EFFECT OF FINANCIAL INCLUSION ON THE PERFORMANCE OF LISTED DEPOSIT MONEY BANKS IN NIGERIA

ABUBAKAR, Mohammed Babakatun
College of Business and Mgt. Studies,
Kaduna Polytechnic, Kaduna
Email:mba4949@gmail.com

MUSTAPHA, Nmanda Mustapha
Department of Business Administration,
Federal Polytechnic Bida, Nigeria
Email:mustaphanmustapha@gmail.com

ALIYU, Adamu
Department of Accounting, Niger State Polytechnic,
Zungeru, Niger State

Abstract

The study examined the effect of financial inclusion on the performance of listed deposit money banks (DMBs) in Nigeria using census sampling method, data were collected from audited financial reports of thirteen (13) listed DMBs in Nigeria for the period of 2014 to 2020. Ex-post facto research design was employed and the fixed effects estimate was used for testing hypotheses after the Hausman test was run. Banks performance was proxied by return on asset (ROA) and net interest margin (NIM) while financial inclusion was proxy by number of automated teller machines (ATM), number of bank branches (NBB), loan to deposit ratio (LDR). The study found that the number of automated teller machines (ATM), number of bank branches (NBB), and loan to deposit ratio (LDR), have significant positive effect on the performance of listed DMBs in Nigeria measured by ROA and NIM. However, the study recommended that DMBs should improve the quality of financial services extended to both existing and potential customers in order to increase their performance.

Keywords: Bank size, financial inclusion, Nigeria, performance.

Introduction

The banking sector is regarded as a remarkably critical sector for every country because it contributes funds to the economy. Financial inclusion is a powerful tool for closing income gaps, fighting poverty, and preserving social harmony (Odutola, 2021). Because of its perceived relevance as a driver of economic growth, the notion of financial inclusion has grown in importance in recent years (Kama, & Adigun, 2013). Despite global consensus, attaining widespread financial inclusion has remained a global problem, with up to 54.0 percent of individuals globally being financially excluded (without access to finance)

(Kama, & Adigun, 2013). The issue is considerably worse in emerging economies, where some nations have financial exclusion rates of up to 70%. For example, in Nigeria a 2010 survey conducted by the Enhancing Financial Innovation and Access (EFInA), only 30.7 million of the 85 million Nigerians over the age of eighteen have access to formal financial services (services from deposit money banks and other formal institutions), leaving over 54 million either served by informal institutions or completely unbanked (Kama, & Adigun, 2013).

Although there has been growth in the amount of financial inclusion in Nigeria over time, but the country still trails below several countries in key indicators of inclusion. Nigeria, for example, falls behind countries such as South Africa and Rwanda, where just 7% of the adult population is unbanked (Mbutor & Uba, 2013). Furthermore, Nigeria has a formal payments penetration of 21.6 percent, which is lower than the 46 percent levels in both South Africa and Kenya. In terms of access to savings products, Nigeria has 461 savings accounts per 1000 people, which is lower when compared to Malaysia's 2,063 savings accounts per 1000 people while credit penetration, as a measure of financial inclusion, is lower in Nigeria than in other comparable nations. It reports just 2% access to formal products, compared to 32 percent in South Africa. In addition, insurance penetration in South Africa is over 30%, whereas it is barely 1% in Nigeria (Mbutor & Uba, 2013). These comparisons are meant to provide an overview of where the country is in terms of financial inclusion (Mbutor & Uba, 2013).

The Maya Declaration of 2011 is the first measurable worldwide set of pledges by emerging markets and developing nations to improve efforts to harness the economic and social potentials of the world's 2.5 billion poorest people through increased financial inclusion. This proclamation was supported by more than eighty (80) institutions from throughout the world, representing more than 70% of the world's estimated unbanked and under banked population (Nmadu & Mika'ilu, 2018). As part of her commitment to the Maya Declaration, the Central Bank of Nigeria created a financial inclusion plan for Nigeria in 2012. The idea by the Central Bank of Nigeria (CBN) in collaboration with other stakeholders is to reduce the exclusion rate to 20% by 2020 in order for people to have access to financial services, engage in economic activities, and contribute to the country's growth and development (Nmadu & Mika'ilu, 2018). However, only 67.5 million (64 percent) of Nigeria's 105.5 million adult population was financially included in 2020 revealing that 36% of Nigerian adults, or 38 million adults, remained financially excluded at the end of 2020 (Odutola, 2021, Zimwara, 2021). The overall financial inclusion benchmark was

