

## **Financial Deepening and Manufacturing Sector Performance in Nigeria (1981-2017)**

**AKINMULEGUN, Sunday Ojo & AKINDE, John Abiodun**

*Department of Banking and Finance*

*AdekunleAjasin University, Akungba-Akoko, Ondo State, Nigeria.*

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**Abstract:** *The depth of financial sector in developing countries had been a source of concern in recent times as evident by the inability of large proportion of citizens and businesses in these countries to access financial services as expected. Thus, this study investigated the effect of financial deepening on manufacturing sector performance in Nigeria from 1981 to 2017.*

*The study employed time series secondary data sourced from the Central Bank of Nigeria (CBN) statistical bulletin and World Bank Development Index. Manufacturing sector performance, (dependent variable), was proxied by ratio of manufacturing value added to gross domestic product, while the independent variables include ratio of credit to private sector to GDP, ratio of market capitalization to GDP, ratio of value of transaction to GDP and interest rate. The study adopted error correction mechanism (ECM) to estimate the effect of the independent variables on the dependent variable.*

*The results revealed that ratio of credit to private sector to GDP with coefficient of 0.189582 and ratio of market capitalization to GDP with coefficient of 0.006649 had positive effect on manufacturing sector performance while ratio of value of transaction to GDP with coefficient of -0.000532 and interest rate with coefficient of -0.043801 had negative effect on manufacturing sector performance.*

*The study concluded that financial deepening had significant effect on manufacturing sector performance in Nigeria. Consequently, it was recommended that deposit money banks and other financial institutions should make more investible credit available to private sector, especially manufacturing firms, at affordable interest rate.*

**Keywords:** *Financial deepening, manufacturing, credit, private sector, interest rate.*

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### **I. Introduction**

Financial deepening is the ability of financial institutions to expand the provision of financial services to all sectors of the economy. It involves the provision of wider range financial assets targeted towards the development of all facets of the society. Financial deepening further involves the capability of financial intermediaries to engage in effective mobilization of savings for productive investments. Usually, financial deepening encompasses the aggregate supply of financial assets in the economy ultimately for improved performance of different sectors of the economy (World Bank, 1982). Given this fact, Nigeria and other developing countries have made several efforts to revitalize their financial sectors so as to improve the supply of financial services to sectors of the economy in order to enhance the growth process. Thus, the importance of finance in achieving targeted economic growth and development through adequate investment needed for such purpose cannot be overemphasized.

Consequently, the financial sector of an economy has been identified as the medium through which required finance are raised for investment and productive purposes. The financial sector is the largest in the world in terms of earnings (Sutton & Jenkins, 2007). It is the most regulated sector due to its economic relevance and acts as a backbone for other sectors in the economy. The financial sector is responsible for mobilizing financial resources from the surplus unit of the economy to the deficit unit. It ensures that savings are allocated optimally for investment. The financial sector is importantly responsible for facilitating business transactions and economic development (Aderibigbe, 2004).

In agreement with the view of Shaw (1973), Popeil (1990) opined that financial deepening is the end product of the adoption of appropriate real finance policy and the broadening of the markets. To this end, the government of Nigeria had made several attempts, through the introduction of various financial policies, to expand the breadth and depth of the Nigerian financial system to ensure wider provision of essential financial services and availability of financial assets. With the aim to ensure deepening of the financial system, the Nigeria government, through the Central Bank of Nigeria (CBN), introduced the rural banking programme in 1977, the People's Bank in 1989 as well the community banks in the 1990s.

To ensure adequate provision of financial services to the poor and low-income earners, the government in 2005 launched the National Microfinance Policy. The policy was implemented to cater for the need of third sector institutions such as market associations, cooperative societies, non-governmental organisations and self-help groups. It further formulated the Nigerian Financial System Strategy 2020 (FSS 2020) as a holistic and strategic road map and framework for developing the Nigerian financial sector into a growth catalyst that will enable Nigeria become one of the twenty largest economies by 2020 (Kama & Adigun, 2013). In 2011, the non-interest banking was introduced to improve the banking habit of a large number of the country's population that had steer clear of conventional banking due to their lack of interest in interest-based services. Other initiatives introduced and implemented by financial regulatory authorities include E-banking services such as deployment of Automated Teller Machine (ATM), Point of Sale (POS) services, and implementation of cashless policy.

