ISSN No:-2456-2165

Electronic Banking's Impact on First Bank Limited's Performance in Nigeria

[1]Salihu Mohammed Hassan
Department of Economics
Modibbo Adama University
Yola, Nigeria.

[2]Adewusi Olusegun Adegoke
Department of Economics
Modibbo Adama University
Yola, Nigeria.

Abstract:- This study looks at how Nigeria's First Bank Ltd. performs after implementing e-banking. Quarterly secondary data for the years 2009Q1 through 2022Q2 were obtained from the NBS and CBN bulleting. Pier-wise Granger causality and ARDL bond test cointegration were used as analysis methods. The results show that First Bank Ltd.'s performance in Nigeria is positively impacted by the coefficient of ATM, MBK, and POS. While First Bank Ltd.'s performance in Nigeria is negatively correlated with INTBK. However, the ARDL bound test for cointegration reveals that there is long-term cointegration between E-banking and commercial bank performance in Nigeria. ATM and POS are statistically significant at the 1% significant level. Similar to this, granger causality shows that there is a one-way relationship between POS and MBK and ATM and PFBN. The relationship between MBK and PFBN, POS and ATM, and MBK and ATM, on the other hand, is reciprocal. Thus, the alternative hypothesis is accepted while the null hypothesis is rejected, and the study effort comes to the conclusion that there is a causal association between E-Banking and First Bank Ltd.'s performance over the time period under consideration. However, as indicated by an f-statistics probability of (0.000000), the entire variable was jointly and simultaneously crucial in raising First Bank Ltd.'s and E-banking's performance in Nigeria. The R2 demonstrates the model's suitability and dependability for policy design. The study stated that in order to achieve the goal of the cashless policy in Nigeria, the government should establish and improve monetary policies (cashless policy) focused at promoting E-banking. Additionally, in order to achieve the goals of a cashless economy or society, the government, monetary authorities ((Central Bank of Nigeria, Ministry of Finance,) and commercial banks should inform and educate the public about the benefits of using E-banking products (POS, Mobile Application, and online banking).

Keywords:- *POS, ATM, MBK ARDL*

I. INTRODUCTION

For the purpose of providing better services and maximizing customer satisfaction, Nigerian banks have lately been investing significantly in new electronic delivery channels for banking products and services. Customers are steadily quitting banks that are unable to deliver these services.

Meanwhile, regardless of the challenges, e-banking is of paramount importance in explaining banking performance, Therefore, this encourages scholars to look into the implications and impacts of electronic payment systems on various economic sectors. When Simon and Elias (2021) looked at how electronic banking affected the performance of Nigerian commercial banks, they came to the conclusion that while point-of-sale terminal and mobile banking transactions have weak or detrimental impacts on those banks' performance, automated teller machine transactions have positive and significant effects on commercials bank in Nigeria. Similar findings were made by Ogutu and Fatoki (2019), who examined the impact of electronic banking on the financial performance of listed commercial banks in Kenya. They discovered a significant positive relationship between financial performance and online, mobile, and agency banking as well as ATM and agency banking. Olaiya and Adeleke (2019) analyzed electronic banking in a related study to determine its impact on deposit money banks' (DMBs') profitability in Nigeria between 2010 and 2018. Their research found that, for the time period covered by the study, digital banking channels had no appreciable impact on the short-term performance of Nigerian banks. Thus, by studying the impact of e-banking on commercial performance in Nigeria, such as return on Assets (ROA) and return on Equity (ROE), this study is positioned to close the gap. To accomplish the specified research goals, the ARDL bound test cointegration and granger causality test will be used. The results of this study will give important new information about how electronic banking affects First Bank Ltd's growth in Nigeria.

The approach, scope, and technique of analysis are the foundation of the gap in the earlier studies. The topic of whether electronic banking has a substantial impact on the profitability of commercial banks, particularly in Nigeria, continues, given the disparate findings and estimating methodologies from the several research on the subject. After reviewing previous studies, it is clear that the majority of them use both primary and secondary data to examine the significance of electronic banking adoption challenges and the impact of some of its products, like point of sale (POS) on the performance of commercial financial institutions as well as the banking industry as a whole and customer satisfaction. Additionally, the earlier research mentioned above used descriptive surveys, chi-square, and ordinary least square methods with mixed findings as their analysis methodology and technique.

ISSN No:-2456-2165

The study is prepared to fill the vacuum by investigating the impact of e-banking on the performance of First Bank Ltd in Nigeria using ARDL and granger causality, as discussed in the part that follows a review of some pertinent literature. should specifically look at how e-banking products like POS, mobile banking, and internet banking affect First Bank Ltd.'s performance in Nigeria. The methodology and analysis of this study are covered in part 3, the results and discussions are covered in section 4, and the conclusion and recommendations are covered in section 5.

II. LITERATURE REVIEW

A. Conceptual Framework

This study's conceptual framework was developed to demonstrate the relationship between its variables which are dependent and independent. The return on assets (ROA) and return on equity (ROE) of commercial financial institutions are used to measure the performance of commercial banks for the purposes of these studies. The diagram below illustrates the relationship between the independent variable, E-banking, and the proxy variables, Point of Sales (POS), Internet Banking (INTBK), and Mobile application Banking (MBK).

