

## ANALYSIS OF COMMERCIAL BANK CREDIT AND SME GROWTH NEXUS IN NIGERIA

Duru, ErasmusEjike (Ph.D),<sup>1</sup>Orji Anthony( Ph.D),<sup>2</sup>

Osuji John Ibeabuchi ( Ph.D),<sup>3</sup> Charity Egondur Duru -Uremadu (Ph.D),<sup>4</sup> IsiwuPaul <sup>5</sup>,  
Onyeonu Chidi Christian ( Ph.D)<sup>6</sup>

Email: duruerasmuse@yahoo.com erasmus.duru@futo.edu.ng

<sup>1,5 &6</sup> Department of Financial Management Technology, School of Management Technology, Federal University of Technology Owerri, Imo State. Nigeria

<sup>2</sup>Department of Economics, University of Nigeria Nsukka, Enugu State

<sup>3</sup>Department of Banking and Finance, College of Management Sciences MichealOkpara University of Agriculture Umudike, AbiaState

<sup>4</sup>Department of Educational Management Micheal Okpara University of Agriculture Umudike, Abia State

Corresponding E-mail: anthony.orji@unn.edu.ng

### Abstract

This study examined bank credit to small and medium scale enterprises (SMEs) and its effect on small-scale enterprises in Nigeria within the period of 1986 to 2020. The Study made use of secondary data obtained from Central Bank of Nigeria Statistical bulletin for the tests and analysis. After testing for the properties of the variables, it was found that the variables were integrated at order (1) and there existed some level of causality but no long run relationship exist among the variables of the model This prompted the study to apply vector autoregressive model to estimate the parameters of the model. Results found that bank credit to SMEs had significantly increased output of SMEs in Nigeria. Hence, bank lending had a positive and significant effect on small and medium scale enterprises in Nigeria However, vector autoregressive response of SMEs to shocks in bank loans to SMEs also indicated positive sign in the first three months after which it then experienced a steady decline in the rest of the period up to the final period. Introducing one standard deviation shocks to discomfort index, SMEs output reacted negatively as seen in the figure; SMEs output slid to negative and

started rising again towards the 10<sup>th</sup> period. Introducing “own shock” to commercial bank loans to SMEs (CBL/SME), the response was sharply negative as it slides to negative point in the second period and remained negative to the final period. This reveals policy inconsistency by banks towards SMEs. Based on the findings of the research it was recommended that measures should be taken to create a pool of long-term funds to enable long term lending to SMEs by commercial banks in Nigeria. In addition, measures should be taken to reduce interest rates for SMEs, ease loan documentation process and requirements, create additional inducement to boost lending to SMEs that ensures consistency in lending and as at when needed and augment monitoring of funds disbursed under the CBN intervention schemes.

Keywords: Commercial Bank, Loans, Small and Medium Scale Enterprises, Growth

JEL Codes: E51, L32, P42

### 1. INTRODUCTION

Small and medium scale enterprise has been seen over the years as the driver of any economy both in the developed and developing economy. Evidence has shown that they help in no small measure in employment generation, poverty alleviation, and increase in productivity and revenue generation (Orji et al, 2023 and Nwosu et al, 2020). The activities of small and medium scale enterprises (SMEs) help to reduce discomfort index (unemployment and inflation) in any economy. In recognition of these critical role SMEs is playing in the economy, governments all over the world have been making concerted effort to ensure that they sustain growth and development of small and medium scale enterprises of which Nigeria is not an exception inclusive. The Nigerian government has put a lot of policy measures in place to foster the growth of SMEs as it is the foundation for industrialization. One of the ways of enhancing this growth is SMEs access to finance. Iloh and Nnanyelugo (2018), posited that a relationship existed between commercial bank credit and output of small scale business by observing that commercial banks' credit to SMEs had significant effect on Nigerian economic growth by positively affecting gross domestic product while lending rate showed a long run negative effect on SMEs output. They concluded that SMEs financing has been a great catalyst

and a driving force for economic growth in Nigeria while Afolabi (2013), noted that a major gap in Nigeria's industrial development process in the past years has been the absence of a strong and virile SMEs sector attributable to the reluctance of banks especially commercial banks to lend to the sector.

Commercial banks through their intermediation role are meant to provide financial succor to SMEs. Past researchers have identified lack of finance as a threat to the performance of SMEs .For SMEs to perform their role in the economy, they need adequate funds in terms of short and long-term loans (Nwosu and Orji, 2016, Ogbuabor et al, 2014, Ohachosim, Onwuchekwa and Ifeanyi, 2013 and Orji, 2012). Adequate financing of SMEs is paramount to their survival, as it has been documented in literature that financial constraint is one of the main reasons SMEs has failed in Nigeria. Osoba (1987), argued that financing strength is the main determinant of small and medium enterprises growth in developing countries. A lot of policies had been made by past and present government in power to assist in alleviating financial constraints facing the small scale enterprise in Nigeria.

The role of a bank is to mobilize savings from the surplus unit and transfer it to the

deficit unit. Commercial banks specialize in acceptance of deposits and issuing of short term loans and advances to the public including small and medium scale industries. The credit of commercial bank to small and medium scale is supposed to show on the active participation of SMEs in the economy as in other countries of the world but in Nigeria the reverse is the case. Several research findings have shown that poor infrastructures and lack of funding are two of the critical factors affecting the development of industry in developing countries of which Nigeria is one. Lack of funding for SMEs has created obstacles in allowing them contribute to economic growth and development. Onugu (2005) ranked access to finance as the second problem faced by SMEs in Nigeria.

