Modelling the Effect of Financial Inclusion on SMEs in Nigeria

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Abstract

The study employed the Error Correction Model to examine the effect of financial inclusion on small and medium enterprises in Nigeria from 1990 – 2019. A co-integration relationship exists between small and medium enterprises and financial inclusion (measured by deposit/savings, access to financial institutions, and the credit to the private sector). The result revealed that financial inclusion (deposit/savings and access to banks) has a positive and statistically significant effect on small and medium enterprises in the study period. However, access to credit has a significant and negative effect on small and medium enterprises. Based on these findings, policymakers are therefore advised to put in place strategies that will further enhance the level of financial inclusion through access to financial institutions, deposit/savings, and provide favorable lending facilities climate to ease access to credit in Nigeria to improve SME's

Keyword: ECM, Financial inclusion, SME's

Jel Classification Codes:C3,C32, G2, G21,D2, D21

1.0 Introduction

Just like the body needs certain nutrients to have a healthy life and a good living, small and medium scale enterprises need a financial system to overcome the financial challenges that lead to the premature demise of its operation. In recent times, it has been on the debating floor both in developing and developed nations as to whether access to affordable and effective financial products (financial inclusion)fosters economic growth and development or not. This is largely due to its potential role in accelerating growth and development through the mobilization of funds from the unbanked population, value creation of small businesses, and the generation of local savings, which tend to increase productive investments in local businesses, often with positive spill-over effects on improvements in human development indicators – health, nutrition, and education (Onaolapo, 2015;Babajide, Adegboye, & Omankhanlen, 2015). Increased access to financial services that are well suited for low-income earners tends to boost effective demand, which in turn induces investment, employment, income generation (Bakari et al., 2019).

Financial inclusion is a situation where individuals and businesses have access to useful, effective, and affordable financial products and services that meet their needs, store value, and call for any time, including access to a bank, payments, savings, credit, and insurance delivered responsibility and sustainability (Sibos, 2014).On the other hand, small and medium scale

enterprises are businesses whose asset or liability is small relative to their size, geography, and employees. According to Oyeyinka (2019), any business with a turnover of less than 100 million per annum and less than 300 employees are tagged as SME. Although, the sector ,despite its contribution related to their volumes, is encountering challenges related to poor financial support and credit environment, crises, huge infrastructure gap, and low human capital investment.

A correlation between the two (financial inclusion and SME's) has long been established by Schumpeter in his theory of innovation. According to him, technological innovation leads to the introduction of a new product or idea, new market, and new customer that can increase productivity. The theory emphasizes that a developed and functional financial sector is a condition guide to successful entrepreneurial engagement in technological innovation because translating innovative thinking in real output has cost implications that may not be apparent to the entrepreneurs but the efficient financial system can identify and fund entrepreneurs. This implies that a broadened access to finance promotes entrepreneurship. According to the international finance corporation (2010), SMEs are specifically in need of bank services because they lack the cash flow to make large investments; they cannot access capital markets as large firms can; and they often lack competent staff to accomplish financial functions. That is, access to the financial products to procure long-term debt can enable SMEs to invest in expansion without losing ownership or short life span. Besides, short-term and operating capital loans help SMEs grow incrementally. Lastly, bank deposit and transaction products can improve operational efficiency and enable SMEs to out source financial functions. Again, Lack of adequate mobilize savings and access to credit influences SME's employment growth because the sector is labour intensive in operation (Prasad, 2010).

Furthermore ,Ibor, Offiong, & Mendie (2017) opined that the only growing segment of the economy that assures easy access to financial services by enabling the underprivileged and weak sections of the society to industriously contribute to the development and safeguard themselves against socio-economic shocks is financial inclusion. Similarly, Bello & Kamoru (2017) viewed that an inclusive financial structure is a global economy policy as it has been perceived as a strategic device for poverty mitigation, promotion of Small and Medium Enterprises (SMEs) and sustaining economic growth sustainability while the financial exclusion of SMEs investors had led to a high level of SMEs failure and poverty in Nigeria.

