



EFFECT OF ELECTRONIC BANKING SYSTEM ON FINANCIAL PERFORMANCE OF SELECTED DEPOSIT MONEY BANKS IN NIGERIA, 2008 - 2017

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Abstract:

The study examined the effect of Electronic Banking System on financial Performance of selected Deposit Money Banks in Nigeria. The Automated Teller Machine (ATM), Point of Sale (POS), Mobile Money Transfer (MMT) was proxies for Electronic Banking used to examine their effects on the aggregate Return on Equity (ROE) of deposit money banks in Nigeria. The research design was an ex post facto research design which made use of secondary data covering the period of 2008-2017. The main models that underpinned the study are; Bank-focused Model, bank-led model and non-bank-led model. The study adopted the ordinary least square (OLS) multiple regression method of analysis in determining the extent of the effects exerted on selected deposit money banks by ATM, MMT and POS. The result of the analysis shows that ATM and MMT have positive and no significant effect on ROE while POS has negative and no significant effect on ROE of selected deposit money banks in Nigeria. The study concluded among others that the introduction of electronic banking in Nigeria has a positive and no significant influence on financial performance of selected deposit money banks in Nigeria. MMT has positive and no relationship with ROE. The study recommended among others that management of deposit money banks should provide more ATM stands outside the banking hall to reduce long queues, exposure of customers to harsh weather and unknown enemies especially during the peak periods like Mondays, Fridays and during festive periods (Christmas and New Year).

1.0 Introduction:

The guidelines on Electronic Banking (e-banking practices in Nigeria which is in line with global trend were introduced by Central Bank of Nigeria (CBN) in 2004. Banks in Nigeria were directed to install Automated Teller Machine (ATM) for cash withdrawals. Specific guidelines were also put in place on standards and use of electronic (e-banking) products such as credit cards, digital cash by CBN in line with international best practices. CBN promoted automated payment instruments, replaced cash transaction mechanism, real time gross and enhanced monetary policy's transmission mechanism. Real time Gross Settlement (RTGS) system was implemented in order to eliminate risk in large value payments and increased efficiency of the payment system (CBN, 2004).

Electronic banking which serves both as a medium of delivery of banking services and as a strategic tool for business development have gained wide acceptance internationally and has become a marvel to Nigerians. It has abridged the gap by offering speed, efficient, convenience and increased comfort and time savings transactions which are made 24 hours a day without requiring the physical interaction with the bank teller (Agu, 2014)

With the Automated Teller Machine (ATM), Point of Sale (POS), and Mobile Phones, one does not need to physically carry large sum of cash around. All that is needed is to locate an ATM and slot your card or position yourself where you can get service and withdraw or transfer your money from your account to another account within seconds.



The business environment in Nigeria is extremely dynamic and experience rapid changes as a result of technological improvement, increased awareness and demands that banks serve the customers electronically. Banks have traditionally been in the forefront of harnessing technology to improve their products and services.

The revolution in the banking industry in Nigeria occasioned by the adoption of electronic banking has compelled Nigerian banks to invest more in assets to meet up with competitive positioning. The adoption of electronic banking (e-banking) has brought major challenges to the banking industry in terms of risk exposure. The volume of deposits has increased as well as the fraudulent practices experienced by Nigerian banks since e-banking adoption.

Earnings have been retained to meet up with shareholders demand. The banking software is usually improved on short term basis causing huge financial costs to the banks. There appears not to be clear improvement on banks return on equity and assets among the performance indicators as speculated.

Among the major challenges customers of e-banking in Nigeria had was the tendency of fraudsters to clone ATM cards and hack into bank deposits account (Obiekwe and Anyanwaokoro, 2017). The banking industry has been adversely affected since the volume (value) of transactions that would have boosted its performance has decreased. The problem which this study tends to address was to examine the effect of electronic banking (e-banking) system on performance of deposit money banks in Nigeria.

