Automated Teller Machine and the Performance of Deposit Money Banks in Nigeria

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 $(2010Q_1 - 2018Q_4)$

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Abstract: This study examined the effect of Automated Teller Machine (ATM) transactions on performance of deposit money banks in Nigeria. The mixed results regarding the nexus between ATM and banks performance motivated us to embark on a study of this nature. Specifically, we ascertained the effect of ATM transactions while controlling for the probable influence of Point of Sale Terminal (POS) transactions on return on equity of deposit money banks. Quarterly data from 2010Q1 - 2018Q4 was estimated using the Auto-regressive Distributive Lag (ARDL) regression technique. We found that ATM transaction has significant effect on return on equity, while POS did not significantly influence return on equity. On the other hand, there is a negative but insignificant relationship between ATM and return on equity, whereas there is a positive but significant relationship between POS and return on equity. Considering our finding, we are of the view that there is significant need for public education and awareness on the benefits of automated teller machine to enhance the adoption of cashless policy in Nigeria.

Keywords: Automated Teller Machine; Point of Sale Terminal; Return on Equity.

1. Introduction

The evolution of automated teller machine in Nigeria can be traced to 1986 when the banking sector was deregulated. The result of this deregulation brought far reaching transformation through computerization and improved bank service delivery. Competition with new products became keen within the system while customer sophistication posed a challenge for them, hence the reengineering of processing techniques of business accounts encourage the automated teller machine and other financial services especially among new generation of commercial banks (Fatai, Zakariyah, Samuel & Mudashiru, 2017). The 21st century has witnessed a dramatic evolution in the financial service industry as a result of the rapid advancement in technological transformation which has become known as e-developments. These changes have engulfed all areas of financial intermediation and financial markets such as e-finance, e-money, electronic banking (ebanking), e-brokering, e-insurance, e-exchange and e

supervision. This new information technology (IT) is turning into the most important factor in the future development of banking, influencing bank's marketing and business strategies. As a result of rapid advances in IT and intensive competition in the banking sector, the adoption of automated teller machine is being increasingly used as a channel of distribution for financial services (Peter & Emenike, 2016). The world has witnessed an upsurge of automated teller machine instruments meant to facilitate trade and simplify payments. Before the introduction of electronic payment into Nigerian banking system; customers had to walk into the banking hall to do transactions of all kind. They had to queue up and spend more hours to talk to a teller to make their transactions. Inconveniences caused by these long queues discourage most customers who sometimes renege from the queues in annoyance. For many years, bankers, IT experts, entrepreneurs and others have advocated for the replacement of physical cash and the introduction of more flexible, efficient and cost effective retail payment solutions (Siyanbola, 2013). Automated teller machine has experienced explosive growth and has transformed traditional practices in banking (Faniran, & Jame, 2015).

The adoption of automated teller machine has brought major challenges to the banking industry in terms of risk exposure. The volume of deposits has increased as well as fraudulent practices experienced by Nigerian banks since its adoption in the economy (Muoghalu, Okonkwo & Ananwude, 2018). Various empirical studies have been carried out on the effect of automated teller machine on the performance of deposit money banks in Nigeria with different conclusions and results (Ekanem, Alhaji, Adeniyi & Adeogun, 2017; Lasisi, & Abubakar, 2014; Mohammed, Mohammed, & Alexander, 2014) have found that automated teller machine has positive effect on the performance of deposit money banks in developing countries including Nigeria. Moreover, other authors like (Fatai, Zakariyah, Samuel & Mudashiru, 2017; Peter & Emenike, 2016). Posit that automated teller machine has negative effect on the performance of deposit money banks



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in developing countries including Nigeria. However, most of these studies were done in an environment outside that of Nigeria. Again, the time frames considered in these studies were short and the results from these studies are conflicting. These shortcomings have somehow contributed to the knowledge gap in the literature, thus warranting a more systematic and comprehensive study of the effect of automated teller machine on the performance of deposit money banks in Nigeria. This study seeks to improve on the past studies by making use of a broad data and ordinary least square to examine the effect of automated teller machine on the performance of deposit money banks in Nigeria by following the Autoregressive Distributive Lag (ARDL) model.

