Electronic Payment Systems and Customer Satisfaction of Commercial Banks in Karu Local Government, Nasarawa State

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Abstract

The Contributions of the financial sector to growth of an economy in undeveloped, developing and emerging markets have been given astounding remarks in the literature. In Nigeria, the general consensus of studies is that the financial sector propels economic growth through various channels. However, the conclusion as to whether the introduction of electronic payment platforms as an innovation strategy impacts customer experience is still contentious. The crux of this study therefore, is to investigate the effect of electronic payment systems on customer satisfaction of quoted deposit money banks in Karu Local Government. Specifically, the study examined the combined effects of automated teller machines (ATM) and point of sales (POS) on customer satisfaction of selected banks operating within Karu L G. The study adopted a descriptive survey research design approach for the purpose of achieving the objectives of the study. The population of the study comprised of all the customers of the twelve (12) quoted deposit money banks in Nigeria with branches in Karu L G. While the sample size of 300 customers was conveniently, determined by randomly selecting 50 customers from 6 operational banks in the area covered by the study. Primary data was collected through a four-point likert scale questionnaire and the reliability of this instrument was measured using Cronbach Alpha. The study adopted the use of multiple regression technique to analyse the data and the result revealed that both ATM and POS have significant effect on customer satisfaction. Based on the findings, it was concluded that electronic payment platforms have meaningfully, influenced customer's satisfaction in the area covered by the study. It was therefore, recommended based on the findings and conclusion that banks should improve their collaborations with network providers in order to reduce the number of failed electronic transactions.

Keywords: Automated Teller Machines, Customer Satisfaction, Electronic Fund Transfer, Karu and Point of Sales.

Introduction

The contributions of the financial sector to growth of economy in undeveloped, developing, emerging and developed markets have been given astonishing remarks in literature. In Nigeria, the general consensus of studies is that the financial sector propels economic growth through various channels (Roy, 2018; Okon & Amaegberi, 2018). Activities of the Nigerian financial sector depends largely on deposit money banks. Hence, bank performance is crucial to financial sector development. The evolution of electronic banking platforms/technologies came to existence in 2012, following the directives of the Central Bank of Nigeria to promote cashless systems. Most banks commenced the implementation of the instruction almost immediately with the pilot study held in Lagos State, Nigeria. Before the end of the year, the thirty-five States of the Federation and the Federal Capital Territory had adjusted to the cashless policy.

The widely used e-payment technologies in the country are Automatic Teller Machine (ATM), Point of Sale (POS) Technology, Mobile Money Transfer (MMT) Technology and Online Money Payment (WEB) Technology according to Nigerian Inter-Bank Settlement System report.

Conversely, the background of electronic payments can be traced back to the 1870's when Western Union (WU) introduced Electronic Fund Transfer (ETF). EFT is a system of transferring money from one bank account directly to another without any paper money changing hands. One of the most widely-used EFT programs is Direct Deposit, in which payroll is deposited straight into an employee's bank account. However, EFT refers to any transfer of funds initiated through an electronic terminal, including credit or debit card, Automatic Teller Machine (ATM), Wire Transfer done via an international banking network such as SWIFT and Point-Of-Sale (POS) transactions. It is used for both credit transfers, such as payroll payments and for debit transfers. Customer satisfaction is a measure of how products and services supplied by a company meet or surpass customer expectation (Olasope, 2013). Customer satisfaction is also referred to as the number of customers, or percentage of total customers, whose reported experience with a firm, its products or its services (ratings) exceeds specified satisfaction goals (Nnolim, 2013). Also, customer satisfaction refers to the extent to which customers are happy with the products and/or services provided by a business. It is a term generally used to measure a customer's perception of a company's products and/or services (Ogbuji, Onuoha & Izogo, 2012). It's not a straight forward science however, as customer satisfaction will vary from person to person, depending on a whole host of variables which may be both psychological and physical.