The broad objective of the study is to examine the effect of Electronic Banking (e-banking) system on financial performance of selected deposit money banks in Nigeria. Specifically, the study sought to; (1) Determine the impact of Automated Teller Machine (ATM) on Return on Equity of Deposit Money Banks in Nigeria (2) Ascertain the effect of Point of Sale (POS) on Return on Equity of Deposit Money Banks in Nigeria (3) Examine the relationship between Mobile Money Transfer (MMT) system and Return on Equity of Deposit Money Banks in Nigeria. The questions that guided the research are (i) what are the impacts of ATM on Return on Equity of Deposit Money Banks in Nigeria? (ii) To what degree does POS responds to Return on Equity of Deposit Money Banks in Nigeria? (iii) What are the effects of MMT on Return on Equity of Deposit Money Banks in Nigeria?

2.0 Review of Related Literature

2.1 Concept of Electronic Banking

Electronic Banking (e-Banking) according to Al-Abed (2003) is an umbrella term for the process by which a customer may perform banking transaction electronically without visiting a brick and mortar institution.

Awe (2013) describes electronic banking as using the infrastructure of digital age to create opportunities both local and global. It enables the dramatic lowering of transaction costs, and the creation of new types of banking opportunities that address the barriers of time and distance.

Ezeamama (2010) defines electronic banking as the provision of banking products and services through electronic delivery channels and other system of banking which render their services to their numerous customers through electronic means irrespective of place, time and distance. It is a means by which a customer may perform banking transactions electronically without visiting brick and mortar institutions.

Benefits of electronic banking

E-banking helps us in overcoming the drawbacks of manual system, as computers are capable of storing, analyzing, consolidating, searching and presenting the data as per the user requirements with lots of speed and accuracy.

From the banker's view point, the first benefits for the banks offering e-banking services is better branding and better responsiveness to the market. Those banks that would offer such services would be perceived as leaders in technology implementation. Therefore, they would enjoy a better brand image. The other benefits are possible to measure in monetary terms. The main goal of every company is to maximize profits for its owner and banks are not exception. Automated e-banking services offer a perfect opportunity for maximizing profits (Ezeamama, 2010)

Automated Teller Machine (ATM)

This is a computerized device that provides the customers of a financial institution with the ability to perform financial transactions without the need for a human clerk/bank teller. Most modern ATM identifies the customer by the plastic card that the customer inserts into the ATM. The plastic card contains a magnetic stripe or chips that contain a unique card number and some security information, such as an expiration date and card validation code. Authentication of the user is provided by the customer entering a personal identification number (PIN). ATMs



are known by various other names including automated transaction machine, automated banking machine, money machine, bank machine, cash machine hole-in-the wall, cash point, any time money etc (Linda, 2009).

The most effective service delivery systems in use today appears to be multichannel – combining full – service branches and electronic limited-service facilities within the same financial firm.

Douglas (2008) states that Automated Teller Machine (ATMs) also called 24-hours tellers are electronic terminals which give consumers the opportunity to bank at almost any time. To withdraw cash, make deposits or transfer funds between accounts, a consumer needs an ATM card and a personal identification number. Some ATMs charge a usage fee for this service, with a high fee for consumers who do not have an account at their institution. If a fee is charged, it must be revealed on the terminal screen or a sign next to the screen.

Point of Sale (POS) Terminal:

This is a computer facility in stores that permits a customer to instantly pay for goods and services electronically by deducting the cost of each purchase directly from a customer's account. The customer presents an encoded debit card to the store clerk who inserts it into a computer terminal connected to the financial firm's computer system. The customer's account is charged for the purchase and funds are automatically transferred to the store's deposit account.

Current point of sale network are divided between online and offline POS systems. The latter (offline system) accumulate all of the customer transaction until day's end and then totaled transaction are subtracted from the customer's account. In contrast, online system deducts each purchase from the customer's account as that purchase is made. Cost wise, financial firms would generally prefer offline POS system, but online systems appear to reduce the frequency of customer overdrafts and thus may be less costly in the long run (Nwaolisa, 2012).

