

Relationship between Financial Inclusion and Economics Growth in Nigeria: Evidence from: 2006 – 2018

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Abstract

The study estimated the impact of financial inclusion variables on economic growth in Nigeria for the periods 2006–2018. The variables selected include access to bank credit; number of bank branches; number of automated teller machines/mobile bank users and point of sale (POS). The study adopted the ADF test for stationarity of the variables and ARDL estimation was also conducted to obtain the long and short run coefficients of the variables of the study. On the basis of the result, it was found that access to bank credit has significant positive relationship with GDP growth in Nigeria. The study further concludes that GDP growth has a strong positive relationship with the branch network as well as the number of ATM/mobile money users/accounts while the relationship between GDP growth and number of POS shows that the number of POS users is weak and has no economic value on the economic growth. The study recommended that government should encourage banks to further increase the number of POS available to customers so as to strengthen the ease of financial access to all bankable persons; also, there is need for banks to increase their number of branches and ATMs in order to enhance access and availability of bank credit to bankable individuals in the country.

Keywords: Financial Inclusion, Bank, Credit, POS, ATM

JEL Classification: E51, N2, O14

1. Introduction

The plan to achieving economic growth has preoccupied the policy thrust of all countries in the world. Nigeria as a developing country suffers the consequences of low level of economic activities evidenced by low productivity (Smart, 2014). Studies in this area discern strongly that financial sector development holds significantly the key to economic growth; studies such as Schumpeter and Mckinnon-Shaw hypothesis introduced finance variable into the growth factors and opined that adequate quantum of finance is needed to procure effective labour resources and new technologies to increase the output of goods and services (Schumpeter, 1912; McKinnon, 1973; Shaw, 1973). Growth propellants such as

technology and human capital development are made possible through finance development (Ndebbio, 2004).

Interestingly, economic theories espouse a positive correlation between financial development and economic growth. Shaw (1973), Mckinnon (1973) Levine and Zervos (1996), Goldsmith (1969), Bekaert et al (1995) in a finance-growth hypothesis show convincing evidence of positive correlation between finance and economic growth. In Nigeria, empirical studies of Adhlakun (2010), Odeniran and Udejaja (2010), Nkoro and Uko (2013), Osuji and Chigbuh (2012) and Anieken and Sikiru (2012) find evidence of positive relationship between financial inclusion and economic growth.

Nigeria's financial sector is still evolving but profoundly sustains the role of saving mobilization from the surplus spending units and canalizing same to the deficit spending units for investment purposes. The reward of efficient and effective financial system is increase in output of the economy through increase in investment. The economy needs a sustained boost in economic activities to further create employment, increase in income and raise aggregate demand for goods and services.

In the pursuance of the development of finance sector, the policy of financial inclusion was introduced to increase the access of bankable groups to the financial service net so as to increase the Country's liquidity position as well as widen credit access and implicitly increase investment.

Financial inclusion policy is an attempt to close the gap that hitherto existed between deficit spending unit and surplus spending unit powered by the intermediation function of the financial system. It is the policy that facilitates and increases access, usage and availability of financial services, provisions as well as increases the number of bankable groups in the financial system. The World Bank (2009) report describes financial inclusion as a process of raising individual access to basic financial services (saving, loans and insurance) in a safe and convenient manner especially among low income and more vulnerable income earners in the economy.

Financial inclusion as a policy is geared towards bringing the low income group into the Nigerian financial system net through a convenient less risky means and less cumbersome procedure into the financial net knowing that a viable and strong financial system definitely will boost the nation's economy. The World Bank group identified financial inclusion indicators to include ATM, POS, bank deepening (number of banks and their branches in the country), access to credit, information access, internet banking services. In a study by Mahanta (2009), capturing of the poor to the financial system will deter them from saving outside their homes or with informal system and encourage them to save in the banks thereby raising their chances to accessing credits from the formal financial institutions. Access to credits by the low income group will help them to overcome financial shocks as well boost their productions.

Financial inclusion is therefore a policy that is imbued with so much of accelerated strategy to boost economic growth especially in developing economy. It is not gainsaying that lack of physical access to financial access by way of not operating any bank account will impede the chances of any bankable group to access bank credit. Despite, the plethora of opportunities and competitive advantage of financial inclusion, the World Bank (2009) identified the difficulty faced by rural clients and most significantly the excluded that ordinarily and deliberately should complement the big clients in the role of capital accumulation for the purpose of raising investible funds needed in growing the economy. This study therefore, is interested in determining the impact of financial inclusion variables on economic growth of Nigeria as it sought to determine the relationship between financial inclusion and economic growth in Nigeria.