set at 80% by 2020, however according to Enhancing Financial Innovation and Access (EFInA) data, just 64% of Nigerian adults were financially included by the end of 2020 (Odutola, 2021). Also, in 2020, 50.5 percent (54.6 million adults) of Nigerian adults had access to formal financial services, compared to 64.1 percent (Adegboyega, 2021). Also, high-income economies have a greater percentage of financial inclusion than developing countries; whereas 89 percent of people in the former have accounts at a formal financial institution, just 41 percent of individuals in the latter do (Ajakaiye, 2013). However, a number of strategic initiatives were launched to improve financial inclusion. Among these are Know-Your-Customer (KYC), agent banking framework, national financial literacy program, cashless policy, and mobile payment system, as well as establishing linkages between commercial banks, governments, and microfinance banks for funding micro, small, and medium enterprises (MSMEs), as well as various credit enhancement schemes and programs (Umoh, 2016). Despite a number of strategies to improve financial inclusion in Nigeria, the targets set out in the National Financial Inclusion Strategy were not fulfilled. This necessitates further study in this area.

Therefore, previous empirical studies on the effect of financial inclusion on performance of banks were inconclusive as mixed findings were reported. Whereas some studies have found that financial inclusion has significant positive effect on the financial performance of banks Al-Chahadah, El Refae, and Qasim (2020), Oranga and Ondabu (2018), Okon and Amaegberi (2018), Kondo (2017), Nzyuko and Jagongo (2017), studies by Nkwede (2015) found that financial inclusion has significant negative effect on the growth of Nigerian economy while Nader (2011) found non-significant relationship between the study variables.

In view of this, the study examines the effect of financial inclusion on the performance of listed DMBs in Nigeria.

Literature Review

Concept of Performance

Firm performance is a crucial condition for an organization's survival and growth, and it is used by businesses to assess the efficacy and efficiency of management. It also assists in the providing of vital information in decision-making for the company's overall management. However, performance is the process through which an organization's limited resources are successfully and efficiently managed in order to fulfill its established short and long-term

objectives (Kakanda et al. 2016, Marn & Romuald, 2012, Yasser, Entebang, & Mansor, 2011). Ayadi and Ellouze (2015) define performance as the capacity to fulfill goals while keeping costs to a minimum. According to Berger and Patti (2002), performance is the rise in a shareholder's wealth from the beginning of one period to the end of another. Although various performance measures exist for measuring financial performance, such as Return on Asset (ROA), Return on Equity (ROE), and Net interest margin (NIM). However, many researchers; Dietrich and Wanzenried (2014), Hassan and Bashir (2003); Dumicic and Ridzak (2013), Owoputi, Kayode, and Adeyefa (2014) have used ROA and NIM to measure financial performance of banks. For this reason, ROA and NIM have been used in this study to measure financial performance of DMBs.

Concept of Financial Inclusion

Financial inclusion is defined as adult population access to financial services in any given economy. Payment, insurance, and pensions are examples of financial services**.** Financial inclusion is the process through which financially excluded and underserved persons in a society have equal access to a variety of accessible financial services (World Bank, 2014). Financial inclusion is the long-term provision of affordable financial services to the poor in order to draw them into the formal economy (United Nations, 2016). According to the CBN (2012), financial inclusion is a situation where financial services are offered by a variety of providers, primarily in the private sector, to everyone who may benefit from them. According to Chibba (2009), financial inclusion is a financial intervention approach targeted at addressing market barriers that prevent the poor and underprivileged from accessing financial services. It also refers to the provision of financial services, such as banking services and credit, at a cheap cost to the great majority of disadvantaged and low-income groups who are usually excluded (Chhabra, 2015). It considers the involvement of vulnerable groups, such as weaker sectors of society and low-income groups, based on the extent to which they have access to financial services such as savings and payment accounts, credit insurance, pensions, and so on (Singh et al., 2014). The various financial services include access to the formal financial system's savings, loans, insurance, payments, and remittance facilities. This facet of financial inclusion is critical in providing people and families with economic security (Kelkar, 2014).