Online /Internet Banking

Nwankwo (2013) defines online banking as an electronic payment system that enables customers of a financial institution to conduct financial transactions on a website operated by the institution, such as a retail bank, virtual bank, credit union or building society. Online banking is also referred to as internet banking, e-banking, virtual banking and by other terms.

To access a financial institution's online banking facility, a customer with internet access would need to register with the institution for the service, and set up some password (under various names) for customer verification.

The password for online banking is normally not the same as for telephone banking. Financial institutions now routinely allocate customers numbers (under various names) whether or not customers have indicated an intention to access their online banking facility. Customer's numbers are normally not the same as account numbers, because a number of customer accounts can be linked to one customer number. The customer can link to the customer any account which the customer controls, which may be cheque, savings, loan, credit card and other accounts. Customer numbers will also not be the same as any debit or credit card issued by financial institution to the customer.

Mobile Money Transfer (MMT): This is mobile phones enabled service offering from banks to its customers, permitting them to operate banking services over their mobile phones using SMS messaging. MMT banking services, by Barnes and Corbitt (2003) are operated using both push and pull messages.

Push messages are those that the bank chooses to send out customer's mobile phones, without the customer initiating a request for the information. Typically push messages could be either mobile marketing messages or message alerting an event which happens in the customer's bank account, such as a large withdrawal of funds from the ATM or a large payment using the customer's credit card etc.

Key and Martin (2004), describes pull messaging as those that are initiated by the customer, using a mobile phones for obtaining information or performing a transaction on his bank accounts. Examples of pull messages for information include an account balance enquiry, or request for current information like currency exchange rates and deposit interest rates, as published and updated by the banks.

Bank Performance:

Rose and Hudgins,(2008), says that performance refers to how adequately a financial firm meets the needs of its stockholders (owners), employees, depositors and other creditors and borrowing customers. Banks performance is of importance to investors because it determines both the returns on investment and it is a measure of economic stability and secured investment environment. Improvement in individuals, groups or organizations cannot be guaranteed except or unless there is a



process of evaluation. Evaluation as a concept is therefore a process by which an organization or firm obtains a feedback on the way it has carried out its activities over time. Performance link an organization's goal and objective with organization's decisions. It is important to note that before we can declare that an activity has improved, it must have been measured so that the extent of improvement can be determined and/or quantified. Measurement is therefore the first step in determining improvement.

Types of performance measurement:

Shaw (2009), in Abdulrasheed, Yahaya and Aliu, (2011), observe that performance can be grouped into two basic types:

Those that relate to result, output or outcome such as competitiveness, profit and those that focus on the determinants of the result such a prices or products

The above statements suggest that performance can be based on results and determinants. They further said that performance usually embraces the following interlinking fundamental areas:

- Money; usually measured as profit or loss;
- Output/input relationship or productivity;
- Customer emphasis: such as quality; Innovation and adaptation to change, and Human resources.

Return on Equity (ROE)

This is the ratio of net income after taxes or total equity capital. It represents the rate of return earned on the funds invested in the bank by its stockholders. It reflects how effectively a bank management is using shareholders' funds.

2.2 Theoretical Review

The theoretical framework of this study is built around the models of Bank-focused Model, bank-led model and non-bank-led model.

Bank-Focused Model

The free encyclopedia (2010), states that, the Bank-focused Model emerges when a traditional bank uses non-traditional low-cost information technology delivery channels to provide banking services to its existing customers. Examples range from use of automated teller machines (ATMs) to internet banking or mobile phone banking to provide certain limited banking services to bank customers. This model is additive in nature and may be seen as a modest extension of conventional branch-based banking (Kapoor, 2010)

Bank-Led Model

This transaction by retail agents of information offers a distinct alternative to conventional branch-based banking in that customer conducts financial transactions through mobile phones, ATM, POS and Internet/Online, instead of at bank branches through bank employees. The model offers services by involving agents. This model was postulated by Lyman, Ivatury and Stachen (2006) which promises the potential to substantially increase the financial services outreach by using different information and communication technology delivery channels

Non-bank-led Model

This model was popularized by Hogan (1991). It is where a bank has a limited role in the day-to-day account management. Typically, its role in this model is limited to safe-keeping of funds. Account management functions are conducted by a non-bank (e.g. Telco) who has direct contact with individual customers. Here a non-bank institution extends financial services where a bank does not come into the picture, unless as a safe keeper of surplus funds.

