatives and superiors will affect user's intention to adopt and use mobile banking services (Carlsson et al., 2006; Lopez-Nicolas et al., 2008; Hong et al., 2008 cited by Zhou et al. 2010). We hypothesize as follows:

H_8: Social factors positively influence behavioural intention to use mobile banking services

15. In high power distance cultures, marketing messages about the benefits of mobile banking, and the banks' and mobile provides' efforts at encouraging consumers to adopt mobile banking will more likely yield positive outcomes (Veiga et al., 2001). These institutions of power will more likely be deferred to in high power distance cultures. Hence, the hypothesis:

H_9: High power distance is positively associated with behavioural intention to use mobile banking.

16. Convenience and cost directly affect adoption of mobile commerce applications. Where the costs are low, it will encourage greater usage of the service (Min et al., 2008). Thus we hypothesize:

H_{10}: Convenience and cost positively influence intentions to use mobile banking services

17. Behavioural intention has a positive direct effect on usage of mobile devices (Carlsson et al., 2006). Then we hypothesize thus:

H_{11}: Increase in behavioural intention will influence user acceptance of mobile banking services

3. Research Method

This study relies on a positivistic epistemology (Myers, 1997; Myers, 2009). We used a deductive approach to understand mobile banking adoption in Nigeria by testing the hypotheses. Several studies have adopted a positivistic approach (Brown et al., 2003; Luarn & Lin, 2005; Alawadhi & Morris, 2008). Also, this study formulated a measurement model integrated from widely accepted studies. These hypotheses are returned as significant at $p<0.05$ and highly significant at $p<0.01$ if there is an influence of one construct on the other, otherwise, the null hypothesis (H_0) is returned. Figure 1 below presents the hypotheses:

