Investment on Automated Teller Machines and Banks' Customer Satisfaction in Nigeria

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Abstract
The issue associated with off banking hall and off hour transactions is currently taking a center stage in the Nigerian banking sector which influenced banks to provide Automated Teller Machines in order to dispense cash, make financial enquiries as well as funds transfers for the purpose of rendering efficient banking services to customers. But recently in Nigeria, deposits were also made through them in some banks. In Nigeria, it performances was bedeviled by some factors which necessitated this paper to focus on the relationship between investment on Automated Teller Machines and customers satisfaction using selected Banks in Nigeria. The study made use of secondary data obtained from annual reports and financial statement of sampled banks quoted in the Nigerian Stock Exchange for the period 2001-2010. Data were analyzed through the Ordinary Least Square regression model using the Statistical Package for Social Sciences. Finding revealed that investment on Automated Teller Machines, related software and hardware had a significant impact on banks' customer satisfaction as measured by Total Deposit. The study recommends that banks should increase their investment on Automated Teller Machines, focus more on data security aspect and service diversification in order to build a strong and reliable relationship with customers for increased profitability

Keywords: Automated Teller Machines, Banks, Customer Satisfaction, Hardware, Software, Total Deposits, Profitability

1. Introduction

In the past few years, banks in Nigeria have increasingly depended on the deployment of management information system (MIS) infrastructure to drive their processes and deliver superior services to meet and surpass customer expectation. Customers' insatiable appetite for fast and reliable services has compelled financial institutions to change over from the ancient banking system to the electronic platform which Automated Teller Machines (ATMs) is one of them. For Ovia (2007), the usages of ATMs have been occasioned by a more radical transformation of business systems and models by embracing electronic banking.

Literature suggested that ATM means neither, "avoids travelling with money" nor "anytime with money" but certainly implies both, because ATMs were the first well–known machines to provide bank customers access to electronic money and transactions, which is more convenient than banking hall and hour transaction. With the advent of ATMs, banks are able to efficiently and effectively serve customers outside the banking hall uninterrupted throughout a whole day without minding the time and periods. An ATM is designed to perform the most important function of banking; it is operated by a plastic card with its special features. The plastic card is replacing human and personal based operations such as cheques clearing, checking of account balances, utility bills payment, money transfers, personal attendance to customers, banking hour's restrictions and other paper based verification (Singh and Komal, 2009). ATMs have made cash at bank just seconds away all through the day at every corner of the globe which allows customers to do a number of banking transactions such as withdrawing cash from ones account, making balance enquiries, making deposits and fund transfer from one

account to another and electronic business transactions by using a plastic magnetic-stripe card and personal identification number provided by the concerned financial institution.

The introduction of ATMs into the Nigerian financial market was in the late 1980s by the then Societe Generale Bank, of which First Bank of Nigeria and liquidated Equity Bank of Nigeria followed suit in what was a short-lived venture. The ATMs introduction was bedeviled with issues of off-line mode of transaction, résistance to technology, inadequate power supply, high cost of deployment and unskilled operational staff. The deployment of cutting edge Management Information System (MIS) has seen the re-emergence of ATMs, and customers are availing themselves of free and uninterrupted access to cash at bank not minding banking operational periods in terms of days and timing.

Available data and reliable information from the Central Bank of Nigeria (CBN) indicated that the number of ATMs terminals in Nigeria increased from 352 in June 2005 to 900 in March, 2006 and to 9,902 in 2009 (CBN Report, 2009). But, it is estimated that the number of ATMs terminals has increased tremendously during the period of writing this paper, while the growth, which the CBN has attributed to increased awareness, introduction of shared ATMs, increased confidence in the system and the higher number of ATMs in use, is remarkable, whereas, it is still negligible compared to ATMs terminal statistics from other countries and emerging economies. For bank customers, ATMs is a great service to humanity, while for the banks it means an immense savings on operational cost due to its investment nature.

Most of the studies reviewed in relation to Nigeria failed to assess the relationship between investments on ATMs and bank customers' satisfaction, which this study tries to fill the gap. It is against this back drop therefore that the paper assesses the relationship between investments on ATMs and bank customers' satisfaction using selected banks in Nigeria covering the period from years 2001 to 2010. To achieve the above objective, the null hypothesis below is formulated for testing.

H_{01}: There is no significant relationship between investments on ATMs and bank customers' satisfaction in Nigeria.

This paper is divided into five sections. Section one above is the Introduction, section two is the literature review. Section three presents the methodology of the study while section four is the discussion of results. Section five concluded the paper and recommendations were made.

