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Original Research Article

Electronic Banking and Deposit Money Bank's Performance in Nigeria

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Abstract: The study investigates the impact of electronic banking on the performance of deposit money banks in Nigeria using quarterly data from the first quarter of 2010 the quarter of 2018 from the Central Bank of Nigeria statistical bulletin. It tested the response of the variables of interest, automated teller machine (ATM), point of sale (POS), mobile banking (MOBE), and web pay (WEPA) on net interest margin (NIMA).It employed the use of Jarque Bera normality and diagnostic tests, Augmented Dickey fuller unit root test for stationarity. The result shows that ATM, POS and WEPA are not significant to NIMA while MOBE is positively related and significant to NIMA. The study recommended that customers should be encouraged to use mobile banking platform.

Keywords: Electronic banking, Deposit money banks, point of sale, teller machine, Mobile banking, net interest margin and web pay.

1. INTRODUCTION

In the past, banking was difficult as people had to spend so much time in the ban king hall. It was so terrible that people were compelled to go with mats**.** People had to transact from branches where accounts were domiciled hence people had to travel with cash when travelling inter-state.

The Diamond Bank started the online real time banking where you could process and conclude transactions from any branch irrespective of where the account was opened. This was the beginning of convenient banking and other banks gradually joined.

With the advent of the electronic form of banking through Information and Communication Technology (ICT), the achievements of Deposit Money Banks (DMBs) in terms of their performance have improved both in profitability and customer service delivery.

Deposit Money Banks are banks that have any liabilities in the form of deposits which are payable on demand as well as transferable by cheques or otherwise usable in making payments.

Electronic banking, however, do involve the means whereby Information Communication Technology is used to steer banking business for prompt and subsequent goals (Malhotra and Singh 2010).

Offer and Nuamah-Gyambrah (2016) assert that customers are now seek for a quick and appropriate technology with much more rewarding banking experience. This innovation arises as a result of the use of computers, Electronic media and divergent of network gadgets. Electronic Banking has speedily become a reality in the industrialized and economically advanced countries, with people who are far apart being able to engage in formal and informal relationships, which would have required them to engage in travels consuming hours or days.

With the very swift usage of the internet, coupled with the world's increasing addiction to e-business, the trend of cash transactions which was the normal of banking activities is now giving way for electronic payment system (Taiwo & Agwu, 2017). This growing acceptance of e-business has however, brought a core transformation in the expectation of customers from their various financial service providers.

It has been observed that there is paucity of research that examined the types of electronic banking and their economic implications in the financial space in Nigeria. However, from these studies, electronic

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banking and the performance of Deposit Money Banks in Nigeria as regards profitability was not examined. Hence there is a gap in the study which pertains to electronic banking in relation to the performance of Deposit Money Banks in Nigeria. This study therefore attempts to ascertain the implication of electronic banking on the performance of Deposit Money Banks in Nigeria.

Statement of Problem

Electronic banking became necessitated for adoption by banks in order to improve and sustain service delivery in a cost effective manner, decongest the antecedent queues that plague banks in their banking halls, enable and assist customers in the withdrawal of cash 24hours-7 days, aid international payment, enable customers to track their banking transactions, and make the needed request for account statement online or even transfer funds to a third party account among other things. The injection of the platform for electronic banking has contributed rapidly to the growth of the financial system as well as development in the country. It has also impacted positively on bank profitability and has eased customer banking. There is no doubt that, this needed introduction of the platform of electronic banking in the Nigerian financial system has made business transactions and dealings easier. But there are still some problems hindering both Nigerian Deposit Banks and their customers from enjoying e-banking. The problem of insecurity as well as lack of privacy as occasioned by the activities of hackers is a major problem militating against utilization of the full immense benefits offered by e-banking. This could lead to financial and capital loss due to inaccurate processing of transactions, data privacy invasion and non-confidentiality, unauthorized access or intrusion to financial institutions system and transaction. Also, banks are not without complaints as it has to do with the performance of electronic platforms such as Automated Teller Machines (ATM), online theft and fraud network downtime, non-availability of financial service, payment of excessive hidden costs on electronic banking channels like short message service (SMS) etc. from customers as regards malfunctioning.

Various scholars like (Enoruwa, Ezuem and Nwani, 2019; Orji, Ogbuador, Okon and Anthony-Orji, 2018; Obiekwe and Mike, 2017; Ugwueze and Nwezeaku 2016; Eze and Egoro, 2016; Jegede, 2014; Karimzadeh, Emadzadeh and Shateri, 2014; Okoro, 2014; Oyewole, Abba and El-Mauda, 2013; Abaenew, Ogbulu and Ndugbu, 2013; Oginni and Gambo, 2013; and Mohammad and Saad, 2011) have studied on the impact of electronic banking on the performance of deposit money banks in Nigeria using annual time series data whereas other scholars like (Ekunabor, Akpoguma, Arilesere and Mustapha, 2018; Taiwo and Agwu, 2017; Oloyede, and Azeez and Aluko, 2015) made use of primary data. However, this study differs from other studies as it made use of return on asset, return on equity, and net interest margin as key indicators and also used quarterly time series data in measuring the performance of Deposit Money Banks in Nigeria.

