

Mobile Banking and Consumer Satisfaction: Evidence from Nigeria

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Abstract

Mobile phones have created a platform to expand commercial transactions in a very easy manner and have created a wide array of business opportunities through the expansion of wireless communication. These developments facilitate business transactions, trading, and purchasing of goods and services without much effort. Hence, it is clear that mobile banking would be an attractive way of providing banking services and it also could contribute to the development of the nation through promotion of better financial services. However, determining the characteristics of mobile banking services and how banks could achieve a proper relationship with customers through mobile banking is vital for development of mobile banking. The study thus undertakes an empirical analysis to examine the effect of mobile banking services on customer satisfaction in Nigeria, using Nasarawa metropolitan city in Nigeria as a study. Ordinary Least Square (OLS) regression method was employed to examine how mobile account balance updates, mobile funds transfer and transaction, and mobile bill payment has influenced ease of use, privacy and convenience. The findings from the analysis showed that mobile balance updates and mobile bill payments do not a significant effect on Privacy/security and convenience due to network out of order problems and inadequate awareness on how customers could use their phones to perform simple banking operations. Customers were found to be satisfied with the use of mobile fund transfer which was found to have a significant relationship with ease of usage. Suggestive from the analysis therefore are that bankers should consider raising consumer awareness and acceptance of new technology-based mobile banking services more, through advertising and promotion rather than word-of-mouth communication. Security, trust and reliability should also be focused by banks by enhancing security of transactions, ensuring proper network system and timely service provision.

Keywords: Mobile banking, Customer Satisfaction, Mobile Balance Updates, Mobile funds.

1. Introduction

The emergence of Global System for Mobile (GSM) has led to improvements in efficiency and productivity, reductions in transaction costs, increased service innovation and better quality of life for most customers. The advent of mobile phone with high quality of technology has enabled new ways to conduct banking businesses, resulting in creation of new institutions, such as mobile banks, mobile

brokers and wealth managers. In the present banking system, excellence in service delivery is the most important tool for sustainable business growth. (Perng, 2007). Customer Complaints are part of the business life of any corporate entity. This is more so for banks because they are service organizations. As a service organization, service delivery and customer satisfaction should be the prime concern of any bank. The bank believes that providing prompt and efficient service is essential not only to attract new customers, but also to retain existing customers.

However, banks minimize instances of customer complaints and grievances through proper service delivery. Service Delivery is an important mechanism that shows how to measure service results with meaningful metrics and using the metrics to drive continuous service improvement. Service Delivery fosters a corporate behavior of responsible use of Information Technology services to maximize corporate profits. Most importantly, Service Delivery fosters true business-Information Technology partnerships to the benefit of the company as a whole. Service delivery has been described to be one of key performance indicators of an organization. The extent to which customer are satisfied with the service rendered has great influence on the overall performance and must be taken seriously by players in the commerce.

In today's environment the satisfied customer are more loyal to the organization otherwise they switch to other organizations. So the dependent variables that are directly affect the customer satisfaction are ease of use, privacy/security, and convenience. While account balance update, bill payment, funds transfer and transaction verification are Variables that affect independent variable. The emergence of GSM has led to improvements in efficiency and productivity, reductions in transaction costs, increased service innovation and better quality of life for the rural dwellers. Mobile Banking has become an important issue, not only to retain customers but also gaining a competitive advantage while maintain and growing overall effectiveness. In the present banking system, excellence in customer service is the most important tool for sustainable business growth.

Modern management science philosophy considers customer satisfaction as a baseline standard of performance and a possible standard of excellence for any business organization. Especially, banks due to similar services compete together in order to achieve customer satisfaction. They try to create eases for their customers. The bank believes that providing prompt and efficient service is essential not only to attract new customers, but also to retain existing ones. However, banks minimize instances of customer complaints and grievances through proper service delivery and review mechanism and to ensure prompt redress of customer complaints and grievances. Service delivery has been described to be one of key performance indicators of an organization. The extent to which customers are satisfied with the service rendered has great impact on the overall performance and must be taken seriously players in the industry.

