Quest Journals
Journal of Research in Business and Management
Volume 9 ~ Issue 2 (2021) pp: 32-40
ISSN(Online):2347-3002
www.questjournals.org

Research Paper

Financial Inclusion As Determinant Of Performance: Does it Matter for Nigeria Deposit Money Banks

EGBERI, Agbarha Kelvin PhD
Department of Business Administration and Management School of Business Studies , Delta State Polytechnic, Ozoro, Delta State, Nigeria. Email: kelvinegberi76@gmail.com

IGHOROJE ESE JAMES
Department of Banking and finance School of Business Studies , Delta State Polytechnic, Ozoro, Delta State, Nigeria. Email:eseroji@gmail.com

ABSTRACT
This paper evaluated financial inclusion as determinant of Nigeria deposit money banks performance. Data financial inclusion variants (bank network, automated teller machine and loans penetrations) and performance measures (total assets and liquidity ratio) were sourced from statistical bulletin of Central Bank of Nigeria during the periods 1981-2019. Multivariate time-series result showed that financial inclusion variants of bank networks and automated teller machine penetrations are the most fundamental determinants of deposit money banks performance, particularly. More so, while loans penetration significantly affects the performance of deposit money banks, is negative. Thus, there is the need to increase loans penetration channels so as to further augment the performance Nigeria deposit money banks. In addition, there is the need to encourage banks to invest in more branches or networks; this would help policy-makers develop effective strategies aimed at expanding bank networks, automated teller machines and loans penetrations of deposit money banks in Nigeria.

KEYWORDS: *Financial inclusion; Automated teller machine; Bank network; Loans; Liquidity*
JEL Classification: *G21; M19*

Received 03 Feb, 2021; Revised: 15 Feb, 2021; Accepted 17 Feb, 2021
Published with open access at www.questjournals.org

I. INTRODUCTION

The business of deposit money banks entails obtaining deposits and using same to grant loans; this business can be very problematic and risky, but it is the rudimentary model employed in the industry. In time past, deposit money banks (DMBs) have been blamed of not reaching out in areas where transaction is very low; in areas with low transactions, costs of providing services are high; hence, DMBs do not see any sense to establish branches in areas with low transactions, volumes and high costs of operations. The above scenario has changed though, and most DMBs have embraced the concept of financial inclusion; this practice has opened up access to financial services and products even in the remotest areas of the country.

Financial inclusion is emerging as a novel archetypeinfluencing DMBsperformance (Fadi, 2019; Odero& Ibrahim, 2018; Iqbal & Sami, 2017; Ozughalu&Ogwumike, 2015), given that financial inclusion plays a vital role in amplifying individualprosperity and assets base of DMBs. Financial inclusion is all about providing access to and active use of affordablefinancial services and products to the masses at affordable terms and conditions. Primarily, digital technologieslike mobile phones, cloud computing, block-chain are some of the utmost enablers of financial inclusion

Globally, it has been widely acknowledged that financial inclusion enables nations to reduce the gap between the rich and poor population. Notably, it has been documented that financial inclusion significantly influences DMBs performance(Ozughalu&Ogwumike, 2015; Julianm& Ana, 2016; Soriano, 2017; Odero& Ibrahim, 2018; and Fadi, 2019). Interestingly, studies have not successfully established whether there is a link between financial inclusion and Nigeria DMBs performance. Again, prior studies have not established the direction of link between financial inclusion and Nigeria DMBs performance. In this paper, financial inclusion

was measured ATM, bank network and loans penetrations and DMBs performance by total asset and liquidity ratio. Thus, this paper investigated financial inclusion as determinant of DMBs performance in Nigeria.