Furthermore, for decades, nations have been striving in various ways to put an end to the sudden death of SMEs. Nonetheless SMEs' failure keeps reoccurring as a result of a deficiency in sustainable and consistent financial flow, among other factors, may well a functional SME's contribute significantly to economic growth and development through income generation which might result to increase in tax revenue to the government coffer. Hence, this will lead to job creation and improving living standards that may have implication to reduction in rising poverty, crimes, crises, and economic hardships. According to (International Finance Corporation, [IFC], 2010, cited in Oyeyinka, 2019),SMEs account for 56% and 65% of businesses in the US and Europe and contribute 40% of Asian country's GDP and 50% of Europe's GDP. SMEs account for 99.9% of all business in Turkey, contributing 53% of Gross Domestic Product, 46% of employment, and 20% of value-added (Terzi, 2015). In South Africa, SMEs account for 91% of businesses, 60% of employment, and contribute 52% of total GDP. In

Nigeria, SMEs account for 96% of the business, contribute 48% of national GDP, 7.27% of exported goods and services, and 84% of employment (Price Waterhouse Cooper, 2018).

Also, financial inclusion is appraised in terms of access to commercial bank branches, access to credit, savings, automated teller machine and among others. According to the Central Bank of Nigeria statistical bulletin (2018),the commercial banks' total credit to the private sector grew from 844,486.2million Naira in 2001 to 9,198,173.1billion Naira in 2010, 13,568,543.7 and 16,193,858.3 billion Naira in 2015 and 2017 respectively. Similarly, the number of commercial bank branches in Nigeria as of 2010increased from 60,133,610 to 433,587,623 in 2015, but declined to 175,891,028 in 2016, and raised to 39,692,229 in 2017 respectively. Likewise, the automated teller machine (ATM)volumeis 5809 in 2010 and fell to 5570 and 5714 in 2016 and 2017 respectively. Correspondingly, commercial banks loan to small scale enterprises percentage of total credit stands at 52,428.4 million Naira in 2001 which increased to 82,368.4 and 90,176.5million Naira in 2002 and 2003 respectively. However, the loan continued to diminish from 54,981.2 in 2004 to 12,949.5 and 10,747.9 million Naira in 2015 and 2017 respectively (Central Bank of Nigeria, 2018). From the forgoing analysis, one can theorize that, financial inclusion measured above has, over the years, mixed reactions or trends but while loans to small scale have been on the decline from 2004 to 2017. This suggests that commercial banks' credit to small and medium scale enterprises over the years is challenging. Thus, to enable the sector to achieve its objectives, there is need for proper financial inclusion.

Besides, this correlation can further be strengthened using the percentage of financial inclusion and commercial bank loans or credit to SMEs in Nigeria. In 2010, 53.7% of Nigerians were financially inclusive and 12,550.3 million Naira loan was availed for SME.In 2012 and 2014financial inclusion rose from 60.3% to 60.5%,and credit from commercial banks to SMEs increased from13,863.5 to 16,069.3 million Naira respectively. However, the increase was short-lived as financial inclusion fell from 60.5% in 2014 to 58.4% and 40% respectively, Likewise, the credit to SMEs plunged from 16,069.3 million Naira in 2014 to 10,747.9 and 10,747.9 million Naira in 2016 and 2017 respectively (CBN, 2017; 2018; Demirguc-Kunt et al., 2018).

Undoubtedly, to salvage SMEs from the financial dilemma in Nigeria, the government put in place strategies and programs while including the Nigerian Industrial Development Bank, Small Scale Industries Credit Scheme, microfinance banks, the Nigerian Bank for Commerce and Industry, and the Bank of Industry. The Central Bank of Nigeria interceded by establishing assorted initiatives such as the Refinancing and Rediscounting Facility,200 billion Naira Restructuring/Refinancing Scheme, 200 billion Naira Commercial Agricultural Credit Scheme, and the Nigerian Incentive-Based Risk Sharing System for Agricultural Lending. Other institutions like the World Bank and Nigerian Bankers' Committee have come up with SMEs support schemes such as the US$41 million World Bank SME I Loan Scheme, World Bank US$270 million SME II Loan Scheme, and the Small and Medium Enterprises Equity Investment Scheme by the Bankers' Committee(Hadiza & Philip, 2017).