2. Literature review

A. Automated teller machine (ATM)

Automated teller machine (ATM) is a computer controlled device that dispenses and provides other services to customers who identify them with a personal identification number (PIN). The physical carriage of cash as well as frequent visit to the banks is being reduced. The principal advantage of ATM is that it dispenses cash at any time of the day even as it needs not to be located within the banking premises but in stores, shopping malls, fuel stations etc., unlike the traditional method where customers have to queue for a very long period of time to withdraw cash or transfer funds. The ATM is the most popular e-transaction solution in Nigeria. ATM is popular because of its convenience Ekanem, Alhaji, Adeniyi & Adeogun, 2017). With ATM, it is a lot easier to withdraw money or to check account balance. However, despite its popularity, the ATM has done very little in reducing the amount of cash in the economy. This is because most Nigerians use ATM only for cash withdrawal. Although ATM machines can perform other functions like fund/cash transfer, mobile phone credit recharge and bills payment, cash withdrawals and balance inquiry remain the most popular applications sort after by users in Nigeria (Asidok, & Michael, 2018).

B. Bank performance

Traditionally, performance in the banking has been measured through costs, time, and quality, which highlight production orientation in the banking (Akhalumeh & Ohiokha, 2012). According to the "triple constraint", a policy is considered to be successful if the service is delivered at the right time, for the right price and quality (Omotunde & John-Dewole, 2013). In this former way of thinking, services were in the dominating position, the crucial field of know-how was production, and the customer was seen as a passive receiver of the building in the end of the construction value chain. However, this production related assessment does not describe the present state of the construction. On the contrary, banking affiliates strongly with customer orientation where service delivered by the banks is emphasized alongside with traditional success factors. Regarding the level of customer satisfaction, the negative

factors appear towards the end of commercial banks services. It is well described by the fact that in less successful projects, all sectors of the project are seen as poor, and if a project succeeds in one sector, it is likely to succeed in another as well. What is noteworthy here is that co-operation and banks qualities of services are not separate dimensions but interwoven with the central processes of banking. Moreover, direct and indirect relationships can be perceived between the factors of customer satisfaction.

C. Theoretical consideration

We pursued this study within the postulation of Technology Acceptance Model (TAM) and Diffusion of Innovation (DOI) Theory. TAM is an information systems theory that models how users come to accept cashless policy and use a technology that will enhance the performance of deposit money banks in Nigeria. TAM is one of the models that have been developed to provide a better understanding of the usage and adoption of information technology which is the base of cashless policy that will promote the performance of deposit money banks in Nigeria. It is presently a prominent theory used in modelling technology acceptance and adoption in information systems research. 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 and perceived ease-of-use. According to TAM, one's actual use of a technology system is influenced directly or indirectly by the user's behavioural intentions, attitude, perceived usefulness of the system, and perceived ease of the system. Diffusion of Innovation theory seeks to explain how, why, and at what rate new ideas and technology spread through cultures. Diffusion Innovation 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 which are the bases of cashless policy that promote the performance of deposit money banks in Nigeria.

D. Empirical studies

Ekanem, Alhaji, Adeniyi and Adeogun (2017) investigate the impact of automated teller machine (ATM) on customer satisfaction and profitability of deposit money banks in Nigeria. The study used a quantitative approach to data collection to gather information from selected customers and workers of deposit money 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 deposit money 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



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the banking institutions.

Asidok, and Michael, (2018) estimates the impact of automated teller machine (ATM) transactions on bank profitability in Nigeria using selected banks data from Electronic payment system office, Central Bank of Nigeria statistical bulletin from 2007-2016. The study adopts Panel unit root and SURE model estimation technique to conduct quantitative analysis for four selected old and new generation banks. The results of this study were analyzed using economic a priori criteria, statistical criteria and econometric criteria. The positive and statistically significant relationship between automated teller machine of old and new generation banks in Nigeria indicates that automated teller machine is a major factor that contributes to old and new banks performance in Nigeria. The positive and statistically significant relationship between point of sale of old and new generation bank in Nigeria indicates that point of sale is a major factor that contributes to old and new banks performance in Nigeria. The positive and statistically significant relationship between mobile banking of old and new generation banks in Nigeria indicates that mobile banking is a major factor that contributes to old and new banks performance in Nigeria.