II. REVIEW OF RELATED LITERATURE

2.1 Concept of Financial Inclusion

In economics literature, the concept of financial inclusion has been broadly defined; however, the most vital aspects to the diverse meaning of financial inclusion is access to prescribed financial services, which include payments, savings, insurance, and credit among others by low income groups at an affordable cost. More so, poverty eradication and inclusiveness are the core concerns of financial inclusion**(**Julianm& Ana, 2016).Thus,financial inclusion is seen as augmenting accessibility to financial services at reasonable cost to low income groups (Umoh, 2016).

Primarily, financial inclusion is the process of availing a collection of needed financial services at a fair price, precise place and time, and void of any form of acumen to all individuals in the society (Aduda&Kalunda, 2012). Similarly, Yunus*et al* (2015) see financial inclusion as timely access to a bouquet of formal financial services offered to every household. Conventionally, these formal financial services are provided by wide-range financial institutions like deposit money banks, microfinance banks, credit unions, and mobile network operators among others.

Economic literature (Aduda&Kalunda, 2012; Aigbokun, 2013; Ozughalu&Ogwumike, 2015; Julianm& Ana, 2016;Soriano, 2017;Odero& Ibrahim, 2018;Fadi, 2019) suggests that financial inclusion significantly and positively affect financial institution performance, particularly microfinance and deposit money banks. On the other hand, other empirical studies (see Aduda&Kalunda, 2012; Ozughalu&Ogwumike, 2015; Iqbal & Sami, 2017) indicate that the consequences of financial inclusion among others include, low savings, slow growth, low business investments, proliferation of social exclusion; these consequences are believed to heighten social classes, and polarized societies that are unhealthy for the economy.

Remarkably, several measures have been adopted in assessing financial inclusion and have been categorized into four – accessibility (ability to use financial services/products); quality (relevance of financial services/products); usability (longevity & depth of financial services/ products), and impact (changes in the lives of consumers attributable to the use of financial services/products) (Taplin*et al.*, 2013; Ajakaiye, 2013). While all these parameters are vital in measuring financial inclusion, emphasis of this study is on accessibility and usability. In this context, several parameters in the index of financial inclusion include branch penetration, automated teller machine (ATM) penetration, and loans penetration, among others.

Noteworthy is the fact that mere ownership of a financial service or product does not imply financial inclusion rather it is the actual usability and accessibility of the financial service or product that ultimately delivers the benefit of financial inclusion. Given this viewpoints, this study employed three measures of financial inclusion, namely ATM penetration (numbers of ATM usage by bank customers), bank branches penetration (numbers of deposit money bank branches accessible by customers), and loans penetration (loans and advances accessible by customers of deposit money banks).

2.2 Performance Explored

The concept of performance refers to the benefits stemming from the effective functioning and operations of an entity. In literature, performance is of two variants – financial and non-financial performance; this study is based on financial performance variants of deposit money banks. The financial performance variant assesses performance on the basis of operations that can be measured in economic or monetary terms. In view of this, performance of deposit money banks can be measured using variables of total assets, liquidity, return on investments, return on equity, return on assets, earnings yield, Tobin's Q among others.

Consequently, a good performing deposit money bank is deemed to have enhanced asset and liquidity levels, returns on investment, equity, earnings (Herly&Sisnuhadi, 2011). Generally, the performances of a deposit money bank are ascertained via the use of ratios which express relationships between variables. Research suggests that financial inclusion and performance is highly dependent on accounting-based or market-based measurements.

Accounting-based measurement is considered as an effective dynamics of performance compared to benchmark rate of return equal to risk adjusted weighted average cost of capital. The market-based measurement arecharacterised by its forward-looking aspect and reflection of expectations of shareholders regarding future performance, which has its basis on either prior or current performance (Wahla, Shah & Hussain, 2012). In view of the aforementioned, this study focused on accounting-based measurements of total asset and liquidity performance in assessing the link between financial inclusion and Nigeria DMBs performance.