Automated Teller Machine

An automated teller machine is computerized telecommunications equipment that allows financial institution clients to conduct financial transactions in public without the need for a cashier, human clerk, or bank teller (DeYoung, 2005). According to Narteh (2015), throughout the last several decades, the automated teller machine has evolved as a primary route for channeling financial services to clients as part of self-service technology. ATMs were introduced into Nigerian retail banking to minimize labor costs, increase consumer engagement, standardize service delivery, and increase customer satisfaction and loyalty (Abdullai & Nyaogu, 2017). Because of the growing prevalence of ATM fraud, the deployment of ATM terminals has averagely enhanced the performance of Nigerian banks, according to Jegede (2014). According to Narteh (2015), the primary elements of ATM service quality include convenience, reliability, simplicity of use, privacy, security, responsiveness, and fulfillment.

Number of Bank branches

This is the number of geographically dispersed bank branches/bank branch network. Branches provide direct touch with bank clients and enable for bank-customer engagement for additional banking services (Al-abedallat, 2017). The key areas of interest for this study are the number of branches and their distribution around the country, the influence of changes in transaction volume, and the cost of operations.

Loan to Deposit Ratio

According to Pandia (2012), the Loan to Deposit Ratio states how far a bank has used depositors' money to provide loans to its customers. The Loan-to-deposit ratio is found by dividing the bank's total investment by its total deposits. This number is expressed as a percentage. High ratio indicates lack of liquidity for the banks to meet the funds necessity while low ratio indicates lack of earning of banks than expected.

Empirical Review

Using a simple regression analysis, Al-Chahadah, El Refae, and Qasim (2020) investigated the impact of financial inclusion on the financial performance of Jordanian banks listed on the Amman Stock Exchange. However, the study found that two measures of financial inclusion (financial access and enterprise

financing) had a statistically significant effect on bank financial performance. The study recommends that Jordanian financial institutions should focus on increasing innovative access to financial services, as well as improving IT infrastructure and financial service development, in order to raise the level of digital banking services, which is currently considered relatively low when compared to other middle-income countries.

Jimoh, Shittu, and Attah (2019) investigated the impact of financial inclusion on bank performance in Nigeria using secondary data collected from the World Bank database, the Central Bank of Nigeria Statistical Bulletin, and annual reports of deposit money banks, and the data was analyzed using a Fixed Effect Regression Model. The study found a significant positive and effect of Automated Teller Machines, bank embranchment, and point of sale terminals on bank performance, while the number of bank account is non-significant. The study recommends that additional ATMs, POS, and branches be installed for greater inclusive finance.

Oranga and Ondabu (2018) investigated the effect of increased bank branch spread, ATMs, and mobile banking services on the financial performance of Kenyan listed banks. The study used a descriptive research approach, and the sample population comprised managerial and operational level personnel from the 11 banks listed in Nairobi Securities Exchange. The study found that bank branch spread, ATM proliferation, and mobile banking services had a positive but little effect on bank financial performance.

Okon and Amaegberi (2018) used a panel unit root and SURE model estimate approach to perform quantitative study on the impact of mobile banking transactions on bank profitability across four chosen old and new generation banks in Nigeria. The positive and statistically significant association between automated teller machines of old and new generation banks in Nigeria suggests that automated teller machines are a crucial element that contributes to the performance of old and new banks in Nigeria. The positive and statistically significant association between point of sale of old and new generation banks in Nigeria suggests that point of sale is a crucial component that contributes to the performance of old and new banks in Nigeria.

Kondo (2017) investigated whether branch network expansions/bank embranchment by Japanese regional banks positively influence their management performances at a time when management environments surrounding regional financial institutions have become increasingly severe due to population declines and regional economic shrinkage. Thus, based on

the panel data analysis, it is concluded that creating additional branches is effective in raising the total amount of loans and bills discounted by each bank since regional banks with many branches can contact more consumers, increasing their profitability.