Moughalu, Okonkwo and Ananwude (2018) empirically ascertained the effect of automated teller machine (ATM) related fraud on deposit money banks financial performance in Nigeria. Empirical studies relating to electronic banking and banks performance in Nigeria has been centered on its benefit of improving profitability of deposit money banks while the effect of fraud perpetrated on automated teller machine (ATM) platforms used by banks operating in the economy are often neglected. The Ordinary Least Square (OLS) was applied in estimating the regression equation, whereas effect of fraud on various channels of electronic banking and financial performance ascertained with the help of the granger causality analysis. The findings from the study dispelled that fraud on point of sale terminals has significant negative effect on interest income, while fraud on automated teller machines, mobile banking and web had no effect on return on assets, return on equity and non-interest income of banks.

Amu, and Nathaniel (2016) studied the relationship between automated teller machine (ATM) and the performance of Nigerian commercial banks. Commercial banking performance was proxied by customer's deposits. Engle-Granger cointegration model was used to analyze data for the sample period January 2009 to December 2013. The results show that automated teller machine (ATM) is not co-integrated with both the savings and time deposits but are co-integrated with demand deposits.

Mohammed, Mohammed and Alexander (2014) examine the introduction of the ATM into the banking system. Questionnaire questions were used to generate data. The research reveals that weak government policy on banks, illiteracy as well as non-challant attitude of customer care services is to be blamed for the dwindling use of ATM in the

state. The study adopted an ex-post facto research design because the data for the study are secondary data that were sourced from Central Bank of Nigeria (CBN), Statistical Bulletin and Statement of Accounts, National Bureau of Statistics (NBS) for the period under review. Return on equity is the dependent (Y) variable while the major explanatory variable (X) considered in the study is automated teller machine is independent variable.

Olatokun and Igbinedion (2009) investigate the adoption of ATM in Nigeria. The result of the study indicates that constraint such as relative advantage, complexity, compatibility and trial ability were positively related to attitude to the use of ATM cards in Nigeria.

Akhalumeh and Ohioka (2012) investigated some challenges with the introduction of cashless policy. Their findings show that 34.0% of the respondents cited problem of internet fraud, 15.5% cited problem of limited POS/ATM, 19.6% cited problem of illiteracy and 30.9% stayed neutral - the respondent not sure of problem being expected or experienced. While in some quarters there was fear of unemployment, some believe it will create more jobs especially when companies manufacturing POS machine are cited in Nigeria. More so, data sourced from Central Bank of Nigeria portal shows that Lagos state, with a population of 17 million people, only has sixty-one Point of Sales, twenty bank branches and twenty-four ATMs per 100,000 people.

Echekoba and Ezu (2012) in a research carried out in Nigeria, observed that 68.2% of the respondent complained about long queues in the bank, 28.9% complained of bad attitude of teller officers (cashiers), while 2.89% complained of long distance of bank locations to their home or work places. Likewise, in her 24th NCS national conference in December 2015, CBN data shows that 51% of withdrawal done in Nigeria was through ATM, while 33.6% was through over the counter (OTC) cash withdrawals and 13.6% through Cheque. Payment was also done through point of sales machine (POS) which accounted for 0.5% and web 1.3%. Therefore, if the introduction of ATM in Nigeria cash withdrawals system reduced OTC withdrawal; then it will implies that introduction of cashless policy supported by application of information technology can achieve more to reduce over dependent on cash payment in Nigeria economy.

Morufu and Taibat (2012) used qualitative survey to ascertain banker's perceptions of electronic banking in Nigeria. The results suggest that bankers in Nigeria perceive electronic banking as a tool for minimizing inconvenience, reducing transaction costs, altering customers queuing pattern and saving customers banking time are far less to satisfy the needs of the population.

Igbara, Emerenini, and Daasi, (2015) examine the impact of cashless policy on small scale businesses. The study carried out in Ogoni of Rivers state, using the purposive sampling technique, 250 owners and operators of small scale businesses were selected and administered questionnaire. The data

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collected were coded and analyzed using frequency table and percentage, while regression analysis was used to test the formulated hypotheses using SPSS (Statistical Package for Social Sciences). The results indicates that: small scale businesses in Ogoni land are predominately occupied by sole proprietorship with meager income with a significant numbers of them having a very poor banking habit; it was also found out that small scale businesses statistically do not rely on heavy capital outlay; couple with the fact that provision of services is their main business activity makes bank transaction, ATMs usage and online banking of less or no significance since their transaction is grossly hinged on "cash and carry basis"; the findings from the study also suggest that operators of small scale business have zero tolerance to ICT usage in both the operations and transactions of their businesses; and this constitute a major challenge to the adoption of cashless policy in the study area and generally, there was a negative significant influence of the introduction of cashless policy on the operations and growth of small scale businesses in Ogoni land.