In Nigeria, customers of banks today are no longer talking about safety of their funds and increase returns on their investments only. Customers demand efficient, fast and convenient services. Customers want a Bank that will offer them services that will meet their particular needs (personalized Banking) and support their Business goals. Mobile banking came into existence in order to fill the vacuum created by adoption of traditional techniques afore adopted in the Nigeria banking system such as delay of service, lack of information backup, lack of interconnectivity and networks failure. Furthermore, the conclusion of (Salem & Rashid, 2011) that customer satisfaction has not been studied specifically for banking sector firms with respect to technology adoption called for informed empirical investigation. Evidence from the literature shows that GSM has considerable impact on the economy being an emerging communication industry in Africa, with Nigeria rated as one of the fastest growing market in this field of communication (Buhalis, 2003). Mobile banking is expected to improve banks operations in term of service delivery. The extent to which the use of mobile phone by banks customers can improve service delivery merit investigation. The effects of mobile phone on banks service delivery has not been greatly explored in a developing economy like Nigeria. Also, the recent proposed cashless policy of the Central Bank of Nigeria (CBN, 2012) has created challenges for the bankers and other players in commerce on attainment customer service satisfaction in cashless society.

Mobile Banking and Consumer Satisfaction: Evidence from Nigeria

Few studies in Nigeria focus on mobile banking while more on IT, ATM and Internet Banking. This is because mobile banking service is just expanding in Nigeria. It is therefore imperative to determine the effects of mobile banking services and customers satisfaction in Nigeria so as to guide policy design and implementation aimed at encouraging its usage.

Thus, the major objectives of this paper are to:

- i. Examine the relationship that exists between mobile accounts balance updates and privacy/security of customers
- ii. Analyze the extent to which mobile bill payment had influenced conveniences of customers
- iii. Examine how mobile fund transfer and transaction verifications had impacted on the ease of usage by customers

Based on the research objectives stated above, the following null hypothesis is formulated for the study:

- H₀₁:** There is no significant relationship between mobile accounts balance updates and privacy/security of customers
- H₀₂:** Mobile bill payment has not significantly influenced the conveniences of customers.
- H₀₃:** Mobile fund transfer and transaction verifications have not impacted on the ease of usage by customers.

2. Literature Review

2.1 Concept of Mobile Banking

Mobile device is commonly known as cell phone and users commonly use it for communication and as a wireless delivery channel. The term mobile "refers to applications, which are designed for users on the move" (Anekar. & D'Incau, 2011). Mobile banking is also known as m-banking. According to Amin; Baba; and Muhammad, (2007) m-banking is defined as "a form of banking transaction carried out via a mobile phone". Moreover, it is defined as a "type of execution of financial services in the course of which - within an electronic procedure- the customer uses mobile communication techniques in conjunction with mobile devices"(Pousttchi & Schurig, Cited in Sinkkonen., Laukkanen, . Kivijarvi, & . Laukkanen, 2007). The technologies generally used for mobile banking are Interactive Voice Response (IVR), Standalone Mobile Application Clients, Short Messaging Service (SMS) and Wireless Application Protocol (WAP) (Tiwari & Buse 2006).

The Federal Reserve survey defines mobile banking as "using a mobile phone to access your bank account, credit card account, or other financial account. Mobile banking can be done either by accessing your bank's web page through the web browser on your mobile phone by text messaging or by using an application on downloaded to your mobile phone". The customers are required to follow a pre-determined process and procedure to get the services offered by the bank such as: depositing, withdrawals, checking of statement, balance inquiry as well as transfers within and outside the country requires verification, authentication and finally transaction (Jepleting, Oscar.& Bureti, 2013). Mobile banking can help to make full access to the details and transactions of personal bank accounts, making credit installment, utility bill payments, and transferring funds. customers who use mobile banking must register for all service through bank website and download the mobile banking application to their phones, once the application are install you can use this service free of charge the only cost you have to pay is the normal communication by the mobile operators (Al-Jabri & Sohail,2012).

Mobile services are more attractive than current online services due to service ubiquity, a unique characteristic exclusive to the mobile environment (Tojib & Tsarenko, 2012). In Iran, the most important services provided in mobile banking system are : balance enquiry, last three accounts transactions enquiry, draft, approved of Check amount, Check status enquiry, blocking card, buy prepaid recharge.

installments payment, bills payment, received messages archives, ability of receiving various customer accounts information, shopping ability, hotel expenses payment, stock market status enquiry. Mobile banking services can be classified based on the originator of a service session, either push or pull". Push it means when the bank sends out the information based on agreed set out of rules such as: the banks send out an alert when the account balances goes below a threshold level. In a meanwhile pull means when customer explicitly requests a service or information from the bank requesting the last five transactions (Masrek, Omar, & Khairuddin, 2012). Today, most banks offer basic mobile banking services for their customers, the most common services available today are: Account alert, security alerts and reminders, Account balances updates and history, Customer service via mobile, Branch or ATM location information, Bill pay; deliver online payments by secure agents and mobile application, Funds transfers and Transaction verification. (Anand, 2007)

2.1.1 Concept of Customers' Satisfaction

Satisfaction can be reflected as a feeling of pleasure when a person attains his or her wants, goals or motivation (Boonlertvanich, 2011).