The motivation for this study is based on the fact that majority of banks' customers presently use one form of electronic platform or the other and the fact that previous literatures have reported mixed and inconsistent findings. This current study contributes to existing literature by empirically examining the effect of ATM and POS on satisfaction.

Statement of the Problem

Generally, technology is making a tremendous impact on service companies and the financial services sector is no exception. The application of information and communication technology concepts, techniques, policies and implementation strategies to banking services has become a subject of fundamentals importance and concerns to all banks and indeed a prerequisite for local and global competitiveness in banking industry (Obiekwe & Mike, 2017). As a result of this technological improvement business environment in financial sector is extremely dynamic and experience tremendous changes and demands banks to serve their customers electronically. Electronic payment has been widely used in developed and developing countries – Nigeria inclusive. The problem here is: how are these customers really enjoying the services? Related to the problem, empirical evidence implies that customers' patronage for and reaction to a particular product depend on their level of understanding of what the product can do (Obiri-Yeboah, Kyere-Djan & Kwarteng, 2013; Offei & Nuamah-Gyambrah, 2016)

The advent of electronic payment in to the banking sector ought to bring flexibility; customer satisfaction thereby enhancing the banks' profitability but the reverse is the case. People are generally afraid of use of ATM because of risk of failure, complexity, security, and lack of personalized service. Kolawole and Mustapha (2018) reveals that 47% of banking customers that used electronic products and services are not satisfied with the quality of the products and efficiency of the delivery. The reasons are machines out of order, out of cash, no printing statements, cards get stocked in the machine, frequent breakdown of ATM service, lack of sufficient technicians in all banks to solve breakdown of ATM machine, lack of sufficient alternative system which substitute ATM service for the customers when temporary problem happen in the machine, lack of convenience of electronic service, lack of reliable mobile payment service, under-development of technological infrastructure, low level of relevant knowledge creation and innovation, interruption of network, lack of suitable and regulatory frame work , resistance to changes in technology among customers and service providers as a result of fear of risks.

The ATMs are also saddled with consistent breakdowns and the internet services to easily access is difficult as far as the ordinary customer is concerned. All these have almost negated the introduction of the electronic payment services in general. For the above-mentioned reasons, this study is undertaken to assess the effect of electronic payment system on banks customers' satisfaction in Karu Local Government.

The specific objectives are to:

    i. Examine the effect of Automated Teller Machine (ATM) on Customer satisfaction of banks in Karu Local Government.
    ii. Ascertain the effect of Point of Sale (POS) on customer satisfaction of banks in Karu Local Government

The following hypotheses were formulated and tested in this study:

Ho1: Automated Teller Machine (ATM) has no significant effect on bank customers' satisfaction in Karu Local Government.

Ho2: Point of Sale (POS) technology has no significant effect on bank customers' satisfaction in Karu Local Government.

Literature Review

Electronic Payment

The electronic payment instruments consist of the ATM, POS, mobile money and internet banking, among others. Payment activities on these channels are sponsored by deposit money banks in Nigeria with support from FinTech companies such as Visa international, Master Card Incorporation, Interswitch company etc. End users use the card to facilitate transactions on ATM and POS terminals. The adoption was quite impressive, as it grew from inception. Kolawole and Mustapha (2018) states that cultural uncertainty avoidance are activities that reduce ambiguity and are such perceived to be valuable. Ugwueze and Nwezeaku (2016) proclaims that electronic payment platforms provide this kind of service for commercial banking end users through their numerous services. Nigeria's payment channel transaction approaches an all-time record of N86.1 trillion in 2019 as reported by the National Bureau of Statistics. This is an approximately 32% rise above the total transaction value in 209 (N65.1 trillion). The report supported the choice of electronic payment channels, as it pointed out clearly that the major electronic payment channels adopted by end users in 2019 were POS, mobile money, ATM and online banking.