Onalo, Lizam, and Kaseri (2017) used secondary data from 1982 to 2014 to analyze the effect of financial inclusion in the context of rural population banking habits on the Nigerian economy. The study found that there is no long-run causation between RDDEPOSIT and RDLOAN and GDP. In other words, the findings indicate that rural dwellers' deposits and loans with rural branches of commercial banks have an impact on the performance of the Nigerian economy in the long run. However, the findings showed that rural population deposits and loans at rural branches of commercial banks had little influence on the performance of the Nigerian economy Nzyuko and Jagongo (2017) examined the influence of technology such as ATMs, mobile phone banking, internet banking, and agency banking on the financial performance of Kenyan commercial banks, as well as how these inclusive advances have taken them closer to branchless banking. The study's target population was 42 commercial banks licensed in Kenya by 2010. The study analyzed time series data from yearly bank supervision reports issued by the Central Bank of Kenya (CBK) and the Kenya Bankers' Association (KBA) (2010-2016). The study discovered a substantial positive association between financial inclusion strategies and financial performance.

Obiekwe and Anyanwaokoro (2017) examined the effect of Automated Teller Machines (ATM), Point of Sale (POS), and Mobile Payment (MPAY) on the profitability of commercial banks in Nigeria from 2009 to 2015 using a sample of five banks. The Panel Least Squares (PLS) estimation approach was used in the study, and data were gathered from the Central Bank of Nigeria (CBN) Statistical Bulletin as well as the sampled banks' Annual Reports and Statements of Accounts. The study found that automated teller machines (ATMs) and mobile phone payments had significant effect on the profitability of commercial banks in Nigeria. However, the effect of Point of Sale (POS) on commercial bank profitability in Nigeria is nonsignificant.

Adelowotan (2016) assessed the implications of the contribution of the branches to banks performance. The study used the whole banks in Nigeria during the period 1981 and 2013 using a pooled data analysis on ordinary least square (OLS). The variables used include the total number of banks branches in rural and urban area and those domiciled abroad regarded as foreign branches, while the growth in Total Asset is proxied as the dependent variable.

The study findings showed that there is a positive but no systematic relationship between number of banks and asset growth.

Nader (2011) examined the profit efficiency of Saudi Arabian commercial banks from 1998 to 2007. According to the findings of his study, the availability of phone banking, the number of ATMs, and the number of branches had a positive effect on the profit efficiency of Saudi banks. On the contrary, the research revealed that increasing the number of point of sale terminals (POSs), PC banking availability, and mobile banking availability did not enhance profit efficiency.

Methodology

The study used Ex-post facto research design because it is used to test hypotheses about cause and effect in situations where it is unethical to control or manipulate the dependent variable (Cohen, Manion, & Morrison, 2007). Also, panel data was extracted from Central Bank of Nigeria (CBN) Statistical Bulletin for financial inclusion and the financial statements of 13 listed DMBs in Nigerian that have the required data for the period 2014–2020. The choice of this period is based on the fact that Central Bank of Nigeria in 2012, as a sign of her commitment to the Maya Declaration to reduce the percentage of adult Nigerians excluded from financial services from 46.3 per cent as at 2010 to 20 per cent by 2020.

Measurement of Variables and Model Specification

The definition and measurements of the dependent, independent, and control variables are presented in Table 1 below:

Table 1
Measurement of Variables

	Variable Name	Symbol	Measurement	Source
Dependent Variable	Return on Assets	ROA	Ratio of net income to total assets	Dietrich and Wanzenried (2014), Hassan and Bashir, 2003)
	Net Interest Margin	NIM	Net interest income divide by the	Dumicic & Ridzak, 2013,Owoputi,Kayode, & Adeyefa, 2014

			average interest earning assets.	
Independent Variables	Number of bank ATMs	ATM	Number of bank ATMs	Obiekweand Anyanwaokoro (2017), Nzyuko and Jagongo (2017),Okonand Amaegberi (2018), Oranga and Ondabu (2018)
	Bank Branches	NBB	Number of Bank Branches	Oranga and Ondabu (2018), Adelowotan (2016),
	Loan-to-Deposit Ratio	LDR	The ratio of total loans to total assets	Chowdhury and Zaman (2018), Rahman and Saeed (2015), Uddin, Reza and Sana (2016)
Control Variables	Bank Size	BS	Natural logarithm of a total assets	Afrifa and Tauringana, (2015); Aljifri and Moustafa (2015)
	Gross Domestic Product	GDP	Annual growth Rate of the Economy	Dumicic & Ridzak, 2015, Eneyew, 2013, Trabelsi, 2015