Customer satisfaction can be defined as a feeling of customers by using a service or product (Metawa and Almossawi, 1998). Customer satisfaction is key factor of customer's desires for future purchase (Mittal & Kamakura, 2001). Besides, the satisfied customers will probably share their good experiences with others (Jamal & Naser, 2002). Customer satisfaction considered as an essential factor of long-term behavior of customers (Ndubisi, 2004). The satisfaction of the customer especially in the service business had a great importance because the satisfaction of the customer directly linked with the customer loyalty or the repetition of using the services the modern banking has provided (Ravichandran, Prabhakaran, & Kumar, 2010). Customer satisfaction is much vital in internet based companies. Good quality products and services are demanded by customers and if they don't get the desired services they can easily move away towards another option. All the online businesses are compelled to isolate and focus customer's need for their satisfaction (Kadir, Rahmani, & Masina, 2011). Customer satisfaction measures how well a product or a service supplied by a firm meets customer expectation.

2.1.2 Customers Satisfaction in Banking Sector

In line with Tsoukatos & Rand (2006), customer satisfaction is a key to long-term business success. To protect or gain market shares, organizations need to outperform competitors by offering high quality product or service to ensure satisfaction of customers. In proportion to Magesh (2010), satisfaction means a feeling of pleasure because one has something or has achieved something. It is an action of fulfilling a need, desire, demand or expectation. Customers compare their expectations about a specific product or services and its actual benefits. As stated by Kotler & Armstrong, (2010), satisfaction as a person's feelings of pleasure or disappointment resulting from the comparison of product's perceived performance in reference to expectations. Customer's feelings and beliefs also affect their satisfaction level. Along with Zeithaml (2009), satisfaction or dissatisfaction is a measure or evaluation of a product or service's ability to meet a customer's need or expectations. Razak, (2007) also reported that overall satisfaction is the outcome of customer's evaluation of a set of experiences that are linked with the specific service provider. It is observed that organization's concentration on customer expectations resulted into greater satisfaction. If the customers of an organization are satisfied by their services the result is that, they will be loyal to them and consequently be retained by the organization, which is positive for the organization because it could also mean higher profits, higher market share, and increasing customer base (Karatepe., Yavas, & Babakus, 2005). Customer satisfaction has become important due to increased competition as it is considered very important factor in the determination of bank's competitiveness (Berry, Seiders, & Grewal, 2002). Continuous measurement of satisfaction level is necessary in a systematic manner (Chakravarty, Widdows, & Feinberg, 1996). Because satisfied customer is the real asset for an organization that ensures long-term profitability even in the era of great competition. Cronin, Brady, &

Hult, (2000) mentioned in their study that satisfied customer repeat his/her experience to buy the products and also create new customers by communication of positive message about it to others. On the other hand, dissatisfied customer may switch to alternative products/services and communicate negative message to others. Customer satisfaction is a set of feeling or outcome attached with customer's experience towards any product/ service (Solomon, 1998). Hence, organizations must ensure the customer satisfaction regarding their goods/services.

2.2 Empirical Literatures

Empirical studies on mobile banking are sparse because it is a newly implemented policy of the CBN. Mobile banking is adapted by the banks as means to provide customers swift and easy access to their bank accounts. Customers adopt a technology when they find it easy to understand and implement. Numerous researchers have investigated perceived usefulness and perceived ease of use as a valid construct to measure customer satisfaction level. According to Kadir, e'tal,(2011) "ease of use, security, low transaction costs, and wide applicability of the solutions increase perceived customer value and should be managed by mobile payment solution provider.