2. REVIEW OF LITERATURE

Concept of electronic banking

Electronic banking as a concept has various definitions as put forth by different scholars. Daniel (1999) defined electronic banking to be the different delivery channels that are made available by banks which can be made used of with different terminal (personal computer and a mobile phone with browser or desktop software, telephone or digital television) for the delivery of banks' information and services to customers by banks. To this end, Arunachalam and Sivasubramanian (2007) opined that Internet (electronic) banking is where a customer or other clients can have access to his or her bank account via the Internet using personal computer (PC) or mobile phone and web-browser. Similarly, in the view of Ongkasuwan and Tantichattanon (2002), internet (electronic) banking service can be defined as banking service which however allows customers or other clients to gain access as required and perform the needed financial transactions or operations on their bank accounts from various locations with the usage of their web enabled device with the use of internet connectivity to banks' web sites or platform any time they wish to perform transactions. Electronic banking service enables bank customers (actual or potential) to perform transactions such as transfer and payments, access of latest information, payment of bills, mobile phone subscription and decoders, customization, print, downloading of statements, opening of account, seeking of personal loans and obtaining a history statement on all accounts. According to Khan (2007), Internet (electronic) banking can be viewed as a broad system that aids financial clients or customers, households or businesses to access accounts, transact their needed business operations, and obtain the required information on financial products as well as services on private or public network including Internet. Electronic banking is a medium of banking that involves the transmission of money electronically. Here, banking services are fully automated such that transactions are concluded within a limited short period of time. Whereas Kin and Mull (2006) provided an abridged definition of Internet (electronic) banking as the process whereby financial intermediation has been conducted on the Internet. In this, the authors meant all the conglomerate of activities carried out by customer through the usage of internet services and other channels convenient for the operation of their banking activities with the banks.

According to Burras (1995), electronic banking is essentially characterized by the usage of data communication networks to establish electronic connections between customers or clients and banks in

preparation, management and control of financial transactions.

Pardon (1977) observed that electronic banking technologies in recent years had expanded in varieties as it has to do with the depth and breadth. With the presence of financial institutions, technologies such as direct deposit, Automated Teller Machines, Web pay, Point of Sales, mobile banking and credit/debit cards have been the key investments and innovations. He further observed that these innovations and creations by the banking financial institutions need an environment that is customer friendly in nature and likely to advance much improvement on their satisfaction, hence increase the performance of banks. He noted that in a homogenous world class, the customer is always sovereign or seen as the king so if these technologies are not meant to improve on service delivery and satisfaction, electronic banking possess no better future and the reverse is plausible.

Components of electronic banking

Electronic banking consists of the following components.

Mobile Banking

Mobile banking as a component of electronic banking involves the use of mobile phones whether internet enabled or not to conduct banking operation at any place and time. It helps to process and concludes transactions on the go. Mobile banking is meant for both low and high value transactions where speed of completing the transaction is key; hence having a very exciting potential within Nigeria banking scene, given the level or height of financial infrastructure requirements and a rapidly increasing mobile phone penetration. The services covered by mobile banking under this product include the following but not limited to account enquiry, funds transfer, recharge phones, changing of passwords and bill payments which are offered by the banking financial institutions in Nigeria.

Internet Banking

Internet banking involves the use of electronic tools and instruments without any form of visitation to the banking hall in the conducting of banking business such as account enquiry printing of statement of account; funds transfer, payments for goods and services, etc. on the internet. This form of electronic banking is usually done through website of the bank. It also provides exactly the same services that the mobile banking application provides with few additions and it is usually more secured and legible.

Telephone Banking

Telephone banking as a component of electronic banking involves the use of telephone lines as a link to the financial institutions or banks computer centre to meet the need of a customer from a financial institution. Services rendered through telephone based banking include, account balance, funds transfer, change of pin, and recharge phones and bills payment.

Electronic Card

An electronic card as a component of electronic banking is a physical plastic card that uniquely identifies a particular holder which can be used for financial transactions over the internet, on the Automated Teller Machine (ATM) and Point-of Sales (Pos) terminal, to authorize payment to the merchant (seller) by buyers. In Nigeria, we have debit and credit cards. While debit cards are linked to our local (NGN) accounts, the credit cards are linked to authorized credit limits. They both offer immediate confirmation of payment and can be used for accessing local and international networks and widely accepted in most countries. The underlying infrastructure and operational rules are often provided by global trusted schemes (such as visa and master card) in addition to local lines. Debit cards are the dominant card mechanism in Nigeria, they are also known as ATM cards and ATM usage is wider than POS transactions.