However, instead of commercial banks helping to ameliorate these problems, it seems they help to worsen them through some of their policies such as high interest rate, demand of sophisticated collaterals, reluctant to lend to SMEs because of their perceived risky nature of SMEs. Inebi (2017) examined the role and impact of financial institution lending to SMEs in the Nigerian and find out there was a significant link between the loans released by financial institution and the active growth and development of small scale business. Nwosa and Oseni (2016)

examined the impact of bank loans to SME's in the manufacturing sector in Nigeria for the period spanning 1992 to 2015. Their study used data on bank loans to SMEs, interest rate on loans and total number of SMEs operating in the manufacturing sector. Their study deduced that bank loans to the SME sector had significant impact on SMEs operating in the manufacturing sector both in the long and short run but from evidence from their work showed an unfavorable interest rate regime for manufacturing SMEs.

Mordi, et al (2014), studied credit delivery to small and medium enterprises in the post bank consolidation era in Nigeria. Sanusi, (2013) carried out an analysis of the annual trend in the share of commercial banks credit to small-scale industries and observe a decline from about 7.5 per cent in 2003 to less than 1% in 2006 and a further decline in 2012 to 0.14 per cent. This decline showed that commercial banks have less preference to lend to SMEs due to inability of many small scale businesses to provide adequate collaterals. From the foregoing, it has shown that commercial banks credit to SMEs have not been adequate to contribute to growth of the domestic economy. The present study aims to ascertain if bank loans to SMEs in Nigeria have indeed been contributing to the growth of the Nigerian economy. The rest of the paper is structured

as follows: section two reviews the literature, while section three provides the methodology. The results are presented and discussed in section four and section five concludes the paper.

## 2. REVIEW OF RELATED LITERATURE

There are different empirical studies that have been conducted to analyse the relationship between SMEs and different macroeconomic variables. However, most of these studies have produced conflicting results, hence the need for this current investigation. For example, Inebi (2017), examined the role and impact of financial institutions lending to SMEs in the Nigerian economic environment. The study used an econometric functional relational model constructed using the ordinary least squares method to test whether there was a significant link between loans released by financial institutions and the active growth and development of small scale businesses or the supposed SMEs in Nigeria from a period of 1992 - 2012. Data for this study included real GDP (as a measure of growth), commercial bank lending to SMEs, development financial institution and foreign direct investment. Findings from his Granger causality test revealed a significant relationship between financial institutions lending and growth of small and medium scale enterprises in Nigeria,

while the foreign investment (portfolio) exert an inverse relationship.

Ayuba and Zubairu (2015), examined the impact of banking sector credit on the growth of small and medium enterprises in Nigeria. The study used annual data between 1985 and 2010 and analyzed same with the aid of descriptive statistics, correlation matrix and error correction model. Data used in the study were growth rate of SMEs in Nigeria (proxied by rate of growth of SMEs registered per year), banking sector credit, trade debt, contribution to SME sector, exchange rate and inflation rate. Their findings revealed that banking sector credits had significant impact on the growth of small and medium enterprises in Nigeria as it had a positive and significant impact on some major macro-economic variables of growth such as inflation, exchange rate, trade debts etc. Also, they found that trade debts, and banking sector deposits were more associated with SME output, and had the capacity to influence output, while exchange rate showed a fair relationship with inflation rate, exchange rate, and SME sector loans had less influence on output. Their study however, concluded that banking sector credit was important but insignificant in understanding growth variations in Nigeria's Small and Medium Sector and further recommended that financial lending institutions (the monetary

authorities) should relax the stringent conditions associated with credit facility in the funding of SMEs in the country so as to encourage easy accessibility of loans which would help in improving SME's financing and performance.

Nwosa and Oseni (2016), examined the impact of bank loans to SMEs in the manufacturing sector of Nigeria for the period spanning 1992 to 2015. The study used data on bank loans to SMEs, interest rate on loans and total number of SMEs operating in the manufacturing sector. Employing error correction modeling technique, their study deduced that bank loans to the SME sector had significant impact on SMEs operating in the manufacturing sector both in the long and short run. They also found sufficient evidence of an unfavorable interest rate regime for manufacturing SMEs and thus recommended a downward review of interest rates charged on SMEs who were engaged in manufacturing such as agricultural products so as to boost their capacity to contribute meaningfully to the economy.

Iloh and Nnanyelugo (2018), studied the relationship between commercial bank credits indicators and availability of credit facility to small and medium scale enterprises in Nigeria. Data on real gross domestic product, SMEs output proxied by wholesale and retail trade

output as a component of gross domestic product, commercial banks' credits to SMEs, exchange rate and lending rate were collated from the Central Bank of Nigeria (CBN) Statistical Bulletin for a period 31 years (1980 to 2010). Their estimation followed the generalized least squares estimation technique. The result showed that commercial banks' credits to SMEs had significant effect on Nigerian economic growth by positively affecting gross domestic product while lending rate showed a long run negative effect on SMEs output. The study concluded that SMEs financing is a great catalyst and a driving force for economic growth in Nigeria and therefore recommended that soft and short term loans, at favorable interest and lending rates should be made available to SMEs for boosting business in Nigeria.

Aguwamba and Ekienabor (2017), investigated bank lending and its impact on small-scale enterprises in Nigeria. They used data on small scale enterprises growth represented by total SMEs in Nigeria as at 2016, bank lending and total deposit money banks operating in Nigeria i.e. bank density. In order to analyze the data, the econometric regression model of ordinary least square was applied in evaluating the impact of bank lending on small-scale enterprises. Their model revealed a positive impact of bank lending on small-scale enterprises. They concluded that the

contribution of deposit money banks in terms of credit granted (bank loans) for the growth of SMEs in Nigeria was estimated to be positive. Some of their recommendations were that measures be taken to create a pool of long-term funds to enable long tenor lending. In addition, they opined that measures should be taken to influence the regime of interest rate downward, ease loan documentation process and requirements, create additional inducement to boost lending to SMEs and augment monitoring of funds disbursed under the CBN intervention schemes.