Source: Researcher Computation 2021

In order to examine the effect of financial inclusion on the performance of listed DMBs in Nigeria, the following model is specified: The following original regression model is specified:

$$Y_{it} = \alpha + \beta_1 \mathbf{X}_{it} + \varepsilon_{\mathbf{it}} \text{ ---------- (1)}$$

Where the dependent variable is denoted by Y_{it} of bank i at time t, α is the constant, the coefficient of the independent variables are denoted by β_1 for bank i at time t while ε_{it} is the disturbance or error term.
Based on the above, the model can be decomposed as follows:

$$ROA_{it} = \beta_0 + \beta_1 ATM_{it} + \beta_2 NBB_{it} + \beta_3 LDR_{it} + \beta_4 BS + \beta_5 GDP + \varepsilon_{it} \quad (2)$$
$$NIM_{it} = \beta_0 + \beta_1 ATM_{it} + \beta_2 NBB_{it} + \beta_3 LDR_{it} + \beta_4 BS + \beta_5 GDP + \varepsilon_{it} \quad (3)$$

Where: ROA is Return on Asset measuring Performance, NIM is Net Interest Margin measuring Performance, the independent variables are number of Automated Teller Machines (ATMs), Number of Bank Branches (NBB), and Loan to Deposit Ratio (LDR), while Bank Size (BS), and Gross Domestic Product (GDP) are the control variables and ε_{it} is the disturbance or error term.

Results and Discussions

Therefore, the diagnostic tests conducted are Normality Test, Multicollinearity Test, Model Specification Test, Heteroscedasticity Test, and Hausman Specification Test. The Shapiro Wilk test for data normality shows that none of the variables are normally distributed. However, when using financial data, it is nearly impossible to use normally distributed data because the distribution is unsystematically randomly distributed between and within banks (Wooldridge, 2013). The Variance Inflation Factor (VIF) was carried out to test for multicollinearity in the study models. Table 3 shows that multicollinearity does not exist, because it is obvious that the tolerance value is between 0.12 and 0.47, reasonably greater than the threshold of 0.1 while the VIF ranges between 1.17 and 2.43, substantially less than the threshold of 10 (Hair et al., 2014; Pallant, 2005). Also, the Breusch-Pagan/Cook-Weisberg test was conducted to determine the presence or absence of heteroscedasticity. The result in Table 4 below shows chi2 values of 104.23 and 128.34 for ROA and NIM models, which are significant at 1%, indicating that the dataset violates the homoscedasticity assumption. Due to the violation of the homoscedasticity assumption in the pooled panel result as revealed by the Breusch-Pagan/Cook-Weisberg test that turns chi2 values of 104.23 and 128.34 which are significant at 1%, we re-run a pooled panel regression using robust option as recommended by Gujarati and Porter (2009) to correct the problem of heteroskedasticity. The link test was used to perform the model specification test. From Table 4, the _hat values, which are the models predicted values, are significant, as expected for ROA (0.003) and NIM (0.005). Similarly, the _hatsq values for ROA (0.174) and NIM (0.226) are insignificant, indicating that the models are well specified. Both fixed effects

(FE) and random effects (RE) tests were run using the Generalized Least Squares (GLS) method. The results revealed a significant difference between FE and RE, allowing the Hausman specification test to be used to determine which model was superior. Finally, the Hausman test result in Table 4 showed prob>chi^2 values of 0.007 and 0.004 for ROA and NIM models, indicating that the fixed effect regression is preferable and should be interpreted.

Table 2

Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	91	0.246	0.106	0.155	0.512
NIM	91	0.025	0.033	0.021	0.087
ATM	91	9.876	5.237	14.015	18.044
NBB	91	2.655	0.168	2.246	2.992
LDR	91	0.212	0.205	0.274	0 .621
BS	91	6.636	4.171	6.248	16.254
GDP	91	0.032	0.025	0.053	0.086

Note: * denotes 5% level of significance. ROA= return on asset, NIM= net interest margin, ATM= number of ATMs, NBB= number of banks branches, LDR= loan-to-deposit ratio, BSIZE= bank size, GDP= gross domestic product.