2.3 Determinants of Deposit Money Banks Performance

In this paper, three dynamics were identified as determinants of deposit money banks (DMBs) performance in Nigeria, namely ATM, branch network and loans penetrations. First, ATM makes it easier for customers to access deposit and withdrawal services rather than queuing at the teller point. Evidently, developed markets make use of ATMand as such it impactson DMBs revenue. *Second*,most DMBs had limited spread of networks. For instance, DMBs recorded reduction in performance during periods of low spread of bank networks. However, with the growth in financial inclusion, DMBs have to open up new branches in diverse points or locations.

Third, the role of loans in promoting performance of DMBs has been widely acknowledged in management literature; the contributions of loans to DMBs performance have made the sector thrive and vibrant. Moreover, Nigeria financial institutions are unable to use thisdynamictool given the quantum of challenges they face in granting loans to customers. The utmost concern is whether penetration of bank networks, ATMs and loans would have significant effects on DMBs performance in Nigeria.

2.4 Empirical Studies

Extant studies have sought to investigate financial inclusion and performance of banks and have come up with mixed views. Fadi (2019) examined the role of financial inclusion in promoting banksperformance using data of 189 countries. The study found evidence that financial inclusion via the instrumentality of improved bank branches, bank penetration influence banks to realize more returns and decreasedrisk.

Likewise, Odero and Ibrahim (2018) evaluated financial inclusion and financial performance of Kenya banks employing measures of financial literacy program, usage of agents and representatives, enhanced proliferation of ATMs and mobile banking services. The result showed that financial inclusion measures positively and significantlyimpact on Kenya banks performance.

Equally, Soriano (2017) examined the dynamics of financial inclusion and its impact on the financial performance of 63India, Southeast Asia, and AfricaFintech start-upcompanies and found that financial service experiences, strategic partnershipswith financial institutions and e-commerce significantly and positively correlation with financial inclusion variables of active customers. More so, the study established that financial inclusion positively and significantly influences the financial performance, measured by yearly revenue.

Bernini and Brighi (2017) studied the effect of financial inclusion (bank branches expansion and efficiency) on local economic growth in Italy. The study found evidence that improved bank branches enhance revenues. Similarly, Iqbal and Sami (2017) ascertained financial inclusionand economic growth in India over a seven year periods. Findings showed a positive and significanteffect of bank branches, while an insignificanteffect for ATMs growth.

Correspondingly, Lisa and Jacolin (2016) focused on the effects of financial inclusion on the performance ofcompanies using firm-level data in seventy-nine (79) countries. The study found evidence that financial inclusion positivelyand significantly impact on companies growth; this positive effect is amplified when bank are lessconcentrated.

2.5 Theoretical Framework

In economic literature, there is an array of clarification for the growing socioeconomic import of financial inclusion; however, this study is anchored on the Finance-Growth Theory (FGT). FGT argues for finance-led inclusive growth, social equality and justice. FGT contended that reducing inequality and increasing degrees of inclusiveness via financial inclusion initiatives can result to an enhanced process of sustained growth and efficient delivery of social security benefits to under-privileged proportion of the society (Beck, *et al.*, 2006; Ajakaiye, 2013).

Remarkably, financial exclusion is part of social exclusion; hence, ensuring that the national economy is managed in a way as to secure the maximum welfare, freedom and happiness of every citizen on the basis of social justice and equality of status and opportunity is a vial objective and directive principle is a major thread of eh FGT (Aduda&Kalunda, 2012; World Bank, 2015). More so, the lack of accessibility to finance has been linked to persistent income inequality, poverty traps, and lower growth (Aduda&Kalunda, 2012), which could also have enhance the performance of financial institutions.

III. RESEARCH METHOD

This paper adoptsthe ex-post facto research design because the study seeks to establish financial inclusion as determinant of DMBs performance by analyzing past events of already existing circumstances. The study population is made up of all publicly quoted DMBs on the Nigerian Stock Exchange (NSE). Given the aggregate characteristics of data, all listed DMBs in Nigeria as at 31st December 2019, constituted the sample size of study; hence, there was no need for sampling.