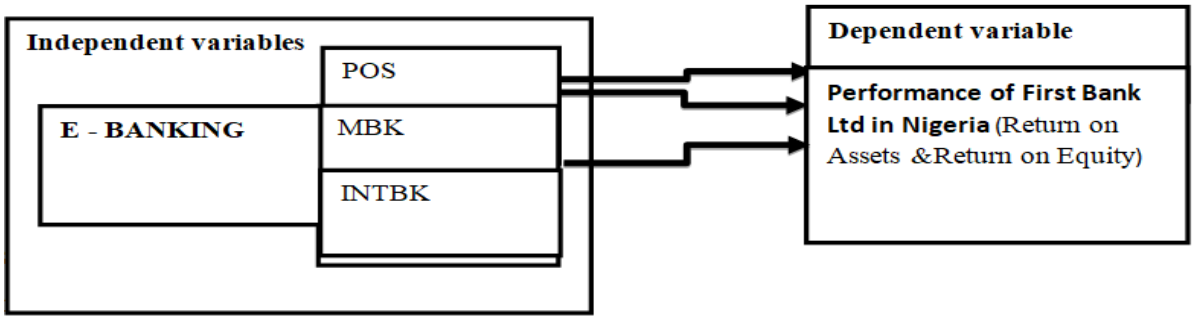

Diagram 1
Source: Authors' Design

B. Theoretical Literature

There is a vast body of research that examined both theoretical and empirical elements of assessing the effectiveness of electronic banking and payments. Here are some theories that were used in this investigation.

➢ *Technology Acceptance Model (TAM)*

Fred Davis's technology acceptance model, was created in 1989. The model was initially created to forecast how well information technology would be received by users when applied in an organizational setting. According to the concept, user approval is influenced by two fundamental assumptions: perceived usefulness and perceived ease of use. According to Davis (1989), perceived usefulness (U) refers to how much a person thinks utilizing a certain technology would help them perform their jobs better, while perceived ease of use (EOU) refers to how much they think using technology will be simple. According to the hypothesis, consumers' attitudes on utilizing new technologies are impacted by how beneficial and simple they seem to be to use. The idea gauges utility and usability using psychometric scales. Scales that reflect job performance, increased productivity, efficiency, and perceived usefulness are used to measure perceived usefulness. The technology's perceived usability is evaluated to see if it is simple to learn, understand, master, use, control, and remember. TAM also proposes that external factors affect intention and actual use through mediating effects on perceived usefulness and perceived ease of use. TAM has come under fire for not accounting for the costs associated with obtaining new technologies. The company might want to use a new technology, but it might not have the personnel or financial resources to do so. Despite this flaw, the TAM is still among the best models for illuminating technology adoption in the context of organizations. This notion has guided financial institution's electronic banking initiatives and motivations.

➢ *Innovation Diffusion Theory*

Everett Roger, the creator of this idea, claims that diffusion is the process by which an innovation spreads over time among members of a social system via certain channels (Ratcliff et al., 1999). It can take a while for an innovation to be adopted, even if it is a good one, according to Meso et al. (2006). According to Rogers, a new idea's dispersion is primarily influenced by four factors: the innovation itself, communication channels, time, and a social structure.

Innovation is defined by Ratcliff et al. (1999) as an idea, practice, or undertaking that an individual or other unit of adoption perceives as novel. According to Rogers (2004), the innovation decision-making process is a search and information-processing activity in which a person is driven to lessen uncertainty around the benefits and drawbacks of an innovation. He emphasizes that there are five stages to the innovation decision-making process: knowledge, persuasion, decision, implementation, and confirmation. In the words of Rogers (2004), the process of invention spread involves lessening ambiguity. Additionally, he put forth the qualities of relative advantage, compatibility, complexity, tri-ability, and observability as factors that can lessen uncertainty in invention. While compatibility refers to how well the innovation fits with the organization's ideals and potential adopters' demands, relative advantage deals with the idea of giving an organization an advantage. The tri-ability of an innovation refers to how much it can be tested out on a small scale. The innovation's observability refers to how easily others can observe it.

ISSN No:-2456-2165

➢ *Theory of Planned Behavior*

Ajzen created the Theory of Planned Behavior (TPB) in 1988. According to the idea, behavioral intentions—which are a result of three variables including a person's attitude toward behavior, subjective norms, and perceived behavioral control—determine individual behavior. The degree to which a person feels favorable or negative feelings toward the conduct of interest is referred to as attitude. According to Conner and Armitage (1998), behavioral intention is a person's motivation in the sense of their conscious purpose to carry out a certain behavior. A person's personal assessment of the social pressure to engage in the desired activity is known as perceived subjective norms. It is considered that subjective norms consist of two interrelated elements: normative views and beliefs about how other individuals, who may be significant to the individual, would prefer the individual to behave. The degree to which a person believes they have control over a behavior is known as perceived behavioral control. It has two components: the degree of control over the conduct and the degree of assurance in one's competence to carry out the activity or not. Because conduct is planned, the idea of planned behavior forecasts behavior. This theory has received a lot of attention and has been expanded to include studies of individual conduct, particularly in terms of predicting an individual's behavior both in intention and in action. According to common consensus, an individual's intention to engage in a behavior should be strong the more favorable their attitude and subjective norm toward the conduct are, as well as the higher level of perceived behavioral control (Chen and Li, 2010).

➢ *Theory of Reasoned Action (TRA)*

This hypothesis has been applied in several research studies on technology adoption. This idea contends that a person's attitude toward a behavior and subjective norms affect their inclination to accept an innovation. The intent behind a person's action is therefore what determines that person's behavior. An individual's positive or negative beliefs about engaging in a certain action are referred to as their attitude toward doing the behavior. Actually, a person's beliefs that they have gathered over their life make up their attitudes. These beliefs might be developed via experiences, outside knowledge, or even from inside. Only a small number of these ideas, nevertheless, truly affect attitude. Beliefs regarding what other people would think of the conduct are known as subjective norms. To put it another way, it refers to the perceived effects of social pressure on a person's decision to engage in an action or not. "The person's view that one or more particular groups believe they should or should not engage in the action, as well as their desire to adhere to the particular referents.

C. *Empirical Literature*

For the purpose of examining the impact of e-banking on the performance of First Bank Ltd in Nigeria, a number of pertinent empirical research have been reviewed.