Automated Teller Machine (ATM)

This is an electronic machine that performs the function of dispensing cash or other banking services that may be required when a card holder inserts an authorized credit or debit card of a bank of which he or she is a customer. It also aids customers of financial institutions or intermediaries to perform the needed financial transactions such as withdrawal of cash, funds transfer or obtaining of account information, at any given point in time of the day without the need for direct interaction with a bank staff. This happens when an account holder inserts an electronic card into the machine and then puts a Personal Information Number (PIN) which gives the required access to the owner of the account.

Point of sale (POS)

This is an electronic terminal/device used to process card payments by using a PIN usually at retail locations like filling stations, supermarkets, eateries, etc. It transfers funds from customer's accounts to the vendors' account usually called the merchant, records every transaction done and prints the needed receipt. It reads the information needed off a customer's debit or credit cards, checks for the availability of funds in the accounts if sufficient, debits the account and transfers to merchant if funded, records every transaction done and prints the needed receipt or rejects the transaction based on insufficient funds. The POS has become very common especially in areas where there are no banks and ATMs. They bridge the gap for cash payments by exchanging cash for amounts debited from customer cards premium. Mobile bank agents provide ready cash for people with debit or credit cards. This however comes with a lot of risk especially with the increased level of kidnapping and fraud. The risk therein is such that if a card is stolen or collected under duress and is

used on a terminal, the merchant is held liable as the transaction will be traced to that terminal.

CBN also introduced a N50 charge recently on every POS transaction as well as stamp duty. These reduced the use of POS and made a lot of terminals inactive.

Empirical Literature

Enoruwa, Ezuem and Nwani (2019) investigated the relationship existing between electronic banking and bank performance in Nigeria, the researchers adopted data from the secondary source. The researchers made use of regression analysis to verify the nature and strength of the relationship that exist between the explanatory and dependent variables. However, the performance of the Nigerian banking sector was proxied by Total Bank Deposit while transaction values of ATM (Automated Teller Machine), MoB (Mobile Banking), POS (Point of Sales) and Web Pay were used as proxy for electronic banking. The researcher found out that the correlation results of electronic channel products (ATM, POS, Web pay, and Mobile Pay) are positively and significantly related to bank performance. The regression result also showed that all the predictors are highly correlated to each other.

Njeru and Omagwa (2018), in their study of mobile banking and bank profitability in Kenya sourced primary data from 60 respondents through a structured questionnaire. They analyzed the data using descriptive analysis and multiple regression analysis. The researcher found out statistically significant transactions effect on the profit of Kenyans' while customization and electronic funds transfer services did not show a significant effect on the profit of Kenyans' tier 1 banks.

Orji, Ogbuador, Okon and Anthony-Orji (2018) researched on the nexus between electronic banking innovations and the overall banking performance from the period of 2012 to 2017 in Nigeria. The researchers employed descriptive data analysis and multiple regression analysis techniques in order to unravel the relationship between each of the independent variables on the dependent variable. The major influencers of banks performance among the variables captured in the study are automated teller machine, bank size, point of sale, mobile banking. The researchers found out that electronic banking innovation impact overall banking performance and the impact is significant.

Ekunabor, Akpoguma, Arilesere and Mustapha (2018) examined the level of relationship that exist between customer satisfaction electronic banking in Nigeria.. They made use of questionnaire composing of 100 respondents to generate the required data necessary for the study. They analyzed the data using descriptive analysis and multiple regression analysis. They concluded from their analysis that there exist a significant relationship between customers' satisfaction and electronic banking. Obiekwe and Mike (2017) took a broad view on the nature of the relationship of profitability of DMBS on electronic of electronic payment method in Nigeria between the periods of 2010 to 2016.

Taiwo and Agwu (2017) examined the important of e-banking on operational efficiency of banks in Nigeria; commercial banks in Nigeria were used as a case study. It has been observed from the framework of banks operational efficiency in Nigeria during the period of adoption e-banking which has improved when compared to the time of conventional or traditional banking. However, the study sample consists of 90 respondents drawn from commercial banks customers and staff in Nigeria. They made use of descriptive data analysis technique in their study. Banks' strength, capital, and revenue base, as well as customer loyalty, have all improved. It was concluded that the innovations of new channels into the banking operations has drastically increased performance as more active customers are with their e-transactions the more profitable it is for the banks.

Ugwueze and Nwezeaku (2016) investigated the link between electronic banking and Nigerian commercial bank performance. The research was necessitated by the increasing use of electronic banking, which has revolutionized financial services in Nigeria and across the world.