Consequently, the aggregate financial inclusion (bank branches, ATM and loans penetrations) and performance (total assets and liquidity ratio) measures were obtained for this study for the periods 1981-2019. Yearly data were obtained from Central Bank of Nigeria (CBN)Statistical Bulletin for financial inclusion and DMBs measures of the study. Given that DMBs performance (total assets) is expressed in billions, it was logged to avoid scaling problems, since other variables are expressed in ratios and numbers.On basis of the above, multivariate regression model was employed and the functional relationship expressed as:

$$bankperf = f(atmp, bbp, ldp) \quad eq.\ 1$$

On the basis of equation 1, a multivariate regression model for bank performance and the financial inclusion measures was estimated:

$$bankperf = \alpha_0 + \sum_{j=1}^{k} ß_1 atmp_t + \sum_{j=1}^{k} ß_2 bbp_t + \sum_{j=1}^{k} ß_3 ldp_t + \mu_t \quad eq.5$$

Variable Description

bankperf= bank performance (measured by total assets and liquidity ratio); *atmp* = automated teller machine penetration (dummy variable - 1, period with ATM usage, 0 if otherwise); *bbp* = bank branches penetration (measured by number of deposit money bank branches); *ldp* = loan-to-deposit penetration (loan-to-deposit ratio); α, $ß_1$=regression coefficient; μ_t=error term.

The total assets of DMBs are usually expressed in billions of Naira, hence to avoid scaling problem, it was logged. A multivariate regression statistical tool was adopted and the analysis was done in phases: descriptive results(mean, standard deviation, correlation matrix, skewness /kurtosis tests for normality of data), and econometric tests (lag order selection criteria, Johansen co-integration and multivariate regression results). On the basis of the review of related literature and model specification, the following conceptual model was given:

Fig. 1: Conceptual Model of the Study

IV. RESULTS

This section presents the pre-estimation results involving mean, standard deviation, minimum and maximum values, correlation matrix and normality test results; the results are presented as follows:

Table 1: Descriptive Statistics Results

Variable	Obs	Mean	Std. Dev.	Min	Max
ttap	39	3.083077	1.142525	1.29	4.62
lqp	39	1.672051	.1079273	1.46	2.02
atmp	39	.2820513	.4558808	0	1
bbp	38	3.440263	.2499999	2.94	3.76
ldp	39	1.82	.0875395	1.58	1.93

Source: Computed by Researcher, 2021

Presented in Table 1 are the descriptive results of independent variables (bank, ATM and loans penetrations) dependent variables (total assets and liquidity) during the period 1981-2019. The results revealed that total asset performance (*ttap*) and liquidity performance (*lqp)* recorded means of 3.08 and1.67 respectively while financial inclusion variables (atmp – ATM penetration; *bbp* – bank branches penetration; *ldp*– loans

penetration) recorded means of .282, 3.44 and 1.82 respectively. The above results are further supported by figure 2:

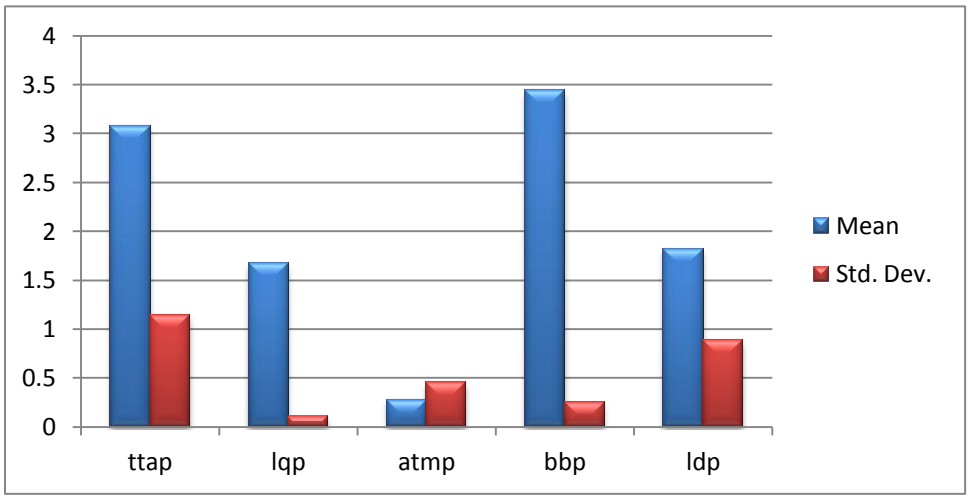

Fig. 2: Movement of Variables

The standard deviation for *ttap* and *lqp*, are 1.14 and .107 respectively while *atmp*, *bbp*and *ldq*are .455, .249 and .087 respectively. In addition, the mean and low standard deviation values for all the variables are clear indications that the variables are not constant over time and describes that overall, the data for *ttap*, *lqp*, *atmp*, *bbp*and *ldp* deviate from both sides by 1.1%, .107%, .445%, 2.49% and .087% respectively and the variations are not too dispersed from each other

Table 2: Tests for Normality of Data

Jarque-Bera test

Equation	chi2	df	Prob > chi2
ttap	1.246	2	0.53646
lqp	3.925	2	0.14052
ALL	5.170	4	0.27027

Skewness test

Equation	Skewness	chi2	df	Prob > chi2
ttap	-.23819	0.340	1	0.55960
lqp	.46611	1.304	1	0.25357
ALL		1.644	2	0.43957

Kurtosis test

Equation	Kurtosis	chi2	df	Prob > chi2
ttap	3.7768	0.905	1	0.34141
lqp	4.3219	2.621	1	0.10544
ALL		3.526	2	0.17150

Source: Computed by Researcher, 2021

The Jarque-Bera, skewness and kurtosis tests of normality of the dependent and independent variables are presented in Table 2. The kurtosis *lqp*(3.925) is leptokurtic since the kurtosis is greater than three (3) while *ttap*(1.246) is platykurtic since the kurtosis is less than three (3); impliedly, there is the presence of fatter tail

than the normal distribution. According to Gujarati (2003), a variable is normally distributed on the basis of the kurtosis when the value is exactly three(3). From the above, it shows that none of the variables were exactly three (3); thus, the variables satisfy the normality condition that they are normally distributed.

Table 3: Correlation Matrix

	ttap	lqp	atmp	bbp	ldp
ttap	1.0000				
lqp	0.1729	1.0000			
atmp	0.7572	0.0514	1.0000		
bbp	0.9657	0.0498	0.7873	1.0000	
ldp	-0.2910	-0.2755	-0.2332	-0.3131	1.0000

Source: Computed by Researcher, 2021

The correlation results revealed that the financial inclusion variables, particularly *atmp*and *bbp*are positively related with performance variables (*ttap*and *lqp),* except financial inclusion variable of *ldp*that is negatively related with performance variables. Impliedly, financial inclusion, particularly automated teller machine and bank branches penetrations positively affect the performance of DMBs while loans penetration negatively affect performance of DMBs in Nigeria.

Table 4: Lag Order Selection Criteria

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-252.755				4546.09*	16.9222	17.1955*	17.7467*
1	-247.682	10.147	9	0.339	6007.11	17.1676	17.5775	18.4043
2	-241.331	12.7	9	0.177	7592.79	17.3332	17.8798	18.9822
3	-232.024	18.615	9	0.029	8422.54	17.314	17.9972	19.3752
4	-215.97	32.107*	9	0.000	6656.85	16.8731*	17.693	19.3466

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	16.6804	9	0.05396
2	6.5036	9	0.68865

H0: no autocorrelation at lag order

Source: Computed by Researcher, 2021

Having found that the series are of order I(1) and I (0), the study proceeded to determine the optimal lag using the Akaike information criterion (AIC). From the table, AIC showed that the optimum lag is four. In addition, the Lagrange-multiplier result is an indication that there is no autocorrelation at lag order among the variables of the study.