2. Literature Review

The finance-growth theory

The origin of the finance-growth hypothesis can be traced back to Bagehot (1873). The proponents of the finance-growth hypothesis argued that the existence of an energetic financial sector has growth-enhancing effects. Schumpeter (1911) posited that banks enable an economy to grow by providing efficient markets for funds. Goldsmith (1969), McKinnon (1973), Levine and Zervos (1996), Ndebbio (2004), among others, also emphasized the positive role of financial systems in economic growth. The finance-growth theory looked at the lack of access to finance as a critical factor responsible for persistent income inequality as well as slower growth. It posits that financial development creates a productive environment for growth through “supply leading” or “demand-following” effect. Consequently, access to safe, easy and affordable source of finance is recognized as a pre-condition for accelerating growth and reducing income disparities and poverty which in turn creates equal opportunities, enables economically and socially excluded people to integrate better into the economy and actively contribute to development and protect themselves against economic shocks (Serrao et. al, 2012). Furthermore, the main argument of proponents of the supply leading theory was that financial markets evolve in response to increased demands for financial services from an already budding economy and as such, the development of financial markets should be a reflection of growth in other sectors of the economy.

Empirical Literature

Nkwede (2015) investigated the influence of financial inclusion on the growth of African economy, using Nigeria as a case study. Extrapolated time series financial inclusion data from Nigeria, covering the period of 1981 to 2013 were used in the analysis. The multiple regression models anchored on Ordinary Least Square technique was adopted in estimating the contributions of the variables. While controlling for other macroeconomic exogenous variables; the results indicated that deposit money banks loans to small scale enterprise and the deposit of rural bank branches of deposit money banks have significant negative influence on the growth of Nigerian economy, while the amount of loan of rural bank branches and the number of bank branches spread in the country had significant positive influence on the growth and development of Nigerian economy over the years. The study

therefore attributed the result to high level of financial exclusion of bankable adult citizens in Nigeria in particular and Africa in general. The study however suggested more inclusive financial system in Nigeria (and Africa) with focus on the rural populace because “growth is good, sustained high growth is better and sustained high growth with financial inclusiveness is the best of all” especially in the developing economy.

Nwankwo and Nwankwo (2014) examined the sustainability of financial inclusion to rural dwellers in Nigeria using cross-section survey design and descriptive analysis. The study found that the sustainability of financial inclusion to rural dwellers in Nigeria remained the mainstream for economic growth in any country. Moreover, it was also found by the study that the economy cannot grow fast without proper implementation of financial inclusion to rural areas in Nigeria. The study therefore recommended that the promotion of collaboration between DMBs, MFBs and communication services providers for enhanced intermediation of financial services should be encouraged; there is need to educate rural dwellers on the importance of banking as it would facilitate the success of CBN financial inclusion policy and that since some of the rural dwellers preferred to keep money under their pillows at home, there should be proper enlightenment to change their orientation on financial inclusion in Nigeria.

The studies of Jalilian and Kirkpatrick (2001) also provided evidence of the relationship between financial development and poverty reduction. They used data for a sample of 26 countries including 18 developing countries. The study used Bank Deposit Money Assets, and Net Foreign Assets as their measures of financial development. The results showed that a one percent change in financial development increases growth in the income of the poor in developing countries by almost 0.4 per cent- a significant impact.

Using rural bank branch data from India, which better capture the direct impact of access to financial services on poverty, Burgess and Pande (2003) studied the impact of rural banks branches on rural poverty reduction, and found that a one percent in the number of rural banked locations reduced rural poverty by 0.34%, and increased total output by 0.55% by facilitating diversification out of agriculture. Meanwhile, Munyanyi (2014) in a study of financial inclusion in Zimbabwe, using a cross sectional data drawn from a rural community found significant positive relationship between financial inclusion variables and incomes of rural dwellers. The result showed that there was an increase in access to financial services including access to credit.

In a study conducted by Mbutor and Uba (2013) on the impact of financial inclusion on monetary policy aggregates in Nigeria between the period 1980 – 2012, using standard econometric tool found a positive nexus between financial inclusion and monetary policy aggregates in Nigeria. The findings further indicated that improvement in financial access increased the effectiveness of financial policy.