Electronic banking was proxied by value of Point-of-Sale transactions while commercial banking performance was proxied by customer deposits. The data for the sample period of January 2009 to December 2013 was analyzed using an Engle-Granger cointegration model. The findings indicate that although POS is not cointegrated with both savings and time deposits, it is with demand deposits. It is suggested that the monetary authorities and commercial banks launch an all-encompassing education campaign for the banking public on the advantages, convenience, and significance of using e-banking channels to complete transactions. Karimzadeh, Emadzadeh and Shateri (2014) investigated the impact of e-banking on the profitability of a bank in Iran. By using quarterly data over the period of 2004–2012. The authors made use of multiple regression analysis. They found that expansion of e-banking has significant positive association to the profitability, measured in terms of ROA, of the sample bank.

Rauf and Qiang (2014) measured the impact of e-banking on the performance of Pakistani commercial banks. The researchers measured the performance of commercial banks in terms of Return on Assets, Return on equity and interest margin using a sample of 10 banks' data over the period of 2002 to 2012. The

researchers found that e-banking has significant positive impact on margin, ROA and ROE of the recent adopters whereas for the early adopters' significant positive impact on ROE and Margin but slightly on ROA. On the basis of findings, they conclude that banks can consider e-banking as a cost saving effective strategy to compete with the domestic and foreign banks given a well-managed monitoring and control over the risks involved in.

The summary of the empirical literature is geared at summarizing the positions of the different researchers into common pool of similar opinions.

However, this study differs from other studies as it makes use of quarterly time series data from the first quarter of 2010 to the last quarter of 2018 and the uses of return on equity return on asset and proxy bank performance with net interest margin (NIMA) as indices for measuring the financial performance of deposit money banks.

3. METHODOLOGY/MODEL SPECIFICATION

This work is anchored in the innovation diffusion theory as postulated by Rogers (1962) on how new innovations in terms of electronic banking are successfully adopted to increase the performance of banks and from the work of Enoruwa, Ezuem and Nwani (2019) which proxy bank performance with total bank deposit. This study will however proxy bank performance with the net interest margin of deposit money banks in Nigeria and other variables like value of transactions consummated through automated teller machine, point of sale, web pay, and mobile banking.

MODEL

$$NIMA_t = ATM_t + POS_t + MOBE_t + WEPA_t + \varepsilon_t$$

Where, NIMA = NET INTEREST MARGIN**,** ATM = Transactions Consummated by Automated Teller Machine, POS = Point of Sale, MOBE = Mobile Banking, WEPA = Web Pay, ε_t = intercept.

Net interest margin is the difference between revenues generated by interest bearing assets and the cost of servicing liabilities.

Presentation of Preliminary Results

The pre-estimation analysis of empirical studies include descriptive statistics and the test of stationarity of the concern variables using Augmented Dickey Fuller (ADF).

Table-3.1: Descriptive/Summary Statistics

	NIMA	ATM	POS	MOBE	WEPA
Mean	7.217941	16.54618	11.65445	11.92519	11.91597
Median	7.080000	17.18609	11.75219	12.00542	11.92591
Maximum	9.310000	17.39371	12.70735	13.14032	12.69453
Minimum	5.250000	14.63528	7.578657	10.69154	11.37296
Std. Dev.	1.178383	0.946501	0.890368	0.657525	0.311930
Skewness	0.258793	-0.834185	-2.928762	0.000810	0.410757
Kurtosis	2.032022	2.033878	14.17830	2.278462	2.713458
Jarque-Bera	1.706909	5.265539	225.6255	0.737545	1.072406
Probability	0.425941	0.071879	0.000000	0.691583	0.584965
Sum	245.4100	562.5701	396.2512	405.4566	405.1428
Sum Sq. Dev.	45.82336	29.56355	26.16093	14.26720	3.210917
Observations	34	34	34	34	34

Source: Computed data using Eviews

Table 3.1 depicts descriptive analysis on the selected variables captured in this study. As indicated in table, the mean values of (NIMA) is 7.217, (ATM) is 16.54618, (POS) is 11.65445, (MOBE) is 11.9251, (WEPA) is 11.915, during the evaluation period.

Examination of the Skewness showed that NIMA is positively skewed, ATM is negatively skewed, POS is negatively skewed, MOBE mirrors a normal distribution and WEPA is positively skewed given its positive value. Examination of kurtosis showed that all the series distributions are platykurtic except POS that is leptokurtic.

Test of Normality Using Jarque Bera Statistic Jarque Bera Statistic measures the difference between the Skewness and Kurtosis of the series with those of the normal distribution. Evaluation shows that:1

The Jarque Bera Statistics for NIMA is 1.706909 and a P-value of 0.425941; this means that NIMA is normally distributed. The Jarque Bera Statistics for ATM is 5.265539 and a P-value of 0.071879; this means that ATM is normally distributed. The Jarque Bera Statistics for POS is 225.6255 and a P-value of 0.00000; this means that POS is not normally distributed. The Jarque Bera Statistics for MOBE is 0.737545 and a P-value of 0.691583; this means that MOBE is normally distributed. The Jarque Bera

Statistics for WEPA is 1.072406 and a P-value of 0.584965; this means that WEPA is normally distributed.