Table 5: Johansen Co-integration Results

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	12	-315.37733	.	59.8844	29.68
1	17	-302.60085	0.52837	34.3315	15.41
2	20	-292.13398	0.45974	13.3977	3.76
3	21	-285.43512	0.32568		

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	2	1.579526	0.4540

*(**) denotes rejection of the hypothesis at 5% and 1%, significance level
LL. test indicates 2 co-integrating equation(s) at 5% significance level

Using the likelihood ratio, the results showed that there are two co-integrating equation at 5 and 1 percent level of significance; this implies that there is the presence of two co-integrating equations at 5 percent and 1 percent significance level. This revealed that there is presence of long-runrelationship between the dependent and independent variables of the study.

Table 6: Multivariate Results

Equation	Parms	RMSE	R-sq	chi2	P>chi2
ttap	8	.036386	0.9991	41582.69	0.0000
lqp	8	.082897	0.5535	44.61883	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ttap						
ttap						
L1.	1.240397	.1332809	9.31	0.000	.9791709	1.501622
L2.	-.2149521	.1317813	-1.63	0.103	-.4732387	.0433344
lqp						
L1.	.0310819	.0708324	0.44	0.661	-.1077471	.1699108
L2.	-.0636782	.0707247	-0.90	0.368	-.2022961	.0749397
atmp	-.1100529	.0258973	-4.25	0.000	-.1608108	-.0592951
bbp	-.0105703	.1182922	-0.09	0.929	-.2424187	.2212781
ldp	-.1406148	.0676862	-2.08	0.038	-.2732773	-.0079523
_cons	.3702767	.4308407	0.86	0.390	-.4741556	1.214709
lqp						
ttap						
L1.	-.3125084	.3036485	-1.03	0.303	-.9076486	.2826318
L2.	.5092977	.3002321	1.70	0.090	-.0791463	1.097742
lqp						
L1.	.3790676	.1613746	2.35	0.019	.0627792	.6953561
L2.	-.139653	.1611294	-0.87	0.386	-.4554607	.1761548
atmp	-.0210953	.0590009	-0.36	0.721	-.1367349	.0945443
bbp	-.9532066	.2695004	-3.54	0.000	-1.481418	-.4249956
ldp	-.3943815	.1542068	-2.56	0.011	-.6966212	-.0921418
_cons	4.742024	.9815674	4.83	0.000	2.818187	6.665861

Source: Computed by Researcher, 2021

Table 6 showed the multivariate regression of financial inclusion measures (ATM, loans and bank branches penetrations) and performance measures (total assets and liquidity) of DMBs in Nigeria during the period 1981-2019. The R-Squared is 0.99 and 0.5535, indicating that the independent variables jointly explained about 99% and 55% of the systematic variations in *ttap* and *lqp*respectively. The bank performance variants (*ttap*= 41582; and *lqp*= 44.61883) are significantly affected by financial inclusion variants. Besides, p-value (p-value=0.000), indicated that there is significant link between financial inclusion and DMBs performance in Nigeria.