Clement, Ayodeji and Rafiat (2018), examined commercial bank lending to small and medium scale enterprises and Nigerian economy over a period of twenty years, spanning from 1998 to 2017. Specifically, their study analyzed effect of average commercial bank lending rate, commercial bank loans and inflation rate to SMEs growth on Nigerian economy, and also the causal relationship between explanatory variables and the Nigerian economy measured in terms of GDP. Their findings revealed that commercial bank loans to SMEs had a negative and insignificant impact on a gross domestic product while Average commercial bank lending rate to SMEs had a negative and insignificant impact on a gross domestic product.

Ubesie, Onuaguluchi, and Mbah (2017), ascertained the effect of deposit money banks' credit on small and medium scale enterprises growth in Nigeria. Data used were deposit money banks' credit to SMEs, SMEs growth index, DMB credit to private sector and bank interest rate.. They concluded that banks credit favored the private sector big players more than SMEs who represented the small segment of the private sector and hence they recommended an increased channeling of loans to SMEs directly to enhance productivity.

John-Akamelu and Muogbo (2018), examined the role of commercial banks in financing small and medium size businesses in Nigeria using structured questionnaires. The study found that small and medium size businesses encountered problem in the procurement of loans from commercial banks; also commercial banks have contributed immensely to the development of SMEs through their loans and advances. Furthermore, Kawugana and Faruna (2018), assessed the impact of First Bank of Nigeria Plc on Financing SMSEs in Bauchi and Gombe States, Nigeria. The study adopted the survey research design and their major instruments of data collection were questionnaires and personal interviews. The main variables of the instruments were nature of financing, impact of the financing, accessibility to the

financing and quantum of the financing. The data was analyzed by means of regression analysis. The major findings of the research was that banks contributed a lot to the continued survival of SMSEs in the States. Based on their finding, they concluded that FBN Plc has impact positively to the growth and survival of SMSEs in the States studied and recommended that the Central Bank of Nigeria and the federal government should do more by encouraging these banks to do more on the financing of SMEs.

Ezeudu (2018), investigated the extent to which deposit money banks (DMB) loans crowded out small and medium enterprises in Nigeria. The study adopted regression model on data from January 2007 to March 2013. Variables tested were DMB total credit allocation and loans to SME. The Augmented Dickey Fuller unit root test was used to examine the level of variables and their first difference. The results from the regression model provided evidence to support that DMB loans to SMEs were not significant in relation to total DMB loans in Nigeria.

### **3.3 Model Specification**

In order to investigate effect of commercial banks loans to small and medium scale enterprises in Nigeria for the period under study (1981-2020), the model establishes the relationship between commercial bank loans to small and medium scale industries (SMEs) and other explanatory variables.

Conclusively, different empirical studies that have been conducted in analyse the relationship between SMEs and different macroeconomic variables. However, most of these studies have produced conflicting results, hence the need for this current investigation.

## **3. METHODOLOGY**

### **3.1 Research Design**

Research design simply is a plan or strategy for conducting a research. Such a plan defines the types of variables to be used and their relationship to one another, method of data analysis, model specification, etc

### **3.2 Sources of Data**

The study is on analysis of the effect of commercial banks loans to small and medium scale enterprises in Nigeria 1986-2020. The data for the study was collected from secondary sources through the Central Bank of Nigeria statistical bulletin various issues, World Bank data, Knoema.com.

Putting the model in simultaneous equation form, it is transformed into Vector Autoregressive form thus:

$$\text{OPSME} = \beta_{10} + \beta_{11}\text{CBLSME} + \beta_{12}\text{FRD} + \beta_{13}\text{INT} + \beta_{14}\text{EXC} + \beta_{15}\text{DCI} + u_1 \dots\dots\dots 1$$

$$\text{DCI} = \beta_{20} + \beta_{21}\text{PSME} + \beta_{22}\text{CBLSME} + \beta_{23}\text{FRD} + \beta_{24}\text{INT} + \beta_{25}\text{EXC} + U_2 \dots\dots\dots 2$$

$$\text{CBLSME} = \beta_{30} + \beta_{31}\text{OPSME} + \beta_{32}\text{IFRD} + \beta_{33}\text{INT} + \beta_{34}\text{EXC} + \beta_{35}\text{DCI} + U_3 \dots\dots\dots 3$$

$$\text{IFRD} = \beta_{40} + \beta_{41}\text{OPSME} + \beta_{42}\text{CBLSME} + \beta_{43}\text{INT} + \beta_{44}\text{EXC} + \beta_{45}\text{DCI} + U_3 \dots\dots\dots 4$$

$$\text{INT} = \beta_{50} + \beta_{51}\text{OPSME} + \beta_{52}\text{CBLSME} + \beta_{53}\text{IFRD} + \beta_{54}\text{EXC} + \beta_{55}\text{DCI} + U_4 \dots\dots\dots 5$$

$$\text{EXC} = \beta_{60} + \beta_{61}\text{OPSME} + \beta_{62}\text{CBLSME} + \beta_{63}\text{IFRD} + \beta_{64}\text{INT} + \beta_{65}\text{DCI} + U_6 \dots\dots\dots 6$$

Where:

$\text{OPSME}$  = Output of SMEs in year  $t$ ,  $\text{DCI}$  = Discomfort index in year  $t$ ,

$\text{INT}$  = Interest rate, , in year  $t$ ;  $\text{EXC}$  = Exchange rate in year  $t$ ;  $\text{INF}$  = inflation in year  $t$ ;

$\text{IFRD}$  = Infrastructural development,  $\text{CBLSME}$  = Commercial bank loans to SMEs

$U_t$  = error term

$t$  = time  $t$

$\beta_1 - \beta_5$  = Parameters to be estimated or slope

$\beta_0$  = Intercept.