However, despite these initiatives, programs, and the significant contribution of SMEs to the economy of Nigeria, challenges still prevail that deter the growth and development of the sector

and most prominent among them is a financial exclusion- the inability to effectively access affordable financial services. This has made some entrepreneurs run into fraudulent loans. Recently, the Central Bank of Nigeria warned entrepreneurs to do away from the kind of loans some default financial operators offer to them. According to (Terzi, 2015), 58 – 68% of SMEs lack adequate formal financing, 200 million lack access to loans and credit in developing economies. Therefore, financial inclusion has become a fundamental theme of argument across the world among researchers, policymakers, individuals, politicians, and policy-oriented agencies. This is because it can serve as an essential apparatus for wealth creation, poverty reduction, employment generation, and improving welfare and the general standard of living. Moreover, studies have also shown that financial inclusion has an appreciating effect on small and medium scale enterprises (Salman, Ayo-Oyebiyi, & Emenike, 2015; Terzi, 2015; Ibor et al, 2017; Riwayati, 2017; Bello et al, 2017; Hadiza & Philip, 2017). In an attempt to find a robust empirical response to the identified gaps, this study employed advanced mechanisms (ECM bound test) to examine the effect of financial inclusion on small and medium enterprises in Nigeria. Also, macro-data was used and preliminary test and the diagnostic test were carried out, in which, previous studies such as those of Terzi (2015);Riwayati (2017);Ibor et al. (2017); and Dandibi et al. (2019) had ignored to conduct due to micro-study. Thus, macro study was employed because the study covered the entirety of Nigeria. Data was available for all the estimated variables, and macro study gives aggregate result rather than disaggregate analysis which can only be generalized or aggregated after findings.

Base on the above, this paper attempts to empirically examine and identify the effect of financial inclusion on SMEs in Nigeria in order to find answers to the following two principal questions: Does the increase in commercial bank branches influence SMEs in Nigeria? What is the effect of access to credit and deposit/savingson SMEs in Nigeria?

The study is paramount to policymakers, entrepreneurs, and government since SMEs are the nerve of every economy that unhooks growth because of its employment generation, export, economic growth, and industrialization. Hence, the findings could be used to influence policy on businesses and commercial banks in Nigeria that will be paramount to survive SMEs in Nigeria at large.

2.0 Review of Relevant Literature

2.1 Theoretical framework

Since it has been earlier established that one of the pertinent factors affecting SMEs in Nigeria is finance, it means that the problems of financial inclusion ought to be solved. Moreover, everyprofit-maximizing firm performance depends on available funds and a stable environment to operate. Therefore, the theoretical framework of this study is the Finance-Growth Theory. The finance-led growth theory was conceived by Bagehot (1873), which stressed that financial mediators establish a productive atmosphere for economic growth and sustainability through the supply and demand leading effect .The theory assumed that effective financial systems simply react and affect the development of SMEs through value creation of small businesses and the mobilization of local savings, which tend to increase productive investments in local businesses. This is so because more savings means more wealth for financial institutions to create credit; and as more entrepreneurs get access to a financial product such as access to financial institutions, access to credit and effective trusted payment

system, financial adviser, and insurance, cost and risks involving transactions are reduced and exchange will be well handled. The paradigm further stated that lack of access to financial products is a responsible factor for raising income inequality which slows down economic wellbeing and growth. That is, access to a safe, easy and affordable source of financial services is acknowledged as a prerequisite for promoting SME's growth(Babajide, Adegboye & Omankhanlen, 2015).

