

Redefining the Performance of Commercial Banks in Nigeria: A Narrative of Electronic Banking

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Abstract

This study examines the impact of electronic banking on the commercial bank performance using monthly data from 2015 to 2016. The total asset of commercial banks was used as proxy for commercial bank performance. The data were sourced from the Central Bank of Nigeria statistical bulletin and the Federal Government of Nigeria/ National Bureau of Statistics issues for two years using monthly data. The study adopted Fully Modified OLS, which has the advantage of modifying the least squares to account for serial correlation effects and test for the endogeneity in the regressors that result from the existence of a co-integrating relationships. The study show that the volume of transactions in Mobile Banking exerted significant negative impact on commercial bank assets in the long run. Other independent variables have the expected sign but not significant. The short run estimation showed that the ECM is significant and has the expected negative sign. The result shows that 74.75% of the errors in the previous times disequilibrium is corrected. The finding further showed that the lag of volume of transaction in Mobile Banking has the expected sign and significant at 5% level of significance. The study therefore recommends that the commercial banks should intensify efforts on mobile banking as it has the tendency to improve their profitability.

Keywords: *.Electronic banking .Commercial banks .Fully Modified OLS .Mobile Banking.*

Introduction

Electronic banking is when the internet is used as delivery channel for providing of services like online transfers, electronic bill payments, and accepting deposit into accounts. The services can either be provided by mounting a dynamic website and providing services through that or services can be provided through a virtual bank as well. It can also be provided by the banks having physical offices. Internet is used as a strategic and differentiating channel to offer high valued financial services; complex products at same or improved quality at lower costs without physical boundaries and to cross sell products like credit cards and loans (Sumra, Manzoor, Sumra, & Abbas, 2011).

Internet technology holds the potential to fundamentally change banks and the banking industry (Malhotra and Singh, 2009). Electronic banking is the use of computers and telecommunications to enable banking transactions to be done by satellite, computer or telephone instead of human interaction. Its features include: automated teller machines (ATM), electronic fund transfers for retail purchases, automatic payroll deposits and bill payments or direct deposit of pay cheques into chequing or saving accounts (Okoro, 2014). The availability of e-banking is expected to affect the mixture of financial services produced by banks, the manner in which banks deliver these services and the resulting financial performances of these banks (Mawutor, 2014). E-Banking eliminates physical and geographical boundaries and limitations of banking services. Banking over the

Internet has attracted the customers and increasing attention since the late 1990's from banks, brokerage houses and insurance companies, as well as the business press, regulators, and law makers all over the world (Mawutor, 2014).

Statement of Problem

The quest for banks in Nigeria to have efficient customer service delivery and maintain global relevance in the system has led to the exploitation of the many advantages of ICT through the use of automated devices imperative in the industry (Ugwueze and Nwezeaku, 2016). This study therefore examined the impact of electronic banking on the performance of commercial banks. Previous studies in Nigeria such as Okoro (2014), Ugwueze and Nwezeaku (2016), Abaenewe, Ogbulu, and Ndugbu (2013) and Ogunlowore and Oladele (2014) have employed both descriptive and inferential techniques, and their findings have shown that electronic banking have impact on the performance of commercial banks. This study improves from previous studies by examining the impact of electronic banking on commercial banks' performance in the era of economic downturn using monthly data between 2015 and 2016. This study investigated whether economic downturn causes occurrence of mixed result from previous studies.

Literature Review

The theory behind this study is Diffusion of Innovation Theory developed by Roger in 1983. The theory explains individuals' intention to adopt a technology as a modality to perform a traditional activity. The critical factors that determine the adoption of an innovation at the general level are the following: relative advantage, compatibility, complexity, trialability and observability. According to (DIT) theory, technological innovation is communicated through particular channels, over time, among the members of a social system. The stages through which a technological innovation passes are: knowledge (exposure to its existence, and understanding of its functions); persuasion (the forming of a favourable attitude to it); decision (commitment to its adoption); implementation (putting it to use); and confirmation (reinforcement based on positive outcomes from it). This theory has become imperative to Nigerian banking industry in the 21st century. There has been a widespread of adoption of electronic banking. Studies such as Ugwueze and Nwezeaku (2016), Ogunlowore and Oladele (2014) and Okoro (2014) have empirically investigated the impact of electronic banking on commercial banks' performance and the economy in general.