Table 2 shows the mean value of return on asset (ROA) is 0.246, with a minimum of 0.155 and a maximum of 0.512. The standard deviation is 0.106, showing that returns vary somewhat among the sampled listed DMBs. Therefore, the mean value of 0.246 for ROA indicates that 25 percent of the profit of the sampled listed DMBs was generated from the banks' assets, whereas the minimum value of ROA is 0.155, indicating that 16 percent was generated from the assets of the sampled listed DMBs during the study period. Furthermore, the maximum value of 0.512 implies that 51 percent of the returns on the assets of listed DMBs in Nigeria were generated. However, it may be stated that the management of these Nigerian banks are efficiently carrying out their agency relationship with the banks' shareholders. On the other hand, the mean value of net interest margin (NIM) is 0.025, minimum of 0.021, with a maximum of 0.087, and a standard deviation of 0.033, indicating a thin variation across listed DMBs.

Also, Table 2 shows the descriptive statistics of independent and control variables used in the study with mean values of 9.876, 2.655, 0.212, 6.636 and 0.032 for ATM, NBB, LDR, BS and GDP. Whereas the maximum values of 18.044, 2.992, 0.621, 16.254 and 0.086 are for ATM, NBB, LDR, BS and GDP, 14.015, 2.246, 0.274, 6.248 and 0.053 are the minimum values for both the

independent and control variables while the standard deviations of the most of the variables differ substantially from their respective means, indicating a moderate variation across listed DMBs.

Table 3

Pairwise correlation Matrix

	ROA	NIM	ATM	NBB	LDR	BS	GDP	VIF
ROA	1.0000							
NIM	0.6489	1.0000						
ATM	0.5114	0.5210						2.22
			1.0000					
NBB	0.4826	0.4138		1.0000				2.14
			0.0669					
LDR	0.5371	0.5607		0.0614				1.17
			0.0542		1.0000			
BS	0.4712	0.5192		0.0184				1.28
			0.0646		0.0098	1.0000		
GDP	0.6158	0.4231		0.0953			1.0000	2.15
			0.0895		0.0701	0.0466		
1/VIF								2.43

Note: * denotes 5% level of significance. ROA= return on asset, NIM= net interest margin, ATM= number of ATMs, NBB= number of banks branches, LDR= loan-to-deposit ratio, BSIZE= bank size, GDP= gross domestic product.

Correlation analysis is used to describe the strength and direction of the linear relationship between two variables (Pallant, 2005). A high level and strong form of relationship between dependent and individual independent variables is expected in correlation analysis, whereas a low level and weak form of relationship between and among independent variables is expected. According to correlation matrix shown in Table 3 above, the correlation among automated teller machines, number of bank branches, loan-to deposit ratio, bank size and gross domestic product with ROA and NIM are moderate and positive with correlation coefficient values of 0.511, 0.482, 0.537, 0.471 and 0.615 and 0.521, 0.413, 0.560, 0.519 and 0.423 respectively. Also, all the correlation coefficients between the pairs of the independent and control variables are less than ±0.8 suggesting absent of multicollinearity, as recommended by Gujarati and Porter (2009).

Table 4

Fixed Effect Regression Results for ROA and NIM Models

ROA MODEL		NIM MODEL	
Variables		**Variables**	
ATM	.311*** (1.25)	ATM	.334** (0.24)
NBB	.314*** (3.42)	NBB	.217*** (0.22)
LDR	.247*** (4.44)	LDR	.121** (1.41)
BS	.217 ** (1.14)	BS	.191*** (1.42)
GDP	.183 ** (1.72)	GDP	.162*** (2.16)
CONS	6.241 (3.27)	CONS	5.754 (3.37)
R-Squared:	0.5412	R-Squared:	0.6718
Within		Within	
	0.4571		0.5127
Between		Between	
	0.4184		0.4941
Overall		Overall	
Hetro. Test: chi2	104.23***		128.34***
Hausman	0.007		0.004
F-Test	32.21***		28.32***
Link Test: _hat	0.003		0.005
	0.174		0.226
_hatsq			

Note: ***, **, * denotes 1%, 5%, and 10% level of significance. ROA= return on asset, NIM= net interest margin, ATM = automated teller machine, NBB= number of bank branches, LDR= loan-to-deposit ratio, BS= bank size, GDP= gross domestic product.