Adewoye (2013) empirically studied the impact of mobile banking on service delivery in the Nigerian Commercial Banks through the use of questionnaire. He found out that the introduction of e-banking services has improved banking efficiency in rendering services to customer. His findings shows that mobile banking improve banks service delivery in a form of transactional convenience, savings of time, quick transaction alert and save of service cost which has recuperate customer's relationship and satisfaction. To this end, he recommended that banks management should create awareness to inform the public about the benefits derived on the e-banking service products, collaboration among banks should perfectly maintained, skilled manpower and computer wizard should be employed by every banks, in order to prevent fraudulent personal and hackers from manipulating the banks data and stealing money from the banks accounts. Finally, provision and maintenance of public network system such as telephone (Nitel) and the availability of these basic infrastructures is fundamental to the efficient functioning of the mobile banking services.

Olatokun and Igbinedion (2009) used Diffusion of Innovation theory to investigate the adoption of mobile banking in Nigeria. They found out that constraint such as relative advantage, complexity, observability, compatibility and trialability were positively related to attitude to the use of mobile phones in Nigeria. Olorunsegun (2010) used cluster sampling technique to study the impact of electronic banking in Nigerian banking system. He found out that a bank has an effective electronic banking system which has improved its customer's relationship and satisfaction. James (2013) used Rogers Diffusion of Innovation theory to investigate the determinants of the adoption of mobile banking in Nigeria. The study empirically showed that age, educational qualification, relative advantage, complexity, compatibility, observability and trialability were important determinants of the adoption of mobile banking. This therefore makes it imperative for relevant stakeholders to make efforts to positively influence these independent variables so as to make mobile banking more popular.

Egwali (2008) used consumer acceptance theory to investigate customers' perception of security indicators (SI) in online banking sites in Benin, Nigeria. He found out that SI were not very effective at alerting and shielding users from revealing sensitive information to fool e-banking sites in Nigeria. (Humphrey & Berger 1990). In another study, Olorunsegun (2010) undertook a research on "the impact of electronic banking in Nigeria banking system". The main objective of his research work was to examine the impact of electronic Banking in Nigeria banking system on how different channels could enhance the delivery of consumers and retails products, and also how Banks choose to support their Electronic Banking component/services internally, such as internet services provider, Internet banking software, Core banking vendor, Managed security service provider, Bill payment provider, Credit Business and Credit scoring company. He used both the primary and secondary data in his study. The

primary data were collected through the use of questionnaire which was administered to credit officers of Unity Bank Plc. while the secondary data were data collected from CBN electronic banking guideline, annual report of Unity Bank Plc. and CBN annual report etc. The study used both descriptive and inferential statistics in analyzing the data. Also, simple frequency counts, percentages and the chi-square were used in the data analysis. He concluded that the electronic banking system in Nigeria has made banking transaction to be easier by bringing services closer to its customers.

Onyedimekwu and Oruan (2013) examined the Empirical Evaluation of Customers' Use of mobile banking Systems in Nigeria. The objective of their research work was to empirically evaluate the success of mobile banking systems in Nigeria, and to access customers' readiness for mobile banking. The methodology employed in this study was positivistic, quantitative and hypothetic-deductive. Hypotheses were derived from the extant literature on Information Systems' Evaluation using D & M IS Success Model. The collected data were analyzed based on descriptive statistics (frequency and percentage) and correlation analyses using the statistical package for social sciences (SPSS) version 18. They came to the conclusion using DeLone & McLean (2003) IS Success Model to show that most bank customers will use mobile-banking systems more often if the system quality, information quality and service quality is improved.

2.3 Theoretical Framework

Customers adopt a technology when they find it easy to understand and implement. As proposed by Wessels and Drennan,(2010), the Technology Acceptance Model depicts that perceived usefulness and perceived ease of use determines an individuals' intention to use a system. Adoption of a technology in customer's point of view is the ease and usefulness he considers to avail from it. Similarly, Task technology Fit model "focuses on the match between user task needs and the available functionality of the IT" (Dishaw & Strong 1999). Technology innovation bridges the gap between customer's expectation and their perceived experience of performance. The technology advancement increases the usefulness which leads to higher customer satisfaction. Furthermore, the theory of planned behavior is a theory about the link between attitudes and behavior of customer. The model assumes behavioral intention to use as customer satisfaction determined by usefulness, risk and trust. According to Baba, and Muhammad 2007; Aldas-Manzano, and Ruiz-Mafe; (2009) perceived usefulness has a positive effect on the behavior of customers. The current study extends its applicability in context to mobile banking adoption.