Unit Root Test using Augmented Dickey fuller

NET INTEREST MARGIN (NIMA)

Augmented Dickey fuller Unit Root Test for NIMA

Net Interest Margin (NIMA) is not stationary at level form, so it has already been differenced to achieve its first difference after taking the log of the series. i.e. DLNIMA. So the series is stationary at first difference after taking the log. D(LNIMA). Null Hypothesis: DLNIMA has a unit root. A p-value of 0.0129 which is less than 0.05 means that we reject the null hypothesis. The series has become stationary at first differencing after taking the log so it is said to be *I (1)* series. Therefore we can reject null hypothesis. It means the DLNIMA series does not have a unit root problem. The result is reliable as the Durbin Watson test statistics is 2.3 meaning that there is no autocorrelation problem.

Table-3.2: Augmented Dickey fuller Unit Root Test for DLNIMA

Null Hypothesis: DLNIMA has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on AIC, maxlag=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.549146	0.0129
Test critical values:	1% level		-3.653730	
	5% level		-2.957110	
	10% level		-2.617434	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(DLNIMA)				
Method: Least Squares				
Date: 09/04/21 Time: 11:02				
Sample (adjusted): 2010M03 2012M10				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLNIMA(-1)	-0.337553	0.095108	-3.549146	0.0013
C	-0.003027	0.005501	-0.550217	0.5862
R-squared	0.295716	Mean dependent var		-0.005361
Adjusted R-squared	0.272240	S.D. dependent var		0.036217
S.E. of regression	0.030896	Akaike info criterion		-4.055920
Sum squared resid	0.028637	Schwarz criterion		-3.964312
Log likelihood	66.89473	Hannan-Quinn criter.		-4.025555
F-statistic	12.59644	Durbin-Watson stat		2.302462
Prob(F-statistic)	0.001296			

Source: Computed data using Eviews

AUTOMATIC TELLER MACHINE (ATM)

Augmented Dickey fuller Unit Root Test for ATM

Automatic Teller Machine (ATM) is not stationary at level form, so it has already been differenced to achieve its first difference after taking the log of the series. i.e. DLATM. So the series is stationary at first difference after taking the log. D(LATM). Null Hypothesis: DLATM has a unit root. A p-value of 0.0000 which is less than 0.05 means that we reject the null hypothesis. The series has become stationary at first differencing after taking the log; so, it is *I (1)* series. Therefore we can reject null hypothesis. It means the series DLATM does not have a unit root problem.

Table-3.3: Augmented Dickey fuller Unit Root Test for DLATM

Null Hypothesis: DLATM has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on AIC, maxlag=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.923830	0.0000
Test critical values:	1% level		-3.653730	
	5% level		-2.957110	
	10% level		-2.617434	
*MacKinnon (1996) one-sided p-values.				

Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(DLATM)				
Method: Least Squares				
Date: 09/04/21 Time: 16:32				
Sample (adjusted): 2010M03 2012M10				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLATM(-1)	-1.077511	0.181894	-5.923830	0.0000
C	0.005657	0.002617	2.162039	0.0387
R-squared	0.539112	Mean dependent var		0.000101
Adjusted R-squared	0.523749	S.D. dependent var		0.020022
S.E. of regression	0.013818	Akaike info criterion		-5.665275
Sum squared resid	0.005728	Schwarz criterion		-5.573667
Log likelihood	92.64440	Hannan-Quinn criter.		-5.634909
F-statistic	35.09176	Durbin-Watson stat		1.936498
Prob(F-statistic)	0.000002			

Source: Computed data using Eviews

POINT OF SALE (POS)

Augmented Dickey fuller Unit Root Test for POS

Point of Sale (POS) is stationary at level form, after being logged. i.e. LPOS. Null Hypothesis: LPOS has a unit root. A p-value of 0.0041 which is less than 0.05 means that we reject the null hypothesis. The series is stationary at level form after taking the log; so it is said to be *I (0)* series. Therefore we can reject null hypothesis. It means the series LPOS does not have a unit root.