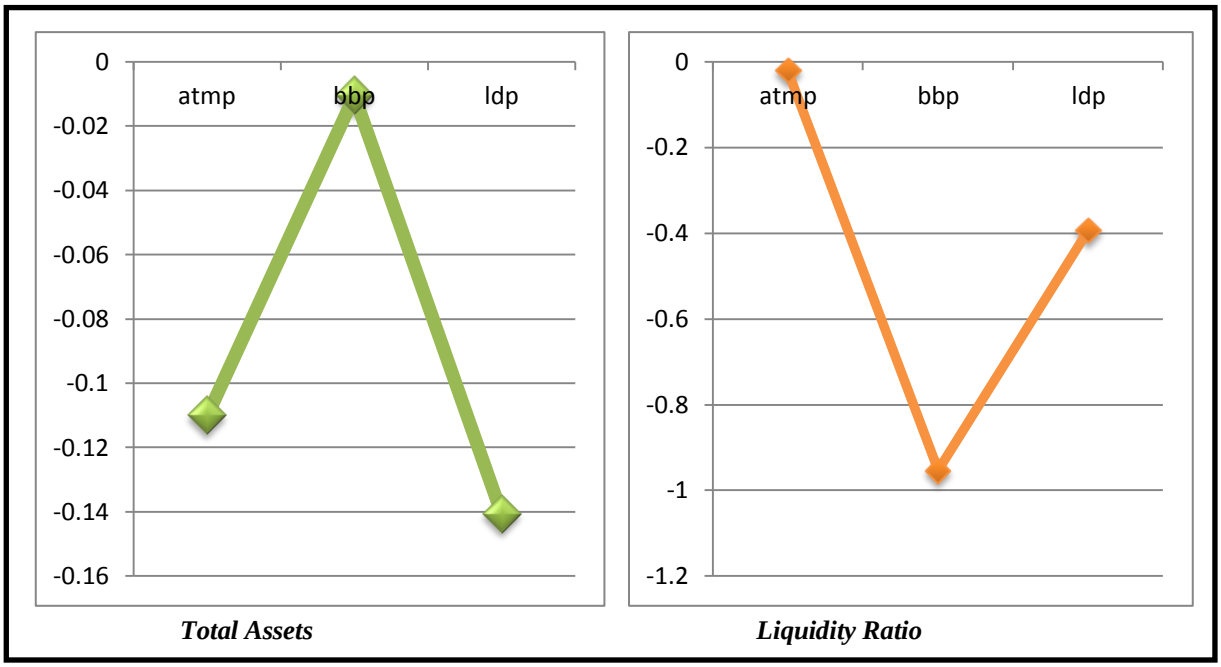

Figure 3: Financial Inclusion Variants and DMBs performance

Interestingly, while financial inclusion variants of bank networks and ATM penetrations are the most fundamental determinants of DMBs performance, particularly; loans penetration significantly affects the performance of DMBs, but is negative (see figure 2). Overall, the conclusion is that financial inclusion significantly affects DMBs performance in Nigeria. This finding corroborates with prior studies conducted by Odero and Ibrahim (2018); Soriano (2017); and Iqbal and Sami (2017) that financial inclusion significantly affect bank performances.

V. CONCLUSION AND RECOMMENDATIONS

The results of multivariate estimates are quite insightful. Empirical results indicate that there is long-run nexus between financial inclusion and Nigeria DMBs performance during the periods 1981-2019; while a positive relationship exist between financial inclusion and the performance of DMBs, a negative relationship exists for loans penetration and performance of DMBs; the following recommendations were given:

1. The reason for the negative influence of loans penetration channels may be connected with the fact that loans channels are limited for customers; hence there is the need to increase loans penetration channels for customers so as to further enhance DMBs performance in Nigeria.
2. There is the need to enhance financial inclusion but also encourages banks to invest in more branches, this would help in the regularization of the liquidity position of DMBs in Nigeria.
3. Policymakers can use these findings to develop their strategies in the expansion of the branches networks. Also, governments can play a fundamental role in enhancing the laws in order to promote bank penetration to get to more deprived people.

Overall, the study recommends that policymakers in the financial institutions such as banks should make use of financial inclusion elements to improve performance of banks. The study has contributed to economics literature in Nigeria by reaffirming the viewpoints of prior studies on financial inclusion and DMBs performance in developed countries; hence the study also fills the gap in literature on using financial inclusion elements of ATM, loans and bank branches penetrations as they affect performance (liquidity and total assets) of DMBs in the Nigerian context. Thus, the findings can be used bybank management, policymakers, and researchers, to further their studies on the subject matter.

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