The impact of electronic banking on the performance of Nigerian commercial banks is examined by Simon and Elias (2021). In particular, it intended to ascertain how automated teller machines, point-of-sale, and mobile banking transactions affected the performance of commercial banks in Nigeria. The study covers the years 2013 to 2017 and used an ex post facto research approach. The data were analyzed using the statistical program E-views. The study's findings show that automated teller machine transactions have a positive and significant impact on commercial bank performance in Nigeria, whereas point-of-sale terminal transactions and mobile banking transactions have weak and negative effects on that performance.

Amu and Nathaniel (2015) look at how the performance of Nigerian commercial banks relates to electronic banking. The rising use of electronic banking, which has redefined financial services both domestically and abroad, made the research necessary. The value of point-of-sale transactions served as a proxy for electronic banking, while client deposits served as a proxy for commercial banking success. Data were analyzed using the Engle-Granger cointegration model for the sample period of January 2009 to December 2013. The findings demonstrate that POS is cointegrated with demand deposits but not with savings or time deposits.

Using panel data, Alomari et al. (2018) investigate the impact of technological advancement on bank performance as assessed by return on equity (ROE) in 13 Jordanian commercial banks between 2011 and 2016. The findings show that the ratios of ATMs, branches, Visa cards issued by each bank relative to the total number of Visa cards issued by all banks, and total credit facilities given by each bank all have a favorable impact on profitability as measured by ROE. On the other hand, there is no real correlation between the number of master cards issued by each bank and the overall number of master cards issued by all banks.

The performance of the bank is examined by Akhisar et al. (2015) in relation to the impact of electronic banking services. They looked at data from 23 developed and developing nations between 2005 and 2013. Results show that electronic banking services are significant as well as the branch-to-ATM ratio, which is extremely significant.

Joan (2018). Analyze the impact that mobile banking usage has had on Nairobi County's performance of small and medium-sized businesses. The study used a survey approach that was descriptive in nature. The study found that SMEs' performance in Nairobi County is positively impacted by the use of mobile banking.

Jamgun and Miroga (2018) continued in the same manner. The impact of mobile banking service costs on the financial health of SMEs in Kakamega County should be evaluated. The study was carried out as an exploratory study. The approach for the investigation was random sampling. There were 373 Small and Medium Enterprises in the sample. Small business owners' answers to semi-structured questionnaires were gathered. The results showed an adverse relationship between small business financial performance and the price of mobile banking services.

Habib and Anaekwe (2017), too. a review of Nigerian conventional banking in light of mobile banking. Utilizing stratified random selection, 400 people from four different areas of Nigeria were chosen in an impartial sample. The gathered data is examined using the appropriate statistical methods. The outcomes accurately depicted Nigeria's technical landscape, showing that despite consumers' high levels of device expertise and access to mobile banking, they are not particularly satisfied with the ease and use of the technology.

In similar research, Kabiru and Aliyu (2016) examine the difficulties with the electronic payment system in Gombe state using data from the Gombe state office of the Accountant General in an effort to offer solutions to the issues found. The information gathered from respondents was examined using straightforward descriptive statistics including means, percentages, and frequencies. The study identified issues with the electronic payment system, such as network issues that prevent variations (personnel updates) between platforms and banks from being recorded, difficulties with the attachment of specific benefits to particular pay populations (grade levels), and troubles with system maintenance, among others.

(2016) Agu et al. Analyze the uptake of mobile banking and its difficulties in Nigeria. Data were gathered from 200 respondents, including bank employees and consumers of certain banks in the city of Enugu, using the survey research methodology. According to the report, middle-aged respondents in Enugu State are still less likely than older respondents to use mobile banking.

Ibe and Odi(2018). The effect of the cashless policy on the Nigerian economy was empirically studied. We utilized quarterly time series data spanning the years 2009 to 2016. The results of this study demonstrate that the cashless policy and economic growth in Nigeria have a long-term, meaningful link. In addition, the strength of the association between automated teller machines and gross domestic product suggests that it is the best and most widely used method for implementing a cashless policy.

According to Akerejola's (2017) corresponding study. investigated the factors that led to the adoption of point of sales by a few chosen companies in Lagos State's banking, oil and gas, retail, and aviation industries. The research design for the study was a cross-sectional survey. Individual SMEs that utilize Point of Sale in the targeted industries and business organizations in Lagos State made up the study's population, which totaled 11,663 people and had a sample size of 2,059 people. Descriptive and inferential statistics (Pearson Product Moment Correlation and Regression) were used to analyze the data. According to the study's findings, the adoption of Point of Sale in the chosen business organizations—SMEs in Lagos State, Nigeria—was significantly and favorably correlated with the availability of infrastructure, POS security, customer trust, customer education, and customer motivation.

In a similar vein, Patrick (2017) investigates the variables that affect the uptake and use of electronic payment systems (EPS). In his work, a qualitative analytical strategy has been used. Interviews were conducted with 4 small and medium business proprietors and managers and a pair of employees from two different banks, the United Bank for Africa (UBA) and the Central Bank of Nigeria (CBN). The interview data were processed and evaluated.

Azih and others, 2017. examined how electronic payments helped accomplish the Millennium Development Goals as well as the difficulties associated with using them. Mean and standard deviation were used to respond to the study questions, and the t-test was used to assess the hypotheses. Based on cadre and gender, the test of hypothesis revealed no discernible difference in their replies. Based on their research, the researchers came to the conclusion that electronic payments are having an influence on the attainment of the millennium development objectives and suggested that banks upgrade their facilities to lessen the obstacles associated with using the electronic payment system.

Similar findings were made by Ogutu and Fatoki (2019), who looked at how electronic banking affected the financial performance of listed commercial banks in Kenya. They discovered a strong positive correlation between the financial performance of these banks and online, mobile, and agency banking as well as ATM banking.

In a related study, Olaiya and Adeleke (2019) investigated electronic banking to determine its impact on deposit money banks' (DMBs') profitability in Nigeria between 2010 and 2018. Additionally, the approach and evaluation technique used by the earlier studies cited above included descriptive surveys, chi-square analysis ordinary least square, ARDL, and TSLS methods with mixed findings.