Table-3.4: Augmented Dickey fuller Unit Root Test for LPOS

Null Hypothesis: LPOS has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on AIC, maxlag=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-4.001429	0.0041
Test critical values:	1% level		-3.646342	
	5% level		-2.954021	
	10% level		-2.615817	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LPOS)				
Method: Least Squares				
Date: 09/04/21 Time: 16:51				
Sample (adjusted): 2010M02 2012M10				
Included observations: 33 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LPOS(-1)	-0.695955	0.173927	-4.001429	0.0004
C	1.708386	0.426309	4.007387	0.0004
R-squared	0.340586	Mean dependent var		0.003603
Adjusted R-squared	0.319315	S.D. dependent var		0.104764
S.E. of regression	0.086434	Akaike info criterion		-2.000183
Sum squared resid	0.231595	Schwarz criterion		-1.909485
Log likelihood	35.00301	Hannan-Quinn criter.		-1.969666
F-statistic	16.01143	Durbin-Watson stat		1.951464
Prob(F-statistic)	0.000364			

Source: Computed data using Eviews

MOBILE BANKING (MOBE)

Augmented Dickey fuller Unit Root Test for MOBE

Mobile Banking (MOBE) is not stationary at level form, so it has already been differenced to achieve its first difference after taking the log of the series. i.e. DLMOBE. So the series is stationary at first difference after taking the log. D(LMOBE). Null Hypothesis: DLMOBE has a unit root. A p-value of 0.0001 which is less than 0.05 means that we reject the null hypothesis. The series has become stationary at first differencing after taking the log; so it is said to be *I (1)* series.

Therefore we can reject null hypothesis. It means the series DLMOBE does not have a unit root problem.

Table-3.5: Augmented Dickey fuller Unit Root Test for DLMOBE

Null Hypothesis: DLMOBE has a unit root				
Exogenous: Constant				
Lag Length: 0 (Automatic - based on AIC, maxlag=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-5.248055	0.0001
Test critical values:	1% level		-3.653730	
	5% level		-2.957110	
	10% level		-2.617434	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(DLMOBE)				
Method: Least Squares				
Date: 09/04/21 Time: 17:08				
Sample (adjusted): 2010M03 2012M10				
Included observations: 32 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLMOBE(-1)	-0.955948	0.182153	-5.248055	0.0000
C	0.003973	0.006260	0.634744	0.5304
R-squared	0.478642	Mean dependent var		-0.000114
Adjusted R-squared	0.461264	S.D. dependent var		0.047868
S.E. of regression	0.035134	Akaike info criterion		-3.798807
Sum squared resid	0.037033	Schwarz criterion		-3.707198
Log likelihood	62.78091	Hannan-Quinn criter.		-3.768441
F-statistic	27.54208	Durbin-Watson stat		1.989784
Prob(F-statistic)	0.000012			

Source: Computed data using Eviews

WEB PAY (WEPA)

Augmented Dickey fuller Unit Root Test for WEPA

Web Pay (WEPA) is stationary at level form, after being logged. i.e. LWEPA. Null Hypothesis: LWEPA has a unit root. A p-value of 0.0041 which is less than 0.05 means that we reject the null hypothesis. The series is stationary at level form after taking the log; so it is said to be *I (0)* series. Therefore we can reject null hypothesis. It means the series LWEPA does not have a unit root.

Table-3.6: Augmented Dickey fuller Unit Root Test for LWEPA

Null Hypothesis: LWEPA has a unit root				
Exogenous: Constant				
Lag Length: 8 (Automatic - based on AIC, maxlag=8)				
			t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic			-3.494190	0.0168
Test critical values:	1% level		-3.724070	
	5% level		-2.986225	
	10% level		-2.632604	
*MacKinnon (1996) one-sided p-values.				
Augmented Dickey-Fuller Test Equation				
Dependent Variable: D(LWEPA)				
Method: Least Squares				
Date: 09/04/21 Time: 17:17				
Sample (adjusted): 2010M10 2012M10				
Included observations: 25 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LWEPA(-1)	-1.598938	0.457599	-3.494190	0.0033
D(LWEPA(-1))	0.880706	0.400856	2.197063	0.0441
D(LWEPA(-2))	0.996832	0.374729	2.660143	0.0178
D(LWEPA(-3))	0.463056	0.349703	1.324139	0.2053
D(LWEPA(-4))	0.736052	0.336638	2.186479	0.0450

D(LWEPA(-5))	0.906968	0.337622	2.686340	0.0169
D(LWEPA(-6))	0.613320	0.329813	1.859600	0.0827
D(LWEPA(-7))	0.479468	0.295300	1.623662	0.1253
D(LWEPA(-8))	0.793476	0.300317	2.642132	0.0185
C	3.963146	1.133441	3.496561	0.0032
R-squared	0.634907	Mean dependent var		0.002250
Adjusted R-squared	0.415851	S.D. dependent var		0.029852
S.E. of regression	0.022815	Akaike info criterion		-4.433584
Sum squared resid	0.007808	Schwarz criterion		-3.946034
Log likelihood	65.41980	Hannan-Quinn criter.		-4.298359
F-statistic	2.898377	Durbin-Watson stat		2.009331
Prob(F-statistic)	0.033232			