Furthermore, the study carries out unit root of all the variables, granger causality test, forecast variance decomposition and impulse response function to know the dynamic interrelationship between the variables in the VAR system. The optimal lag length is selected using the Akaike information criteria. Also Johansen cointegration is applied to test if there is a long run relationship existing among these variables of interest in the model.

## 4. RESULTS AND DISCUSSION

### 4.1 Pre-Estimation Test Results

Table 4.1 below shows the result of the stationarity test which was carried out using the Augmented Dickey Fuller (ADF) unit root test. The test is summarized thus:



#### 4.1.1 Unit Root Test

**Table 4.1: Summary of Unit Root Test Result**

Variable	ADF Test statistics		Decision	Order of Integration
	At Level	1 <sup>st</sup> Difference		
OPSME	-0.810104	-4.829437	Stationary at 1 <sup>st</sup> difference	I(1)
CBLSME	-2.691440	-6.632770	Stationary at 1 <sup>st</sup> difference	I(1)
INFRD	-1.709659	-7.087058	Stationary at 1 <sup>st</sup> difference	I(1)
INT	-2.210465	-3.811392	Stationary at 1 <sup>st</sup> difference	I(1)
EXC	1.294990	-4.893382	Stationary at 1 <sup>st</sup> difference	I(1)
DCI	-1.150672	-3.412296	Stationary at 1 <sup>st</sup> difference	I(1)
<i>Critical value at 5% level = -2.9511</i>				

Source: Computed from E-Views 9.0

A cursory look at the unit root test above shows that the variables are stationary at first difference, which implies that variables are integrated of order one, I(1). Based on this result, we test for the existence of a long-run relationship amongst the variables, i.e. cointegration.

#### 4.1.2 Johansen Cointegration Test

**Table 4.2: Johansen Cointegration Test Results**

Hypothesized No of CE (S)	Trace Statistic				Max-Eigen Statistic		
	Eigen-Value	Trace statistics	5% Critical Value	Prob**	Max-Eigen statistics	5% Critical value	Prob**
None	0.927411	18.67918	95.75366	0.2356	33.93415	40.07757	0.1686
At most 1	0.803851	10.28577	69.81889	0.5634	22.12416	33.87687	0.2246
At most 2	0.573674	10.73351	47.85613	0.2262	21.28165	27.58434	0.0546
At most 3	0.413104	23.45185	29.79707	0.2246	17.05302	21.13162	0.1695
At most 4	0.179489	6.398832	15.49471	0.6484	6.330478	14.26460	0.5712
At most 5	0.002134	0.068354	3.841466	0.7937	0.068354	3.841466	0.7937

Note: \*\*Trace test indicates no cointegrating eqn(s) at the 0.05 level

\*\*Max-eigen value test indicates no cointegrating eqn(s) at the 0.05 level

The result of the Johansen cointegration rank tests presented in table 4.2 above shows that the Trace and Max-eigen statistics indicate no Cointegrating equations at the 5% level. The existence of no cointegrating equation(s) indicates that there is no long-run relationship between bank loans and growth of SMEs in Nigeria. In other words, bank loans and advances to SMEs have no long run effect on the growth of small and medium scale enterprises in Nigeria. Hence, we examine only the short run effect by using the VAR model.

### 4.1.3 Granger Causality/Block Exogeneity Test for the VAR Model

The direction of causality between the variables is determined using the VAR Granger causality/Block exogeneity test. This test is necessary to justify the use of the VAR model and determine the inter-relatedness of the variables. It is summarized below:

**Table 4.3: Granger Causality and Block Exogeneity Test Result**

	OPSME	CBLSME	IFRD	INT	EXC	DCI
OPSME	-	<b>4.2747</b> (0.0180)	<b>8.5833</b> (0.0431)	<b>6.0315</b> (0.0144)	<b>10.0372</b> (0.0416)	<b>12.3780</b> (0.0021)
CBLSME	<b>20.2060</b> (0.0000)	-	<b>10.8981</b> (0.0043)	0.2208 (0.8955)	3.1266 (0.2094)	0.1142 (0.9445)
IFRD	<b>11.2731</b> (0.0291)	3.3319 (0.1890)	-	3.2579 (0.1961)	1.7293 (0.4212)	1.3089 (0.5197)
INT	<b>10.7254</b> (0.0026)	0.3767 (0.8283)	3.9434 (0.1392)	-	5.7529 (0.0563)	<b>14.2762</b> (0.0008)
EXC	<b>9.0912</b> (0.0432)	1.9631 (0.3747)	0.4442 (0.8008)	1.6157 (0.4458)	-	0.8348 (0.6588)
DCI	<b>8.2570</b> (0.0334)	2.3480 (0.3091)	<b>9.5004</b> (0.0086)	<b>21.8570</b> (0.0000)	4.8360 (0.0891)	-

Source: Extracted from Eviews 9.0 Output

*Null hypothesis: No causality exists amongst the variables*

*Alternate hypothesis: The variables granger cause each other*

The Table 4.3 above shows the causality amongst the variables. The block Exogeneity Wald test is employed to assess whether inclusion of the lagged value of the variables is important in explaining the dynamics of other variables in the multivariate frame work. This is in addition to the explanatory power of the lag of these variables (Gupta and Porter, 2009). The probability values show the decision criterion for each set of causal relationship existing between the variables.