Therefore, by evaluating the impact of electronic banking on the Performance of First Bank Ltd in Nigeria, this study is ready to close the gap. should specifically look at how e-banking products like point of sale, mobile banking, and internet banking affect First Bank Ltd.'s performance in Nigeria.

To determine how First Bank Ltd.'s performance in Nigeria is impacted by electronic banking. In order to accomplish the stated objectives of the study, the ARDL bound test cointegration and the Granger causality test will be used.

III. METHODOLOGY

The study used a quantitative research approach to examine how First Bank Ltd. in Nigeria's performance was impacted by electronic banking. To accomplish the study's goals, the ARDL bound test cointegration, ECM, and Granger causality test were used. According to Pesaran et al. (2001), the selection of ARDL is crucial since it captures the sequence of distinct orders. To determine the direction of causation between the variables under inquiry, the Angel-

Granger causality test was used. The information came from the National Bureau of Statistics (NBS), the Central Bank of Nigeria (CBN) Statistical Bulletins, and global development indices.

A. Model Specification

The model used by Simon and Elias (2021), who investigate the impact of electronic banking on the performance of Nigerian commercial banks, was adopted by the researcher to investigate the impact of e-banking on First Bank Ltd.'s performance in Nigeria and modified to suit the study's objectives. The Simon and Elias (2021) model's functional form is defined as follows:

Yi = f(ATM,POS,MB) and the mathematical representation is thus:

$$Yt = a0 + \beta 1\ ATMt + \beta 2\ POSt + \beta 3\ MBt + e,$$

Where: ATM = the amount of ATM system transactions in banks; POS = the number of point-of-sale terminals; Yi = Net Profit, a proxy for profitability/financial success. MB stands for mobile banking utilization rates.

As a result, this study amended Simon and Elias' (2021) model and asserted that the amount of Point of Sale transactions, mobile application banking transactions, internet banking transactions, and ATM transactions determines how well commercial banks (PFBN) perform. This postulation's functional form is stated as follows:

$$PFBN = f\ (POS, MBK, INTBK, ATM) \ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

For estimation purposes, the model is specify as follows:

$$\text{Log PFBN}_t = \beta_0 + \beta_1 logPOS_t + \beta_2 logMBK_t + \beta_3 logINTBK_t + \beta_4 logATM_t + e_t \ldots\ldots\ldots\ldots\ldots (3.2)$$

Where:

PFBN stands for "performance of commercial banks at time t," "POS" stands for "volume of point of sales transactions at time t," "MBK" stands for "volume of mobile banking transactions at time t," "INTBK" stands for "internet banking transactions at time t," and "ATM" stands for "volume of ATM transactions at time t." e = "Error term," and "t" stands for "Time trend."

➢ *ARDL Specification*

According to Pesaran and Shin (1995) and Pesaran, Shin, and Smith (1996), the autoregressive distributed lag model (ARDL) method is the fundamental modeling strategy used in this work. In comparison to traditional methodologies created by Engel and Granger (1987), Johansen (1988), and expanded by Johansen and Juselius (1990), the ARDL approach to cointegration offers several benefits. The ARDL technique may be utilized while working with a mixture of I(0) and I(1) series, therefore it does not call for pre-testing for unit root. Second, the approach takes into account variables with various optimum lag times. Additionally, ARDL employs a single reduced form equation as opposed to other cointegration methods, which need for the definition of system equations. As a result, the following is how ARDL represents the relationship between the model's variables:

$$\Delta lnPFCB_{t=}\alpha_0 + \emptyset_1 lnPFCB_{t-1} + \emptyset_2 lnPOS_{t-1} + \emptyset_3 lnMBK_{t-1} + \emptyset_4 lnINTBK_{t-1} + \emptyset_5 lnATM_{t-1} + \sum_{i=1}^{k1} \sigma_{1i} \Delta ln\, PFCB_{t-1} + \sum_{i=0}^{k2} \gamma_{2i} \Delta ln\, POS_{1t-i} + \sum_{i=0}^{k3} \varepsilon_{3i} \Delta ln\, MBK_{2t-i} + \sum_{i=0}^{k4} \gamma_{2i} \Delta ln\, INTBK_{1t-i} + \sum_{i=0}^{k5} \gamma_{2i} \Delta ln\, ATM_{1t-i} + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ 3.3$$

The differences the five variables chosen for the study are (PFBN, POS, MBK, INTBK, and ATM), and the operator is the first-difference operator. PFBN is the dependent variable in equation (3.5), and the long-run suppressors are (POS, MBK, INTBK, ATM). As a result, the alternative hypothesis (H1: γ1 ≠ γ2 ≠ γ3 ≠ γ4 ≠ γ5 ≠ 0), designated by F (POS, MBK, INTBK, ATM), is evaluated against a joint significance test that suggests no co-integration hypothesis (H0: γ1 = γ2 = γ3 = γ4 = γ5 0), where terms ε1 – ε6 are mutually uncorrelated white noise error terms. Pesaran and Pesaran (1997) as well as Pesaran et al. (2001) both describe two sets of critical values. The difference is the five variables that were chosen for the study are (PFBN, POS, MBK, INTBK, and ATM), and the operator is the first-difference operator. PFBN is the dependent variable in equation (3.5), and the long-run suppressors are (POS, MBK, INTBK, ATM). As a result, the alternative hypothesis (H1: γ1 ≠ γ2 ≠ γ3 ≠ γ4 ≠ γ5 ≠ 0), designated by F (POS, MBK, INTBK, ATM), is evaluated against a joint significance test that suggests no co-integration hypothesis (H0: γ1 = γ2 = γ3 = γ4 = γ5 0), where terms ε1 – ε6 are mutually uncorrelated white noise error terms. Pesaran and Pesaran (1997) as well as Pesaran et al. (2001) both describe two sets of critical values.