Babajide et al. (2014) tried to ascertain the impact of flow of FDI on economic development of host African countries characterized with low income per capita. Panel data was utilized for 39 African countries, 20 of which were low income

countries. The results indicated that FDI had significant impact on economic development of host African countries, by enhancing development of host sector and reducing gradually dependence on foreign capital, which resulted in increased income per capita, better education, living standards and wellbeing of the host economies. The study however recommended that government of host economies should guide the sector of FDI inflow, and ensure policies are in place to enhance domestic investment and development in such sectors. This will gradually bring about closure of existing proactive factors and hence improve economic development.

Michael (2016) examined whether increased access to financial services by farmers can bring about sustainable development in Nigeria merits attention. In response, the study adopted survey research design to obtain and analyse the perception of 105 farmers in Ogun State, Nigeria on the subject. The study discovered that financial inclusion in the Nigerian agriculture sector can be used to achieve sustainable development. The study however recommended the citing of more financial institutions in rural areas and financial discipline, amongst others, as measures to achieve financial inclusion in the agricultural sector.

3. Methodology

Research Design

This study focused on the relationship between financial inclusion variables and economics growth in Nigeria from 2006 -2018. The study adopted *ex post facto* research design. Since economic theory variables already exist and their relationship is unknown, as such, data cannot be manipulated by the researcher to confess in a predetermined manner. The ex post facto fits well into this study because in time series all variables of interest are put under observation, their relationships and inter dependences examined as their outcomes are estimated. Also, their feedback effects are at the same time considered and empirically measured (Gujarati, 2003). The study relied on investigative explanation of dependent and explanatory variables. More so, the explanatory variables were researched on based on past records in other to seek the possible link, effects and variations that come from explanatory side which react on the dependent variable.

Model Specification

The model for this study is specified using Gross Domestic Product (GDP) as the dependent variable. While financial inclusion indicators such as access to Bank Credit (BKCR), number of Bank Branches (BKBR), Automated Teller Machines (ATM) and Point of Sales (POS) were used as independent variables (explanatory variables). Specifically, the model is specified in functional form as follows:

$$GDP = f(BKCR, BKBR, ATM, POS)..... 1$$

Equation (1) can be express in its econometric form as follows:

$$GDP = B_0 + B_1BKCR + B_2BKBR + B_3ATM + B_4POS + U_t..... 2$$

Where GDP refers to gross domestic product, BKCR is the bank credit, BKBR indicates bank branches, ATM is Automated Teller Machine, POS signifies point

of sales, U_t is the stochastic error term, B_0 stands for constant term, while B_1 and B_2 is the slop of the coefficients.

Data Discussion

The variables used in this study include gross domestic product (GDP), access to credit, POS, and bank branches and ATM. The GDP is used as proxy for economic growth and measured total output of goods and services produced annually. Thus, the GDP is output measure of a country for the period under study. Also, the data for commercial bank access was measured by calculating the total money credit by all customers of all the banks guaranteed by the central bank of Nigeria taken annually for the period of 15 years whereas the Point of Sale (POS) is the total number of POS used annually for the period of the study; the number of ATM was also measured to provide the data for bank branches.

Sources of Data Employed

The data study made use of secondary data. The data for gross domestic product (GDP), access to credit, POS, and bank branches and ATM .were culled from World Bank Statistical data and Central Bank of Nigeria (CBN) statistical Bulletin of 2018

4. Result

The result obtained from the estimation of the impact financial inclusion variables on economic growth of Nigeria are presented thus.

Descriptive Statistics of Data

Table 1: *Summary Statistics of Time Series Variables of the Study*

	GDP	BKCR	BKBR	ATM	POS
Mean	5.098065	13.65978	5.290998	10.56515	16.172951
Median	6.309719	14.15507	5.209569	11.49132	21.00673
Maximum	9.250558	22.26722	6.563825	16.92304	63.715203
Minimum	-1.616869	8.111026	3.780877	0.680087	15.41700
Std. Dev.	3.086716	4.086368	0.925192	5.926912	23.159514
Skewness	-0.827870	0.575512	-0.032982	-0.589595	1.130421
Kurtosis	2.672037	2.907425	1.649912	1.933173	2.671814
Jarque-Bera	1.780648	0.833392	1.141930	1.580380	3.261947
Probability	0.410523	0.659221	0.564980	0.453759	0.195739
Sum	76.47098	204.8966	79.36496	158.4773	2.43E+08
Sum Sq. Dev.	133.3894	233.7777	11.98373	491.7961	7.51E+15
Observations	15	15	15	15	15