2.2 Empirical Review

However, academic tussles do prevail in the position of financial systems in SMEs. Empirically, Khan (2011) adopted content analysis and found that financial intermediaries have an insignificant effect on the growth and development of SMEs, which may result in erosion of credit standards by bank repetitive risk, and insufficient regulation of microfinance institutions. However, Terzi's (2015)results show that financial inclusion contributed positively to the success of SMEs using survey data. Simiyu and Oloko(2015) employed content analysis and obtained that Mobile Money Transfer (MMT) has an increasing effect on the number of micro-businesses and enhances performance. Salman et al.(2015) examined the effects of financial inclusion on SME growth and economic development in Nigeria and revealed that financial inclusion (measured by mobile banking, banking services, and banking penetration) has a significant and positive effect on the growth and development of SMEs. Similarly, Entebang (2016) discovered that financial inclusion with dimensions (mobile banking, banking services, and banking penetration) has a significant and positive effect on the growth and development of SMEs

Furthermore, Ibor et al. (2017) employed cross-sectional survey data and observedthat financial inclusion positively and significantly impacts the operations and growth of MSMEs in Nigeria. Likewise, Riwayati (2017) shared similar technique of analysis and discovered that the financial inclusion of business players can mediate the determinants of the success of SMEs in Indonesia. Bello and Kamoru (2017) examined the effect of financial on SME's contribution to economic growth using the OLS method and found that financial inclusion can boost SMEs through access to a loan in Nigeria. Hadiza and Philip (2017) used survey data to investigate the effect of financial inclusion on SMEs and found that financial inclusion significantly influences small-scale entrepreneurs. Lastly, Dandibi et al. (2019) studied the effect of financial inclusion and literacy on the performance of agro-based SMEs in Yobe using survey data. The findings revealed that financial inclusion has a significant and appreciating effect on the performance of agro-based SMEs in Yobe State.

4. Methodology

The study employed annual time series data from 1990 to 2019. The rationale for this time frame was data were only available for SMEs from 1992 while financial inclusion dimensional variables used data were available from 1990. This is because SMEs were established in 1992 in Nigeria and the data only available from this period. The first two observations were interpolated as zero. Data a resourced from the central bank of Nigeria's (2019) statistical bulletin. Data sourced are commercial banks credit to SMEs, savings/deposits, access to credit measured (credit to the private sector), and access to banks measured (number of commercial banks branches).

Drawing from literature (Bello & Kamoru,2017 and Babajide et al, 2015), it is argued that the level of access to banks, access to deposit/savings, and access to credit induces changes in SMEs. In other words, to empirically examine the effect of financial inclusion on SMEs, an econometric model is specified as:

$$CBSMEt = \alpha_0 + \beta_1 DSSt + \beta_2 A2Bankt + \beta_3 A2Credit_t + \mu_t \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where; $CBsme$ denotes small and medium enterprises, a measure for commercial banks creditto SMEs;$2Bank$is Access to Bank; DSS denotes Access to deposit/savings, and$A2Credit$ is the access to credit. Identities$\alpha_0, \beta_1 - \beta_4and\mu_t$ denote the intercept, slope coefficient, and the error term.

To estimate the relationship between the variables, the ECM bound testing technique for co integration was employed. The choice of this technique is guided by the numerous advantages which it has over other co-integration methods (such as residual-based technique and Maximum likelihood test), which give the short-run effect of the variables. The ECM model to be estimated is specified as follows:

$$\Delta CBSMEt = \alpha_0 + \beta_1 \sum_{i=0}^{n} \Delta DSS_{t-i} + \beta_2 \sum_{i=0}^{n} \Delta A2Bank_{t-i} + \beta_3 \sum_{i=0}^{n} \Delta A2Credit_{t-i} + \varepsilon_{t-1} + v_t \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where; Δ is differentiation identityand $\varepsilon_{t-1}$is the one period lag of the error term (v_t). The procedure of the ECM technique for co integration requires the series to be stationary of order one (i.e. I(1)). For this purpose, Augmented Dickey-Fuller (ADF) was used to check the stationarity properties of the variables that are employed in this study.