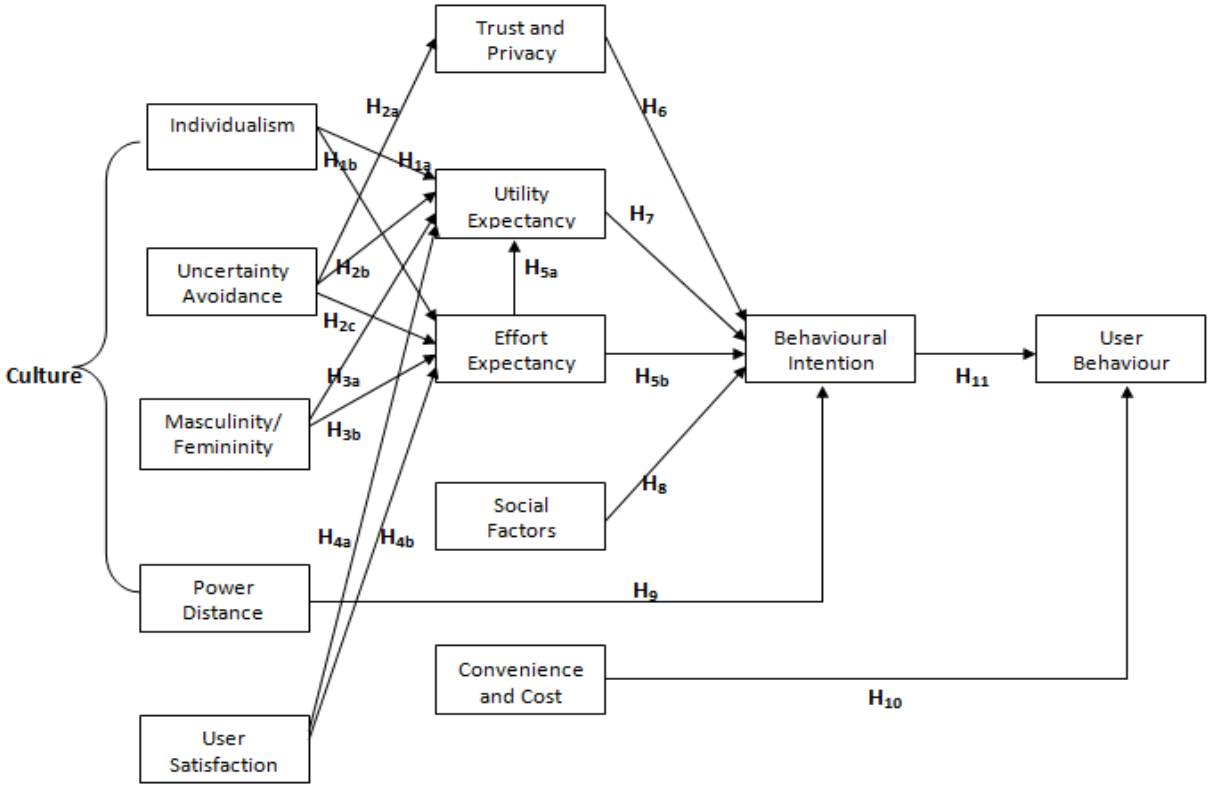

Figure 1: Conceptual Model

4. Data Collection Procedures:

We used questionnaires as survey instruments for this study. Data were gathered from 231 respondents. Questionnaires were distributed to students and workers from varied fields in Nigeria. The questionnaires were mailed by post and e-mailed to others within targeted group who could not be reached physically. The questionnaires were validated by conducting a pilot study. A sample of participants representative of the actual research population with mobile banking usage experience were asked to complete the questionnaire to ensure the suitability of the questionnaire.

5. Data Analysis:

1. Demographic Analysis

The data produced 231 responses for the data sample. The user demographics such as gender, age, marital status, income and occupation were analysed. The sample consists of 39% female and 61% male. The ratio of gender distributions, female to male was two to three (i.e. 2:3). The imbalance in gender percentage was due to low numbers of women in the sampled employed population. Figure 2 represents the gender group distribution within the sample data.

Figure 2: Gender Distribution

The highest group in the Nigerian data sample was between the age group of 21-25 years consisting of 47.5% followed by age group of 26-30 years consisting of 29%. Participants younger than 20 years of age had a low percentage. The reason for this was that the survey participants needed to own a functional bank account with regular monthly income, a mobile device and also be a mobile-banking subscription. Respondents aged 30 years and younger were highly represented in the data sample with 81.5%. The age least represented in the sampled data were those older than 40 years. The age group distribution is shown in Figure 3.

Figure 3: Age Group Distribution

The highest group of the respondents considering marital status was that of the singles which constituted 71% of the Nigerian data sample. The large number of single respondents supports the age group of the distribution of the samples since majority of the respondents are age 30 years and younger. The married respondents were 25%. The marital status distribution is shown in figure 4.

Figure 4: Marital Status

The monthly income distribution shows that 47 % of the respondents earned less than 5000 Rands (less than $714US Dollars) a month. This was accounted for by the student population and unskilled workers who earn minimum wages in the country. Figure 5 below shows the distribution of income of respondents in the sample data.

Figure 5: Income

Figure 6 below shows the distribution by occupation consists of 45% students and 55% workers from diverse field of employment.

Figure 6: Occupation

2. Mobile Banking Services Usage in Nigeria

Mobile banking services consist of mobile accounting services, mobile financial information and other mobile services such as SMS bundles, air ticket payments, etc. The respondents showed that they use mobile accounting services less frequently. 20.8% used money transfer. 10% use third party payments, 7.4 % used standing orders (bill payments), 3.5% used insurance policies and 12.6 % used order cheque book. The majority of the mobile accounting services in Nigeria are never or seldom used. The mobile accounting usage in Nigeria is shown in Figure 7. The mobile financial information services were less frequently used by the Nigeria respondents. SMS alert for account transactions accounted for 82.2% of the use of the service more than 1-6 times monthly. Balance enquiries accounted for 78.3% of respondents that never or seldom use, or use it less than one time a month while statements enquiries accounted for 85.2%. The least used service by the respondents was stock enquiries and reports. Figure 8 shows the mobile financial usage in Nigeria. No respondents in the sample data used payments of traffic fines, purchase of lotto tickets, and applying for loan services. The total number of respondents that used SMS and data bundles services less than one time in a month, 1-6 times monthly and 2-6 times weekly were 69.7% and 68.4% respectively. Figure 9 shows the usage of other m-banking services in Nigeria

Figure 7: Mobile Accounting Usage in Nigeria

Figure 8: Mobile Financial Information Usage in Nigeria

Figure 9: Other Mobile Banking Service Usage in Nigeria

3. Regression Analysis

We first analysed the reliability and construct validity to determine the consistency and regularity of the survey questions. The Cronbach alpha was used to test the reliability. The variables were larger than 0.7 which indicated good reliability. The factor analysis was used to determine the validity. Most of the variables showed a clean loading. The internal consistency of the constructs was confirmed to be satisfactory.