Despite all these measures to improve the depth of the Nigerian financial system in terms of provision of extensive and satisfactory financial services to different sectors of the economy, financial deepening in Nigeria over the recent time is still not encouraging as evident from wide fluctuations of the ratio of broad money to gross domestic product ( $M_2/GDP$ ). For instance, financial deepening as indicated by ratio of broad money to GDP increased from 28.1 percent in 2007 to about 37.7 percent in 2008. But there was a drastic decline in financial deepening between 2009 and 2011 falling from 42.7 percent to about 21 percent. This was still the case in 2012 and 2013 with  $M_2/GDP$  standing at 21.33 at end of 2012 and 19.34 at the end of 2013. However, financial deepening was relatively stable between 2014 and 2015 as  $M_2/GDP$  stood at about 21 percent (CBN, 2015).

Therefore, this has attracted the attention of researchers to raise question about the influence on financial deepening on the growth process in Nigeria. Thus, researchers have conducted several studies on the influence of financial deepening on economic growth [Ndebbio (2004), Nzotta&Okereke (2009), Nwosa, Agbeluyi& Saibu (2011), Ohwofasa&Aiyedogbon (2013), Oniore (2014), Osisanwo (2017)]. Nonetheless, few studies were documented on the effect of financial deepening on manufacturing sector performance in Nigeria. Among these few studies, some scholars reported positive link between financial deepening and manufacturing sector performance [Owolabi, Olanrewaju, & Okwu (2013), Dada (2015), Aiyetan&Aremo (2015)] while some found negative relationship between the two phenomena [Ogunsakin (2014), Atoyebi, Okafor&Falana (2014), Olanrewaju, Aremo&Aiyegbusi (2015), Campbell & Asaley (2016)]. It is therefore evident that there is yet to be consensus on this matter in the literature. In addition, previous researchers tend to focus more on bank based measure of financial deepening without giving much credence to market-based measures. Not only these, the importance of manufacturing sector in the developmental processes of a nation cannot be overemphasized. Drawing from the words of Akinmulegun and Oluwole (2014), "manufacturing sector in Nigeria could literally be assumed to have a vast potential for a spot for economic development due to abundant labour force coupled with the agrarian nature of the economy". It is against these highlighted issues that this study examined the effect of financial deepening on manufacturing sector performance in Nigeria. Thus, it was hypothesized that financial deepening has no significant effect in manufacturing sector performance in Nigeria.

## **II. Literature Review**

### **2.1 Conceptual Clarification**

Financial deepening explains the expansion in the provision of financial services by financial intermediaries with a wider choice of services targeted toward the development of all areas of the society (Ohwofasa&Aiyedogbon, 2013). Financial deepening aimed at improving economic conditions through increased competitive efficiency within financial markets which, in turn, indirectly benefits the non-financial sectors of the economy (Nwanna&Chinwudu, 2016). Nzotta and Okereke (2009) asserted that financial deepening is the ability of financial institutions in an economy to effectively mobilize savings for investment purposes.

Financial intermediaries are the vehicles for financial deepening. Financial intermediaries mediate between the surplus economic unit (providers of financial resources) and deficit economic unit (users of financial capital) (Thakor, 2007). They mobilize funds from households, firms, or other financial intermediaries with surplus and idle financial resources, and lend it to other households, firms, or other financial intermediaries with profitable investment opportunities but inadequate funds.

Financial deepening enables financial intermediaries perform their functions of mobilizing, pooling and channeling domestic savings into productive use more effectively thereby contributing to economic growth of a country. In addition to mobilizing savings and improving capital allocation, financial deepening reduces the extent and significance of information asymmetries (Stiglitz and Greenwald, 2003) and allows for risk transformation and monitoring (Diamond, 1984).

In the literature, Libanio(2006) using Kaldor's first law, which posits a positive causal relationship between the growth of manufacturing output and the growth of GDP, defined manufacturing sector as the engine of growth of an economy. Manufacturing sector, according to Adebayo (2010), refers to those industries which

are involved in the manufacturing and processing of items and indulge in either creation of new commodities in value addition.

Dickson (2010) explained that manufacturing sector is a sub-sector which accounts for substantial share of the industrial sector in developed countries. According to him, the final products of manufacturing firms can either serve as finished commodities for sale to final consumers to as intermediate goods for further production process.