➢ *Pairwise Granger Causality Model*

- *Causality Test:*

The causality test significantly shows the direction the of relationship or causation between two or more variables. The study's goals are being met via the researcher's use of pairwise Granger causality. Thus, the following is a specification of the causality test model:

$$PFBN_t = \sum\phi i\ PFBN_{t-1} + \sum \Theta j\ POS_{t-1} + \sum \Theta j\ MBK_{t-1} + \sum \Theta j\ INTBK_{t-1} + \sum \Theta j\ ATM_{t-1} + \mu t \ldots\ldots\ldots\ldots\ldots 3.4$$

$POS_t = \sum\phi i\ POS_{t-1} + \sum \Theta j\ PFBN_{t-1} + \sum \Theta j\ MBK_{t-1} + \sum \Theta j\ INTBK_{t-1} + \sum \Theta j\ ATM_{t-1} + \mu t$ -……3.5

$MBK_t = \sum\phi i\ MBK_{t-1} + \sum \Theta j\ POS_{t-1} + \sum \Theta j\ PFBN_{t-1} + \sum \Theta j\ INTBK_{t-1} + \sum \Theta j\ ATM_{t-1} + \mu t$ ……..3.6

$INTBK_t = \sum\phi i\ INTBK_{t-1} + \sum \Theta j\ POS_{t-1} + \sum \Theta j\ MBK_{t-1} + \sum \Theta j\ PFBN_{t-1} + \sum \Theta j\ ATM_{t-1} + \mu t$ ……3.7

$ATM_t = \sum\phi i\ ATM_{t-1} + \sum \Theta j\ POS_{t-1} + \sum \Theta j\ MBK_{t-1} + \sum \Theta j\ INTBK_{t-1} + \sum \Theta j\ PFBN_{t-1} + \mu t$……3.8

B. Apriori Expectations

We performed the economic Apriori test in order to evaluate the size and magnitude of the parameter estimations. Economic theory served as the basis for this assessment to determine whether the parameter estimate matches expectations. Increasing the amount of point-of-sale transactions, mobile banking transactions, internet banking transactions, and ATM transactions is anticipated to have a favorable influence on the performance of commercial banks (PFBN) based on economic theory. These imply that: B_1, $\beta_{2,}$ β_3, $\beta_{4,}$ >0

IV. EMPIRICAL RESULT AND DISCUSSION OF KEY FINDINGS

A. Unit Root Tests

Tests for unit roots in Table 4.1. For the variables under examination, the results of the Augmented Dickey Fuller (ADF) test and the Pillips-Perron test at the level and at the first difference unit are shown below. The variables are therefore an amalgam of I(0) and I(1). As a result, this serves as the foundation for the ARDL examination.

Table 1 Augmented Dicky Fuller (ADF) Test and Pillips-Perron Test I(0) and I(1)

Variables	ADF I(0) t-statistics	ADF I(1) t-statistics	Phillips-Perron I(0) t-statistics	Phillips-PerronI(1) t-statistics
PFBN	-5.667018**	-12.74001**	-5.800598**	-14.27552**
MBK	-1.044220	-7.764097**	-2.371524	-8.997447**
POS	1.402568	-5.640377**	-0.299426	-7.698846**
ATM	1.534837	-7.600795**	19.12615	-8.129085**
INTBK	-4.319683**	-5.261975**	-2.452196	-7.794134**

Statistically significant at 1% and 5%, respectively, is indicated by the notation (**) (***).
Author calculation based on E-views 10 (2023).

Having discovered that the variables in Table 1 above are a combination of I(0) and I(1) from the unit root test. In order to determine the long-term relationship between the variables under examination, we thus utilize the ARDL bound test technique to handle the series containing a mixture of I(0) and I(1).

Table 2 Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-396.7815	NA	2.59e+08	22.21008	22.34204	22.25614
1	-310.7305	152.9796*	2299198.	17.48503	17.66097	17.54644
2	-308.8414	3.253500	2190326.*	**17.43563***	17.65556*	17.51239*
3	-308.6227	0.364372	2290550.	17.47904	17.74296	17.57116

Author calculation based on E-views 10 (2023).

The results of the lag section criterion, which are necessary to perform the bound test and Johannsen cointegration, are shown in Table 2 above. Prior to using the ARDL bounds test technique for cointegration, the proper lag order was chosen. Based on the minimal value of the AIC (17.43563*), the outcome indicates that the lag order is 2. The appropriateness of lag order prevents the cointegration findings from being distorted by the ARDL bounds testing technique.

Table 3 Correlation

	PFBN	ATM	POS	MBK	INTBK
PFBN	1.000000				
ATM	0.703470	1.000000			
POS	0.935634	0.453155	1.000000		
MBK	0.907508	0.405516	0.799767	1.000000	0.418450
INTBK	0.070239	0.259529	0.531693	0.418450	1.000000

Author calculation based on E-views 10 (2023).

The correlation between the variables under consideration is displayed in Table 3 above. The correlation between ATM, POS, MBK, INTBK, and PFBN is positive, as shown by the correlated values of 0.070239, 0.907508, 0.935634, and 1.000000, respectively.

ISSN No:-2456-2165

Table 4 Cointegration Testing Using ARDL Bounds

Model. No.	Variables	F-statistic	Percent	Decision rule
1	(PFBN/MBK, ATM, POS, INTBK)	16.815800	5%	Reject
	Critical value	Lower Bound I(0)	Upper Bound I(1)	
	1%	3.29	4.37	
	5%	**2.56**	**3.49**	
	10%	2.2	3.09	

Author calculation based on E-views 10 (2023).

The ARDL result in Table 4 above demonstrates that when the Performance of Commercial Bank (PFBN) is the dependent variable, the calculated F-statistic of (16.815800) falls above the upper bound (3.49) of the critical value 95% level of significance (5%), which suggests that there is a cointegration and long run relationship between the variables under investigation. The alternative hypothesis is therefore accepted, while the null hypothesis of no cointegration is rejected.