3. Method and data

This study applied an ex-post facto research design on the basis that the data needed for the analysis were available within the period studied that is, 2010Q1 - 2018Q4. The model was estimated using the Autoregressive Distributive Lag (ARDL) model. The data were purely secondary in nature and were carefully sourced from Nigeria Deposit Insurance Corporation (NDIC) quarterly reports. Performance of deposit money banks in Nigeria which is the dependent variable was measured using Return on Assets (ROE). Value of transaction on Automated Teller Machine (ATM) is the independent variable. That notwithstanding, we included transaction done on Point of Sale Terminals (POS) as control variable since there are perfected using the ATM cards.

A. Empirical Model Specification

The model used for the study was the adaptation and modifications from the work of Uchenna (2015) who examined the effect of automated teller machine on banks' profitability in Nigeria. The model is stated thus:

$$ROE = f(ATM) \tag{1}$$

Where:

ROE = Return on Equity

ATM = Automated Teller Machine

The model was modified by introducing a control variable: Point of Sale Terminal (POS) and thus:

$$ROE = f (ATM, POS)$$
 (2)

Econometric transformation of Equ. 2 is stated as:

$$LogROE_t = \beta_0 + \beta_1 LogATM_t + \beta_2 LogPOS_t + u_t$$
 (3)

Where:

ROE = Return on Equity

ATM = Automated Teller Machine

POS= Point of Sale

 β_0 and μ are the constant and error term respectively, while β_1 , and β_2 are the coefficient of automated teller machine and point of sale terminals.

4. Results and data interpretation

A. Descriptive features of the data

The descriptive characteristic of the data is summarized in Table 1. From the descriptive statistic of the data, the mean were divulge to be 11.04, 898.08 and 154.59 for ROE, ATM and POS, while the median are 4.95, 922.46 and 74.13 respectively. The standard deviation of the data are 26.96 for ROE, 511.88 for ATM and 194.97 for POS. The maximum and minimum values are 162.98 and -5.48 for ROE, 1832.55 and 62.59 for ATM and 714.35 and 1.87 for POS. from the Jarque-Bera statistic, the data followed normal distribution as the p-values for ROE, ATM and POS are significant at 5%. With this, inference made from the regression output would be deemed reliable and devoid of any outlier that possess threat to the reliability of the regression estimate.

Table 1
Descriptive Properties

	Descriptive Froperties		
	ROE	ATM	POS
Mean	11.03806	898.0825	154.5914
Median	4.950000	922.4600	74.12500
Maximum	162.9800	1832.550	714.3500
Minimum	-5.480000	62.59000	1.870000
Std. Dev.	26.95608	511.8804	194.9681
Skewness	5.175657	0.089969	1.489436
Kurtosis	29.68265	1.921545	4.227100
Jarque-Bera	1228.671	15.793165	15.56919
Probability	0.000000	0.007961	0.000416
Sum	397.3700	32330.97	5565.290
Sum Sq. Dev.	25432.05	9170755.	1330439.
Observations	36	36	36

Source: Data Output from E-views 10.0

B. Test for Stationarity of Data

We utilized the Augmented Dickey-Fuller (ADF) Test and Phillips Perron (PP) to ascertain the stationarity properties of the data. The test for stationarity was performed at first difference using two criteria: intercept and trend intercept. As can be seen in Table 2 and 3, the data have no stationarity defects that can affect the output of the regression analysis thus result would be considered reliable in statistical terms.

