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Technology Acceptance Evaluation of Electronic Banking in Nigeria

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ABSTRACT

Electronic banking in the modern world today requires some degree of technology acceptance for effectiveness. A lesser statistics in academic research in Africa relating to e-banking denotes the need for more research into the field of e-banking across developing countries. This is further affected by factors militating against e-banking acceptance in developing nations with Nigeria inclusive. This Paper investigates the factors influencing the adoption and effective use of e-banking in Nigeria. Cross-sectional data was collected from 176 respondents through a survey. Multiple regression and factor analysis was employed to analyze data. The findings supported the developed research hypotheses and confirmed that perceived relative advantages, perceived ease of use, and trust in e-banking all impact attitudes toward the intention of adopting Internet banking. This paper makes a contribution to Internet banking literature. It sheds light on the factors that affect online banking adoption. The findings made contributes in terms of understanding the factors that contribute to the adoption of online banking by Nigerian consumers and invariably direct future e-banking policies. Future research can examine myriads of technology acceptance models aimed at achieving more effective results.

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INTRODUCTION

Electronic banking is the most advance channel in financial services. Electronic banking offers many benefits to banks, as well as to customers. However, when comparing globally, the percentage of electronics banking in Nigeria, users fewer compared to users in countries like USA, Malaysia, and Lebanon and as in other regions around the developed counties. There can be several reasons behind this occurrence. Consumer's use of electronic banking requires acceptance of the technology, which can be complex because it comprises the changing in behavioral pattern. Moreover, electronic technology could be difficult for some consumers to comprehend. Besides that the consumers also need to comprehend the complex environment of the technology in monetary aspects. In addition, electronic banking trust is extra important because a number of consumers are still worried about personal privacy and transaction safety and security, these worries include sensitive information and parties concerned in the financial transaction are concerned about access to critical files, and information transferred via the electronic technology (Velmurugan, 2012; Singhal and Padhmanabhan, 2008; Mayer, Davis, & Schoorman, 1995; Bradley & Stewart, 2002; B. Suh & I. Han, 2002).

The understanding of factors that effect on intention, could contribute in increasing the acceptance of the electronic banking habit. Electronic banking is relatively new, especially in a Nigeria banking environment (Gao & Owolabi, 2008). Over 20 banks in Nigeria invest a massive amount of money in the banking system. Unfortunately, the rate of usage of the Electronic banking is still low compared to the European countries and the United States of America. Muhammad & Mukhtar, (2013) affirmed that the use of Information Communication and Technology (ICT) in the banking industry in Nigeria increases return on equity, the study also emphasis more on policies that will boost efficient/proper utilization of ICT equipment rather than additional investments. Therefore, Electronic banking acceptance is premeditated by examining the reasons behind unwilling consumers to use online banking in Nigeria. In addition, there are still very few studies conducted on electronic banking in Africa countries, in general, and in Nigeria, in specific. Therefore, this study attempts to fill this gap. Subsequent sections highlights the theoretical background to this study from technology acceptance model (TAM) and innovation diffusion theory (IDT) perspectives, the chosen methodological approach and results to a logical conclusion.

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Theoretical Background:

This study has implemented a lot of research to identify factors that affect the adoption of new technology. Due to a lack of grounded theory in the information and communication technology (ICT) field, researchers have turned to models that have been developed in other areas as a foundation for their research. In the case of predicting an individual's intention to adopt ICT, information systems (IS) This study have borrowed intention models from social psychology as the foundation for this research, thus, this study adopts Wu & Wang (2005) and discusses the following literature review which serve as a groundwork for the development study model.