Secondly, we performed a regression analysis to test the model hypotheses. The results are presented in the Table 1

Table 1: Correlation Coefficient

Hypotheses	Independent vs. Dependent	Values	
		Beta (B)	**p-value**

H_{1a}	IDV vs. UE	-0.026	0.636
H_{1b}	IDV vs. EE	0.229***	0.000
H_{2a}	UA vs. TP	0.152*	0.020
H_{2b}	UA vs. UE	0.053	0.362
H_{2c}	UA vs. EE	0.133*	0.034
H_{3a}	M/F vs. UE	0.150**	0.013
H_{3b}	M/F vs. EE	0.166**	0.010
H_{4a}	US vs. UE	0.310**	0.0000
H_{4b}	US vs. EE	0.269**	0.0000
H_{5a}	EE vs. UE	0.148*	0.026
H_{5b}	EE vs. BI	0.141*	0.049
H_6	TP vs. BI	-0.046	0.554
H_7	UE vs. BI	0.319***	0.000
H_8	SF vs. BI	0.098	0.118
H_9	PD vs. BI	0.138*	0.023
H_{10}	CC vs. UB	-0.006	0.922
H_{11}	BI vs. UB	0.307***	0.000

*p<0.05; **p<0.01; ***p<0.001

KEY:

US: User Satisfaction
TP: Trust & Privacy
UE: Utility Expectancy
EE: Effort Expectancy
SF: Social Factors
CC: Cost & Convenience
BI: Behavioural Intention
IDV: Individualism
PD: Power Distance
UA: Uncertainty Avoidance
M/F: Masculinity/Femininity
UB: User Behaviour

From the above Table 1, individualism (IDV) was found to have a correlation coefficient of 0.229, with effort expectancy (EE) at P<0.001. This supports the positive relationship that was hypothesised between the two factors. Uncertainty avoidance (UA) has a positive correlation of 0.133, P<0.05 with effort expectancy (EE) and 0.152, P<0.05 with trust (TP). The relationship accounted for 16% of the variance. Masculinity/femininity (M/F) has a positive relationship with utility expectancy (UE) at 0.150.P<0.01. The relationship accounted for 27% of the variance. User satisfaction (US) shows a statistical significance with utility expectancy(UE) and effort expectancy(EE) at 0.310,P< 0.01 and 0.269,P<0.01 respectively. The relationship accounted for 24% and 11%. Effort expectancy (EE) also shows positive correlation with both utility expectancy (UE) and behavioural intention (BI) at 0.141, P<0.05 and 0.148, P<0.05. Each had 16% and 18%of the variance in the data. Utility expectancy (UE) and power distance (PD) has a positive significant relationship with behavioural intention (BI) at 0.319, P<0.001 and 0.138, P<0.05 respectively. Their relationship with BI accounted for 15% and 20% of the variance in the data. Behavioural intention to use positively correlates with user behaviour (UB) at 0.01. This relationship accounted for 9%.

4. 6. Discussions and Conclusions

This study explains user adoption of mobile banking services by formulating a conceptual model. The model is used to explain mobile banking adoption in Nigeria. This research developed a set of hypotheses from literature. Several of the results provide strong support for the validity of the hypotheses generated for the model. User satisfaction was found to have a significant relationship with utility expectancy and effort

expectancy thereby supporting hypotheses H_{4a} and H_{4b}. This suggests that, increased satisfaction leads to positive perceptions of mobile banking.