Source: Computed data using Eviews

Hypotheses Testing with OLS Regression Analysis

MODEL

$NIMA_t = ATM_t + POS_t + MOBE_t + WEPA_t + \varepsilon_t$

Table-3.7: Regression Analysis when Net Interest Margin is the dependent variable

Dependent Variable: DLNIMA				
Method: Least Squares				
Date: 09/04/21 Time: 17:48				
Sample (adjusted): 2010M02 2012M10				
Included observations: 33 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.705543	0.916238	1.861464	0.0732
DLATM	-0.410877	0.718555	-0.571811	0.5720
DLMOBE	1.012837	0.395603	2.560236	0.0161
LPOS	-0.029255	0.149408	-0.195809	0.8462
LWEPA	-0.657435	0.369206	-1.780673	0.0858
R-squared	0.311969	Mean dependent var		0.006935
Adjusted R-squared	0.213679	S.D. dependent var		0.057426
S.E. of regression	0.050922	Akaike info criterion		-2.978297
Sum squared resid	0.072607	Schwarz criterion		-2.751554
Log likelihood	54.14190	Hannan-Quinn criter.		-2.902005
F-statistic	3.173960	Durbin-Watson stat		0.436501
Prob(F-statistic)	0.028595			

Source: Computed data using Eviews

Hypotheses One

H_{01}. There is no significant impact of Automated Teller Machine (ATM) on the Net interest Margin of deposit money banks in Nigeria.

Interpretation of results sees Table 3.7: Regression Analysis when Net Interest Margin is the dependent variable

DLATM does not have a significant influence on the Net Interest Margin. It has a coefficient of 0.410877 and a p-value of 0.5720; this value is greater than 0.05 meaning that the amount generated through ATM has no significant effect on the net interest margin (NIMA) of the deposit money bank. A one unit change in the amount generated through Automated Teller Machine will result to 0.410877 unit change in Net Interest Margin (NIMA). NIMA has a negative relationship with DLATM, which means that as the amount generated through ATM increases net interest margin decreases.

Hypotheses Two

H_{02} There is no significant impact of Point of Sale (POS) on the net interest margin of deposit money banks in Nigeria

Point of Sale (POS) does not have a significant impact on the Net Interest Margin. It has a coefficient of 0.029255 and a p-value of 0.8462; this value is greater than 0.05 meaning that the amount generated through POS has no significant effect on the net interest margin (NIMA) of the deposit money bank. One unit change in the amount generated through POS will result to 0.029255 unit change in Net Interest Margin (NIMA). POS has a negative relationship with NIMA, which means that as the amount generated through POS increase net interest margin decreases.

Hypotheses Three

H_{03} There is no significant effect of Mobile Banking (MOBE) on the net interest margin of deposit money banks in Nigeria.

Mobile Banking (MOBE) has a significant effect on the Net Interest Margin. It has a coefficient of 1.012837 and a p-value of 0.0161; this value is less than 0.05 which means that the amount generated through Mobile banking has a significant effect on the net interest margin (NIMA) of the deposit money bank. One unit change in the amount generated through MOBE will result to 1.012837 unit change in Net Interest Margin (NIMA). MOBE has a positive relationship with NIMA, which means that as the amount generated through MOBE increase net interest margin increases.

Hypotheses Four

H_{04} There is no significant effect of Web Pay (WEPA) on the net interest margin of deposit money banks in Nigeria

Web Pay (WEPA) does not have a significant effect on the Net Interest Margin. It has a coefficient of 0.657435 and a p-value of 0.0858; this value is greater than 0.05 which means that the amount generated through Web Pay does not have a significant effect on the net interest margin (NIMA) of the deposit money bank. One unit change in the amount generated through Web Pay will result to 0.657435 unit change in Net Interest Margin (NIMA). WEPA has a negative relationship with NIMA, which means that as the amount generated through Web Pay increases net interest margin decreases.

Conclusively, the charges on web pay paid by bank customer on transactions online should be reduced to the barest minimum to allow for more adoption of the platforms by customers.

Customers should be encouraged to use the mobile banking platform through the giving of gifts or promotions to stimulate the use of the platforms by bank customers.

The minimum withdrawal limit on a single withdrawal should be made uniform to allow for unnecessary charges after the third withdrawal by banks from other bank users.