Automated Teller Machine (ATM)

An automated teller machine (ATM), also known as an automated banking machine (ABM) or Cash Machine is a computerized telecommunications device that provides the clients of a financial institution with access to financial transactions in a public space without the need for a cashier, human clerk or bank teller (Ugwueze & Nwezeaku, 2016). On most modern ATMs, the customer is identified by inserting a plastic ATM card with a magnetic stripe or a plastic smart card with a chip that contains a unique card number and some security information such as an expiration date. According to Thomas, Jain and Angus (2013), authentication is provided by the customer entering a personal identification number (PIN). Using an ATM, customers can access their bank accounts in order to make cash withdrawals, credit card cash advances, and check their account balances as well as purchase prepaid cell phone credit.

Point of Sales (POS) Technology

Point of sale (POS) also sometimes referred to as point of purchase (POP) or checkout is the location where a transaction occurs (porter, 2014). A 'checkout' refers to a POS terminal or more generally to the hardware and software used for checkouts, the equivalent of an electronic cash register (Porter, 2014). A POS terminal manages the selling process by a salesperson accessible interface. The same system allows the creation and printing of the receipt. POS systems record sales for business. Electronic point of sales (EPOS) electronic payment system is user friendly

with simple multi-functional equipment with many possibilities of use. It enables the operators to administer payments by the customer in a simple way and subsequently to record the payments for clear accounting purposes (Tchouassi, 2012). Evidences from the literature show that 28 billion transactions are made using dial-up POS systems in North America. Also, in the United States, there are 10 million payment terminals; over 60% currently dial-up terminals (Salehi & Alipour, 2010). When customers swipe their debit or credit card through the POS terminal, the transaction begins with the card reader extracting the Bank Identification Number (BIN). The BIN identifies the type of card, debit or credit, as well as the issuing organization. The POS system then, based on the BIN, determines the network that should be accessed, the telephone number(s) for that network, and other operational parameters required to complete the transaction as quickly and securely as possible. These parameters include the data transfer rate, the line protocol, either synchronous or asynchronous, and the type of encryption and the encryption key to use.

Customer Satisfaction

According to Hansemark and Albinsson, satisfaction is an overall customer attitude towards a service provider, or an emotional reaction to the difference between what customers anticipate and what they receive, regarding the fulfillment of some need, goal or desire. Obiri-Yeboah, Kyere-Djan and Kwarteng (2013) defines satisfaction as a judgment following a consumption experience-it is the consumer's judgment that a product provided (or is providing) a pleasurable level of consumption-related fulfillment. Roy (2018) defines satisfaction as a person's feelings of pleasure or disappointment resulting from comparing a product's perceived performance (or outcome) in relation to his or her expectations. Satisfaction can be associated with feelings of acceptance, happiness, relief, excitement, and delight. Most research confirms that the confirmation or disconfirmation of pre-consumption expectations is the essential determinant of satisfaction. This means consumption. During consumption, customers experience the product performance and compare it to their expected product performance level. Satisfaction judgments are then formed based on this comparison. The resulting judgment is labelled positive disconfirmation if the performance is better than expected, negative disconfirmation if it is worse than expected and simple confirmation if it is as expected. In short, customers evaluate product performance by comparing what they expected with what they believe they received.

Empirical Review

Udo, Kabir, Yussuf and Adeogun (2017) investigate the impact of automated teller machine (ATM) on customer satisfaction and profitability of commercial banks in Nigeria. The study used a quantitative approach to data collection to gather information from selected customers and workers of commercial banks in Maiduguri, Borno state, Nigeria. In this study, a well-structured closed ended questionnaire was designed and distributed to participants in the responding organizations to elicit information pertaining to their adoption of ATM in conducting financial transactions with commercial banks. The data obtained were analyzed and presented in tabular form with the aid of descriptive statistics. This study found that the generality of the concept of

electronic automation has in the past few decades accorded great acceptance and relevance in almost all organizations, institutions and especially the banking institutions. In addition, automation has from its inception contributed immensely to the development of the banking activities, customer satisfaction and profitability of commercial banks in Nigeria