Table 2
ADF Stationarity Test

Variables	Intercept	Trend and Intercept	Remark
ROE	-5.116889 (0.00)*	-11.05933 (0.00)*	Stationary
ATM	-7.951756 (0.00)*	-7.836854 (0.00)*	Stationary
POS	-5.811860 (0.00)*	-5.236556 (0.00)*	Stationary

Source: Data Output from E-views 10.0

Table 3 PP Stationarity Test

Variables	Intercept	Trend and Intercept	Remark
ROE	-31.48659 (0.00)*	-31.67032 (0.00)*	Stationary
ATM	-10.79168 (0.00)*	-10.48181 (0.00)*	Stationary
POS	-3.026076 (0.04)**	-5.236556 (0.00)*	Stationary

Source: Data Output from E-views 10.0

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C. Sensitivity Analysis

Sensitivity analysis is needed as an affirmation to the fitness and stability of the model specified as required by classical linear model estimation in econometric. To this end, this study utilized serial correlation LM test, heteroskedasticity test and Ramsey reset specification tests. The assumption underlying the three (3) tests of sensitivity analysis is that the p-value of the f-statistic must be greater than 0.05. A p-value less than 0.05 on any of the three (3) tests of sensitivity analysis is considered a fall out of the diagnostic test chosen thus result would be assumed null and void in statistical point of view. With the result in Tables 5-6, the model of this study passed the sensitivity analysis giving the impression that the output of the analysis would be adduced to be reliable.

Table 4 Serial Correlation LM Test

Beriai Contenation Ent Test				
Obs*R-squared	F-statistic	Prob.		
6.959025	2.640102	0.0973		
Source: Data Output from E-views 10.0				

Table 5 Heteroskedasticity Test

Treterositedustreity rest				
Obs*R-squared	F-statistic	Prob.		
10.68048	1.052042	0.4376		

Source: Data Output from E-views 10.0

 Table 6

 Ramsey Reset Specification

 F-statistic
 Df
 Probability

 2.445376
 1, 20
 0.1336

Source: Data Output from E-views 10.0

D. ARDL Co-integration

The ARDL result in Table 7 discloses the presence of cointegration/long run relationship between transaction on ATM and performance of deposit money banks in Nigeria. We arrived at this conclusion on the basis that the f-statistic of 223.6447 is far way greater than the upper and lower bound critical values of 3.87 and 3.10 respectively. It would be adduced that the wealth of shareholders are related with ATM. The amount of fund invested in the installation of ATMs by deposit money banks significantly relates with performance.

Table 7
Bound Test for ROE, ATM and POS

	Bound Test for ROE, ATM and LOS					
ſ	T-Test	5% Critical Value Bound		Remark		
ſ	F-Statistic	Lower Bound	Upper Bound			
ſ	223.6447	3.10	3.87	Null Hypothesis Rejected		

Source: Data Output from E-views 10.0

E. ARDL Short Run Relationship

The ARDL result in Table 8 shows that ATM has a negative but insignificant relationship with banks performance measured by return on equity, while a POS has a positive but significant relationship with return on equity. A unit rise in ATM leads to 1.04% depreciation in return on equity. This is contrary to a priori of a positive relationship considering the fact that transaction on ATMs are expected to improve efficiency and service delivery of the banks which would reduce cost thus

increase performance. This is in agreement with the work of Moughalu, Okonkwo and Ananwude (2018) who found that transaction on ATM has negative relationship with performance of deposit money banks in Nigeria. On other hand, a percentage increase in transaction on POS results in 4.95% appreciation in return on equity of banks this supporting the finding of Asidok and Michael (2018) and Ekanem, Alhaji, Adeniyi and Adeogun (2017) on the positive linkage between POS and performance of banks. Holding ATM and POS constant, return on equity would be valued at 28.62%. With inference, from the adjusted R-squared, ATM and POS explained 70.48% changes in banks performance: return on equity. This is statistically significant as revealed by the f-statistic of 8.40 and p-value of 0.00 (0.00 < 0.05). With regard to the issue of autocorrelation in the model, the Durbin Watson value of 2.4 implies that there is no issue of autocorrelation in the model. Moreover, the serial correlation in Table 4 provides evidence that the variables in the model were not serially correlated.