Utility expectancy and effort expectancy had significant relationships with behavioural intention. Our analysis indicates that utility expectancy and effort expectancy are major factors influencing behavioural intention to adopt mobile banking. Users are willing to use mobile banking if they find it useful for their everyday life. Users also consider ease of use when adopting mobile banking. This supports hypotheses H_7 and H_{5b}, and is consistent with previous findings on behavioural intention with other technology adoption models (Gu et al., 2009). No significant relationship was found between trust and privacy, and social factors with respect to behavioural intention. Thus H_6 and H_8 were both returned as null hypotheses. H_8 shows mobile banking users are not influenced by social effects such as friends, relatives, colleagues at work and the service providers (banks). Contradictory to what was expected in H_6, the users behavioural intention to use mobile banking is not determined by trust and privacy. This finding requires further investigation through a qualitative research methodology. Conducting semi structured interviews with the participants would have provided rich data for an in-depth analysis.

Our observations revealed some useful findings about the role that culture plays in the user behaviour and adoption of mobile banking in Nigeria. The perceptions of mobile banking are influenced by the cultural values of individuals in Nigeria. For instance, Masculinity has a positive relationship with utility expectancy. It supports the hypothesis H_{3a}.This means mobile banking adoption in Nigeria tends towards users with assertiveness and strong persona. Interestingly, individualism had a positive relationship with effort expectancy. This means the higher the individualism exhibited, the greater the ease of use of mobile banking services.

High power distance has a direct impact on behavioural intention to use mobile banking. This means that the high power distance culture influences the behavioural intention to use mobile banking. The user tends to accept mobile banking services due to the views of the powerful. This result supports hypothesis H_9. Uncertainty avoidance has a positive correlation with effort expectancy and trust. This supports hypothesis H_{2a} and H_{2b}. High uncertainty avoidance cultures perceive mobile banking as well- structured and hence easy to use. These cultural traits are also associated with strong trusting beliefs with regards to mobile banking.

In conclusion, this study describes mobile banking acceptance in Nigeria. The result of the study finds some support for the model. Our result revealed that cultural values are playing pertinent role towards mobile banking adoption in Nigeria. The results of this research offer some implications for other African countries such as South Africa, Mauritius, and Kenya among others. This is supported by Anandarajan et al., (2002) who stated that local culture should be considered when incorporating technology like mobile banking services.

7. Limitations and Future Studies

The selected participants in this study represented a fraction of mobile banking users. We assumed that the chosen samples of respondents are the major users of mobile banking applications. This study only accommodated participants already using mobile banking applications and services. Given the widespread

adoption of mobile banking applications and services in developing and emerging markets, the future studies can explore other countries with a comparative analysis among these countries.

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6. References

Agarwal, R., Rastogi, S., & Mehrotra, A. (2009). Customers' Perspectives Regarding E-banking in an Emerging Economy. *Journal of Retailing and Consumer Services*, 16(5), 340-351.

Agboola, A. A. (2006). Electronic Payment Systems and Tele-banking Services in Nigeria. *Journal of Internet Banking and Commerce,* 11(3). Retrieved May 23, 2009, from http://www.arraydev.com/commerce/jibc/

Aggelidis, V., & Chatzoglou, P. D. (2008). Using a Modified Technology Acceptance Model in Hospitals. *International Journal of Medical Informatics*, 78(2009), 115-126.

Alawadhi, S., & Morris, A. (2008, August, 6-9). *The Use of the UTAUT Model in the Adoption of E-government Services in Kuwait*. Paper Presented at the 2008 41st Hawaii International Conference on System Science, San Francisco, California. Retrieved November 18, 2009, from http://www.computer.org/portal/web/csdl/proceedings/h#4

Anandarajan, M., Igbaria, M., & Anakwe, U. P. (2002). IT Acceptance in Less Developed Country: A Motivational Factor Perspective. *International Journal of Information Management,* 22, 47-65.

Ayo, C. K., Ekong, U. O., Fatudimu, I. T., & Adebiyi, A. A. (2007). M-Commerce Implementation in Nigeria: Trends and Issues. *Journal of Internet Banking and Commerce,* 12(2).