2.3.1 Technology Acceptance Model (TAM) Theory

Technology Acceptance Model is one of the models that have been developed to provide a better understanding of the usage and adoption of information technology. It is presently a prominent theory used in modeling technology acceptance and adoption in Information systems research. Fred Davis in 1985 proposed the TAM in his doctoral thesis at the MIT Sloan School of Management. TAM is an information systems theory that models how users come to accept and use a technology that will encourage economic growth. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it. The factors are; perceived usefulness (PU) and perceived ease-of-use (PEOU). According to TAM, one's actual use of a technology system is influenced directly or indirectly by the user's behavioral intentions, attitude, perceived usefulness of the system, and perceived ease.

2.3.2 Diffusion of Innovation (DOI) Theory

Diffusion of Innovation theory seeks to explain how, why, and at what rate new ideas and technology spread through cultures. This theory was developed by Gabriel and Rogers (a professor of rural

sociology), popularized the theory in their 1962 book Diffusion of Innovations. He said diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. Rogers explained the process of Innovation diffusion as one which is dictated by uncertainty reduction behavior amongst potential adopters during the introduction of technological innovations. Diffusion of Innovation (DOI) Theory consists of six major components: innovation characteristics, individual user characteristics, adopter distribution over time, diffusion networks, innovativeness and adopter categories, and the individual adoption process. Arguably the most popular of the six components of DOI centers on the characteristics of the innovation itself. After analyzing a variety of previous innovation diffusion studies, Rogers singled out the following five characteristics of innovations that consistently influence the adoption of new technologies.

2.3.3 Perceived Risk Theory (PRT)

Perceived risk also has some serious points to be considered on mobile banking. Earlier studies have suggested that the user's perception on risk is a main factor in the adoption of new technology. When the new innovation is done, it helps to develop the life style of the users and it will be more if the adoption increases satisfaction. It is also a fact that a progressive image could be created among the community using mobile banking services and they get self-respect and it will play a great role in adoption of the technology. On the other hand McLean and DeLone also updated the modern view and they considered the user's satisfaction as the key measure in assessing the successfulness on a system.

3. Methodology

3.1 Research Design

The paper applied a descriptive research design. Descriptive research design is a systematic, empirical inquiry into which the researcher does not have direct control of independent variables as their manifestation has already occurred or because they are reflecting the state of happenings and qualify the obtained findings through the use of quantitative analysis (Mugenda & Mugenda, 1999). Questionnaire was administered to raise data meant for the analysis and the results analyzed to establish the relation between mobile banking services and customer satisfaction of some selected bank in Nasarawa state (First Bank, UBA, Zenith Bank, fidelity bank, GT Bank and FCMB banks).

3.2 Procedure for Data Analysis and Model Specification

Quantitative analysis was used for the purpose of this study, because quantitative analysis results provide support for anticipated directions of the association between independent and dependent variables therefore, the study used regression analysis (OLS) to address the three hypothesis of this study since the study is addressing relationship between the various variables. This was achieved by the use of statistical package for social science (SPSS) and E-views. The major statistical analysis that was used in this study is the ordinary least square (OLS) regression analysis- the simple regression analysis. This analysis was used in order to find the linear relationship between the independent variables, which are: mobile account balance updates, mobile funds transfer and transaction, and mobile bill payment; while the dependent variable which is Consumer satisfaction is Proxied by ease of usage, privacy and convenience.

The model specifications here are formulated to tests the three hypotheses and they are as follows:

$$P_i = \beta_0 + \beta_1 MBU + \mu_i \text{-----} 1$$

$$C_i = \beta_0 + \beta_1 MBP + \mu_i \text{-----} 2$$

$$EU = \beta_0 + \beta_1 MFT + \mu_i \text{-----} 3$$

Where;

MBU = Mobile account balance updates: Account information involves sending bank Mini statements to the customer, checking account history, alerts on account activity or passing of set thresholds Monitoring of term, deposits access to loan statements, access to card statements Status on cheque, stop payment on cheque etc

P = Privacy/security: The concerns for securing the mobile channel mirror, the risks seen in the online environment, including authenticating the consumer's identity and protecting transmission of data from interception enabled by viruses, malware, and phishing attacks.

MBP = Mobile Bill payment: The Federal Reserve survey defined mobile payments as "purchases, bill payments, charitable donations, payments to another person, or any other payments made using a mobile phone. Mobile payments can be used by accessing a web page through the web browser on your mobile device, by sending a text message (SMS), or by using a downloadable application on your mobile device.