Table 8
ARDL Regression: ROE, ATM and POS

ARDL Regression: ROE, ATM and POS				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROE(-1)	-0.056968	0.024391	-2.335579	0.0295
ROE(-2)	-0.012161	0.022960	-0.529675	0.6019
ROE(-3)	-0.147498	0.022917	-6.436264	0.0000
ROE(-4)	-0.113403	0.023510	-4.823557	0.0001
ATM	-0.010387	0.005803	-1.789887	0.0879
ATM(-1)	-0.001261	0.006729	-0.187345	0.8532
ATM(-2)	-0.000203	0.006796	-0.029814	0.9765
ATM(-3)	-0.007890	0.006892	-1.144840	0.2652
ATM(-4)	-0.011639	0.006751	-1.724058	0.0994
POS	0.049482	0.009143	5.412037	0.0000
C	28.62152	3.250925	8.804117	0.0000
R-squared	0.800006	Mean dependent var		5.563125
Adjusted R-	0.704771	S.D. dependent var		5.371542
squared				
S.E. of regression	2.918627	Akaike info criterion		5.246390
Sum squared resid	178.8861	Schwarz criterion		5.750237
Log likelihood	-72.94224	Hannan-Quinn criter.		5.413401
F-statistic	8.400317	Durbin-Watson stat		2.415593
Prob (F-statistic)	0.000024			

Source: Data Output from E-views 10.0

F. Effect determination

The effect of ATM and POS on performance of deposit money banks was determined using the granger causality analysis. As reveal in Table 9, there is a unidirectional causal relationship between ATM and return on equity. Causality runs from ATM to return on equity at 5% level of significance. The implication of this result is that ATM has significant effect on the performance of deposit money banks in Nigeria. Performance of deposit money banks in terms of return on equity is greatly determined by investment and transaction on ATM. Conversely, there was no unidirectional causal relationship between POS and return on equity. Put differently, POS transactions has no significant effect on deposit money banks performance.



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Table 9

Granger Causanty Test				
Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
ATM does not Granger Cause ROE	35	4.85689	0.0348	Causality
ROE does not Granger Cause ATM		1.29161	0.2642	No Causality
POS does not Granger Cause ROE	35	0.99850	0.3252	No Causality
ROE does not Granger Cause POS		0.00011	0.9917	No Causality

Source: Data Output from E-views 10.0

5. Conclusion and recommendations

Banks world-over continue to invest heavily in information technology and over the years employed the use of ATM to support a range of innovative banking services with the aim of improving service relationships. Automated teller machine services provide the ability to perform banking transaction without going into the banking hall for counter transaction. Based on the finding from this study, we concludes that ATM transactions has significant effect on performance of deposit money banks in Nigeria.

Considering our finding, we are of the view that there is significant need for public education and awareness on the benefits of automated teller machine to enhance the adoption of cashless policy in Nigeria. The banks must improve service quality and customer responsiveness in cases of lost or stolen cards, frauds, and other customer complaints in relation to point of sale and performance of deposit money banks in Nigeria.

References

- Akhalumeh, P. B. & Ohiokha, F. (2012). Nigeria cashless economy: the imperatives. International Journal of Management and Business Studies, 2(12), 31-36.
- [2] Amu, H & Nathaniel, C. (2016). The relationship between automated teller machine (ATM) and the performance of Nigerian commercial banks. International Journal of Management and Applied Science, 3(9), 10-21
- [3] Asidok, N. O. & Michael, A. A. (2018). Mobile banking transactions and bank profitability in Nigeria: International Journal of Economics, Commerce and Management, 6(6), 5-9.
- [4] Echekoba F. N. & Ezu G. K. (2012). Electronic retail payment systems: user acceptability and payment problems in Nigeria. Arabian Journal of Business and Management Review, 5(9), 60-63.
- [5] Ekanem, E. U. U., Alhaji, A. K., Adeniyi, M. Y., & Adeogun, B. S. (2017). Impact of automated teller machine on customer satisfaction and