Bagchi, K., Cerveny, R., Hart, P., & Peterson, M. (2003). *The Influence of National Culture in Information Technology Product Adoption*. Paper Presented at the 2003 9th Americas Conference on Information Systems, USA. Retrieved May 10, 2010, from http://aisel.aisnet.org/cgi/viewcontent.cgi?article=1585&context=amcis2003

Boadi, R. A., Boateng, R., Hinson, R., & Opoku, R. A. (2007). Preliminary Insights into M-commerce Adoption in Ghana. Retrieved May 21, 2009, from http://idv.sagepub.com/cgi/content/abstract/23/4/253

Brown, I., Cajee, Z., Davies, D., & Stroebel, S. (2003). Cell Phone banking Predictors of Adoption in South Africa – An Exploratory Study. *International Journal of Information Management*, 23(3), 381-393.

Carlsson, C., Carlsson, J., Hyvönen, K. Puhakainen, J., & Walden, P. (2006, January 4). *Adoption of Mobile Devices/Services – Searching for Answers with the UTAUT.* Paper Presented at the 2006 39th Hawaii International Conference on System Sciences, Hawaii, USA. Retrieved June 26, 2009, from E-journal Portal, UCT Libraries.

Chiemeke, S. C., Evwiekpaefe, A. E., & Chete, F. O. (2006). The Adoption of Internet Banking in Nigeria: An Empirical Investigation. *Journal of Internet Banking and Commerce,* 11(3).

Delone W. H., & McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. *Journal of Mnagament Information Systems,* 19(4), 9-30.

Gelderman (1998). The relation between user satisfaction, usage of information systems and performance, *Information & Mangement, 34(1),11-18.*

Grabner-Krauter, S. & kaluscha, E. (2003). Empirical Research in On-line Trust: A Review and Critical Assessment. *International Journal of Human-Computer Studies*, 58, 783-812.

Gu, J., Lee, S., & Suh, Y. (2009). Determinants of Behavioural Intention to Mobile Banking. *Expert Systems with Applications*, 36(1), 11605-11616.

Gupta, P. (2005). Web Services: An Enabler for Mobile Banking. *An Intellect White Paper.* Retrieved May 18, 2009, from http://www.prdomain.com/upload/100/10032034.pdf

Hall, E.T. (1976). *Beyond Culture*. New York: Anchor Books/Doubleday.

Harris, P., Rettie, R., & Kwan, C. C. (2005). Adoption and Usage of M-Commerce: A Cross-Cultural Comparison of Hong Kong and the United Kingdom. *Journal of Electronic Commerce Research*, 6(3), 210-224.

Hofstede, G. (1980). *Cultural Consequences: International Differences in Work Related Values*. Beverly Hills: Sage.

Hofstede, G. (1997). *Cultures and Organizations: Software of the Mind.* London: Mc Graw Hill.

Hofstede, G. (2001). *Cultural Consequences : Comparing Values, Behaviours, Institutions, and organisations across Nations*. Thousand Oaks: Sage.

Hofstede, G., Neuijen, B., & Ohavy, D. D. (1990). Measuring Organizational Cultures: A Qualitative and Quantitative Study Across Twenty Cases. *Administrative Science Quarterly*, 35, 286-316.

ICT works(2010). Tapping the Nigerian internet goldmine. Retrieved June 25,2010, from http://www.ictworks.org/news/2010/02/24/tapping-nigerian-internet-market-goldmine

ITU (2009). *Telecommunication/ICT Market Trends in Africa 2007*. Retrieved May 21, 2009, from http://www.itu.int/ITU-D/ict/statistics/material/af_report07.pdf

Li, Y., & Yeh, Y. (2010). Increasing Trust in Mobile Commerce Through Design Aesthetics. *Computers in Human Behaviour*, 26(4), 673-684.

Luarn, P., & Lin, H. (2005). Toward an Understanding of Behavioural Intention to Use Mobile Banking. *Computers in Human Behaviour,* 21(6), 873-891.

Malhotra, A., Segars, H. A. (2005) Investigating wireless WEB adoption patterns in the US. *Communications of the ACM, (6)2,144-176*

McCoy, S., Galletta, D., & King, W. (2005). Integrating National Culture into IS Research: The Need for Current Individual-Level Measures. *Communications of the Association for Information Systems,* 15, 211-224.

Merchant, L. (2007). Exploring the Influence of Cultural Values on the Acceptance of Information Technology: An Application of the Technology Acceptance Model. *Issues in Informing Science and Information Technology,* 4, 431-443.