A cursory examination of the Chi-square statistics and the p-values, as summarized above, shows that the variables

are significant for each pair of variables in the first column and the first row. The predominance of significant p-values points to the fact that we are rejecting the null hypothesis and accepting the alternate hypothesis. Thus, we conclude that there exists two-way causal relationship amongst the variables.

In other words, we conclude that there is bi-directional causal relationship between SME output (OPSME), commercial banks loans to SME (CBLSME), Infrastructural development (IFRD), interest rate (INT), exchange rate (EXC) an discomfort index (DCI). Therefore, this finding justifies the

fitting of the VAR model. The Vector Autoregression (VAR) model is then estimated below.

#### 4.1.4 Lag Selection Criteria

The optimal lag for the VAR model is selected using the Akaike information criteria (AIC). The AIC is deemed to be more superior to other lag selection criteria given that it favors large observations. The criteria Table is shown below:

**Table 4.4: VAR Lag Order Selection Criteria**

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-506.1237	NA	1215481.	<b>31.03780</b>	31.30989	31.12935
1	-344.5627	254.5811	626.4201	<b>23.42804</b>	25.33269*	24.06890
2	-287.8451	68.74856*	224.8313*	<b>22.17243*</b>	25.70963	23.36259*

\* indicates lag order selected by the criterion

The AIC criterion selects only 2 lag periods for the VAR model having automatically computed the values at various lag periods. Thus, we adopt 2 lags for our VAR model.

#### 4.1.5 Estimation of the VAR Model

The VAR model is estimated below as follows:

**Table 4.5: Summary of the VAR Model Estimates**

	OPSME	CBLSME	IFRD	INT	EXC	DCI
OPSME(-1)	1.349111 (0.19294) [ 6.99250]	1.207025 (1.71120) [ 0.70537]	-1.044116 (2.05684) [-0.50763]	-0.197335 (11.3655) [-0.01736]	-120.0060 (81.4266) [-1.47379]	22.41841 (34.3103) [ 0.65340]
OPSME(-2)	-0.300409 (0.21650) [-1.38759]	-3.387645 (1.92015) [-1.76426]	1.702249 (2.30800) [ 0.73754]	1.833723 (12.7534) [ 0.14378]	151.9254 (91.3697) [ 1.66276]	-15.86642 (38.4999) [-0.41212]
CBLSME(-1)	0.026846 (0.02812) [ 0.95455]	-0.090065 (0.24944) [-0.36107]	0.393458 (0.29983) [ 1.31229]	0.943568 (1.65675) [ 0.56953]	-0.531659 (11.8695) [-0.04479]	0.573625 (5.00140) [ 0.11469]
CBLSME(-2)	0.039078 (0.02535) [ 1.54173]	-0.336271 (0.22481) [-1.49583]	0.244732 (0.27021) [ 0.90570]	-0.540955 (1.49312) [-0.36230]	14.63547 (10.6973) [ 1.36815]	-6.802086 (4.50745) [-1.50908]
IFRD(-1)	-0.025540 (0.02131) [-1.19839]	0.133219 (0.18902) [ 0.70479]	0.479305 (0.22720) [ 2.10962]	2.102749 (1.25544) [ 1.67491]	0.960183 (8.99443) [ 0.10675]	11.48734 (3.78993) [ 3.03101]
IFRD(-2)	0.013043 (0.01985) [ 0.65718]	0.276741 (0.17603) [ 1.57214]	0.060942 (0.21158) [ 0.28803]	-2.297561 (1.16915) [-1.96515]	-4.275530 (8.37622) [-0.51044]	-9.392392 (3.52944) [-2.66115]
INT(-1)	-0.000495 (0.00282)	-0.004178 (0.02498)	-0.053697 (0.03003)	0.245609 (0.16595)	-1.389981 (1.18889)	0.034784 (0.50096)

	[-0.17585]	[-0.16724]	[-1.78802]	[ 1.48006]	[-1.16914]	[ 0.06944]
INT(-2)	0.000197 (0.00304) [ 0.06467]	0.012580 (0.02699) [ 0.46614]	0.021450 (0.03244) [ 0.66125]	0.211985 (0.17924) [ 1.18267]	0.976357 (1.28416) [ 0.76031]	2.449307 (0.54110) [ 4.52654]
EXC(-1)	5.12E-05 (0.00063) [ 0.08114]	7.63E-05 (0.00560) [ 0.01363]	0.004326 (0.00673) [ 0.64246]	0.050891 (0.03721) [ 1.36780]	0.879678 (0.26656) [ 3.30009]	0.039356 (0.11232) [ 0.35039]
EXC(-2)	-0.000111 (0.00073) [-0.15131]	0.005102 (0.00650) [ 0.78552]	-0.000435 (0.00781) [-0.05572]	-0.091005 (0.04314) [-2.10956]	0.030467 (0.30907) [ 0.09858]	-0.168271 (0.13023) [-1.29211]
DCI(-1)	0.000508 (0.00090) [ 0.56660]	-0.001235 (0.00795) [-0.15538]	0.010602 (0.00955) [ 1.10992]	0.056190 (0.05278) [ 1.06459]	0.331981 (0.37814) [ 0.87794]	0.278262 (0.15933) [ 1.74641]
DCI(-2)	-0.000946 (0.00083) [-1.14475]	0.002429 (0.00733) [ 0.33141]	-0.000357 (0.00881) [-0.04056]	-0.183892 (0.04867) [-3.77833]	-0.169488 (0.34869) [-0.48607]	-0.471130 (0.14693) [-3.20658]
C	-0.860951 (0.64172) [-1.34162]	27.00676 (5.69159) [ 4.74503]	-6.461122 (6.84124) [-0.94444]	2.342194 (37.8027) [ 0.06196]	-339.7490 (270.832) [-1.25446]	-14.14206 (114.119) [-0.12392]
R-squared	0.915864	0.723929	0.933573	0.729436	0.963289	0.759486
Adj. R-squared	0.893382	0.558286	0.893716	0.567098	0.941263	0.615177
F-statistic	40.12703	4.370423	23.42337	4.493305	43.73317	5.262930