C = Convenience: Strategic implications and customer perception of m-banking services are explored (Laukkanen, 2005) with a focus on the consumer value creation and a better understanding about the customer-perceived value of m-banking services

MFT = Mobile fund transfer: This involves the transfer of cash money from customer's own accounts to another customer's account either within the same bank or to another different bank. It supports person to person transfers with immediate availability of funds for the beneficiary.

EU = Ease of usage: Ease of use means the level to which the customer perceived that modern banking is easy to recognize and manage. All type of modern banking usually has user friendly appearance, so this quality makes it more easy to use for customer, that's why customer has positive feeling towards them (Lin, 2011).

4. Presentation of Result and Discussion of Findings

4.1 Normality Statistics (Descriptive Statistics)

The normality statistics for the variables: C, EU, MBP, MBU, MFT and P are as shown in Table 4.1 below. The mean for C, EU, MBP, MBU, MFT and P are all different. This indicates that the variables exhibit significant variation in terms of magnitude, suggesting that estimation of the variables in levels will introduce some bias in the results. The Jarque-Bera statistic for all the variables is significant; hence we reject the null hypothesis and conclude that the series are normally distributed (or have a normal distribution).

Table 4.1: Summary of Normality Statistics

	C	EU	MBP	MBU	MFT	P
Mean	4.485455	4.363636	4.363636	4.120000	3.970000	2.726364
Median	4.670000	4.330000	4.330000	4.000000	4.000000	2.670000
Maximum	5.000000	5.000000	5.000000	4.670000	4.670000	3.670000
Minimum	4.000000	3.330000	3.330000	3.330000	3.330000	2.000000
Std. Dev.	0.431656	0.505851	0.460071	0.342783	0.482721	0.534458
Skewness	-0.044120	-0.524245	-0.891663	-0.776666	0.162312	0.458901
Kurtosis	1.383027	2.601193	3.377642	3.902620	1.769856	1.942901
Jarque-Bera	1.201928	0.576757	1.522981	1.479301	0.741874	0.898250
Probability	0.048283	0.049478	0.006970	0.007281	0.000087	0.008186
Sum	49.34000	48.00000	48.00000	45.32000	43.67000	29.99000
Sum Sq. Dev.	1.863273	2.558855	2.116655	1.175000	2.330200	2.856455
Observations	399	399	399	399	399	399

Source: Authors Computation, 2015 (E-views 7.0)

4.2 Test of Hypotheses and Interpretation of Results

4.2.1 Hypothesis One: H_{01} : There is no significant relationship between mobile accounts balance updates and privacy/security of customers

Model one: $P_i = \beta_0 + \beta_1 MBU + \mu_i$ ----- 4

Table 4.2.1: Regression result on Privacy/security and Mobile account balance updates

Dependent Variable: P

Method: Least Squares

Date: 08/31/15 Time: 17:01

Sample: 399

Included observations: 399

Variable	Coefficient	Std. Error	t-Statistic	Prob.
B0	4.521826	0.577090	7.835567	0.0000
MBU	-0.147386	0.208067	-0.708356	0.4967
R-squared	0.052808	Mean dependent var		4.120000
Adjusted R-squared	-0.052436	S.D. dependent var		0.342783
S.E. of regression	0.351655	Akaike info criterion		0.910633
Sum squared resid	1.112951	Schwarz criterion		0.982978
Log likelihood	-3.008481	Hannan-Quinn criter.		0.865030
F-statistic	0.501769	Durbin-Watson stat		2.210508
Prob(F-statistic)	0.496659			

$P = 4.52 - 0.14MBU$ ----- 5

$SEE = 0.57$ 0.20

$t^* = 7.83$ -0.70

$F^* = 0.50$; Prob(F-statistic)=0.49

$R^2 = 0.05$; $Adj.R^2 = -0.05$

$DW = 2.21$

From the regression result in table 4.2.1, the calculated t-value for mobile balance updates of customers (for privacy/security model) is -0.70 and the tabulated value is ± 1.96 . It falls in the acceptance region and hence, we accept the first null hypothesis (H_{01}). *The conclusion here is that there is no significant relationship between mobile accounts balances updates and privacy/security of customers.*

The F-statistics which is used to examine the overall significance of regression model equally showed that the result is insignificant, as indicated by a very low value of the F-statistic, 0.50 and it is insignificant at the 5.0 per cent level. That is, the F-statistic value of 0.49 is greater than 0.05.

The R^2 (R-square) value of 0.05 shows that the *mobile accounts balance updates* has a very poor impact. It indicates that about 5 per cent of the variation in *privacy/security of customers* is explained by *mobile accounts balance updates*, while the remaining 99.5percent is captured by the error term.