Mwatsika (2016) examines the impact of ATM Banking Performance on Customer Satisfaction with the Bank in Malawi. 353 respondents participated in this study to assess the impact of Automated teller machine banking performance on customer satisfaction with banks. The study adopted a performance only approach to measuring customer satisfaction. A self-administered questionnaire containing multi-dimension and multi-attribute Likert measurement scales was used where respondents rated the performance only and their satisfaction with Automated teller machine banking and satisfaction with their respective banks. Using SPSS, regression analysis of satisfaction with Automated teller machine banking performance and satisfaction with the bank was conducted and the results indicate that performance of automated teller machine banking has 40 percent predictive capability of customer satisfaction with the bank. The study further found that despite influencing customer satisfaction with the bank, Automated teller machine banking has no capability to attract customers to switch banks.

Methodology

This study adopts a descriptive survey research design as well as the causal approach for the purpose of achieving the objectives of the study. The population of the study comprised of all the customers of the twelve (12) quoted deposit money banks in Nigeria with branches in Karu Local Government. However, only 6 banks observed to have higher customer base were considered for the purpose of data collection as 50 customers their customers were selected randomly. These customers sampled were restricted to those using ATMs and POS. The sample of customers per each branch were collected over a month period.

Table1: List of Sampled Banks

S/N	BANK	Number of customers
1	United Bank for Africa	50
2	Guarantee Trust Bank	50
3	Access Bank	50
4	First Bank	50
5	Zenith Bank	50
6	Keystone Bank	50
	Total	300

Source: Field Survey, 2021.

The researcher randomly sampled (50) fifty customer per bank who are using one or a combination of all the identified technological payment platforms in this study. The three (300) hundred customers constitute the sample size of the study. The justification for sampling (50) fifty customers per bank is based on convenience as it is almost impossible to get the exact number of customers without bothering the bank management. Also, random sample of customer without

particular reference to number per bank will not ensure a good representation of all banks in the sample. Primary data were collected through questionnaires and the response pattern is 'Strongly Agree' (SA), 'Agree' (A), 'Disagree' (D), and 'Strongly Disagree' (SD). The Reliability of this instrument was evaluated using Cronbach Alpha with the result presented below:

Table 2: Alpha Test

Variable	α=Alpha	Comment
Automated Teller Machine (ATM) technology	0.9746	Reliable
Point of Sale (POS) technology	0.9714	Reliable
Customer Satisfaction	0.9680	Reliable

Source: STATA Output, 2021.

The result indicated that all the variables have no reliability constraint because the widely acceptable threshold is 0.7 and since all variables depicted an Alpha value above 0.7 the instrument is considered reliable.

The study adopted a multiple regression model to test the relationship between the variables in electronic payment platforms measured by Automated Teller Machine (ATM) and Point of Sale (POS).

The model for the study is specified thus:

CS = f (ATM, POS)

The above equation can be written in more detail form as follows:

$CS_{it} = b_0 + \beta_1 ATM_{it} + \beta_2 POS_{it} + U_{it}$…….. (i)

Where: CS = Customer Satisfaction, ATM= Automated Teller Machine, POS = Point of Sale, $\beta 0$ = intercept/constant term $\beta1, \beta2, \beta3, \beta4$ = coefficients of determination, U_{it} = error term.

Results and Discussions

To elicit information from the sampled population, a total number of 300 questionnaires were distributed to bank customers. However, only 226 questionnaires were properly completed and returned in a state useful for the purpose of analysis. The result for the response rate is displayed below.

Table 3 Response Rate

Response	Frequency	Percent
Returned	226	87
Unreturned	74	13
Total	300	100

Source: Authors computation, 2021.