## **2.2 Theoretical Review**

The theories underlying this study were reviewed as follow

### **Supply-leading Theory**

Supply-leading theory is one of the theories that explain the linkage between financial sector and real sector development. The supply-leading hypothesis posits that financial sector development precedes development in the real sector. Odhiambo (2008) noted that supply-leading response suggests that financial sector development drives the real sector of the economy. According to supply-leading theory, financial sector deepening precedes growth in the manufacturing sector. In other words, financial sector deepening leads the manufacturing sector and stimulates growth in the manufacturing sector through an effective financial intermediation process. That is, by mobilizing limited financial resources from small savers and channeling same to large investors for investment purpose taking into cognizance the relative rate of return (Patrick, 1966). Thus, the supply-leading hypothesis postulates that with the development of the financial sector, savings will increase and later be transformed into investment through various financial institutions, which in turn improves the efficient allocation of funds and greatly enhance growth through multiplier effect.

### **Demand-following Theory**

The demand-following hypothesis expresses a contrary view from supply-leading theory as regard the linkage between financial sector development and manufacturing sector growth. The demand-following theory argues that real sector (manufacturing being a sub-sector) is the driver of financial sector development. The demand-following theory explains that demand for financial services by the real sector serve as motivation for the establishment of financial institutions in the economy. Arestis and Demitriades (1997), supported this notion that development in the financial sector is influenced by the level of growth that takes place in the real sector. The implication is that development in the financial sector is caused by real sector development. Real sector development induces demand for financial services, which are satisfied by the establishment of new financial institutions (Odhiambo, 2009). The demand-following theory maintains that with economic growth, all sectors of the economy will undoubtedly increase their demand for financial services, which will lead to further expansion of the financial system.

### **Endogenous Growth Theory**

The endogenous growth model which is also referred to as the new growth theory was developed in response to the criticism on the neo-classical growth theory. The endogenous growth model is a new theory which explains the long-run growth rate of an economy on the basis of endogenous factors as against the exogenous factors of the neoclassical growth theory. The endogenous growth has been linked with economists like Arrow (1962) and Romer (1986). The theory emphasizes technical progress resulting from the rate of investment, the size of capital stock and the stock of human capital. In other words, the endogenous theory explains that long run growth is influenced by rate of investment, size of capital and stock of human capital in an economy.

The relevance of this theory to this study can be analyzed from the several ways which financial deepening affects real growth of output. The rate of investment in an economy is influenced by the accessibility of investors to investible capital which happens to be a function of the depth of the financial system. The quality and quantity of capital stock available in an economy is dependent on the intermediation process carried out by financial institutions. Therefore, the availability and accessibility of adequate investible capital influence savings which later translates into accumulation of capital stock. This way manufacturing sector can tap into this and increase their output.

## **2.3 Empirical Review**

Aiyetan and Aremo (2015) studied the effect of financial sector reform development on manufacturing output growth in Nigeria within the periods 1986 to 2012. The study focused on the effects of financial sector development on disaggregated manufacturing output growth in Nigeria. Employing Vector Autoregression (VAR) approach, the study examine whether or not financial sector variables stimulate growth of output in the manufacturing sector of Nigerian economy with reference to some key macroeconomic variables. The finding

indicated that liberal financial system and a deepened financial sector would enhance output growth of manufacturing sector in Nigeria.

Maxwell and Oluwatosin (2012) examined the influence of financial deepening on manufacturing output in Nigeria from 1970 to 2010. The study made use of vector autoregression technique to analyze banking annual data obtained from Central Bank of Nigeria (CBN) Statistical bulletin and annual reports. The results revealed that the coefficients of financial deepening indicators included in the study do not exert significant effect on manufacturing output in Nigeria.

In their study, Elijah and Uchechi (2012) adopted autoregressive distributed lag (ARDL) cointegration method to analyze the link between financial development and industrial production growth in Nigeria from 1970 to 2009 using time series secondary data obtained mainly from CBN statistical bulletin. The study found a cointegrating relationship between financial sector development and industrial production in Nigeria. In addition, the study revealed that both long run and short run dynamic coefficients of financial sector development exhibited significant negative impact on industrial production. Based on these outcomes, the study noted that one of the policy implications is that the most important task for Nigerian government is to ensure that further healthy financial sector reforms that will enhance the efficiency of the domestic financial sector are introduced.