Ugwueze and Nwezeaku (2016) studied the relationship between electronic banking and the performance of Nigerian commercial banks. Electronic banking was proxied by value of Point-of-Sale transactions while commercial banking performance was proxied by customers' deposits. Engle-Granger co-integration model was used to analyze data for the sample period January 2009 to December 2013. Their results show that POS is not co-integrated with both the savings and time deposits but are co-integrated with demand deposits. They recommended that the monetary authorities and commercial banks should embark on an all inclusive enlightenment campaign for the banking public on the benefits, convenience and importance of adopting e-banking channels in completing their transactions.

Ogunlowore and Oladele (2014) examined the impact of electronic banking on satisfaction of corporate bank customers in Nigeria. Data collected with a structured questionnaire were analysed by descriptive statistics and the hypothesis formulated was tested using chi-square test. The study found that there is a significant relationship between electronic banking and customers' satisfaction. They suggested that critical infrastructure like power; security and telecommunication should be strengthened to ensure the application of electronic banking in Nigeria and optimum satisfaction on the part of customers. Implied from the above, foreign direct investment will increase and

productive capacity will be doubled. This will improve the standard of living of citizenry and further engender economic growth and development.

Okoro (2014) examines the impact of selected e-payment instruments on the intermediation efficiency of the Nigerian economy. Using time series data of 2006 – 2011, he employed multiple regression technique in the analysis of the sourced data. He employed the intermediation efficiency indicator (the ratio of currency outside bank to broad money supply) as a dependent variable, while the automated teller machine (ATM), point of sales (PoS), Mobile and Internet service values were used as the independent variables. He found out that there is significant relationship between ATM, PoS, Internet service values and the intermediation efficiency of indicator. He found out that there is no significant relationship between Mobile service value and intermediation efficiency of the Nigerian economy within the period under study. He recommended that the banks should put more effort in advertising these products in Nigeria. Improved internet and information technology awareness for the public in form of seminars and conferences will cause an upswing in e-payment techniques usage. This may cause a positive impact on the usage of these instruments by the customers of the deposit money banks in Nigeria and hence improve the intermediation efficiency of the Nigerian economy.

Methodology

Research Design

The study was designed as an experimental research. Reinard (1998: 233) describes an experimental research as the study of effects of variables manipulated by a researcher in a situation where all other influences are controlled and completed for the purpose of establishing causal relationships". In this study, the researcher attempt to establish causal relationships between performance of commercial banks and interactions of electronic banking. The study therefore investigates the relationship between commercial banks' performance and adoption of electronic banking.

The functional relationship of the model for the study is presented in equation 3.1:

$$CBA = f(ATM, POS, MBB, ITB) \quad (3.1)$$

Where:

CBA = Commercial bank assets proxy for commercial bank performance

ATM = Volume of transaction in Automated Teller Machine

POS = Volume of transaction in Point of Sale

MBB = Volume of transaction in Mobile Banking

ITB = Volume of transaction in Internet Banking

f = functional relation

Therefore, equation 3.1 is presented in econometric model below

$$CBA_t = \alpha_0 + \alpha_1 ATM_t + \alpha_2 POS_t + \alpha_3 MBB_t + \alpha_4 ITB_t + \mu_t \quad (3.2)$$

$$\alpha_1, \alpha_2, \alpha_3, \alpha_4 < 0$$

α_0 = intercept

$\alpha_1 - \alpha_4$ = parameters to be estimated

μ_t = Stochastic error term

All the data were sourced from Central Bank of Nigeria Statistical Bulletin and Federal Government of Nigeria/ National Bureau of Statistics. Data on commercial bank total asset were obtained from the CBN while data on electronic banking came from Federal Government of Nigeria/ National Bureau of Statistics. The data were monthly data covering 2015 and 2016.