The result in Table 3 showed a total positive response rate of 87%. According to Mugenda and Mugenda (2003) a response rate of above 50% is sufficient for descriptive study. Babbie (2004) also posited that the response rates of above 50% are considered adequate for analysis and publication. He concluded that 60% is considered good, 70% very good while 80% and above is excellent. Built on these affirmations from well-known scholars, 87% aggregate response rate is considered appropriate for the study.

Descriptive Statistics

A descriptive statistic explains the behaviour of data used for any study. For the purpose of this study, the behaviour of the primary data collected from the sampled respondents expressed in mean, standard deviation, minimum and maximum is presented and explained in Table 4.

Table 4 Descriptive Statistics

Questions	MEAN	STD. DEV.	MIN.	MAX
Customer Satisfaction (CS)	2.5712	1.0905	1	4
Automated Teller Machine (ATM)	2.4796	1.0372	1	4
Point of Sales (POS)	2.7384	1.1487	1	4

Source: Researchers Computation, 2020

As seen from table 4. automated teller machine as electronic payment system has a cumulative mean of 2.5712 with a corresponding standard deviation of 1.0905. It was also, found that point of sale as a payment platform by banks had a mean of 2.4796 and a standard deviation of 1.0372. meanwhile, the minimum and maximum for all variables shows 1 and 4 respectively indicating a total absence of outliners.

Correlation Coefficient Matrix

A correlation matrix is a statistical technique used in determining the relationship between the dependent and independent variables of the study. The Table 5 shows the Pearson correlation coefficients between all combinations of dependent and independent variables.

Table 5: Correlation Matrix of the Independent and Dependent Variables

Variables	CS	ATM	POS
CS	1.000		
ATM	0.0590	1.000	
POS	0.1993	-0.1350	1.000

Source: STATA output, 2021.

The result from the Table 5 shows a positive correlation between the dependent variable of customer satisfaction and the explanatory variables of ATM and POS with coefficients of 0.0590 and 0.1993 respectively. This implies that the three explanatory variables move in the same direction with customer satisfaction.

Multicollinearity Test

Multicollinearity is a statistical situation where some independent variables in a multiple regression model are highly auto-correlated. This was tested in the study using Variance Inflation Factor. According to O'Brien (2007), the Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. Values of VIF that exceed 10 are often regarded as indicating multicollinearity problem. The result is presented in table 6.

Table 6 Variance Inflation Factor Measure of Multicollinearity Test

Variable	VIF	1/VIF
ATM	1.26	0.790524
POS	1.21	0.827585
MEAN VIF	1.17	

Source: Regression Result Using STATA, 2021.

Table 6 shows that VIF and tolerance value for all the variables had mean VIF of less than 10 and tolerance of higher than 0.05 implying therefore, that there was no multicollinearity among the independent variables.

Homoscedacity Test for Customer Satisfaction

Lack of an equal level of variability for each value of the independent variables is known as hecteroscedastitcity, the Breusch-pagan test developed by Breusch and pagan (1979) is used to test

for homogeneity in a linear regression mode. The rule is that if p-value is greater than 0.05, Ho is accepted and H₁ is rejected, if the p-value is less than 0.05, Ho is rejected and H₁ is accepted.

Test for Hecteroscedastitcity in the response and residuals.

1.003	3	0.2080
Test – Statistics	Df	Sig

The result of the test shown above indicate that the test statistic is 1.003 p-value = 0.2080. Since the p-value is greater than 0.05. The null hypothesis is accepted and concluded that there is homoscedascity in the data (that is, the data is not heterogeous in variance), which satisfies the assumption of the regression.

Regression Result

In this section of the study, the data collected was subjected to statistical analysis using multiple regression technique. Also, the hypotheses formulated were tested in an effort to ascertain the causality between the individual explanatory variables with the dependent variable. Below, is the table showing the statistical output generated from STATA version 13.