Adeusi and Aluko (2015), assessed the relevance of financial sector development on real sector productivity in Nigeria in the 21<sup>st</sup> century. The study adapted the financial sector development measures used in King and Levine (1993) as predictors of industrial sector production output. Employing the Ordinary Least Square (OLS) technique, the study revealed that there is a strong linear relationship between financial sector and real sector productivity. The result of the study indicated that financial sector development is a veritable means to enhance real sector productivity. In a related study, Aliyu and Yusuf (2013) explored the effect of financial development on real sector growth in Nigeria. It further study revealed that financial sector development has remarkable impact on real sector growth in Nigeria. However, the result of the study further show that credit allocated to the private sector exhibited a significant impact while liquid liabilities and the size of financial intermediaries exert significant positive influence on real sector growth.

Frances, Chukwuedo and Chukwunonso (2016) adopted the Gregor-Hansen Endogenous structural break and supply-leading hypothesis to examine the relationship between financial deepening and investment in Nigeria from 1970 to 2013. Using the Granger Causality test to establish the direction of causality between the two phenomena, the study found a unidirectional causality between financial deepening and investment in Nigeria, with the causality running from the former to the latter. The study further reported that financial deepening has significant impact on domestic investment in Nigeria.

Mounde (2017) examined the causal relationship between foreign direct investment and manufacturing output in Nigeria using industry production for the determinant of manufacturing output from 1981 to 2016. The study adopted ex-post facto research design with 176 listed manufacturing companies being the sample size. Using Johansen cointegration test, the study found a long run relationship between foreign direct investment and output of manufacturing sector in terms of industry production. The study further revealed that there is a unidirectional causality between foreign direct investment and industry production in Nigeria. The causality runs from foreign direct investment to industry production both in the long run and short run.

The study carried out by Okoye, Nwakoby and Okorie (2016) examined the effect of economic liberalization policy on the performance of industrial sector in Nigeria. The study focused on how dynamism in some key macroeconomic variables, such as exchange rate, financial deepening, trade openness and lending rate, affected trend in output performance of Nigeria's industrial sector in the post reform era. Using data spanning from 1986 to 2014, the study employed vector error correction mechanism. Results of the study revealed that financial deepening exert a significant positive impact on industrial output while the Granger causality test showed that there is a weak causal relationship between financial deepening and industrial output with trade openness and industrial output exhibiting a bi-directional causation.

However, Uchenna, Belmondo, Simplice and Ibukun (2016) explored the multidimensional financial inclusion and manufacturing firms' performance in developing nations with focus on Nigeria economy. The study made use of matching technique to examine the impact of financial inclusion on the performance of manufacturing firms in Nigeria. The matching estimation result showed that whereas firms perform better with the aid of access to bank services, the extent differs in relation to the type of access they have. According to the study, this implies that the extent to which firms' performance increase through financial deepening is determined by the type of financial inclusion that is been observed.

In an attempt to assess the validity of the supply-leading hypothesis Dehkordi (2012) conducted a study on the causal relationship between financial sector and real sector in Iran. The study reported weak evidence in support of supply-leading response in Iran between 1981 and 2010 and suggested that no causality exist between the financial and real sectors. In a related study Monnin and Jokipii (2010) found in a sample of 18 Organisation and Economic Cooperation Development (OECD) countries that there is a positive link between banking sector

stability and real output growth. It was also discovered through Fed forecast errors that banking sector stability (instability) results in a significant underestimation (overestimation) of GDP growth in the successive quarters.

Samsi, Yusof and Cheong (2012) investigated how the financial and real sectors interact in Malaysia during the period 1986Q1 to 2011Q4. The findings showed that real sector output has strong association with the banking sector and the banking sector is the major contributor to output growth.

Mert and Serap (2017) investigated the causality between financial development and firm growth in Turkish manufacturing industry during the period 1989-2010. Adopting a non-causality method proposed by Dumitrescu and Hurlin (2012), the study considered heterogeneity and cross-sectional dependence and revealed that the supply-leading hypothesis holds for majority of the subsectors. The study noted that the result was robust across the subsectors irrespective of the financial development proxy. In addition, the study showed that firm growth is not uniform across subsectors.

### III. Methodology

This study made use of time series secondary data sourced mainly from Central Bank of Nigeria statistical bulletin and World Bank development index covering periods between 1981 and 2017.