REFERENCES

- Abaenewe, Z. C., Ogbulu, O. M., & Ndugbu, M. O. (2013). Electronic banking and bank performance in Nigeria. *West African Journal of Industrial and Academic Research*, *6*(1), 171-187.
- Arunachalam, L., & Sivasubramanian, M. (2007). The Future of Internet Banking in Indian. *Academic Open Internet Journal*, 20.
- Burras, E. (1995). Internet Banking Services to Customer. *Journal of Finance*, *2*(3), 56-69.
- Daniel. (1999). Transforming Payment Systems: Meeting the Need of Emerging Market Economies. Washington D.C: World Bank.
- Ekunabor, A., Akpoguma, E., Arilesere, M. & Mustapha, U. (2018). E-banking and the Performance of Commercial Banks in Nigeria. *Finance and Economic Journal*, *1*(3), 66-77.
- Enoruwa, K. O., Ezeuen, D. M. & Nwani, C. O. (2019). Electronic Channels and Bank Performance: Empirical Evidence from Nigeria. *SSRG International Journal of Economics and Management Studies*, *6*(5), 37-45.
- Eze, G. P. & Egoro, S. (2016). Electronic banking and profitability of commercial banks in Nigeria. *Journal of Finance and Economic Research*, *3*(1), 23-32.
- Jegede, C. A. (2004). Effects of Automated Teller Machine on the Performance of Nigerian Banks. *Journal of Applied Mathematics and Studies*, 2, 40-46.
- Karimzadeh, S. D., Emadzah, M. & Shateri, J. (2014). The Effects of Electronic Banking Expansion on Profitability of a Commercial Bank (Sepah Bank of Iran). *Indian Journal of Science Research*, 4(6), 305-312.
- Khan, S. (2007). The Effects of Trust and Interdependence on Relationship Commitment: A Trans- Atlantic Study. *International Journal of Research in Marketing*, *13*(4), 303-17.
- Kin, R. U. & Mull, O. (2006). Customers Perception on Internet Banking. *Journal of Finance*, 3(4), 32-44.
- Malhitra, P.. & Singh, B. (2010). Experience in internet banking and performance of banks. *International Journal of Electronic Finance*, 4(1), 56-68.
- Mohammad O. A., & Saad, A. A. (2011). The impact of e-banking on the performance of Jordanian banks. *Journal of Internet banking and Commerce*, *16(2)*, 1-10.
- Njeru, I., & Omagwa, J. (2018). Mobile Banking and Profitability of Tier 1 Commercial Banks in Kenya. *International Journal of Scientific and Educational Research*, *2*(4). 14-22.
- Obiekwe, C. J., & Mike, A. (2017). Electronic Payment Methods and Profitability of Banking Firms in Nigeria: A Panel Data Analysis. *International Journal of Finance and Accounting*, 6(3), 67-74.
- Offer, M. O., & Nuamah-Gyambah, K. (2016). The contribution of electronic banking to customers' satisfaction: A case of GCB bank limited – koforida. *International Journal for Management Information Technology*, *8*(1), 1-11.
- Oginni, O. S., Abba, M., Gambo, J. E., & Abam, A. (2013). E-banking and Bank Performance: Evidence from Nigeria. *International Journal of*

Scientific Engineering and Technology, *2*(8), 766-771.

- Okoro, A. S. (2014). Impact of electronic banking instruments on the intermediation efficiency of the Nigerian economy. *International Journal of Accounting Research, 1(6),* 14-21.
- Oloyede, I., Azeez, S., & Aluko, A. (2015). Assessed the Benefit of E-commerce and E-banking to the Nigerian Economy. *International Journal of Management Science*, 2(1), 1-5.
- Onay, C., & Ozsoz, E. (2013). The impact of internet-banking on brick and mortar branches: the case of Turkey, *Journal of Financial Services Research*, *44*(2); 187–204.
- Ongkasuwan, L., & Tantichattanon, W. (2002). Electronic instrumentation Fundamentals. New York:
- Orji, A., Ogbuador, J. E., Okon, A. N., & Anthony-Orji, O. I (2018). Electronic Banking Innovations and Selected Banks Performance in Nigeria. *The Economic of Finance Letters*, 5(2), 46-57.
- Oyewole, O. S., Abba, M., El-Maude, J. G., & Arikpo, I. A. (2013). E-banking and bank performance: Evidence from Nigeria. *International Journal of Scientific Engineering and Technology*, *2(8)*, 766-771.
- Pardon, E. (1977). E-Banking and Service Quality. *Internet Research*, *2*(2), 56-68.
- Rauf, S., & Qiang, F. (2014). The integrated model to measure the impact of e-banking on commercial bank profitability: evidence from Pakistan, *Asian Journal of Research in Banking and Finance*, *4*(1); 25–45.
- Rogers, E. (1962). *Diffusion of Innovations. New York: Free Press.*
- Rogers, E. M. (1995). *Diffusion of Innovations*. 4th Edition, the Free Press, New York.
- Taiwo, J. N., & Agwu, M. E. (2017). The role e-banking on operational efficiency of banks in Nigeria. *Basic Research Journal of Business Management and Accounts*, 6(1), 1-10.
- Ugwueze, C. A., & Nwezeaka, C. N. (2016). E-Banking and Commercial Bank Performance in Nigeria: A Cointegration and Causality Approach. *International Journal of e-Education, e-Business, e-Management and e-Learning, 6*(3), 175-185.