5. Result and Discussion

In this section, all the results were discussed, from pre-test to the last diagnostic tests. We first checked the stationarity properties of the data used in this study, the Augmented Dickey-Fuller (ADF) and Philips Peron were employed to conduct the unit root test for the series. These tests compare the null hypothesis "individual series has a unit root" against the alternative hypothesis that the "individual series does not have a unit root". Presented in table 1 below:

Table 1: Result of Unit Root Tests

Variables	**ADF Level**	**PP Level**	**ADF First dif**	**PP First dif**
CBSME	1.893	1.533	4.629***	3.881***
DSS	0.243	0.351	4.822***	4.823***
ASC	1.697	2.184	3.608**	3.595**
A2BANK	1.952	2.456	4.404***	4.358***

Note: ***, **, and * denote level of significance at 1%, 5% and 10%

Table 2 shows the result of ADF and PP unit root test. All the variables were stationary after the first different in both techniques. This result invalidates the use of Error Correction model (ECM) analysis. The method presented only the short run effect of the independent variables on dependent variable. Consequently, Johnson co-integration test was conducted to test whether a long-run relationship exists between the variables. The null hypothesis "*no level relationship"* was tested against the alternative estimated as follows:

Table 2: Johnson co-integration test result

Hypothesis	Eigenvalue	Trace Stat.	Critical value	Prob.
None	0.945	87.499	47.856	0.000
At most 1	0.657	35.309	29.797	0.011
At most 2	0.551	16.056	15.495	0.041
At most 3	0.087	1.641	3.841	0.200

Note, trace test indicates 3 co-integrating equations at the 5% level

From the Johnson co-integration results in Table 2 above, it shows that the trace statistics revealed 3 co-integration equation at the 5% level; hence, a rejection of Null hypothesis. Thus, it was concluded that at 5% level of significance a long-run relationship exists between financial inclusion (deposit/savings, access to credit, and the number of commercial banks) and commercial banks' credit to small and medium enterprises. Therefore, we estimated the Error correction model.

Having ascertained the existence of co integration, the ECM model was estimated based on the optimal lag-length (1,3,3,3) suggested by Akaike Information Criterion (AIC), presented in Table 3.

Table 3: Results of ECM Model

Dependent Variable: $\Delta CBSME$

Regressor	Coefficient	Std. Error	t-Statistic	Prob.
C	16.5210	2.9687	5.5651	0.0001
ΔDSS	0.1082	0.0307	3.5210	0.0021
$\Delta DSS(-1)$	1.0218	0.1349	7.5733	0.0000
ΔASC	-1.0306	0.2129	-4.8414	0.0004
$\Delta ASC(-1)$	−1.0748	0.2019	−5.3222	0.0002
$\Delta A2Bank$	0.1198	0.0206	5.8172	0.0001
$\Delta A2Bank(-1)$	0.1405	0.0278	5.0447	0.0003
ε_{t-1}	−0.3277	0.0551	−5.9430	0.0001
R^2	0.7605	F-statistic		4.7622(0.0035)
Durbin-Watson stat	1.6873			

Source: Author's computation from output.

Table 3 shows the ECM result. The current and lag values of DSS and A2credit have a significant and positive effect on SMEs in Nigeria within the period of study. Specifically, a unit increased in the current and previous values of DSS would lead to an average of 0.1 and 1.02 units increase in SMEs in Nigeria. Accordingly, a unit improved in the current and past values of A2credit would inflate SME's by 0.12 and 0.14 units respectively. These findings are in line with the findings of (Ibor et al, 2017; Riwayati, 2017; Bello & Kamoru, 2017; Hadiza & Philip, 2017; Eniola & Entebang, 2016; Salman et al, 2015; Terzi, 2015; Simiyu & Oloko, 2015). However, current and lag values of ASC have a significant and negative effect on SMEs. This implies that a unit increased in ASC would lead to a 1.03 and 1.07 units decrease in the SMEs. This finding corroborates with the discoveries of the previous study (Khan, 2011).