The study was anchored on the supply-leading hypothesis. The performance of manufacturing sector, being the dependent variable, was proxied by the ratio of manufacturing value added to gross domestic product (MNVAD/GDP); while the independent variables include ratio of credit to private sector to gross domestic product (CPS/GDP), ratio of market capitalization to GDP (MCAP/GDP), ratio of value of transaction to GDP (VLT/GDP) and interest rate. To examine the influence of the independent variables on the dependent variable, error correction mechanism (ECM) was employed.

#### Model specification

To capture the effect of financial deepening on manufacturing sector performance in Nigeria, a multiple regression model was formulated. The model for the study was built on the empirical specification in the work of Campbell and Asaleye (2016) with modification. The model of Campbell and Asaleye (2016) was expressed thus:

$$M_1 = f(\text{CRPSY}, \text{BM}_2\text{Y}, \text{SMCY}, \text{IRS}, \text{LLY}) \text{-----} 1$$

Where:  $M_1$  = Output of manufacturing sector as percentage of total GDP; CRPSY= Credit to Private Sector;  $\text{BM}_2\text{Y}$ = Ratio of broad money to GDP; SMCY= Ratio of Market Capitalization to GDP; IRS = Prime interest rate, LLY = Ratio of reserve money to deposit.

For the purpose of this study, equation 1 was modified. Therefore, the model for this study is stated as:

$$\text{MNVAD\_GDP}_t = F(\text{CPS\_GDP}_t, \text{MCAP\_GDP}_t, \text{VLT\_GDP}_t, \text{INTR}_t) \text{-----} 2$$

Explicitly, equation 2 is expressed in an econometric form thus:

$$\text{MNVAD\_GDP}_t = \beta_0 + \gamma_1\text{CPS\_GDP}_t + \gamma_2\text{MCAP\_GDP}_t + \gamma_3\text{VLT\_GDP}_t + \gamma_4\text{INTR}_t + \epsilon_t \text{-----} 3$$

Where:

MNVAD\_GDP = Ratio of Manufacturing Value Added to Gross Domestic Product

CPS\_GDP = Ratio of Credit to Private Sector to Gross Domestic Product

MCAP\_GDP = Ratio of Market Capitalization to Gross Domestic Product

VLT\_GDP = Ratio of Value of Transaction to Gross Domestic Product

INTR = Rate of Interest

$\epsilon$  = Error term

$\beta_0, \gamma_1, \gamma_2, \gamma_3, \gamma_4$  are parameter estimates

#### A priori Expectation

Based on the theoretical postulation of supply leading hypothesis, as employed in this study, the independent variables are expected to have positive relationship with the dependent variable. That is,  $\gamma_1, \gamma_2, \gamma_3$  and  $\gamma_4$  are expected to be greater than or equal to zero ( $\gamma_1, \gamma_2, \gamma_3$  and  $\gamma_4 \geq 0$ ).

### IV. Discussion of Results

The outcome of the empirical estimation is discussed as follow:

#### Descriptive Statistics

The results of descriptive statistics of the variables are presented in table 1.

**Table 1: Result of Descriptive Statistics**

	MNVAD_GDP	CPS_GDP	MCAP_GDP	VLT_GDP	INTR
Mean	6.183196	11.17444	10.42034	794.3135	17.60795
Median	5.727706	8.207608	6.847426	295.7318	17.58562
Maximum	10.43726	23.07600	39.95010	4288.137	29.80000
Minimum	2.410130	5.917270	3.053461	40.61776	7.750000
Std. Dev.	2.567428	5.855521	8.454698	969.3212	4.689690

Skewness	0.114501	1.015998	1.384637	1.985533	0.181480
Kurtosis	1.769147	2.259734	5.032946	6.851723	3.573666
Jarque-Bera	2.351162	7.210372	18.19436	47.18292	0.710450
Probability	0.308640	0.027182	0.000112	0.000000	0.701016
Sum	222.5951	413.4541	385.5525	29389.60	651.4940
Sum Sq. Dev.	230.7091	1234.336	2573.349	33825010	791.7551
Observations	36	37	37	37	37

Source: Authors' computation.