Source: Eviews 9 Output

## 4.2 Discussion of Results

The stationarity test revealed that the data was stationary after the first difference of the variables. No long run relationship was found between bank credit to SMEs and growth of SMEs in Nigeria. Also, the vector granger causality test revealed that the variables had bi-directional causal relationship thereby justifying the fitting of a vector (VAR) model to the data. The estimated VAR model in the first period lag revealed that bank loans to SMEs increased the output of SMEs (OPSME) by 1.207% but not significantly since the t-statistic (0.705) was less than 1.960. Furthermore,

infrastructure (IFRD), interest rate (INT) and exchange rate (EXC) had negative and insignificant relationships with growth of SMEs while increases in the discomfort index increased SMEs output by 22.418% though not significantly. In the second period lag, discomfort index and bank loans turned negative while the rest of the variables were s

In the bank loans (CBL/SME) equation, increase in SMEs output increased bank loans to SMEs by 0.0268%. The same positive relationship was also found between infrastructure development (IFRD), interest rate (INT), discomfort index (DCI) and bank loans to SMEs.

In the same system of equations, banks loans to SMEs increased infrastructural development by 0.1332%, likewise interest rate and exchange rate. Infrastructural development a positive effect on Discomfort index in the one lag but changed to negative in second year.

In the discomfort index equation, only bank loans to SMEs (CBL/SME) decreased discomfort index. Other variables - output of SMEs, infrastructure, interest and exchange rates were positively related to discomfort index.

One very interesting observation from the Vector Autoregression model estimates above is that there was predominantly insignificant relationship amongst the variables. Except for interest

### **4.3 Post-Estimation Test Results**

The post estimation test comprised the impulse response function, model fitness (R-squared) and the autocorrelation tests. These tests are necessary to further show the robustness of the vector relationship that exists between bank loans to SMEs and growth of the SMEs and other related variables.

rate which significantly decreased discomfort index, interest rate which significantly decreased exchange rate and discomfort index which significantly increased infrastructural development, all in the first period lags, the rest of the relationships were insignificant both at the first and second period lags. The implication of this finding is that there exist some levels of inter-dependency among the variables. This implies that for the problem of SMEs to be solved using commercial bank loan and credit. The factors affecting credit delivery will be known others any effort that hands it as a single equation or problem will fail. This is the problem with past policies.