Branchless banking allows banks to offer financial services through the use of information and communication technology delivery channel to facilitate performance of banks. Bank transactions can be completed through the internet, mobile phone and automated teller machine (ATM).

3.0 Methodology

The research employs Ordinary Least Square (OLS) multiple regression analysis to examine the effect of Electronic Banking System on performance of deposit money banks in Nigeria. Stationary test was conducted on each of the variables using ADF to avoid spurious regression results. The estimation was done using the econometric computer software package, E-Views version 9.0

The time series data used for this study were obtained from secondary sources through the Nigerian banks' annual financial reports and Fact Books from Central Bank of Nigerian various issues, 2008-2017.

3.1 Model Specification

The econometric model to consider in this study takes ATM, POS, and MMT as the explanatory variables and ROE as dependent variable respectively. These variables are used at constant values. This is used to obtain a reliable parameter estimates in the time series regression.

Given the above considerations, we specify a three predictor model as follows;



$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n + U_t \quad 3.1$$

Where;

Y = Dependent variable

$X_1, X_2, X_3, \dots, X_n$ = the explanatory or independent variables

$\beta_1, \beta_2, \beta_3, \dots, \beta_n$ = the coefficient of the parameter estimate or the slope

U_t = Error or disturbance term

t = Time

In relating this to the study;

$$ROE = f(ATM, POS, MMT) \quad 3.2$$

Relating to econometric form and the variables log linearised, it will appear thus;

$$\ln ROE = \beta_0 + \beta_1 \ln ATM + \beta_2 \ln POS + \beta_3 \ln MMT + \dots + U_t \quad 3.3$$

Where;

$\ln ROE$ = Return on Equity

$\ln ATM$ = Automated Teller Machine

$\ln POS$ = Point of Sale

$\ln MMT$ = Mobile Money Transfer

β_0 = intercept (Constant term)

U_t = Error term

A priori expectation: It is expected that $\beta_1 = \beta_3 > 0$

3.2 Description of Variables

Automated Teller Machine (ATM)

This is a computerized device that provides the customers of a financial institution with the ability to perform financial transactions without the need for a human clerk/bank teller. Most modern ATM identifies the customer by the plastic card that the customer inserts into the ATM. The plastic card contains a magnetic stripe or chips that contain a unique card number and some security information, such as an expiration date and card validation code. Authentication of the user is provided by the customer entering a personal identification number (PIN). ATMs are known by various other names including automated transaction machine, automated banking machine, money machine, bank machine, cash machine hole-in-the wall, cash point, any time money etc (Linda, 2009).

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4.0 Data Presentation

Table: 4. 1. ATM usage in volume, POS usage in volume, MMT usage in volume and ROE 2008-2017

Year	ROE	ATM	POS	MMT
2008	27.4	4,504.5	98.67	1.20
2009	37.7	4,937.4	101.49	11.43
2010	40.8	3,597.39	114.48	59.85
2011	51.6	14,055.66	279.18	170.82
2012	112.6	17,861.94	432.09	283.59
2013	88.9	25,460.46	1449.18	1285.2
2014	87.1	33,118.92	2808.63	3118.23
2015	68.7	42,396.30	2835.09	4294.62
2016	86.4	46,156.5	2844.18	4384.8
2017	87.7	54,900.45	2850.98	4321.35

Source: Annual Report of selected banks and Central Bank of Nigeria (CBN) Statistical Bulletin various years