(A) Technology Acceptance Model (TAM):

After an extensive review of the information systems literature, Davis (1989) developed the Technology Acceptance Model (TAM). TAM as it is commonly known was adapted from the theory of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The original TAM consisted of perceived ease of use (PEOU), perceived usefulness (PU), attitude toward using (ATU), behavioral intention to use (BI), and actual system use (AU). PU and PEOU are the two most important determinants for system use. The ATU directly predicts users' BI which determines AU and has been the most influential theoretical tool for explaining the user acceptance of technology in terms of numbers of the citations it has received (Venkatesh, Davis & Morris, 2007). In fact, TAM has been claimed to have become so influential. TAM's pre-eminence has led scholars to discuss whether it has reached an exemplary position (Benbasat & Barki, Quo Vadis, 2007). At the same time, TAM led to other important aspects of technology acceptance behavior being neglected or unnoticed (Lee, Kozar & Larsen, 2003). TAM views perceived usefulness and perceived ease of use as the most salient beliefs influence an individual's decision to adopt new technology. The study showed that social influence processes and cognitive instrumental processes significantly influenced user acceptance and that PU and PEOU indirectly influenced AU through BI.

(B) Combination of Innovation Diffusion Theory (IDT) and TAM:

Innovation Diffusion Theory (IDT) is another well-known theory proposed by (Rogers EM 1995), the study which singled out the following five significant innovation characteristics: relative advantage, compatibility, complexity, trial ability, and observables. These characteristics are used to explain the user adoption and decision making process. They are also used to predict the implementation of new technological innovations and clarify how these variables interact with one another. The central concept of innovation diffusion is "the process in which an innovation is communicated through certain channels, over time, among the members of a social system." However, research has suggested that only the relative advantage, compatibility, and complexity are consistently related to innovation adoption. Relative advantage is related to perceived usefulness, while complexity is related to perceived ease of use (Liao & Lu, 2008). Compatibility is the degree to which the innovation is perceived to be consistent with the values of the potentials users, previous experiences and needs. High compatibility will lead to better adoption.

Research Model and Hypotheses Development:

This study purposes to provide a theoretically justified research model that integrates online banking trust with TAM factors. Then the researcher tested the factors' effect on the intention empirically. The research model is presented in Fig 1. The following literature review explains hypotheses and the relationship between variables.

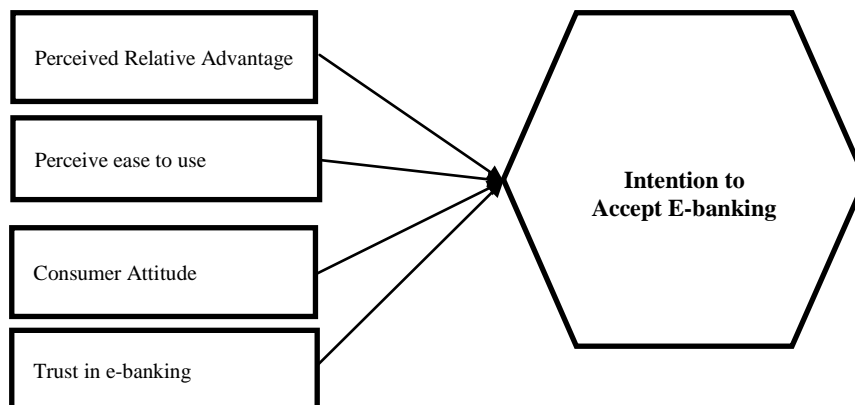


Fig. 1: Research Model

A. Relative Advantage:

Relative advantage is defined as “the degree to which an innovation is perceived as being better than the idea it supersedes”. Relative advantages refer to the degree to which an innovation provides settlement, which supplant those of its forerunner and may incorporate factors such as economic benefits, image enhancement, convenience and satisfaction (Rogers E.M, 2003). This construct was found to be similar to perceived usefulness constructs in TAM (Davis, 1989; (Liao & Lu, 2008; Wu & Wang, 2005). Tung, Lee, Chen & Hsu (2009) study of an extensions financial cost and TAM model with IDT for exploring users’ behavioral intention to use the CRM information system, affirmed that perceived usefulness and perceived ease of use are instrumental in explaining the variance in users’ intentions and concluded that IDT and TAM are complimentary to each other. The positive influence of relative advantage on individuals’ intention to adopt Internet banking has been found in several previous studies (Hernandez & Mazzon, 2007; Kolodinsky, Hogarth & Hilgert, 2004). In this study, the relative advantage as the degree to which online banking is perceived as being better than the knowledge it supersedes. Therefore, we posited that:

H1: Perceived relative advantage in using electronic banking may likely influence the intention to use the technology

B. Perceived Ease of Use:

Perceived ease of use is defined as “the degree to which a person believes that using a particular system would be free from effort” (Davis, 1989). Perceived ease of use was established to affect the acceptance of online banking service (Plouffe *et al.*, 2001; Lin, *et al.*, 2009; Hsu & Wang, 2009; Tung *et al.*, 2009; Lee, 2009; Norbayah *et al.*, 2009; Sudha *et al.*, 2010; Wei *et al.*, 2009). Usually, when a technology is fashioned to be easy to use, Consumers will have the intention to accept the technology. Here, this study defines ease of use as the degree to which customer’ use of online banking services is perceived as easy or unsophisticated. Thus, this study hypothesizes that:

H2: Perceived ease of use of using electronic banking may likely influence the intention to use the technology.

C. Consumer Attitude:

Drawing on TRA, consumer attitude relates to the level to which an individual makes a positive or negative evaluation about performing behavior (Fishbein & Ajzen, 1975). For this study, consumer attitude towards online transactions is defined as the magnitude to which a consumer makes a positive or negative evaluation about online banking (Andrews, 2007). Attitude plays an important role in prompting individuals’ intention to adopt a new technology. In the case of online banking adoption, consumers who believe that online banking would bring affirmative magnitudes would hold a promising attitude toward online banking, while individuals who believe that online banking would bring negative consequences would hold an unfavorable attitude toward Internet banking. The effect of attitude on intention has been confirmed in the online banking areas (Agarwal *et al.*, 2009; Al-Majali & Nik Mat, 2010; Jaruwachirathanakul & Fink, 2005; Kuisma, *et al.*, 2007; Lee, 2009; Md Nor, AbuShanab & Pearson, 2008; MdNor, 2005; Suh & Han, 2002; Tan & Teo, 2000). It can be concluded that, the attitude has played a significant role in influencing an individual’s intention to adopt new technology especially in Nigeria context. Therefore, this study hypothesized that:

H3: Consumer attitude toward may have influence on consumer intention to e-banking usage

D. Trust in E-Banking:

Trust is defined as "the willingness of a party to be susceptible to the actions of alternative party based on the anticipation that the other will perform a specific action significant to the trust or, regardless of the ability to monitor or control that other party" (Mayer, Davis & Schoorman, 1995). Trust has played a significant role in e-commerce activities is the fact that in a virtual setting, the degree of uncertainty of economic transactions is higher than in traditional settings (Md Nor & Pearson, 2007; Rotchanakitumnuai & Speece, 2003;). The effect of trust on attitude has been validated in studies related to the Internet banking domain (Alsajjan & Dennis, 2009; Al-Somali, Gholami & Clegg, 2009; (Amoroso & Hunsinger, 2008; Grabner-Kraäter & Faullant, 2008; T.S.H. Teo & J. Liu, 2012). Therefore, in the context of individuals’ trust of online banking services, it is expected that individuals with a high degree of trust will be more likely to have positive attitude toward Internet banking services than are individuals with less trust. This leads to proposing that:

H 4: Trust may likely influence intention to use electronic banking system

IV. Research Methodology:

A. Development of Instruments:

The instrument intended to measure the strength of the relationship, this study uses paper-based questionnaire for the survey. Items to measure behavioral intention to use online banking, attitude, were generated based on the procedures suggested by Ajzen & Fishbein (1980) and Al-Majali & Nik Mat (2010) containing five items for intention and four items for attitude. Items to measure the relative advantage was

adapted from the measurement developed by Tung *et al.*, (2009) containing four items. Items to measure perceived ease of use was adapted from the measurements developed by Davis (1989), containing four items. Items to measure online banking trust were adapted from the measurements developed by Mozie (2012) containing four items. All items designed based on a five-point Likert's scales, ranging from "disagree strongly" (1) to "agree strongly" (5).