### 4.3.1 Impulse Response Function (IRF)

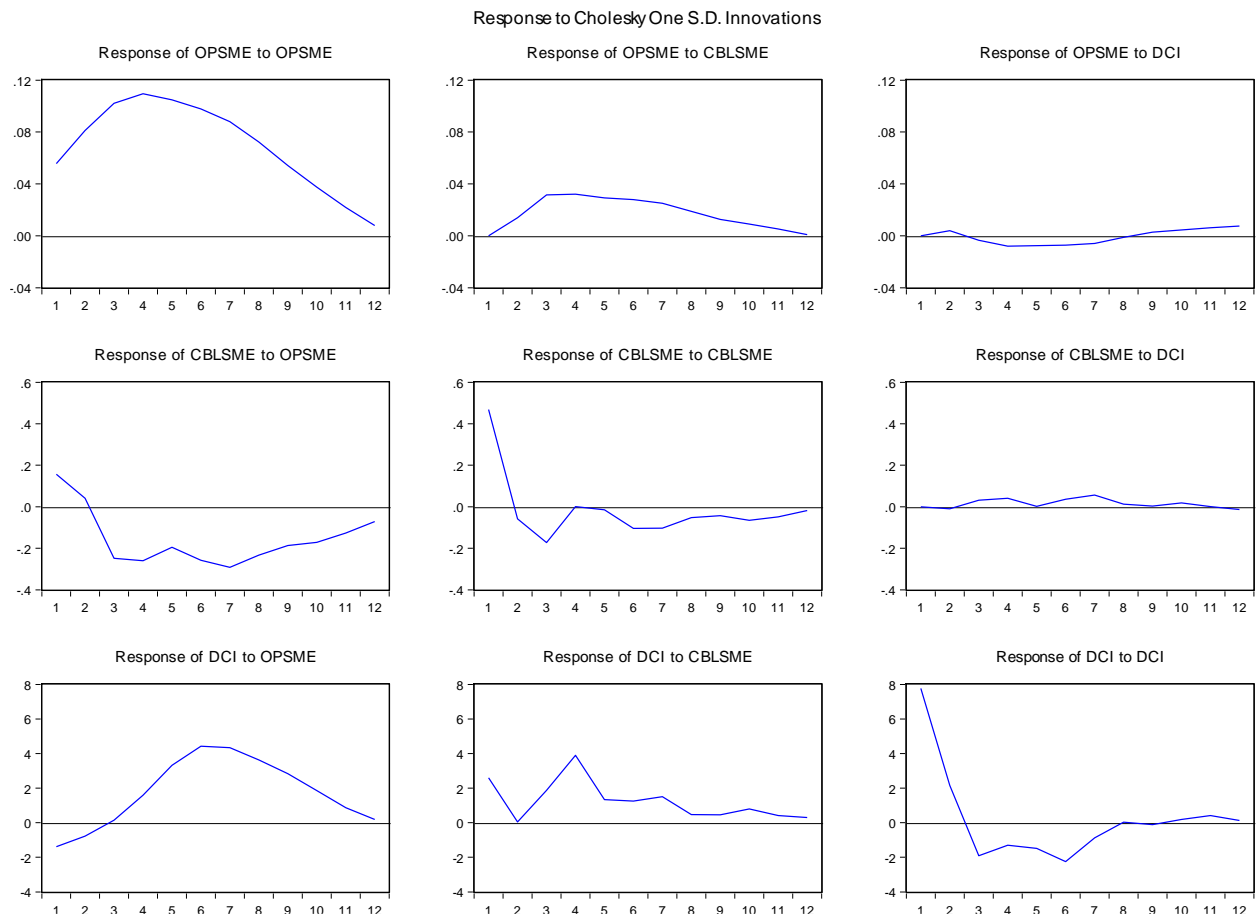


Figure 4.1: Impulse Response Function

The response function shown in the figure above revealed very interesting facts about the relationship between bank loans to SMEs and growth of SMEs in Nigeria for the period under review. The response of SMEs to shocks in bank loans to SMEs could be said to be somewhat positive in the first three months after which it then experienced a steady decline in the rest of the period up to the final period. Introducing one standard deviation shocks to discomfort index, SMEs output reacted negatively as seen in the figure; SMEs output slid to negative and started rising again towards the 10<sup>th</sup> period. Introducing “own shock” to commercial bank loans to SMEs (CBLsME), the response was sharply negative as it slid to negative point in the second period and remained negative to the final period. The response of discomfort index (DCI) to one standard deviation innovation to SMEs output (OPSME) is very encouraging as it rose from negative point to positive and slowly reached the zero point at the final period. Similar movement was also found in the response of DCI to CBLsME.

### 4.3.2 Table for Variance Decomposition of Output of small and medium scale enterprise and commercial bank loan to small and medium scale enterprise

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Variance  
Decomposition of  
OPSME:

Period	S.E.	OPSME	CBLSME	IFRD	INT	EXC	DCI
1	0.055645	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.100561	95.88699	1.927053	1.889006	0.130210	0.013166	0.153573
3	0.147636	92.39493	5.436098	1.905307	0.114634	0.025615	0.123413
4	0.187905	90.99297	6.262791	2.114820	0.333237	0.041668	0.254511
5	0.217716	90.91778	6.470629	1.938282	0.332680	0.031371	0.309256
6	0.240585	90.98688	6.647347	1.712882	0.273107	0.038251	0.341537
7	0.257631	91.03058	6.747833	1.536183	0.257431	0.078863	0.349112
8	0.268612	90.97466	6.695510	1.413583	0.308691	0.284400	0.323161
9	0.275332	90.45710	6.585344	1.399767	0.435745	0.804749	0.317299
10	0.279611	89.50541	6.491275	1.448262	0.523131	1.698831	0.333087

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Variance  
Decomposition of  
CBL SME:

Period	S.E.	OPSME	CBL SME	IFRD	INT	EXC	DCI
1	0.493531	10.08589	89.91411	0.000000	0.000000	0.000000	0.000000
2	0.504271	10.33261	87.47807	2.137905	0.015210	7.84E-05	0.036129
3	0.609009	23.68330	67.98499	5.707686	0.044768	2.292999	0.286254
4	0.682387	33.44067	54.15053	6.685703	0.966036	4.166372	0.590689
5	0.713064	38.13442	49.63241	6.368529	0.902771	4.419668	0.542198
6	0.773135	43.52387	44.04939	5.656732	0.890385	5.200336	0.679283
7	0.846571	48.23410	38.23657	5.283162	0.809964	6.432024	1.004180
8	0.883656	51.21973	35.43993	4.863745	0.759488	6.774654	0.942449
9	0.909268	52.62410	33.69861	4.711257	1.148189	6.926142	0.891695
10	0.931304	53.54470	32.60694	4.522391	1.213092	7.221914	0.890962

### Source: Eview Result

The result of variance decomposition shows that if there is a shock or innovation introduced in the output of small and medium scale enterprise which is called own shock it causes 92.39% variation on the activities of OPSME. However if there is a shock to commercial bank loan to small and medium scale enterprise, it will contribute to 5.4% fluctuation to OPSME. A shock to infrastructure will contribute to 1.91 fluctuations to OPSME. A shock to interest rate, exchange rate, and discomfort index will contribute to 0.124, 0.025 and 0.123% fluctuation in OPSME respectively in the short run (third quarter), while in a long run (last quarter), a shock introduced to OPSME will cause 89.5% variations in OPSME. A shock to CBL SME will cause 6.491% variations to OPSME. A shock to infrastructure will cause 1.448% to OPSME while a shock to interest rate, exchange rate, and discomfort index will cause 0.52%, 1.7% and 0.37% respectively to OPSME.

The implications of the results shows that there is no much difference between the short run and long run shock or innovation on the activities of small and medium scale enterprise in Nigeria. However, shock from other variable have impact on the activities of small and medium scale enterprise more especially interest rate, exchange rate and infrastructure., but the most important shock comes from own shock.