The study employed Fully Modified Ordinary Least Squares as technique of estimation. The Fully Modified OLS introduced is a robust single equation approach, who corrects for repressor endogeneity. This estimation begins by conducting unit root test using Augmented Dickey Fuller (ADF) test. The ADF test has the following model:

$$\Delta X_t = \lambda_0 + \lambda_1 X_{t-1} + \lambda_2 T + \sum_{i=1}^n \varphi_i \Delta X_{t-1} + \epsilon_t, \epsilon_t \sim \text{IID}(0, \sigma^2) \quad (3.3)$$

In equation (3.3), Δ is the difference operator, X is the natural logarithm of the series, T is a trend variable, λ and φ are the parameters to be estimated and ϵ is the error term. Then, the co-integration test was carried out using Johansen's approach. The model for estimating co-integration is specified as follows:

$$\Delta Z_t = \varphi_0 + \pi Z_{t-p} + \sum_{i=1}^{p-1} \varphi_i \Delta Z_{t-1} + \epsilon_t, \epsilon_t \sim \text{IID}(0, \sigma^2) \quad (3.4)$$

This information of the existence of co-integrating equations among the series was further used to carry out short run estimation. Granger (1987) showed that if two variables are cointegrated, then they have an error correction representation. The Error Correction Model (ECM) provides information about the long run, short run relationship as well as the speed of adjustment between the variables in incorporating to the estimated equation, the error correction term (ECM). The ECM equation is specified as follows:

$$\Delta CBA_t = \alpha_0 + \alpha_1 \Delta ATM_t + \alpha_2 \Delta POS_t + \alpha_3 \Delta MBB_t + \alpha_4 \Delta ITB_t + \alpha_5 ECM_{t-1} + \mu_t \quad (3.5)$$

Data Analysis

The section deals with the analysis of data. It is divided into unit root test, cointegration test, long run FMOLS and short run FMOLS.

Unit Root Test

The Unit root test conducted for the series is given in Table 4.1. The augmented Dickey Fuller technique was employed to test the stationarity of the series.

Table 4.1: Unit root test

Variables	Level/Difference	Critical Value (ADF)	ADF	ORDER
CBA	Level	-2.9981	-0.7230	
	First Diff.	-2.9981	-3.7583*	1(1)
ATM	Level	-3.0124	0.7609	
	First Diff	-3.0047	-5.6138*	1(1)
POS	Level	-3.0048	-0.2376	
	First Diff.	-3.0048	-7.3863*	1(1)
MBB	Level	-2.9981	-2.9297	
	First Diff 1	-3.0048	-5.2965*	1(1)
ITB	Level	-2.9981	-1.2945	
	First Diff	-3.0124	-5.6327*	1(1)

Source: Author's Regression Output, 2017

* indicates significance at 5% level.

Table 4.1 shows the stationarity test for the series and from the table it can be seen that all the series were stationary at first difference.

Cointegration Test

Table 4.2: Trace Test Results of Cointegration Test

Null Hypothesis	Alternative Hypothesis	Statistics	Critical Values	P- Values
SERIES: CBA, ATM, POS, MBB, ITB				
$r = 0$	$r \geq 1$	106.6740	69.81889	0.0000
$r \leq 1$	$r \geq 2$	52.99225	47.85613	0.0152
$r \leq 2$	$r \geq 3$	26.75350	29.79707	0.1078

Source: Author's Regression Output, 2017

Table 4.2 shows the co-integration test of the series. The trace statistic shows that there are two co-integrating equations among the series. This means there is a long-run relationship among the series.

Long- Run Relationships

Table 4.3 provides the information on long- run regression of the relationship among the series.