B. Subjects Data Collection:

Subjects in the study were commercial banks' customers in Western part of Nigeria (Lagos). A personally-administered questionnaire method used in the survey. The questionnaire was circulated active banks in Nigeria. This study circulated total number 200 questionnaires. One hundred seventy-six (176) questionnaires were returned, denoting 96.4 percent rate of return. Total numbers of 146 were used after excluding incomplete questionnaires, responses from users of online banking, missing data and outlier. Sample demographics are shown in Table I.

Table 1: Demographic Response

Variable	Category	Frequency	Percent
Gender	Male	86	58.9
	Female	60	41.1
Age	18-25	30	20.5
	26-30	38	26.0
	31-35	28	19.2
	36-40	32	21.9
	Above 41	18	12.4
Occupation	Employed	52	35.62
	Self employed	48	32.87
	Student	46	31.51
Income \$	181-240	23	15.7
	241-300	25	17.1
	301-600	32	21.9
	600-900	30	20.6
	900 above	36	24.7
Knowledge E banking	Yes	96	65.75
	No	50	34.25
Aware of e-banking	Yes	76	52.05
	No	70	47.95

The above table indicated 58.9% of the participants were male and 41.1% were representing female in this study. Considering the age, 20.5% of the participants were within the range of 18-25 of age group; 26% were within the age group 26-30; 19.2% representing the age within 31-35; 21.9% of the participants were within the range of 36-40 and participant above 41 in age representing 12.4% of the sample.

V. Result Analyses:

Factor analysis was used to determine if the number of factors and the loading of measured (indicator) variables on them conform to what is expected on the basis of pre-established theory as previously argued factor loading is expected to be 0.7 or higher to confirm that independent variables identified a priori are represented by a particular factor (Thompson & Schofield, 2007). In this study a number of steps comprise a factor analytic procedure such as KMO and Bartlett's test to reconfirm the reliability of the construct, the table II below shows the KMO and Bartlett's.

Table II: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.876
Bartlett's Test Approx. Chi-Square	5.364E3
Of Sphericity Df	367
Sig.	.000

Table III: Cronbach Alpha

Code	Variable	Cronbach Alpha	Average Variance Extracted
PRA	Perceived Relative Advantage	0.876	0.769
PEU	Perceived Ease of use	0.839	0.701
CA	Consumer Attitude	0.889	0.784
TR	Trust	0.852	0.723
EBINT	Intention to E-banking	0.858	0.748

The above table III shows the results of the expected yardstick for reliability of construct are 0.7 for Cronbach Alpha and 0.5 for Average variance extracted (Hair *et al.*, 2011; Klein & Rai, 2009), from the above results, the construct proved good fit for the study. However, after running and confirming the reliability and validity of the constructs, then multiple regressions was performed. Table IV below shows the results of the Analysis.

Table IV: Regression Results

Multiple R	= 0.689
R square	= 0.475
Adjusted R square	= 0.473
Standard error	= 0.8011

	DF	Sum of squares	Mean square
Regression	4	87.147	21.787
Residual	141	86.677	0.614
F= 35.483	145		
Significance F= 0.000			

Code	Variables	Beta	t	Sig
PRA	Perceived Relative Advantage	0.473	4.101	0.000
PEU	Perceived Ease of use	0.442	3.978	0.001
CA	Consumer Attitude	0.566	7.676	0.000
TR	Trust	0.487	4.568	0.000

Note: a) Independent variable, PRA, PEU, CA, TR,
b) Dependent variable Ebint

The result from the multiple regression performed above indicated that F statistic for the final model is 35.483 with a p value of 0.000, showing a significant model. The results also indicated that the Perceived Relative Advantage ($\beta=0.473$, $p < 0.000$), Perceived Ease of use ($\beta=0.442$, $p < 0.001$), Consumer Attitude ($\beta = 0.566$, $p < 0.000$) and Trust ($\beta= 0.487$, $p < 0.000$) effect on behavioral intention is statistically significant, thus supported all the stated hypothesis in this study Consumer Attitude has more influence over other three predictors, that is perceived relative advantage, perceived ease of use and trust on intention to use electronic banking system as shown in above table standardized beta coefficient. Overall of the four predictors together explain 47 percent of the variance in the behavioral intention to use electronic banking system.