Source: Author's Computation

Table 1 above shows the summary statistics of Gross Domestic Product (GDP), Bank Credit (BKCR), Bank Branches (BKBR), Automated Teller Machines (ATM) and Point of Sales (POS). The results disclosed that average score of economic growth is 5.1% whereas, Bank Credit (BKCR), Bank Branches (BKBR), Automated Teller Machines (ATM) and Point of Sales (POS) have an average score of 13.7, 5.3, 10.6 and 16%, respectively. The result further disclosed that the

probability values of the Jarque–Bera statistic was statistically significant, indicating that all the data used in the study are normally distributed.

Unit Root Test Result

The Augmented Dickey Fuller (ADF) unit root test is used in order to test for the order of integration of the time series used in the study. This step is necessary because the ARDL bounds test used in the study requires the variables of the study to be stationary at level and first difference and none of the variables should be stationary at second difference. At this point, the unit root test result of the time series data used in the study are presented in table 2 as thus.

Table 2: Unit Root Test

Series	ADF t-Statistic	ADF	5% critical level	Order of integration
GDP	-4.456478		-3.1449**	I(1)
ATM	-10.1267		-3.8209**	I(0)
BKBR	-4.9012		-3.8753**	I(1)
BKCR	-5.8876		-3.9336**	I(1)
POS	-3.8809		-3.8299**	I(0)

*Note: *significant at 1%, ** significant at 5%, *** significant at 10%*

Source: Author's Computation

From the result presented in table 2, the unit root status of the variables indicate that POS and ATM were stationary at level I(0) whereas GDP, BKBR and BKCR were stationary at first difference I(1). In other words, the series possesses a mixture of order of integrations, which implies that the variables were stationary at level and first difference and it is a strong reason for adopting ARDL model in the study.

Table 3: Lag Structure

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-246.9864	NA	874.4423	12.44932	12.53376	12.47985
1	-211.4227	65.79287*	180.5386*	10.87113*	11.12447*	10.96273*
2	-210.6339	1.380439	212.4205	11.03169	11.45391	11.18435
3	-208.5331	3.466186	234.6706	11.12666	11.71776	11.34038

Source: Author's Computation

The lag was automatically selected from Table 3, where all the lag selection criteria choose one period lag for the estimation of the ARDL model.

Table 4: Bound Test Results

F-statistics	Lag	Critical Values		
		Sig level	lower bound I(0)	upper bound I(1)
71.88	1	10%	3.03	4.06
		5%	3.47	4.57
		1%	4.4	5.72

Source: Author's Computation

The rule of thumb for accepting and rejecting null hypothesis in Bound test states that if the value of F-statistic is greater than the value of the upper bound value,

then null hypothesis is rejected which implies that , the presence of long run relationship of the variables of the study.

Therefore, the result in table 4 shows that the calculated F-statistics is 71.88 while the upper critical bound is 4.57. Thus, the null hypothesis (Ho) of no co-integration is rejected. This implies that there is long-run relationship between financial inclusion variables and economic growth which is suitable for long run policy forecast.

Table 5: Estimated long-run parameters using ARDL Technique

Variable	Coefficient	Std. Error	t-Statistic	Prob.
POS	0.000000	0.000000	8.299855	0.0763
BKCR	0.066499	0.011189	-5.943363	0.1061
BKBR	0.160483	0.009435	17.009214	0.0374
ATM	0.378281	0.019885	19.023230	0.0334
C	-0.204340	0.031838	-6.418059	0.0984
@TREND	0.036137	0.002522	14.328866	0.0444