The model also indicates that there is no autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 2.21. This shows that the estimates are unbiased and can be relied upon for policy decisions.

4.2.2 Hypothesis Two: *Mobile bill payment has not significantly influenced the conveniences of customers.*

Model two: $C_i = \beta_0 + \beta_1 MBP + \mu_i$ ----- 6

Table 4.2.2: Regression result on Convenience and Mobile Bill Payment

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Dependent Variable: C
 Method: Least Squares
 Date: 08/31/15 Time: 17:03
 Sample: 399
 Included observations: 399

Variable	Coefficient	Std. Error	t-Statistic	Prob.
B0	3.977549	1.595040	2.493698	0.0342
MBP	0.086075	0.354115	0.243072	0.8134
R-squared	0.006522	Mean dependent var		4.363636
Adjusted R-squared	-0.103864	S.D. dependent var		0.460071
S.E. of regression	0.483374	Akaike info criterion		1.546912
Sum squared resid	2.102850	Schwarz criterion		1.619256
Log likelihood	-6.508014	Hannan-Quinn criter.		1.501308
F-statistic	0.059084	Durbin-Watson stat		2.258277
Prob(F-statistic)	0.813399			

$$C = 3.97 + 0.08MBP \text{-----} 7$$

$$SEE = 1.59 \text{ } 0.35$$

$$t^* = 2.49 \text{ } 0.24$$

$$F^* = 0.05; \text{Prob}(F\text{-statistic}) = 0.81$$

$$R^2 = 0.006; \text{Adj.}R^2 = -0.103$$

$$DW = 2.25$$

From table 4.3, the calculated t-value for MBP is 0.08(Convenience model) and the tabulated value is given as ± 1.96 , under 95% confidence levels. Since the calculated t-value is less than the tabulated value ($0.08 < 1.96$), we therefore, accept the null hypothesis (H_0). *We conclude that Mobile bill payment has not significantly influenced the conveniences of customers.*

Also, by examining the overall fit and significance of the convenience model (C) model, it can be observed that the model does not have good fit, as indicated by the relatively low value of the F-statistic, 0.05 and it is insignificant at the 5.0 per cent level. That is, the F-statistic value of 0.81 is greater than 0.05 probability levels.

More so, the R^2 (R-square) value of 0.006 shows that the model does not have a good fit too. It indicates that about 0.6 per cent of the variation in C is explained by Mobile Bill payment (MBP), while the remaining 99.4percent is captured by the error term.

Durbin Watson (DW) statistics which is also used to test for the presence of autocorrelation indicates that there is no autocorrelation among the variables as captured by (DW) statistic of 2.25. This shows that the estimates are unbiased and can be relied upon for policy decisions.

4.2.3 Hypothesis three: Mobile fund transfer and transaction verifications have not significantly impacted on the ease of usage by customers.

$$\text{Model three: } EU = \beta_0 + \beta_1 MFT + \mu_i \text{-----} 8$$

Table 4.2.3: Regression result on Ease of usage and Mobile Fund transfer

Dependent Variable: EU
 Method: Least Squares
 Date: 08/31/15 Time: 17:07
 Sample: 399

Included observations: 399

Variable	Coefficient	Std. Error	t-Statistic	Prob.
B0	7.187406	0.886535	8.107300	0.0000
MFT	0.737322	0.201935	3.651293	0.0053
R-squared	0.596990	Mean dependent var		3.970000
Adjusted R-squared	0.552211	S.D. dependent var		0.482721
S.E. of regression	0.323023	Akaike info criterion		0.740779
Sum squared resid	0.939094	Schwarz criterion		0.813123
Log likelihood	-2.074284	Hannan-Quinn criter.		0.695176
F-statistic	13.33194	Durbin-Watson stat		2.275979
Prob(F-statistic)	0.005307			

$$EU = 7.18 + 0.73MFT \text{-----} 9$$

$$SEE = 0.88 \quad 0.20$$

$$t^* = 8.10 \quad 3.65$$

$$F^* = 13.33; \text{Prob(F-statistic)} = 0.005$$

$$R^2 = 0.59; \text{Adj.} R^2 = 0.55$$

$$DW = 2.27$$

The calculated t-value for MFT was found to be 3.65 (table 4.2.3) and also by rule of thumb, the tabulated value is ± 1.96 under 95% confidence interval levels. The calculated MFT value is found to be greater than the tabulated value (that is; $3.65 < 1.96$), we thus, reject the third null hypothesis (H_0). **In conclusion, Mobile fund transfer and transaction verifications have significantly impacted on the ease of usage by customers.**

Also, by examining the overall fit and significance of the EU model, it was found to have a good fit, as indicated by the high F-statistic value of 13.33 and it is significant at the 5.0 per cent level. That is, the F-statistic value of 0.005 is less than 0.05.