Table 5 Results of the ARDL Error Correction Model

CointEq(-1)*	**-0.573773**
Probability	0.0011

Author calculation based on E-views 10 (2023).

The calculated coefficient of the error correction term (-0.573773) is statistically different from zero at the 1% level and with the required negative signs, according to the findings of the ECM estimation in Table 4.5 above. This implies that the system's (the economy's) potential to restore equilibrium by around 57.3% every year.

B. ARDL Results

Table 6 (PFBN) : Dependent Variable

VARIABLES	COEFFICIENT	STD.ERROR	T-STATISTIC	PROB
PFBN(-1)	0.191180	0.141909	1.347194	0.1844
PFBN(-2)	0.235048	0.141877	1.656701	0.1042
ATM	0.69E-10	0.08E-08	8.625000	0.0035
MBK	6.29E-09	1.06E-07	0.059183	0.9531
POS	1.33E-08	1.00E-07	0.132725	0.0000
INTBK	-1.03E-07	3.39E-07	-0.302119	0.7639
C	8.341967	4.986655	1.672858	0.1010
R^2	0.719781		D.W. Statistics	1.993778
AdjustedR^2	0.707413			
F-statistic	87.065972			
Prob(F-statistic)	0.000000			

Author calculation based on E-views 10 (2023).

The ARDL findings are shown in Table 6. The performance of commercial banks in Nigeria is shown to be favorably impacted by the coefficient of ATM, MBK, and POS. While the performance of Nigerian commercial banks is inversely correlated with INTBK. The null hypothesis was rejected since ATM and POS are statistically significant at the 1% level, as shown by their respective probability values of 0.0035 and 0.0000. The likelihood values of 0.9531 and 0.7639 at the 5% level of significance, on the other hand, show that the coefficients of MBK and INTBK are inconsequential. The null hypothesis was approved as a result.

According to the associated probability value of 0.00000, the F-statistics value of 87.065972, which assessed the combined significance of the parameter estimates, was judged to be statistically significant at the 1% level. This suggests that all of the model's variables were jointly and statistically significant. The R2 value of 0.719781 (71.9%) indicated that the explanatory variables accounted for 71.9% of the total variance in the performance of First Bank Ltd in Nigeria. Additionally, the corrected R2 of 0.707413 suggested that the explanatory variables in the model explained 70.7% of the total variance in the dependent variable, while the remaining 29.3% was captured by the error term.

Indicating that the model is relevant and non-spurious, the Durbin-Watson statistics of 1.993778 were found to be greater than R2 0.719781. This indicates that the model may be utilized to formulate policy.

Table 7 Pairwise Tests for Granger Causality

Null Hypothesis:	Obs	F-Statistic	Prob.	decision
MBK has not Granger Cause PFBN	54	9.20076	0.0091	reject
PFBN has not Granger Cause MBK		21.61342	0.0000	reject
INTBK has not Granger Cause PFBN	54	0.02945	0.9710	accept
PFBN has not Granger Cause INTBK		0.04026	0.9606	accept
ATM has not Granger Cause PFBN	54	6.40273	0.0073	reject
PFBN has not Granger Cause ATM		0.00222	0.9978	accept
POS has not Granger Cause PFBN	54	0.00143	0.9986	accept
PFBN has not Granger Cause POS		0.00427	0.9957	accept
INTBK has not Granger Cause MBK	54	1.78516	0.1785	accept
MBK has not Granger Cause INTBK		0.50810	0.6048	accept
ATM has not Granger Cause MBK	54	8.15287	0.0009	reject
MBK has not Granger Cause ATM		23.1313	8.E-08	reject
POS has not Granger Cause MBK	54	8212.64	1.E-62	reject
MBK has not Granger Cause POS		0.20752	0.8133	accept
ATM has not Granger Cause INTBK	54	1.27153	0.2895	accept
INTBK has not Granger Cause ATM		0.75590	0.4750	accept
POS has not Granger Cause INTBK	54	0.59153	0.5574	accept
INTBK has not Granger Cause POS		1.63574	0.2053	accept
POS has not Granger Cause ATM	54	4.46050	0.0166	reject
ATM has not Granger Cause POS		10.4346	0.0002	reject

Author calculation based on E-views 10 (2023).

According to their probability values, the results in Table 7 above show that there is a unidirectional association between ATM and PFBN, POS and MBK. The link between MBK and PFBN, POS and ATM, and MBK and ATM, on the other hand, is reciprocal. As a result, the alternative hypothesis is accepted, the null hypothesis is rejected, and the study effort comes to the conclusion that there is a causal link between Electronic banking and First Bank's performance over the examined time.

C. Diagnostic Test

According to Gujarati (2004), diagnostic tests should be carried out to ensure that the model ultimately selected is a good model in the sense that all estimated coefficients have the correct signs and are statistically significant based on the t and F tests. This study's diagnostic tests in this respect included the Serial Correlation LM Test, the Heteroscedasticity Test, and the Multicollinearity Test.

Table 8 Breusch-Godfrey Serial Correlation LM Test Results

Breusch-Godfrey Serial Correlation LM Test results			
F-statistic	0.659471	Prob. F(2,45)	0.5221
Obs*R-squared	1.537661	Prob. Chi-Square(2)	0.4636

Author calculation based on E-views 10 (2023).

We accept the null hypothesis, which asserts that there is no serial correlation in the residuals, but Table 8 above shows that the probability Chi-Square for obs*R-squared is 0.4636. Since the probability value of 0.4636 is larger than 5%, we reject the null hypothesis. This suggests that the model has no serial correlation with the data.