Data Analysis

Table: 4.2 Descriptive Statistics

	LNATM	LNMMT	LNPOS	LNROE
Mean	9.730745	5.782458	6.473011	4.143348
Median	9.967655	6.403100	6.673694	4.344368
Maximum	10.91328	8.385899	7.955418	4.723842
Minimum	8.187964	0.182322	4.591781	3.310543
Std. Dev.	1.030444	2.848205	1.498792	0.467010
Skewness	-0.423627	-0.769389	-0.190619	0.534401
Kurtosis	1.631817	2.405774	1.303927	1.942515
Jarque-Bera	1.079068	1.133725	1.259169	0.941922
Probability	0.583020	0.567302	0.532813	0.624402
Sum	97.30745	57.82458	64.73011	41.43348
Sum Sq. Dev.	9.556340	73.01046	20.21741	1.962886
Observation	10	10	10	10

Source: Eview-9.0 computation software, 2017

The descriptive characteristics of the variables are presented in the table above. The mean values of the ATM (9.730745), MMT (5.782458) and POS(6.473011), while the median variables which measure the centrality of variables are distributed in the following pattern 9.967655, for ATM, 6.403100 for MMT, 6.673694 for POS, and 4.344368 for ROE respectively. The probability corresponding to the Jarque-Berra (JB) shows that the variables are not normally distributed given a high significance value of the p-value which is significantly greater the 0.05. The series for standard deviation are 1.030444 for ATM, 2.848205 for MMT, 1.498792 for POS and 0.467010 for ROE respectively. All the variables are negatively skewed towards normality as evidenced by the negative sign of the skewness. The kurtosis that measured the peakdness of the distribution of each of the variables is 1.631817, 2.405774, 1.303927 and 1.942515 for ATM, MMT, POS and ROE. The Jarque-Bera suggests that all the variables are normally distributed as the p-values are significant at 5% level of significance

**Table 4.3 Regression Analysis Result**

Dependent Variable: LNROE

Method: Least Squares

Date: 10/19/18 Time: 18:01

Sample: 2008 2017

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.170845	2.113704	0.553930	0.5996
LNATM	0.402044	0.359946	1.116957	0.3067
LNPOS	-0.270977	0.284235	-0.953356	0.3772
LNMMT	0.140831	0.093602	1.504572	0.1831
R-squared	0.782413	Mean dependent var	4.143348	
Adjusted R-squared	0.673619	S.D. dependent var	0.467010	
S.E. of regression	0.266802	Akaike info criterion	0.484554	
Sum squared resid	0.427099	Schwarz criterion	0.605588	
Log likelihood	1.577232	Hannan-Quinn criter.	0.351780	
F-statistic	7.191707	Durbin-Watson stat	1.970320	
Prob(F-statistic)	0.020608			

Source: E-view 9.0 software, 2018

Regression Equation:

$$ROE = 1.170845 + 0.402044ATM - 0.270977 POS + 0.140831MMT$$

$$SE = (2.113704) (0.359946) (0.284235) (0.093602).$$

Interpretation of Regression Coefficient, Durbin- Watson and Coefficient of Determination (R²)

The regression coefficient shows that a 1% increase in ATM will lead to an increase in ROE by 1.170845. The regression also shows that 1% increase in MMT has a positive contribution to ROE by 0.140831. This shows that POS contributed negatively to the growth of ROE, while ATM and MMT have a positive contribution to ROE. The coefficient of determination which is captured with adjusted R-Square shows that the value of adjusted R-Square yielded 0.673619. This entails that about 67.3% of the variations of ROE is explained by the changes in the specified independent variables. This entails that about 32.7% of changes in ROE is explained by some other variables outside the model. The Durbin-Watson which yielded 1.970320 I show absence of positive serial correlation in the time series data.