Table 4.3: Long Run Regression

Dependent Variable: CBA

Method: Fully Modified Least Squares (FMOLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATM	0.0433	0.1076	0.4026	0.6920
ITB	0.4546	1.3117	0.3466	0.7329
MBB	-1.0087	0.2885	-3.4954	0.0026
POS	0.8633	0.6195	1.3934	0.1804
C	27537091	2430163.	11.331	0.0000
R-squared	0.7265	Adjusted R-squared	0.6658	

Source: Author's Regression Output, 2017

Table 4.3 indicates that 72.66% variation in growth rate of the commercial bank assets was explained by the independent variables. Volume of transaction in Automated Teller Machine has the expected sign but not significant. A unit increase in ATM leads to a decrease of 0.0433 unit commercial bank assets. The volume of transaction in internet banking has the expected sign but not significant. The result showed that an increase in volume of transaction in internet banking increases the commercial bank assets. Every 1 unit increases in volume of transaction in internet banking leads to increase of 0.4546 units in commercial bank assets.

Volume of transaction in Mobile Banking also does not have the expected sign but it is significant at 5%. This shows that it exerted impact on commercial bank assets. A unit increase in volume of transaction in Mobile Banking leads to 1.0087 units decrease in commercial bank assets. Lastly, the volume of transaction in Point of Sale has the expected sign but it is not significant. A unit increase in volume of transaction in Point of Sale leads to an increase of 0.8633 units in commercial bank assets.

Short Run Regression (Error Correction Model)

The parsimonious ECM for Fully Modified OLS is given in Table 4.4 and it was computed by generating the error correction term. The variables that were not significant in the over-parameterisation ECMs were removed from the final estimation.

Table 4.4: Short Run Regression (Error Correction Model)

Dependent Variable: D(CBA)

Method: Fully Modified Least Squares (FMOLS)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MBB(-1))	0.6873	0.1907	3.6042	0.0020
ECM(-1)	-0.7475	0.1274	-5.8686	0.0000
C	82827.86	92300.27	0.8974	0.3814
R-squared	0.5682	Adjusted R-squared		0.5201

Source: Author's Regression Output, 2017

The short run dynamics is shown in Table 4.4 and the coefficient of determination (R²) was 0.5682 respectively, and it showed that 56.83% of the variation in commercial bank assets is explained by the explanatory variables. The ECM is correctly signed and significant in the estimation. ECM is significant at 5% level of significance. The result shows that 74.75% of the errors in the previous times disequilibrium is corrected. Lag of volume of transaction in Mobile Banking has the expected sign and significant at 5% level of significance. This shows that it exerted impact on commercial bank assets. A unit increase in volume of transaction in Mobile Banking leads to 0.6873 units increase in commercial bank assets.

These findings have shown that the impact of electronic banking on the performance of commercial banks in this era of economic downturn critically made all other forms of electronic banking such as ATM, PoS, and Internet banking to have no significant impact on their performance. Factors that should have caused this may include cash crunch, power outage and transaction cost. Commercial banks such as GTB, First Bank, Access Bank and Union Bank have relied heavily on Mobile Banking. It has enabled transactions to be done without wasting cost.

Conclusion and Recommendation

This study examines the impact of electronic banking on the commercial bank performance using monthly data from 2015 to 2016. The total asset of commercial banks was used as proxy for commercial bank performance. The data were sourced from Central Bank of Nigeria statistical bulletin and Federal Government of Nigeria/ National Bureau of Statistics issues for two years using monthly data. The study adopted Fully Modified OLS, which has the advantage of modifying the least squares to account for serial correlation effects and test for the endogeneity in the regressors that result from the existence of a co-integrating relationships. The findings of the study showed that volume of transaction in Mobile Banking exerted significant negative impact on most literature empirically reviewed. It is concluded that electronic banking has a significant impact on the performance of commercial banks assets in the long run. Other independent variables have the expected sign but not significant.

The short run estimation shows that the ECM is significant and has the expected negative sign. The result shows that 74.75% of the errors in the previous times disequilibrium is corrected. The finding further showed that the lag of volume of

transaction in Mobile Banking has the expected sign and significant at 5% level of significance. The study therefore recommends that the commercial banks should intensify efforts on mobile banking as it has the tendency to improve their profitability.

Considering the results of the findings of this study which is in agreement with most literature empirically reviewed, it is concluded that electronic banking has a significant impact on the performance of commercial banks.

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