$R^2 = 0.99$, $Dw = 2.25$ 2.0, $F(Prob) = (0.006)$

Source: Author's Computation

From the ARDL long run estimated results obtained, holding all the other factors constant, the GDP growth is accounted by 99% of the change in financial inclusion variables. The result also indicates that though POS had positive sign, it has no economic value on Nigeria's economic growth at the time of the study. Also, one billion naira increase of commercial bank credit resulted to increase in the country's GDP by about 6 billion naira. Holding other factors constant, the growth of bank branches in Nigeria by one unit resulted to increase in GDP by about 16 units. The obtained regression equation further implied that there is a strong positive relationship between GDP growth and growth of Branch Networks. Furthermore, a unit increase in the number of automated teller machine users resulted to increase in GDP by about 37 units. This implied that the number of ATM users had the highest influence on the GDP growth followed by Number of Branch Networks then commercial bank credits. There is a weak positive relationship between Point Of Sale (POS).and GDP growth The criteria for comparing whether the predictor variables were significant in the model was through comparing the corresponding probability value obtained and $\alpha=0.05$. If the probability value is less than 0.05 then the predictor variable is significant and if otherwise, it is not significant. From the result presented, all the financial inclusion variables (Number of Mobile Money users/Accounts, Bank credit, Branch networks and Automated Teller Machines) under consideration in this study were significant except Point of Sale (POS) that manifested p-value of (0.0763) which is greater than (0.05) level of significance. The F-statistics of (162.58) with a p-value of (0.006) less than (0.05) indicated that the variables of financial inclusion had significant joint influence on Nigeria's GDP growth.

Diagonistic Tests of Validity of Result

Test of Stability

The result presented below shows the stability of the coefficients, the graph of the cumulative sum of recursive residual (CUSUM). The residuals are plotted within 5% critical bounds.

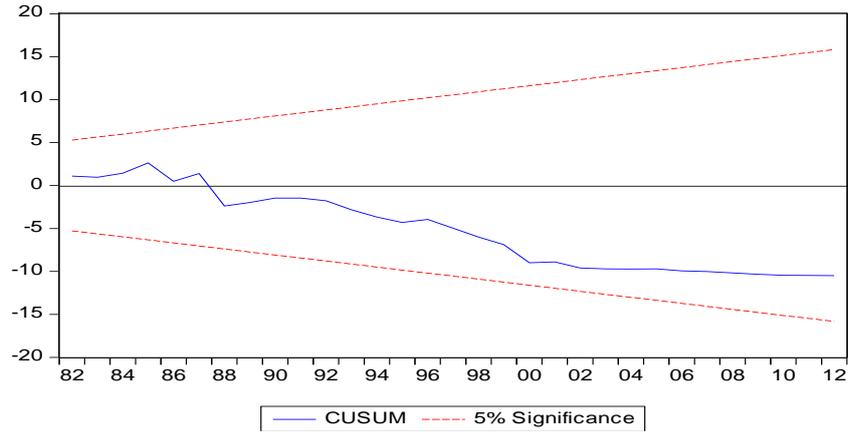
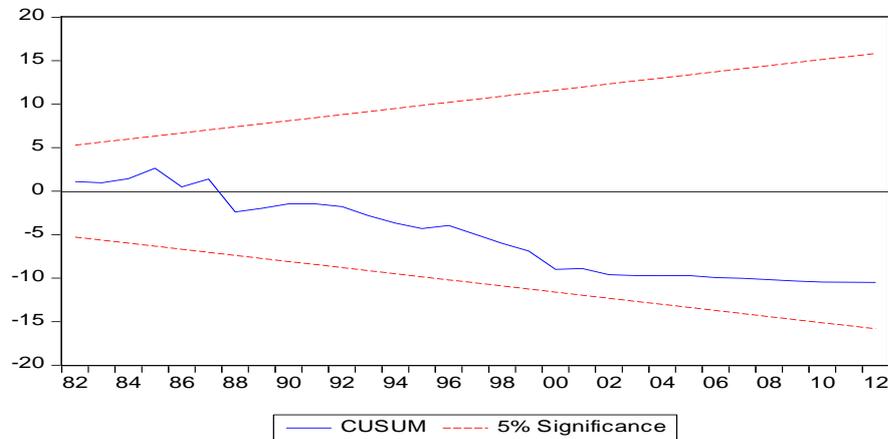


Figure 1: Graph of CUSUM Test

The two straight red lines represent the critical bounds at 5% significance

Graph of cumulative sum of Squares of Recursive Residuals (CUSUMS)



The straight line represents critical bounds at 5% significance levels (cusumsq) on the graph of test of stability. From the findings the regression specification and estimation were significant having passed all diagnostic tests.(CUSUMSQ) stability tests were shown. Since the estimated model is stable over the study period the line then lies between the critical points.

Another stage is to check the goodness of fit and the validity of the model. Diagnostic tests such as Lagrangian multiplier (LM) test for serial correlation and the plot of cumulative sum of recursive residues (CUSUM) and cumulative sum of squares of recursive residuals (Cumusq) stability test.