2. Literature Review

Business organizations are of the opinion that quality of services provided stimulates strategic competitiveness in dynamic business environment. Literature provides significant relationship between service quality and firm's performance based on improved productivity, increased market share, enhanced customer's attraction and loyalty, improved staff morale, and sustained profitability (Lassar. 2000). Research has found that service quality in banks is critical for customers' satisfaction leading to retention (Jabnoun and Al-Tamimi, 2003). Keeping in view the significance of service quality as a means of competitive advantage and organizational sustainability, survival and profitability, the banks are pursuing multidimensional approaches to improve their quality of service in order to attract and retain customers (Newman, 2001).

According to Castleberry and Resurreccion (1989), the physical location of banks' delivery channels, influence perception of customers about quality of service. Consistent delivery of services, physical dimensions and staff better interaction with customers, trustworthy processes and procedures positively affect delivery of service quality (Sureshchandar, Rajendran and Anantharaman. 2002). Pleasant customer interaction with staff significantly affects customers' perception of quality (Yavas, U., Bilgin, Z., and Shemwell, D. 1997). In response to this requirement, banks have initiated flawless delivery processes to reduce delivery timings to improve service quality that may improve performance and invariably profitability, which the introduction of ATMs also aimed at improving service quality.

Adaptability to ATMs has become extremely popular among bank customers as convenient mode of business transactions. The technological innovation has transformed the banking business as banks are aggressively adopting this mode due to huge investment in it. The advantages of using ATM have given new impetus in dimensions of service quality and banks are offering new service choices to customers, which invariably affect bank customers satisfaction in terms of services rendered. Cabas (2001) noted investment opportunities, reduction in costs, satisfaction of customers and competitiveness as motives to install and add new ATMs to the

existing bank network to aid customers' satisfaction. Moutinho (1992) established that ATMs facility resulted in speed of transactions and saved time for customers.

2.1. Automated Teller Machines and Service Quality

Various scholars and authors viewed ATMs as a means to quality service from different dimensions. Lovelock (2000) identified secure and convenient location, adequate number of ATMs, user-friendly system, and functionality of ATMs as a means to quality service delivery. Davies, Moutinho and Curry (1996) examined costs involved in the use of ATMs and efficient functioning of ATMs as the factors that influence customers' satisfaction about service quality using ATMs. Joseph and Stone (2003) examined customers' perception on ATMs quality of service in the United States of America and found that user-friendly, convenient locations, secure positions, and the numbers of ATMs provided by the banks is essential to dimensions of ATM service quality which affect customers' satisfaction. In Botswana where a study was carried out by Mobarek (2007), established speed of operation, and reduction in waiting time as the important predictors of ATMs service quality which influences customers' satisfaction.

Researchers have divergent views about the use and effectiveness of ATMs. Stemper (1990) stressed the positive dimension of ATMs based on freedom of transaction. Effective service delivery in ATM system guarantees quality service and superior performance and provide autonomy to the customers (Lovelock, 2000). Yavas, Benkenstein and Stuhldreier (2004) argued that customers' focused on ATMs delivery system that will fulfil their needs and maximize operational performance which are essential dimensions for banks to achieve and sustain competitive advantage. Dilijonas, Krikšciunien, Sakalauskas and Simutis (2009) examined the essential aspects of ATM service quality in Baltic States. They identified essential resources like adequate number of ATMs, convenient and secure location and user-friendly system as important dimensions of ATMs operation due to maximum speed, minimum errors, high uptime, cash backup and value-based aspects such as quality service at reasonable cost, and maximum offering to cover maximum needs of customers) as vital facets.

Prior studies of Al-Hawari, and Ward (2006) compiled a list of five major items about ATM service quality that include convenient and secured locations, functions of ATMs, adequate number of machines and user-friendliness of the systems and procedures. An empirical study found that these items constitute important aspects of ATM service quality. Islam, Kumar, and Biswas (2007) examined the satisfaction level of ATM card holders of a leading bank (HBSC) in Bangladesh. The study found significant relationship of ATM service quality with customers' satisfaction. The study identified that location, personnel response, quality of currency notes, promptness of card delivery and performance of ATM were positively and significantly related to customer' satisfaction. The security, frequent breakdown of machine, and insufficient number of ATMs were major contributors of customers' dissatisfaction.