The results revealed that all the variables have positive averages. The mean value of the variables include: MNVAD\_GDP 6.183196, CPS\_GDP 11.17444, MCAP\_GDP10.42034, VLT\_GDP 794.3135, and INTR17.60795. The value of the standard deviation revealed that the variables exhibited low variation from their mean with the exception of VLT\_GDP. The asymmetric distribution of the series round its mean was measured by the Skewness of the series. The result revealed that all the variables have long right tail. The peakedness or flatness of the variables was also measured by the kurtosis of the series. The result showed that MCAP\_GDP, VLT\_GDP and INTR were leptokurtic while MNVAD\_GDP and CPS\_GDP were platykurtic.

**Multicollinearity Test**

Multicollinearity of the variables was examined by conducting the pair-wise correlation among the explanatory variables. The result is presented in table 2.

**Table 2: Result of Matrix Correlation**

	CPS_GDP	MCAP_GDP	VLT_GDP	INTR
CPS_GDP	1.000000			
MCAP_GDP	0.677356	1.000000		
VLT_GDP	0.546008	0.876311	1.000000	
INTR	-0.066259	-0.048089	-0.090772	1.000000

Source: Authors' computation.

The result of the pair-wise correlation revealed that the explanatory variables were not perfectly correlated. For instance, there is a correlational relationship of about 67.7% between MCAP\_GDP and CPS\_GDP as well as about -9.1% correlational relationship between INTR and VLT\_GDP This means that the explanatory variables are free from problem of multicollinearity. The implication of this is that each of the explanatory variables will be able to explain the variation in the dependent variable independently.

**Stationarity Test**

To avoid the problem of spurious regression in this study, unit root test was carried out to establish the stationarity of the variables. The stationarity test method adopted was Augmented Dickey-Fuller unit root test. The result is presented in table 3:

**Table 3: Result of unit root test**

Variables	ADF Statistics		Critical values		Order of integration	Remark
	At level	1 <sup>st</sup> diff	5%	10%		
MNVAD/GDP	-1.581150	-6.172932	-2.951125	-2.614300	I(1)	S
CPS/GDP	-0.814707	-6.323191	-2.948404	-2.612874	I(1)	S
MCAP/GDP	-1.818249	-6.617461	-2.948404	-2.612874	I(1)	S
VLT/GDP	-2.338574	-6.374843	-2.948404	-2.612874	I(1)	S
INTR	-2.418241	-5.904416	-2.951125	-2.614300	I(1)	S

Source: Authors' computation.

The stationarity of the variables is examined by comparing the ADF statistics with the critical values. A variable is said to be stationary when the ADF statistic is greater than the critical value and not stationary if the ADF statistic is less than the critical value in absolute term. The result of the unit root test as presented in table 3 showed that all the variables have unit root problem. Since this is the situation, the variables were differenced to

solve the unit root problem. The result showed that all the variables became stationary at first difference. This implies that all the variables were integrated of order one I(1). The stationarity of the variables indicated that there is short run equilibrium relationship among them.

**Cointegration Test**

Having established the stationarity of the variables, the cointegration test was conducted to ascertain the long run equilibrium relationships among the variables. For this study, Johansen cointegration approach was adopted. The result is presented below:

**Table 4: Result of Cointegration Test**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.613288	70.10834	69.81889	0.0474
At most 1	0.384042	37.80576	47.85613	0.3105
At most 2	0.332955	21.33017	29.79707	0.3374
At most 3	0.158444	7.563658	15.49471	0.5132
At most 4	0.048730	1.698547	3.841466	0.1925

Trace test indicates 1 cointegrating equation(s) at the 0.05 level

\*denotes rejection of the hypothesis at the 0.05 level

Source: Authors' computation.

To examine the cointegration of the variables, the trace statistics was compared with the critical value at 0.05 level. The condition for cointegration of the variables is that the trace statistics must be greater than the critical value at 5 percent level. From the result, trace statistics indicated one cointegrating equation. This means that the variables were cointegrated. The implication of this is that there were long run equilibrium relationships among the variables. Thus, the variables will sustain their togetherness in the long run.