Table 4 shows that the F-statistics returns values of 32.21 and 28.32 for ROA and NIM models that are statistically significant at 1% level of significance. These confirm the overall significance of the models. The overall R-squares are 42% and 49%, indicating that the variables considered in the models explain about 42% and 49% change in both ROA and NIM, while about 58% and 51% change may be as a result of other variables not captured by the study models. From the regression result in Table 4, number of ATM (ATM) has significant positive effect on banks performance; ROA at the 0.01 level (β= .311, $p<0.05$) and NIM at the 0.05 level (β= .334, $p<0.05$).This means that an increase in the number of ATM by 1, will result in an increase in performance by 31% for ROA and 33% for NIM. The more the number of ATMs deployed, the more the commission on turnover and the more profitability to the banks. This result is consistent with the studies by Nader (2011), Nzyuko and Jagongo (2017),

Oranga and Ondabu (2018), Ebiringa (2010), Obiekwe and Anyanwaokoro (2017), Okon and Amaegberi (2018) who found significance positive effect of ATM on banks performance.

From the regression result in Table 4, number of bank branches (NBB) has significant positive effect on banks performance; ROA at the 0.01 level ($\beta = .314$, $p < 0.05$) and NIM at the 0.01 level ($\beta = .217$, $p < 0.05$). This means that an increase in the number of bank branches (NBB) by 1, will result in an increase in performance by 31% for ROA and 22% for NIM. This result is consistent with the studies by Nader (2011), Kondo (2017), Oranga and Ondabu (2018), Adelowotan (2016) who found significance positive effect of NBB on banks performance.

Also, Table 4 shows that loan-to-deposit ratio (LDR) has significant positive effect on banks performance; ROA at the 0.01 level ($\beta = .247$, $p < 0.05$) and NIM at the 0.05 level ($\beta = .121$, $p < 0.05$). This means that a 1% increase in loan-to-deposit ratio (LDR), will result in an increase in performance by 25% for ROA and 12% for NIM.

Conclusion and Recommendations

The study examines the effect of financial inclusion on the performance of listed DMBs in Nigeria. Therefore, the study found that the number of automated teller machines (ATM), number of bank branches (NBB), and loan to deposit ratio (LDR), have significant positive effect on the performance of listed DMBs in Nigeria measured by ROA and NIM. However, the study recommends that DMBS should improve the quality of financial services extended to both existing and potential customers in order to increase their performance.

Reference

Abdullai, H. M., & Nyaoga, R. B. (2017). Effect of automated teller machines usage on operational performance of commercial banks in Nakuru County, Kenya. *International Journal of Economics, Finance and Management Sciences*, *5*(3), 162-167.

Aduda, J., & Kalunda, E. (2012). Financial inclusion and financial sector stability with reference to Kenya: A review of literature. *Journal of Applied Finance and Banking*, *2*(6), 95.

Al-Chahadah, A. R., El Refae, G. A. & Amer Qasim, A. (2020).The impact of financial inclusion on bank performance: The case of Jordan. *International Journal of Economics and Business Research (IJEBR), 20 (4*),

Aro-Gordon, S. (2017). Implementation of financial inclusion strategy in Nigeria. *SDMIMD Journal of Management*, *8*(2), 27-43.

Babajide, A. A., Lawal, A. I., Amodu, L. O., Ewetan, O. O., Esowe, S. L., & Okafor, T. C. (2020). Financial institutions concentration and financial inclusion penetration in Nigeria: a comparative analysis. *Journal of Contemporary African Studies*, *38*(4), 610-626.

Chauvet, L., & Jacolin, L. (2017). Financial inclusion, bank concentration, and firm performance. *World Development*, *97*, 1-13.

Chhabra, N. (2015). Financial inclusion in India Thesis. Rohtak: Maharshi Dayanand University.

Ditta, A. S. A., & Saputra, A. (2020). Financial inclusion and banking performance in Indonesia.

Dixit, R., & Ghosh, M. (2013). Financial inclusion for inclusive growth of India-A study of Indian states. *International Journal of Business Management & Research*, *3*(1), 147-156.