In another study in Bangladesh, Shamsuddoha, Chowdhury, and Ahsan (2005) found that 24 hours service delivery, accuracy and convenient locations were the main predictors of customer satisfaction. The study also indicated lack of privacy in executing the transaction, fear of safety and complexity of the machines were the major cause of concern for the customers. Joseph and Stone (2003) in their study in the United States, found that easy access to location, user-friendly ATMs and security are important factors that influence majority of bank customers' perception on ATM service quality. Patrı´cio, Fisk, and Cunha (2003) undertook a qualitative study of a Portuguese bank regarding customers' use of multi-channel offerings, which the study identified accessibility and speed of operation as strong predictors of customers' satisfaction, whereas security dimension and technical failures were main causes of dissatisfaction.

Previous research have found that reliability feature of ATMs is essential to consumers' use of electronic channels of banking (Liao and Cheung, 2002). Polatoglu and Ekin, (2001) studied the perceived attributes of ATM service quality and their marketing implication. They found that convenience, reliability, and ease of use are important aspects, whereas complexity and unreliability due to some associated risks were causes of dissatisfaction. Lebanc (1990) in a study of ATM users in Canada, established that major reasons for using ATM were accessibility, freedom to do banking at all times, and to avoid waiting lines. The study also found the users' apprehension about the risk associated with its use and complexity of the machine in executing the transaction. Moutinho (1992) examined relationship of dimensions of usage rate and performance expectation with customers' prolonged satisfaction with ATM services. The results indicated that usage rate had a negative association with customer perceived prolonged satisfaction whereas performance expectations found to have positive and significant predictor of customers' prolonged satisfaction.

(Moutinho and Brownlie 1989) found that accessibility and location of ATMs significantly affect users' satisfaction. The research found that customers were willing to accept new offerings through ATMs. Waiting in queue to use the ATM was the major cause of dissatisfaction among the users. Literature provides support to the idea that pleasant experience of automated services provides enhanced value to the customers and attracted them to undertake improved business with their banks (Zhu. 2002). Simultaneously, researchers like Grabner- Krauter and Kalusha (2003), Reichhield and Schefter (2000) have concluded that technology-based services are likely to give sense of incompetence to customers, isolate them, and increase passiveness. In addition, the pattern of adoption of technology and its use may differ across organizations and cultures as Howcroft (1991) noted that dissatisfaction among customers is associated with frequent interruptions and breakdown of ATMs.

Intense competition and technology-based new services are shaping customers loyalty. Marketers identified customers' satisfaction through behavioral, cognitive, and attitudinal response to the service provider. Athanassopoulos. (2000) found strong empirical evidence of innovation, convenience, price, and service quality as vital dimensions of customers' satisfaction. An understanding of customers' expectations enables organizations to offer customer-focused services and reduce attrition of customers. Literature offers significant evidence of the association between satisfactions of customers and superior financial performance, customer loyalty, and market share (Wood, 2008). Researchers contend that service quality has a direct link with customer satisfaction as strong evidence exists in literature about customers' satisfaction from ATM services (Leblanc, 1990).

Literature finds a large number of studies that highlight the satisfaction of customers with ATMs use (Moutinho and Brownlie 19892); (Komal and Singh, 2009); (Wan, Luk, and Chow, 2005); (Mobarek, 2007). Some studies have also identified customers' dissatisfaction with ATM service quality dimensions. Large numbers of customers are resistant to this new mode of service delivery and prefer more personalized service (Murdock and Franz, 1983). Findings from studies indicated that customers do not like ATMs because of impersonality, vision problem, fear of technology and reluctance to change and adopt new mode of quality service delivery.

3. Methodology

The study used field survey research method with a population of 21 banks as quoted in the Nigerian Stock Exchange (NSE). The research utilized secondary data generated from annual reports and accounts of selected banks published by the Nigerian Stock Exchange as at 31st December, 2013. The data collected were analyzed using Ordinary Least Square (OLS) regression model through the Statistical Package for Social Sciences (SPSS). The Ordinary Least Square (OLS) regression model was employed to estimate the relationship between investments on ATMs and banks customer satisfaction in Nigeria. It is assumed that banks investment on ATMs is substituted by the number of ATMs owned by the selected banks, software investment and hardware investment made by the banks, while customer satisfaction is proxied by the total deposit liabilities of the banks. The relationship between explanatory and dependent variables can be modelled mathematically, however, this model is concerned with Ordinary Least Square (OLS) regression in measuring the relationship between independent factors and bank customer satisfaction (TDL) as follows:

Independent Variable = α + $\beta1$ software + $\beta2$ hardware + $\beta3$ ATM + μ

Where: α= constant

$\beta1$ to $\beta3$ =parameters to be estimated

μ = error term

The independent variables are:

1. Software: It is the net investment in software during the period I; it is one of the independent variables represented by S.
2. Hardware: - It is the net investment in computer hardware equipment in the period I it is the one of the independent variables represented by H.
3. ATM: - The number of ATMs owned by the banks in the period I, it is one of the independent variable.