### 4.3.3 Test for Model Fitness

The adjusted R-squared showed that for the first equation, about 89% of the variations in SMEs output were being explained by the changes in bank loans to SMEs, infrastructural development, interest rate, exchange rate and discomfort index. For the second equation, about 56% were explained while the rest had adjusted R-squared values of 89%, 57%, 94% and 62% respectively. These are indications that the VAR model had strong fitness.



#### 4.3.4 Test for Autocorrelation

The VAR residual serial correlation LM test revealed that there was no autocorrelation in the model. This was evident in the p-value of the LM-stat (0.1103) which led to the acceptance of the null hypothesis of no serial correlation at both lags one and two. This has been summarized in the Table 4.6 below:

**Table 4.3.3: Serial Correlation LM Test Result**

*Null hypothesis: No serial correlation at lag order h*

Lags	LM-Stat	Prob
1	58.49089	0.1103
2	48.50754	0.0796

Source: Eviews 9 output

## 5. SUMMARY OF FINDINGS, CONCLUSION AND POLICY RECOMMENDATIONS

### 5.1 SUMMARY OF FINDINGS,

This research empirically investigated bank credit to SMEs and SMEs growth nexus in Nigeria, using the Vector Autoregression (VAR) model. The VAR model was justified based on the result of the stationarity, cointegration and the Block exogeneity tests. The results indicated that bank loans to SMEs increased the output of SMEs (OPSME) by 1.207% but not significantly while infrastructure (IFRD), interest rate (INT) and exchange rate (EXC) had negative and insignificant relationships with growth of SMEs. Increases in the discomfort index increased SMEs output by 22.418% though not significantly. This implied that increase in bank loans has

actually enhanced growth of SMEs but this has not been significant over the years. The positive effect of discomfort index on growth of SMEs is a clear indication that as discomfort increases, more people were inclined towards establishing businesses to ease the discomfort. This justifies the positive relationship.

Furthermore, study found that increases in SMEs growth increased bank loans to SMEs by 0.0268%. This implied that as SMEs grows, banks were also more inclined to increasing their lending to these businesses through the reduction of interest rates on these loans to attract more borrowers. The same positive relationship was also found between infrastructure development (IFRD), interest rate (INT), discomfort index (DCI) and bank loans to SMEs.

Similarly, banks loans to SMEs increased infrastructural development by 0.1332%, likewise interest rate and exchange rate. Discomfort index had the highest effect on infrastructural development increasing it by 11.487%. What this implied was that the more banks grant loans to SMEs, they were invariably contributing to the growth of infrastructure that enhances more SME businesses. Also, discomfort index increased infrastructure due to the encouraging it has on the growth of SMEs in Nigeria.

The findings showed that the vector relationship among the variables was predominantly insignificant and this corroborated the finding of Ezeudu (2018) and Toby (2015). There is still insignificant effect of bank loans to SMEs on the growth of SMEs in Nigeria. However, the hypotheses tested the dynamic relationship among the variables and found that all the bank loans variables significantly affected growth of SMEs in Nigeria. This was tested using the joint F-statistic. The implication of this is that bank loans alone cannot enhance growth of SMEs, but it with the interaction of other variables like infrastructural development, interest rate, exchange rate and low discomfort index, that bank loans will have the desired effect on the growth of SMEs in Nigeria.

The impulse response function revealed that the response of SMEs growth to shocks in bank loans to SMEs was positive in the first three months after which it experienced a steady decline in the rest of the period up to the final period. This showed that initially, SMEs grew but what was needed is sustenance of the growth through constant funding and improvements in basic infrastructure. The response of discomfort index (DCI) to one standard deviation innovation to SMEs output (OPSME) was very encouraging as it rose from negative point to positive and slowly reached the zero point at the final period.

## 5.2 CONCLUSION

The study examines bank credit to SMEs and its effect on small-scale enterprises in Nigeria for the period, 1986 to 2020. It was observed from the analysis that the bank credit to SMEs had significantly increased output of SMEs in Nigeria. Hence, bank lending had an effect on small-scale enterprises in Nigeria. Based on the findings of the study, it can be said that the contribution of commercial banks in terms of credit granted (bank loans) for the growth of SMEs in Nigeria was positive and insignificant in influencing the economy. The insignificance of the individual variables was a pointer to the fact

that bank loans needed to be met by reduced interest rate, increased infrastructural development and competitive exchange rate in order to have the desired impact on SMEs. But this study found these variables to be individually insignificant hence the low impact of bank loans on SMEs growth. However, taken jointly, the variables were found to have significant interaction and significant effect on the growth of SMEs in Nigeria.

### 5.3 RECOMMENDATIONS

Arising from the finding of this research summarized above the study makes the following recommendations: First, policy actions should be taken to create a pool of long-term funds to enable long term lending to SMEs by banks. Second, measures should be taken to influence the regime of interest rate downward, ease loan documentation process and requirements, create additional inducement to boost lending to SMEs and augment monitoring of funds disbursed under the CBN intervention schemes, etc. Third, SMEs that

require funding should be encouraged as bank loans were found to be insignificant in influencing SMEs growth. Thus more SME loans will go a long way to make bank loans to SMEs significant in the long run. Fourth, Government should strive to ease discomfort in the economy through the reduction of unemployment rate and effective management of monetary policies to reduce inflation. Notwithstanding the relative increases in discomfort index, SMEs performance was positive. As SME performance improves, discomfort index will reduce. Fifth, Government through policy interventions, should make effort at reducing instability in the economy that negatively effects SME activities especially exchange rate and interest rate. Finally, more infrastructural facilities should be provided by the government to aid the SME activities because SMEs cannot provide such facilities by themselves. Without the provision of these infrastructures all efforts at boosting small and medium scale enterprise will be in futility.

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