Min, Q., Ji, S., & Qu, G. (2008). Mobile Commerce User Acceptance Study in China: A Revised UTAUT Model. *Tsinghua Science and Technology,* 13(3), 257-264.

MMA: Mobile Marketing Association (2009). Mobile Banking Overview. Retrieved May 21, 2009, from http://www.mmaglobal.com/mbankingoverview.pdf

Muganda, N. O., Bankole, F. O., & Brown, I. (2008, September 3). *Internet Diffusion in Nigeria: is the 'Giant of Africa' Waking Up?* Paper Presented at the 2008 10th Annual Conference on World Wide Web Applications, www2008, University of Cape Town, South Africa. Retrieved May 10, 2009, from Conference CD Pack, [978-0-620-42642-8].

Myers, M. D. (2009). *Qualitative Research in Business Management.* London: Sage.

Myers, M.D (1997). Qualitative Research in Information Systems. *MIS Quarterly Discovery,* 21(2), 241-242.

Okazaki, S. (2005). New Perspectives on M-Commerce Research. *Journal of Electronic Commerce Research*, 6(3). 160-165.

Schein, E. (1985). *Organisational Culture and Leadership*, Jossey-Bass: San Fransisco.

Schwabe, G., & Göth, C. (2005). Mobile Learning with a Mobile game: Design and Motivational Effects. *Journal of Computer Assisted learning*, 21, 204-216.

Scornavacca, E., & Hoehle, H. (2006). *Mobile Banking in Germany.* Retrieved May 18, 2009, from http://project.hkkk.fi/helsinkimobility/papers/Mobile%20Applications_1_2.pdf

Srite, M., & Karahanna, E. (2006). The Role of Espoused National Cultural Values in Technology Acceptance. *MIS Quarterly,* 30(3), 679-704.

Straub, D., Keil, M., & Brenner, W. (1997). Testing the Technology Acceptance Model Accross Cultures: A Three Country Study. *Information and Management*, 33, 1-11.

Suoranta, M. (2003). *Adoption of Mobile Banking in Finland*. Doctoral Dissertation. Jyväskylä University Printing House, Jyväskylä and ER-paino, Lievestuore.

Teo, T. S. H., & Pok, S. H. (2003). Adoption of WAP-Enabled Mobile Phones among Internet Users. *International Journal of Management Science,* Omega 31(6), 483– 498.

Tiwari, R., & Buse, S. (2007). *The Mobile Commerce Prospects: A Strategic Analysis of Opportunities in the Banking Sector.* Hamburg, Germany: Hamburg University Press.

Trompenaars, F., & Hampden-Turner, C. (1998). *Riding The Waves Of Culture*, London: Nicholas Bearley.

UNCTAD: 2007. United Nations Conference on Trade and Development. Science and Technology for Development: A New Paradigm for ICT. *Information Economy Report 2007-2008.* New York.

Veiga, J. F., Floyd, S., & Dechant, K. (2001). Towards Modelling the Effects of National Culture on It Implementation and Acceptance. *Journal of Information Technology,* 16, 145-158.

Venkatesh, V., Morris, M. G., Davis G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.

Wei, J., Stankosky, M., Calabrese, F., & Lu, L. (2008). A Framework for Studying the Impact of National Culture on Knowledge Sharing Motivation in Virtual Teams. *The Journal of Information and Knowledge Management Systems*, 38(2), 221-231.

Wu, J. H., & Wang, S. C. (2005). What Drives Mobile Commerce? An Empirical Evaluation of the Revised Technology Acceptance Model. *Information & Management*, 42(5), 719–729.

Yang, W., Cheng, H. & Dia, J. (2008). A Location-aware Recommender System for Mobile Shopping Environments. *Expert Systems with Applications,* 34, 437–445.

Zakour, A. B. (2004). *Cultural Differences and Information Technology Acceptance*. Paper Presented at the 2004 7th Annual Conference of the Southern Association for Information Systems. Retrieved June 10, 2009, from http://sais.aisnet.org/sais2004/.%5CZakour.pdf

Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to Explain Mobile Banking User Adoption. *Computers in Human Behaviour*, 26(4), 760-767.