Dependent variable is: customer satisfaction, which is measured by total deposit liabilities of the banks represented by TDL.

4. Discussion of Results

The data analysis and results for this paper is based on the information captured in tables 1 and 2 below

Table 1: ANOVA Table for the Significant Relationship between Investments on ATMs and Bank Customer Satisfaction

MODEL		DF	Sum of Square	Mean Square	F_{CAL}	P-VALUE
REGRESSION		2	7763665972211268000	3881832986106342000	6.950	0.002
RESIDUAL		97	5417911734180620000	55854760146191900		
TOTAL		99	6194278331401880000			

Source: Fieldwork, 2014

Table 2: Coefficient of the Independent Variables

Variable	Coefficient	Std. Error	T-Statistics	P-Value
(Constant)	90792711.848	42205488.7	2.151	0.034
SH	-0.2552	0.232	-1.101	0.274
ATM	1.798	49740548.7	3.452	0.001
R^2	12.5%			
Adj-R^2	10.7%			

Source: Fieldwork, 2014

Table 1 above shows the ANOVA table of regression analysis to check if there are any significant relationships between investments on Automated Teller Machines (ATMs), software (S), hardware (H) and bank customers satisfaction (TDL). From the table, it can be seen that the combined P-value of both SH and ATM is 0.275, the R coefficient is 12.5% @ 5% significant level. So, since the calculated combined P – value of 0.275 is greater than the table value of 0.002 @ 5% significant level, hence a linear relationship exist. Based on this, the study do reject the null hypothesis (H_{01}) which stated that there is no significant relationship between investment on ATMs and banks customer satisfaction in Nigeria as measured by (TDL). From the analysis, the study concludes that there is a significant relationship between investment on ATMs and banks customer satisfaction in Nigeria.

Furthermore, table 2 above presents the coefficients of the independent variables and a t-test to evaluate each independent variable contribution to the model. The multiple regression models for (TDL) against SH and ATM will be:

TDL = 90792711.848 – 0.2552SH + 1.798ATM

From the tables and the t-test result, it is observed that at α = 5% significant level, ATM as one of the independent variable have a significant contribution to the model in assessing banks customer satisfaction since its P-values of 0.0001 is less than the table value α = 5% significance level and its coefficient is positive meaning that its impact on TDL is positive but SH have no significant contribution to the model in assessing banks TDL since its p-value of 0.274 is greater than the table value α = 5% significance level. It can also be observed that the model R^2 and adj-R^2 are 12.5% and 10.7% respectively. The result of the coefficient of variation R^2 implies that only 12.5% of the variation is explained by the independent variables which is low to say the model is adequately linear likewise the adjusted coefficient of variation R^2_{adj} of 10.7% result to the same conclusion.

5. Conclusion and Recommendations

The results shows that there is an impact of ATMs on banks customer satisfaction since there is a significant linear relationship between total deposit liability (TDL), investment on software, investment on hardware and ATMs. The t-test results also showed that ATMs as one of the independent variable have a significant

contribution to the model in assessing banks customer satisfaction since it's P-value is less and it's co-efficient is positive; meaning that its impact on total deposit liability (TDL) is positive, though investment on hardware and investment on software have no significant contribution because its P-value is greater and the Co-efficient of variation R^2 and adjusted Co-efficient of variation are low to say the model is adequately linear. It can be inferred that ATM as an independent variable have a significant contribution in assessing banks customer satisfaction and that the rapid diffusion of ICT in Nigerian banking sector provides a platform to use innovative technologies to enhance operational efficiency and quality of service to attain and retain customers.

Therefore, Finding revealed that investment on Automated Teller Machines, related software and hardware had a significant impact on banks' customer satisfaction as measured by Total Deposit. This is because the rapid growth in use of ATMs in Nigeria offers opportunities to banks to use customers' passion for this innovative service for strategic advantage. The banks should proactively monitor customers' preferences with regard to use of this delivery channel for effective response. Bank should focus on important aspects of security and privacy as well as efficient operation of ATMs. Banks should also augment and diversify their services through ATM and use this medium to build a strong and sustained relationship with customers for improved profit. This is to say that banks should increase their investment on Automated Teller Machines, focus more on data security aspect and service diversification in order to build a strong and reliable relationship with customers for increased profitability

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