Dzombo, G. K., Kilika, J., & Maingi, J. (2018). The Mediating Effect of Financial Inclusion on the Relationship between Branchless Banking Strategy and Performance of Commercial Banks in an Emerging market Context: The Case of Kenya. *International Journal of Economics and Finance*, *10*(7), 161-161.

Efobi, U., Tanankem, B., Asongu, S., & Beecroft, I. (2016). Exploring multidimensional financial inclusion and manufacturing firms performance in a developing country: The case of Nigeria. *African Governance and Development Institute WP/16/043*.

Ene, E. E., & Inemesit, U. A. (2015). Impact of microfinancein promoting financial inclusion in Nigeria. *Journal of Business Theory and Practice*, *3*(2), 139-158.

Ghosh, S. & Sanyal, B. (2019). Determinants of operating efficiency of commercial banks in India: Insights from panel regression model. Das, R.C. (Ed.), the impacts of monetary policy in the 21st Century: Perspectives from Emerging Economies, Emerald Publishing Limited, 253-263.

Jimoh, A.T. Shittu, A. T. & Attah, J. A. (2019). Impact of financial inclusion on performance of banks in Nigeria. *Journal of Management (FUOJM), 4*(3), 84 – 96.

Kama, U., & Adigun, M. (2013). Financial inclusion in Nigeria: The Journey so Far. *Available at SSRN 2365209*.

Kelkar, V. (2014). Financial inclusion for inclusive growth. ASCI Journal of Management, 39(1), 55–68.

Le, T.-H., Chuc, A. T., & Taghizadeh-Hesary, F. (2019). *Financial inclusion and its impact on financial efficiency and sustainability: Empirical evidence from Asia. Borsa Istanbul Review.* doi:10.1016/j.bir.2019.07.002.

Malek, B. A., Mohtar, S., & Ariffin, A. S. (2017). The factor that affects the effectiveness of agent banking characteristics on financial inclusion performance: A study from Malaysian government-owned banks in Negeri Sembilan. *Journal of Advanced Research in Business and Management Studies*, *7*(1), 91-102.

Mbutor, M. O., & Uba, I. A. (2013). The impact of financial inclusion on monetary policy in Nigeria. *Journal of Economics and International Finance*, *5*(8), 318-326.

Neil, K. (2019). "What is the meaning of operational efficiency?" available at: https://smallbusiness.chron.com/meaning operational-efficiency-67982.html.

Nmadu, Y. B., & Mika'ilu, A. (2018). Financial Inclusion and Deepening in Nigeria: The Contribution of Jaiz Bank. *Share: Jurnal Ekonomi dan Keuangan Islam*, *7*(2), 95-115.

Onalo, U., Lizam, M., & Kaseri, A. (2017). Financial inclusion and the Nigerian economy: Empirical evidences. *Asian Journal of Economics, Business and Accounting*, 1-10.

Ozili, P. K. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review*, *18*(4), 329-340.

Ramzan, M., Amin, M., & Abbas, M. (2021). How does corporate social responsibility affect financial performance, financial stability, and financial inclusion in the banking sector? Evidence from Pakistan. *Research in International Business and Finance*, *55*, 101314.

Ranganath, N. S., & Rao, G. T. (2013). Banking and financial inclusion in india-A need for innovation. *Srusti Management Review*, *6*(1), 37-42.

Sarma, M., & Pais, J. (2011). Financial inclusion and development. *Journal of international development*, *23*(5), 613-628.

Shaikh, S. A., Ismail, M. A., Shafiai, M. H. M., Ismail, A. G., & Shahimi, S. (2017). Role of Islamic banking in financial inclusion: Prospects and performance. *Islamic banking*, Palgrave Macmillan, Cham.

Shihadeh, F. H., Hannon, A. (M. T. ., Guan, J., Haq, I. ul, & Wang, X. (2018). Does Financial Inclusion Improve the Banks' Performance? Evidence from Jordan. Research in Finance, 117–138.

Singh, C., Mittal, A., Garg, R., Goenka, A., Goud, R. P., Ram, K., et al. (2014). Financial inclusion in India: Select issues. In IIM Bangalore research paper no. 474.

Wuave, T., Yua, H., & Yua, P. (2020). Effect of liquidity management on the financial performance of banks in Nigeria, European Journal of Business and Innovation Research, 8(4), 30-44.