Table 9 Heteroskedasticity Test Findings: Breusch-Pagan-Godfrey

Heteroskedasticity Test Findings: Breusch-Pagan-Godfrey			
F-statistic	1.125252	Prob. F(6,47)	0.3624
Obs*R-squared	6.782723	Prob. Chi-Square(6)	0.3414
Scaled explained SS	20.87415	Prob. Chi-Square(6)	0.0019

Author calculation based on E-views 10 (2023).

Obs*R-squared has a probability value of 0.3414, as seen in Table 4.9 above. We thus accept the null hypothesis that there is no heteroskedasticity since the probability value (0.3414) is larger than 5%. We want our model to be homoscedastic, which means that it is.

ISSN No:-2456-2165

Table 10 Multicollinearity Test (Variance Inflation Factor) Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
PFBN(-1)	0.020138	1.341073	1.075351
PFBN(-2)	0.020129	1.339528	1.074975
ATM	4.31E-16	1.291054	1.266653
MBK	1.13E-14	2.998742	2.786301
POS	1.00E-14	3.740978	3.329504
INTBK	1.15E-13	1.824314	1.408510
C	24.86672	1.770135	NA

Author calculation based on E-views 10 (2023).

The estimated models are not impacted by this issue, according to the results of the variance inflation factor (VIF) test used to check for the multicollinearity problem in the estimated model, which is shown in Table 4.10. The centered VIF values are all less than 10.

D. Discussion of the Results

This research looked at First Bank Ltd.'s performance in Nigeria from the first quarter of 2009 to the fourth quarter of 2022. The study's secondary data source is CBN bulleting and the analytic method employed was ARDL. However, the following is a summary of some of the study's key findings:

- Based on the study's findings, First Bank Ltd.'s performance in Nigeria is considerably and favorably impacted by point of sale (POS) as shown by the coefficient (1.33E-08) and probability value (0.000). It is implied that First Bank Ltd.'s performance in Nigeria has increased as a result of improvements in the areas of customer services, transaction volume, product quality, patronage, assets, equity, revenue, and profit margin through point of sale (POS) respectively. Therefore, it is strongly advised to include the unbanked population by employing Point of Sale as a method of payment.
- Based on the coefficient (0.69E-10) and probability value (0.0035) of the study, First Bank Ltd. in Nigeria has greatly enhanced its performance thanks to ATM. This suggests that the use of ATMs for payment and digital transactions by commercial banks has improved the usability and efficacy of electronic banking transactions as well as boosted the income and profitability of commercial banks in Nigeria and the overall performance of the economy.
- The analysis shows that mobile banking has little but beneficial impact on First Bank Ltd.'s performance, but overall, one can argue that this impact has increased First Bank Ltd.'s performance as shown by the coefficient (6.29E-09) and probability value (0.9531). This suggests that using mobile banking as a method of E-banking and payments has made transactions simple in day-to-day activities and decreased excessive cash holdings, which lowers the inflation rate and decreases the risk of an attack, thereby securing customers and the economy and improving the financial health and efficiency of First Bank Ltd in Nigeria.
- In contrast, the study discovered a weak, negative correlation between First Bank Ltd.'s performance and Internet banking (INTBK), as evidenced by the coefficient (-1.03E-07) and probability value (0.7639). This may be due to a lack of financial literacy, network issues, illiteracy, high operational costs for banks, and cyber security crimes that have an impact on the performance of commercial banks and the viability of online banking. Therefore, quick action is required on the part of the government, First bank Ltd.'s management, monetary authorities (CBN), security agencies (EFCC, ICPC,DSS), and service providers (NCC, MTN, AIRTEL, GLO, 9MOBILE) in order to provide long-term solutions and protect First Bank Ltd.'s operations in Nigeria.

According to the f-statistics likelihood of (0.000000), all the variables are generally discovered to be jointly and concurrently significant in enhancing electronic banking and First Bank Ltd.'s performance in Nigeria. The R2 demonstrates the model's suitability and dependability for policy design. Electronic banking performance and First Bank Ltd.'s performance in Nigeria exhibit long-run cointegration, according to the ARDL bound test for cointegration. Similar to this, granger causality shows that there is a one-way link between POS and MBK and ATM and PFBN. The link between MBK and PFBN, POS and ATM, and MBK and ATM, on the other hand, is reciprocal. As a result, the alternative hypothesis is accepted, the null hypothesis is rejected, and the research effort comes to the conclusion that Electronic banking has had a positive impact on First Banks Ltd.'s performance during the course of the study.

The results of this study were supported by Simon and Elias' study (2021), which looked at how electronic banking affected the performance of Nigerian commercial banks. and show that automated teller machine transactions have a favorable and significant impact on First Bank Ltd.'s performance in Nigeria, whereas point-of-sale terminal and mobile banking transactions have unfavorable and minor impacts on the performance of the country's commercial banks. Additionally, the study by Ogutu and Fatoki (2019) that looked at the impact of electronic banking on the financial performance of listed commercial banks in Kenya discovered a strong positive correlation between online, mobile, and agency banking as well as ATM banking.

In contrast to their study, this one used quarterly data from 2009Q1 to 2022Q2 using ARDL to assess the impact of e-banking on First Bank Ltd.'s performance in Nigeria. The performance of commercial banks in Nigeria is shown to be favorably impacted by the coefficient of ATM, MBK, and POS. While the performance of Nigerian commercial banks is inversely correlated with INTBK. However, the ARDL bound test for cointegration reveals that there is long-term

cointegration between E-banking and commercial bank performance in Nigeria. ATM and POS are statistically significant at the 1% significant level. Similar to this, granger causality shows that there is a one-way link between POS and MBK and ATM and PFBN. The link between MBK and PFBN, POS and ATM, and MBK and ATM, on the other hand, is reciprocal. As a result, the alternative hypothesis is accepted, the null hypothesis is rejected, and the research effort comes to the judgment that E-Banking has had a positive impact on First Bank Ltd.'s performance during the course of the study.