- profitability of commercial banks. International Journal of Banking and Finance Research, 3(2), 17-21.
- [6] Faniran, O. A. & James, A. O. (2015). Acceptance of mobile banking in Nigeria: International Journal of Management and Applied Science, 3(9), 15-21.
- [7] Fatai, A. S., Zakariyah, O. A., Samuel, O. O. & Mudashiru, A. S. (2017). Effect of automated teller machine (ATM) on demand for money in Isolo Local Government Area of Lagos State, Nigeria. Journal of Applied Business and Economics, 16(3), 14-26.
- [8] Igbara, F. N., Emerenini, F. M. & Daasi, G. L. K. (2015). The impact of cashless policy on small scale businesses in Ogoni Land of Rivers State, Nigeria. Journal of Economics and Finance, 3(5), 7-15.
- [9] Lasisi, A. R. & Abubakar, S. J. (2014). An empirical study of automated teller machine (ATM) and user satisfaction in Nigeria: a study of united bank for Africa in Sokoto metropolis. European Centre for Research Training and Development, 2(3), 1-11.
- [10] Mohammed, M., Mohammed, A. A. & Alexander, S. O. (2014). The effects of customers experience on ATM refund system for failed bank transactions: A Study of Deposit Money Banks in Maiduguri, Borno State, Nigeria, Journal of Business and Management, 16(11), 50-67.
- [11] Morufu, O. & Taibat, A. (2012). Bankers' perceptions of electronic banking in Nigeria: A review of post consolidation experience. Research Journal of Finance and Account, 3(2), 5-6.
- [12] Moughalu, A. I., Okonkwo, J. J. & Ananwude, A. C. (2018). Effect of electronic banking related fraud on deposit money banks financial performance in Nigeria. Discovery, 54(276), 496-503.
- [13] Olatokun, W. M. & Igbinedion, L. J. (2009). The adoption of automatic teller machines in Nigeria: An application of the theory of diffusion of innovation. Issues in Informing Science and Information Technology, 6(2), 373-393.
- [14] Omotunde, M., Sunday T. & John-Dewole, A. T. (2013). Impact of Cashless Economy in Nigeria. Greener Journal of Internet, Information and Communication Systems, 1(4), 25-36.
- [15] Peter, I. A. & Emenike, K. O. (2016). Impact of automated teller machine on banking services delivery in Nigeria: A Stakeholder Analysis, International Journal of Accounting Research, 1(6), 14-21.
- [16] Siyanbola, T. T. (2013). The effect of cashless banking on Nigerian economy. Canadian Journal of Accounting and Finance, 1(2), 9-19.
- [17] Uchenna, O. G. (2015). Automated teller and banks profitability in Nigeria: International Journal of Accounting and Finance Research, 7(3), 21-29.



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APPENDIX

Return on Assets of Deposit Money Banks, Value of Transaction on ATM and Value of Transaction on Point of Sale Terminal from 2010Q1 to 2018Q4

Year	Return on Assets (%)		Value of Transaction on POS (N³Billion)
2010 Q ₁	4.38	62.59	2.77
Q_2	26.38	80.72	2.67
Q ₃	25.61	114.90	2.80
Q_4	162.98	141.50	4.48
2011 Q ₁	10.20	333.50	6.28
Q_2	13.82	364.67	6.45
Q_3	-5.48	387.48	8.64
Q_4	-0.28	476.08	9.65
2012 Q ₁	13.65	454.79	1.87
\mathbb{Q}_2	13.65	483.25	8.74
Q_3	22.20	499.71	14.75
Q_4	5.09	546.91	22.66
2013 Q ₁	5.46	611.26	26.28
Q_2	11.20	675.09	30.94
Q_3	8.30	729.23	43.15
Q_4	8.33	813.36	60.64
2014 Q ₁	4.91	784.05	67.47
Q_2	4.96	852.36	70.25
Q_3	4.94	1,027.92	78.00
Q_4	4.93	1,015.55	96.35
2015 Q ₁	2.48	992.56	112.13
Q_2	5.75	992.56	112.13
Q_3	1.91	992.56	112.13
Q_4	2.90	992.56	112.13
2016 Q ₁	1.41	1,247.03	189.75
Q_2	1.82	1,247.03	189.75
Q_3	1.82	1,247.03	189.75
Q_4	-0.46	1,247.03	189.75
2017 Q ₁	0.03	1,502.06	285.98
Q_2	0.83	1,544.23	324.13
Q_3	2.85	1,558.76	364.55
\overline{Q}_4	4.69	1,832.55	435.15
2018 Q ₁	5.17	1,568.95	474.73
Q_2	6.65	1,603.17	543.63
Q ₃	4.56	1,591.01	650.41
Q ₄	9.73	1,716.96	714.35

Source: Nigeria Deposit Insurance Corporation Quarterly Reports from 2010 – 2018