The coefficient of the error correction term lagged by one period (ε_{t-1}) is negative, less than 1, and statistically significant, and therefore indicating that approximately 33% of the deviations or disequilibrium in SMEs will be corrected within a year. More so, R^2(= 76%) shows a good fit of the model, implying that 76% variation in SME's is explained by DSS, ASC and A2creditwhile the remaining 24% is explained by other factors outside this model.

After conducting the short-run effect of financial inclusion on SMEs, there is a need to perform a diagnostic test to evaluate the method of analysis, assumptions, specification issue and stability. This is to determine whether to proceed with the analysis or modify the variables in case the classical assumptions of Ordinary least square are violated or the model is mis-specified or unstable. The result is presented in Table 4.

Table 4: Diagnostic Tests

LM Test Statistics	Results
Autocorrelation: $\chi^2(2)$	4.554917 (0.1025)
Heteroscedasticity: $\chi^2(2)$	9.333894 (0.7473)
Normality: Jaque-Bera	1.965794 (0.374225)
Functional Form: Ramsey RESET F-stat (1,22)	2.354506 (0.1532)
CUSUM and CUSUMQ	Stable

Source: Author's computation from output.

The diagnostic results reported in Table 4 show that the model employed passes the diagnostic tests including serial correlation (Durbin-Watson stat. and Breusch-Godfrey Serial correlation LM test), normality (Jaque-Bera), functional form (Ramsey RESET) and heteroscedasticity.

Also, the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMQ) lie within the 5% significant lines/critical boundaries, therefore confirms the stability of the model. Find in the appendix.

6. Conclusion, Policy Implications and Recommendations

This study employs the ECM bounds testing approach to investigate the effect of financial inclusion on SMEs in Nigeria during the 1990-2019 period. The result of the cointegration analysis indicates that financial inclusion (deposit/savings, access to the bank, and credit) and small and medium enterprises have a long-run relationship. Also, the ECM result shows that

while current and previous values of deposit/savings and access to commercial banks have a significant and positive effect on the growth of small and medium enterprises in Nigeria, access to credit in the current and past period, however, has a significant negative effect on the growth of small and medium enterprises in Nigeria.

In this manner, we can respond to our questions stated in the earlier section. *Does the increase in commercial bank branches influence SMEs in Nigeria?* The answer is yes. Based on the study's finding, increase in commercial bank branches measured as access to banks can influence SMEs in Nigeria. *What is the effect of access to credit and deposit/savings on SMEs in Nigeria?* Access to credit has a negative and significant effect on SMEs, and the declining effect could be associated with commercial banks' rigid credit facility conditions coupled with the inability of the entrepreneurs to meet up interest rate and others while deposit/savings has a positive and significant effect on SMEs in Nigeria.

Hence, the study's findings validate some exiting empirical studies that employed micro-data analysis and are in conformity with the theoretical framework built on finance-led growth theory which emphasizes that an effective and efficient financial system will mediate to have a plight effect on the growth and development of SMEs through the mobilization of funds and value creations. However, the study was constrained with data problems which limit its scope to 29 years. This is because SMEs was established in 1992 in Nigeria and data available from this period were used in this study.

The findings of this study, therefore, indicate that access to bank and access to deposit/savings money banks are the major elements of financial inclusion that induce an appreciating effect on the growth and development of the small and medium enterprises in Nigeria in the short-run, while access to credit is the main short-run elements of financial inclusion that induces a declining effect on the growth and development of the small and medium enterprises in Nigeria. Based on these findings, this study recommends policies and actions that will seek to increase the number of commercial banks, deposit/savings facilities across the country and provide favourable lending conditions to ease access to credit, specifically in rural areas, in other to improve the level of financial inclusiveness of entrepreneurs to enhance the growth and development of small and medium enterprises. This is because deposit/savings and access to banks werediscovered to have a positive and significant effect on the growth of SMEs in the study period, while access to credit was found to have a negative and significant effect on SME's.

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Appendix