5. Summary of findings and Conclusion and**Recommendations**

- (i) ATM has positive and no significant effect on Return on Equity (ROE) of deposit money banks in Nigeria.
- (ii) MMT has positive and no significant impact on Return on Equity (ROE) of deposit money banks in Nigeria
- (iii) POS has negative and no significant response to Return on Equity (ROE) of deposit money banks in Nigeria

Conclusion

This study examined the effect of electronic banking on performance of deposit money banks in Nigeria for the period of 2008-2017. The E-banking variables considered in this study include ATM, MMT and POS. The study concludes that the introduction of electronic banking in Nigeria has a positive but no significance influence on performance of selected deposit money banks in Nigeria. Even though it has contributed to the development of the payment system in particular and the banking system in general, e - banking system, involves commitment of huge amount of financial resources on computer technology and telecommunication facilities, computer technology is a primary requirement for the proper functioning of electronic banking (Alagh and Ene, 2014).

Some of the problems that hinder the effective operation of e-banking/cashless banking in Nigeria are infrastructural deficiencies such as erratic power supply, lack of government support and high charge on payment terminals (MMT and ATM) etc. However, these problems are only peculiar to Nigeria as it is known that in developed countries issues like power failure or failure links are not in existence.

Recommendations

- Management of banks should provide more ATM stands outside the banking hall to reduce long queues that expose customers to harsh weather and unknown enemies during the pick periods like Mondays, Fridays and Christmas and other festive period. New Year.
- Creating a corporate online presence for banks should be more than just building a website but building a web business for banks. Also short messages service (SMS) gate way provider should provide a decent quality of service for bank and financial institutions in regard to SMS services.



- Banks should make quality their watchword. They should procure quality ICT gadgets that will enhance efficiency, satisfaction and customer retention and increased profitability among others. This is because attention is now on the ability of banks to capture, retains and satisfy their existing customer which is normally a function of efficient service delivery.

References

- Abdulrasheed, A. Yahaya, K. A, and Aliu, O. A. (2011). "Determinants of Performance among banks in Nigeria": A cross generation Analysis, Ilorin: Department of Accountancy and finance University of Ilorin. Retrieved from: <http://us.mc11447.mail.yahoo.com/Mc/welcome?gx-1&tm-13008..>
- Alagh, J.I. and Eneh, E.E. (2014). Impact of cashless Banking on Bank Profitability (Evidence from Nigeria). *Asian Journal of finance and Accountancy Macro think Institute* 6(2) 362-376
- Al-Abed, S. A. (2003), "Electronic Banking", available at <http://www.Bankersonline.com/technology/gurus-tech081803d.html>.
- Basle Committee (1996). Implications for Central Banks of the Development of Electronic Money. Switzerland: *Publication of Bank for International Settlement*.
- Blog-Article (2013). The History of Electronic Payments Parts 1&2", Internet copy: *E- Money blog*.
- CBN. (2014). Central Bank of Nigeria Statistical Bulletin CBN, Abuja
- Douglas, R. (2008). "ATM Crime/ATM Fraud overview DFR, Risk management.ATM" *Msecurity.com*
- Guadamuz, A. (2015). Electronic Money: A viable Payment System. *eHowonline: Edindurg Research Archieve*.
- Key, P; Martin S. (2004); " Assessment of Today's Mobile Banking Application From the view of Customer requirements", *Hicss, vol7, proceedingof the 37' Annual Hawaii international Conference on system sciences.(HICSS'04)*
- Linda, M.(2009). ATM Fraud: Seven Growing Threats to Financial Institution, London, *Randon Press*.
- Nwankwo,O., Eze, O.(2013)"Electronic Payment in cashless economy of Nigeria: Problems and Prospects. Macrothink: *Journal of payment research*.
- Nwolisa, F.E. and Ezu, G.K. (2012). Electronic Retail Payment System: User Acceptability and Payment Problem in Nigeria. Awka. *Arabian Journal of Business and Management Review (OMAN) Chapter Vol.1 (9)*
- Roses,P.S. and Hudgins,S.C.(2008). *Bank Management and financial service7th Ed*. New York: McGraw-Hill/Irwin Companies.
- Obiekwe, C.I. and Anyanwaokoro, M (2017). Electronic Payment Method and Profitability of Banking firms in Nigeria: A Panel Data Analysis. *International Journal of Finance and Accountancy* 6(3) 67-74.