Discussion:

This study endeavored to test a research model based on the combination of innovation diffusion theory (IDT) and Theory of reasoned action (TAM) using electronic banking as the objective technology. As predictable, the results have buttressed the combined theory's proposition that individuals' behavioral intention to use electronic banking is influenced by their attitude, relative advantage, perceived ease of and trust on the technology. The results specify the applicability and ability of the combined theories to foresee acceptance intentions, in this study's case within different sampling frame of (Nigerians banking customers) and objective technologies is electronic banking. As shown on the table perceived relative advantage in using electronic banking may likely influence the intention to use the technology. This finding conforms to Hernandez & Mazzon (2007) and affirms that perceived relative advantage is a major determinant of individuals, attitude toward accepting electronic banking system. Perceived relative advantage in using electronic banking may likely affect the intention to use the technology. Results of the study also established that perceived ease of use significantly influence customer intention to use of electronic banking system, the intention to use electronic banking services is attributed to the reasons that individual's may learn to use electronic banking systems quickly and unearth that it is easy to use it. This corroborates the finding by Norazah & Norbayah, 2009; Sudha *et al.*, 2010; Wei *et al.*, 2009.

The Multiple regression analysis performed also presented a significant relationship between electronic banking trust and behavioral intention to toward acceptance of the technology toward, the hypothesis that trust may likely influence intention to use electronic banking system supported the this study. This result is consistent with Chiu *et al.*, 2012; Md Nor & Pearson, 2007; Grabner-Kraäter & Faullant, , 2008). The results specify that trust on using the electronic banking is extraordinary, and it is seen as one of the key factors influencing the intention to accept technology, this is based on the degree of uncertainty of a simulated setting of economic dealings is higher than in traditional way of buying/trading (Md Nor & Pearson, 2007; Grabner-Kraäter & R. Faullant, 2008). Consumer Attitude has more influence over other three predictors, which are perceived relative advantage, perceived ease of use and trust on intention to use electronic banking system as shown in above table standardized beta coefficient. This finding was consistent with past studies such as (Lin *et al.*, 2010; Agarwal, Rastogi & Malhotra, 2009; Al-Majali & Nik Mat, 2010; Lee, 2009; K. Md Nor, E. AbuShanab & J.M. Pearson, 2008; Suh & Han, 2002; M. Tan & T.S.H. Teo , 2000). Cheerfully, banking customers have faith in using the electronic banking systems, believing that it would be a enjoyable knowledge for them, as it is a worthy

knowledge. They would be able to use the electronic banking system and become more resourceful, increasing in technology know-how and ability to be more skillful in the basic technology successfully.

Conclusion:

This study has investigated the relationship between perceived relative advantages, perceived ease of use, electronic banking trust, customer attitude and customers' intention to use electronic banking system. The results make available indication for the combined theoretical model acceptance IDT & TAM and the concepts perceived electronic banking trust. The effects of the concepts agreed with the view of perceived relative advantages, perceived ease of use, electronic banking trust were independent variables. They have certified a noteworthy role in influencing individuals' consumer behavioral intention toward acceptance of electronic banking system. Furthermore, the result revealed that attitude has a significant and positive influence on individuals' intention to accept electronic banking system. The stated hypotheses for this study all were significant and shows that the model fit for the overall fitness. The model explains approximately 47 % of the variance on the consumer behavioral intention to use electronic banking system.

Limitations and Future Recommendation:

There are several limitations in this study. Firstly, this study has investigated the factors influencing customers' behavioral intention to use electronic banking. This sound larger than the covered scope of this research, future recommendation of study can enhance the research model, and include the factors of re-intention or continue of using new technology. Secondly, our research is focused on Nigeria. However, the resultant model can be tested in other countries to compare the results with this study. A cross comparison study would allow a better understanding of the factors that affect electronic banking electronic. Thirdly, various activities exist to customers when using electronic banking such as; transfers between accounts, check balances and conduct financial transaction. Future research should investigation into these specific activities to expand this research to the next stage, which allows Internet banking providers to understand the factors that affect the usage of specific Internet banking activities. Fourthly, future study can also consider using the demographic variables in this research as control variables and compare the effects with the ones found in the present research.

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