Table 7: Regression Result

Variables	Statistics	p-values	
R Square	0.9269		
Adj. R square	0.9258		
F. statistics	890.22	0.000	

Variables	Coefficient	P-Value
Automated Teller Machine	0.1335198	0.039
Point of Sale	0.6297243	0.000

Source: STATA Output, 2021

The result of the linear regression in table 7 indicates R-squared=0.9269. The R-squared value of 0.9269, gives an indication that there is a strong linear relationship between the dependent and independent variables. The R-squared indicated that the explanatory power of the independent variables is 92%. This means that about 92% of the level of customer satisfaction in banks can be explained by the independent variables while the remaining 8% is explained by variables not included in the model. The adjusted R-squared which is slightly lower than the R-squared value is a precise indicator of the strength of the relationship between the dependent and the independent variables because is sensitive to the addition of irrelevant variables.

The Table 7 also showed the model is fitted as indicated by the F-Statistics of 890.22 which is significant at 1% level of significance (as evidenced by the p-value of 0.0000).

Based on the individual explanatory variables, the study show that automated teller machine has a coefficient of 0.1335198 and a p-value of 0.0039. Based on the p-value which is less than the t-statistic of 0.05, the study therefore rejects the null hypothesis which states that, automated teller machine has no significant effect on customer satisfaction among commercial banks in Karu Local Government. Furthermore, the study depicts that point of sale has a coefficient of 0.6297243 and p-value of 0.0000. Based on this finding which is evidenced by a p-value of 0.0000 we reject the null hypothesis which states that point of sale has no significant effect on banks customer satisfaction in area covered by the study.

Automated Teller Machine and Customer Satisfaction

The first objective of the study is to ascertain the effect of automated teller machine (ATM) on banks customer satisfaction in Karu Local Government. The hypothesis tested stated that automated ATM has no significant effect on banks customer satisfaction in Karu Local Government. The result of the regression showed that ATM exerts significant influence on banks customer satisfaction in the area covered by the study. The import of this result is that a percentage increase in the ATMs will result to an increase satisfaction of banks customers in the area covered by the study. The result also, underscore the relevance of ATMs in the banking business as customer benefit from the convenience it offers. This out outcome supports the technology acceptance theory which is the core theory underpinning this work and consistent with findings of Obiekwe and Anyanwaokoro (2017) and Sajud and Hashem (2017).

Point of Sales and Customer Satisfaction

The study also, assessed the effect of point of sales (POS) on banks customer satisfaction in Karu Local Government. The hypothesis stated that POS has no significant effect on banks customer satisfaction in Karu Local Government. The result of the study using multiple regression analysis indicated that POS as an electronic payment platform has a significant effect on the satisfaction of banks customers in the area covered by the study. Most of the customers agreed with the assertion that the introduction of POS has greatly increased their satisfaction due ease of assess ability and limited transaction time. This outcome also supports the technology acceptance theory which is the main theory underpinning this work and also found to in tandem with the findings of Ugbede, Yahaya and Edicha (2019) and Ogutu and Fatoki (2019).

Conclusion

The study examined the effect of electronic payment systems on banks customers' satisfaction in Karu Local Government. Based on the findings of this study, it was concluded that the introduction and use of automated teller machines and point of sales systems have significant influence on customer satisfaction. This can be evidenced by the number of customers who troop in mass to make use of ATMs at any time and the number of POS stands that have taken over the conventional banking making it easier for customers to access funds and make purchases conveniently.

Recommendation

Based on the findings and conclusion of this study, the following recommendations are made:

i.   i. Commercial banks should create more ATM pay points in their branches and if need arises in other public places like shopping malls, markets, filling stations etc so that there will be ease of accessibility for customers (convenience) and regularly service the machines to avoid errors.

ii.

iii.   Ii. It is also, recommends that reasonable number of point of sales machines should be supplied to retailers so that customers can benefit using their ATM cards to pay for goods and services. Again, the bank should ensure cases of errors are resolved within the shortest possible if not completely eliminated.

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