Serial correlation

The null hypothesis of no serial correlation was not rejected. This implies that there is evidence of not serial correlation since P-value of F-statistic of 0.095 is 0.90 which is greater than 0.05. The goodness of fit of the model is relatively high.

Discussion of Result

Discussions were made in line with the results obtained from the data analysis used for the study. At this point the overview of the descriptive statistics of the data used in the study indicated that all the variables used for the study were normally distributed. The preliminary investigation on the stationarity of the variables used for the study using Augmented Dickey Fuller test revealed gross domestic product, access to bank branches and bank credit availability were integrated at first difference whereas automated teller machine and point of sales were integrated at level, thereby showing a mixed order of integration of one and zero which gives the researcher a good reason for adopting ARDL – Bound test.

Furthermore, the ARDL result obtained indicates that there existed a long-run relationship between financial exclusion variables and economic growth of Nigeria. The result is in conformity with finance led theory of Bagehot (1873) and inclusive growth theory that the existence of financial sector combined with inclusive growth strategy generates growth enhancing effects.

Moreover, the results of the estimated long run coefficients of the variables used in the study disclosed that, the availability of bank branches and automated teller machines respectively were statistically significant and contributed positively to the growth of economic growth in Nigeria. Whereas the amount of transactions using point of sales shows no economic value to the contribution of economic growth in Nigeria under the periods of the study, while availability of bank credit has not been utilized and therefore, has no statistically significant effects on the economic growth in Nigeria; but not withstanding and holding all other factors constant, the result generally revealed that economic growth is attributed to 99% changes in financial inclusion variables in Nigeria.

The post-diagnostic result conducted on the above regression result revealed that the regression model employed for the study was free from autocorrelation, heteroskedasticity and that the residuals of the model were normally distributed.

Long-run Impact of Financial Inclusion on the Economic Growth in Nigeria

The long run result of bank branches presented in table 5 above revealed that availability of bank branches has a positive and significant impact on economic growth in Nigeria at the long run. The result disclosed that one percent increase in bank branches leads to 16% increase in economic growth in Nigeria. The result shows that there is a positive relationship existing between the number of available bank branches and economic growth in Nigeria at the period of the study. It implies

that an increase in bank branches will lead to an increase in economic growth in Nigeria, all other factors hold constant. On the other hand, it means that financial access to all has the potency of boosting Nigeria's economy. This result is validated by the findings of Kama and Adigun (2013) and Stephen, Flora and Louise (2009) that a long run relationship existed between financial inclusion variables and economic growth in Nigeria.

These findings were consistent with the findings of Ngugi, Amanja and Maana (2010) who established that the financial sector plays a crucial role in economic development. The depth of the financial sector has generally promoted economic growth in Nigeria.

The study also established that there is a strong positive relationship between economic growth and ATM which is one of the variables of financial access. The result shows that a one percent increase in ATM will lead to a 37% increase in economic growth in Nigeria, holding all other things constant. These findings were consistent with those of Mbutor and Uba (2013) who found that there was evidence of the effect of financial inclusion proxies on economic growth in Nigeria.

Furthermore, the study found that access to credit impacted insignificantly on economic growth whereas the amount of POS usage has no economic value on the economic growth in Nigeria under the periods of the study.

5. Conclusion and Recommendation

This study estimates the impact of financial inclusion variables on Nigeria's economic growth. The result indicated a mixed order of integration and existence of long-run relationship existing between financial inclusion variables and economic growth. Furthermore, the ARDL estimation was conducted to obtain the long and short run coefficients of the variables under consideration. On the basis of the result obtained, it is concluded that the components of financial inclusion have a significant contribution to GDP growth in Nigeria.

In the light of the results and findings in this paper and in reference to the objectives of the study and estimated result of the model, the following recommendations are; since the size of bank credit is significant in raising domestic output of Nigeria and its access has increased following an increase in financial inclusion then, the Central Bank of Nigeria should encourage the commercial banks to raise their credit creating abilities.

Since the coefficient for POS is positive and significantly related to output growth of Nigeria, it shows that an increase in the number of POS in the country will propel and facilitate banking transactions. This is evident given the size of bank customers that crowd our banking halls daily and the long queues at the ATM dispensing centers. Therefore, the commercial banks should increase the supply of POS agents by reducing the stringent conditions attached to POS subscription.

Lastly, it is evident that the spread of branch networks of banks in Nigeria impedes financial access of the bankable adults therefore it is exigent for banks to expand their operations especially the rural communities who have been financially excluded.

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