More so, the R^2 (R-square) value of 0.59 shows that the model have a very good fit also. It showed that about 59 per cent of the variation in EU is explained by Mobile fund transfer, while the remaining huge 41 percentage unaccounted variation is captured by the error term.

Durbin Watson (DW) statistics which is also used to test for the presence of serial correlation indicates that there is no autocorrelation among the variables as captured by (DW) statistic of 2.27, and as thus the estimates are unbiased and can be relied upon for sound policy decisions.

4.3 Discussion of Findings

Based on the result found in model two, which is the Privacy/security model, it could be observed that the **MBU of customers** insignificantly influences Privacy/security. It further showed that **MBU** has a negative relationship with Privacy/security. This result as found here is in conformity with the works of **Aghdaie** (2012) who observed in his empirical analysis that fraudulent activities from computer wizard and hackers has not been properly checkmated and as such there has been high manipulations of banks information and stealing of money from the bank accounts of customers without their knowledge. Major problems envisaged to hamper the implementation of the policy are cyber fraud and illiteracy. The result thus showed that a unit change in MBU (holding other factors constant), on the average, **reduces privacy/security by 0.14 units**

More so, in model two, Convenience was also found to be insignificantly influenced by MBP. The finding generally supports the result of previous research. Ravichandran et al. (2010) examined influence of

mobile service quality on customer satisfaction in banking industry stated that the reason could be deduced from the fact that most Nigerian does not use their telephone lines for transaction activities due to network out of order problems. This product (MBP) has also experienced low patronage due to inadequate awareness and education of the customer on how to maximally use their phone to transact simple bank payments operations, and as a result has not contributed immensely to customer satisfactions.

However, in model three, MFT was found to have positive relationship with EU, and statistically significant. This is due to aggressive marketing strategies adopted by banks when a customer opens account with them to enhance adequate transfer of funds with their mobile handheld. Saleem, & Rashid (2011) observed that Computer software are promptly installed on customers phones that enables them transfer funds from one account to another with relative ease and without coming to the banking hall. The results from table 3 thus shows that a unit change in MFT (holding other factors constant) on the average, increases ease of usages by 0.73units.

5. Conclusion and Recommendations

The main objective of this study is to find out whether mobile banking services have significantly impacted on customer satisfaction in Nigeria. The mobile banking services provided by commercial banks in Nigeria generally cover information- push where customers can access banking information and make transaction such as Account information, Payments, transfers and Investments using mobile phone as terminal. The results of the findings and the hypotheses tested showed that Mobile banking services have not enhanced customer satisfaction in form of MBP and MBU. Thus customers have not been able to derive maximal satisfaction on mobile banking services. It however, reveals that commercial banks in Nigeria that have implemented mobile banking are chalking-up some successes in the area of MFT even with the problems that come with it. These challenges include network problem and Security which are major contributory factors that hinder the effectiveness of mobile banking service in the Nigeria banking sector for optimal customer satisfaction.

Based on the findings, the study suggests that banks advertisement should be focused on the novel aspect for mobile banking. Bankers should also consider raising consumer awareness and acceptance of new technology-based banking services more, through advertising and promotion rather than word-of-mouth communication. Since customer satisfaction is related with proper adoption and usage of modern banking services, it is recommended for banks to improve the information channel by making motivational strategies regarding methods of using services and their benefits (Zari Baf and Hosseini, 2012). Secondly, Security, trust and reliability should also be focused by banks by enhancing security of transactions, ensuring proper network system and timely service providing. Bank can also make services more enjoyable for customers by conducting informative seminars and conferences to instruct customers about use, privacy and safety of mobile banking services. Many customers are not well aware of modern privacy and security settings being used in mobile banking services. Hence they can be trained by providing basic technological skills. All of the above a human factor is always there. For enhancing customer's satisfaction service providers are required to involve human to some extent as for dealing with complaints or issues related to services and for timely response to meet customer's expectations.

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