V. CONCLUSIONS AND RECOMMENDATIONS

A. *Conclusions*

This research looked into how Nigeria's First Bank Ltd. performed after implementing e-banking. According to the study's findings, Point of Sale and ATM usage substantially and favorably impacts First Bank Ltd.'s performance in Nigeria by enhancing customer services, transaction volume, product quality, return on asset, equity, revenue, and profit margin, respectively. implying that First Bank Ltd.'s performance in Nigeria may be improved by employing POS and ATMs as forms of electronic banking. An urgent need exists for the government, first Bank Ltd.'s Management, monetary authorities, and service providers to offer solutions in order to safeguard and enhance the performance of First Bank Ltd in Nigeria as a result of the study's findings that network failure, lack of education, cyber security crime, and other factors, among others, are significantly affecting the use and success of internet banking.

B. *Recommendations*

The study's conclusions led to the following suggestions.

- In order to achieve the goal of the cashless policy in Nigeria, the government should develop and enhance monetary policies (also known as the "cashless policy") targeted at promoting E-banking. Additionally, in order to achieve the goals of a cashless economy or society, government officials, monetary authorities (CBN, the Ministry of Finance), and First Bank Ltd. should inform and educate the public about the benefits of utilizing electronic banking services (Point of sales, mobile banking, and internet banking).
- In order to secure and enhance the performance of First Bank Ltd. and the Nigerian economy, the government, commercial banks, monetary authorities (CBN), and service providers (MTN, GLO, 9MOBILE AIRTEL) should work together to offer solutions to the problems facing the internet and E-banking (network failure, illiteracy, cyber security crime).
- Given the significance of ATMs and POS as electronic banking products, it is advised that relevant authorities (Central Bank of Nigeria, Nigerian Communications Commission,) work with security agencies (EFCC, DSS, ICPC), to strictly monitor, secure, and utilize effectively, and as well as provide services continuously to facilitate its smooth use in order to improve the performance of First Bank Ltd. and the Nigerian economy.
- In order to lower the danger of fraud, the report also suggested that internet and mobile banking be carefully guarded, monitored, and improved. Additionally, service providers should raise the standard of services provided to Nigerians who utilize mobile and online banking.

REFERENCES

[1]. Agu, Bertram, H.D & Simon N, P, Nwankwo. (2016). Examine mobile banking adoption and challenges in Nigeria. *International journal of innovative social sciences & humanities research* 4(1), 17-27

[2]. Akerejola, W. O, (2017). Determinants and adoption of point of sales of selected business organizations in Lagos state, Nigeria. Ph.D. thesis submitted in the Department of Business Administration and Marketing School of Management Sciences Babcock University Ilisan-Remo Ogun State Nigeria

[3]. Akhisar I., Tunay, K. B., & Tunay, N. (2015). The effects of innovations on bank performance: the case of electronic banking services. *Procedia - social and behavioral sciences*, *195*, 369-375.

[4]. Alomari, M. W., Bashayreh, A. G., & Tahtamouni, A. S. (2018). The contribution of banking services in enhancing the profitability of Jordanian commercial banks. *Business and economic horizons*, *14*(5), 1027-1035.

[5]. Amu C. U, And Nathaniel C. (2015) 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

[6]. Azih. N, Nwagwu, & Lazarus. (2017). Impact of electronic payment system in Abakaliki urban of Ebonyi state, Nigeria and its implications on the achievement of the millennium development goals. *International journal of research in social sciences*. 15(1), 2270-2307

[7]. Chen, S. C., & Li, S. H. (2010). Consumer adoption of e-service: Integrating technology readiness with the theory of planned behavior. *African Journal of Business Management*, 4(16), 3556-3563.

[8]. Conner, M., & Armitage, C. J. (1998).Extending the theory of planned behavior: A review and avenues for further research. *Journal of applied social psychology*, 28(2), 1429-1464

[9]. Ibe, R. C. & Odi, E. R. (2018). The impact of cashless policy on Nigeria economy. *International journal of business & law research* 6(4), 38-48,

[10]. Jamgun. J & Miroga, J. (2018). Determine the effect of mobile banking services cost on financial performance of smes in kaka mega county. *International journal of management and commerce innovations*, 6(1), 2063-2072

[11]. Joan, W. M. (2018). Effect of mobile banking adoption on the performance of small and medium enterprises in Nairobi County. *International journal of economics, business and management research*, 2(4), 445-486

[12]. Kabiru, S., & Aliyu, M. (2016). Evaluate Electronic Payment System Challenges in Gombe State: Evidences from the Office of the Accountant General of Gombe State, Nigeria. *Journal of Humanities and Social Science* 21(4), 1-7

[13]. Meso, P., Checchi, R. M., Sevcik, G. R., Loch, K. D., & Straub, D. W. (2006). Knowledge spheres and the diffusion of national IT policies. *The Electronic Journal of Information Systems in Developing Countries*, 23(13), 29-37

[14]. Olaiya, A. C. & Adeleke, K.O. (2019) electronic banking and profitability of deposit money banks in Nigeria. *Journal of association of professional bankers in education*, 5(1), 130-142

[15]. Ogutu Mary & Fatoki Olanrewaju I., (2019) effect of e-banking on financial performance of listed commercial banks in Kenya. *Global science journal:* 7(1), 2320-9186

[16]. Patrick,O.I. (2017*)*.Qualitative evaluation of the factors influencing the adoption of electronic payment systems (smes) by smes in Nigeria. *European scientific journal. 13(31), 1857 – 7881*

[17]. Ratcliff, R., Van Zandt, T., & McKoon, G. (1999).Connectionist and diffusion models of reaction time. Psychological review, 106(2), 261-275.

[18]. Rogers, E. M. (2004). A prospective and retrospective look at the diffusion model. *Journal of Health Communication*, 9(S1), 13-19.

[19]. Simon N. N. And Elias I. A. (2021) effect of electronic banking on commercial bank performance in Nigeria, *European journal of accounting, finance and investment*.7(1), 3466 – 7037