**Causality Test**

The causality test was conducted to assess the direction of causality among the variables. For the purpose of this study, Granger causality test technique was employed. The result is presented thus:

**Table 5: Result of Granger Causality Test**

Null Hypothesis:	Obs	F-Statistic	Prob.
CPS_GDP does not Granger Cause MNVAD_GDP	34	6.41559	0.0049
MNVAD_GDP does not Granger Cause CPS_GDP		0.88115	0.4251
MCAP_GDP does not Granger Cause MNVAD_GDP	34	1.76787	0.1886
MNVAD_GDP does not Granger Cause MCAP_GDP		0.67581	0.5166
VLT_GDP does not Granger Cause MNVAD_GDP	34	5.19926	0.0118
MNVAD_GDP does not Granger Cause VLT_GDP		1.19119	0.3183
INTR does not Granger Cause MNVAD_GDP	34	0.03957	0.9613
MNVAD_GDP does not Granger Cause INTR		0.15041	0.8610

Source: Authors' computation.

The causality of the variables was adjudged by considering the probability value at 0.05 level. The null hypothesis of no causality was accepted where the p-value was greater than 0.05 while the null hypothesis was rejected where the p-value was less than or equal to 0.05. Given this, the results showed that there is unidirectional causal relationship between ratio of credit to private to gross domestic product and ratio of manufacturing value added to gross domestic product. The causality which flows from the former to the latter indicated that ratio of credit to private sector to GDP granger causes manufacturing sector performance in Nigeria. Also, the result revealed that ratio of value of transaction to gross domestic product granger causes manufacturing sector performance. However, the result further revealed that there was no causality between manufacturing performance and ratio of market capitalization to GDP as well as interest rate.

**Discussion and Implication of Findings**

The empirical result of error correction model (ECM) is presented in table 6.

**Table 6:** Result of ECM

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CPS_GDP(-1))	0.189582	0.080923	2.342738	0.0271
D(MCAP_GDP(-1))	0.006649	0.037509	0.177260	0.8607
D(VLT_GDP(-1))	-0.000532	0.000258	-2.063479	0.0492
D(INTR)	-0.148234	0.043276	-3.425352	0.0020
ECM(-1)	-0.043801	0.050234	-0.871938	0.3912
C	-0.024746	0.168816	-0.146589	0.8846

R<sup>2</sup> 0.471127, Adjusted R<sup>2</sup> 0.369420, F-stat 4.632223, Prob(F-stat) 0.003726, D-W stat 1.999634

**Source: Authors' computation.**

The result showed that ratio of credit to private to gross domestic product had positive relationship with ratio of manufacturing value added to gross domestic product. This is in agreement with the *a priori* expectation. The positive coefficient of 0.189582 implies that a percentage increase in the ratio of credit to private to gross domestic product will produce positive effect on manufacturing performance to the tune of 18.95 percent. Statistically, the relationship between ratio of credit to private sector to GDP and ratio of manufacturing value added to GDP is significant as given by the probability value of 0.0271. This finding contradicts the finding of Maxwell and Oluwatosin (2012) which reported that indicators of financial deepening do not exert significant effect on manufacturing performance in Nigeria.

It was discovered from the result that the ratio of market capitalization to GDP, in line with the *a priori* expectation, also had positive but insignificant relationship with ratio of manufacturing value added to GDP. This is as given by the coefficient of 0.006649 and P-value of 0.8607. The coefficient of 0.006649 implies that one percent increase in ratio of market capitalization to GDP will lead to about 0.6649 percent increase in manufacturing sector performance.

Contrary to the theoretical expectation, the result further showed that ratio of value of transaction to GDP had significant negative effect on manufacturing sector performance in Nigeria. This is as shown by the coefficient of -0.000532 and P-value of 0.0492. The implication of this is that a percent change in the ratio of value of transaction to GDP will lead to about 0.0532 percentage decrease in the ratio of manufacturing value added to GDP, meaning that manufacturing sector performance will fall to the tune of 0.0532 percent.

In the same vein, interest rate exhibited significant negative effect on manufacturing sector performance in Nigeria. This is as revealed by the negative relationship between interest rate and ratio of manufacturing value added to GDP with coefficient of -0.148234 and P-value of 0.0020. This result contradicts the *a priori* expectation. Thus, a percentage increase in the rate of interest will result to about 14.82 percent decrease in the ratio of manufacturing value added to GDP. In other words, increase in the rate of interest will cause significant decline in manufacturing sector performance in Nigeria.

From the result, it was discovered that the error correction coefficient was appropriately signed as given by the coefficient of -0.043801. The implication of this is that any short run disequilibrium among the variables will be adjusted at a speed of 4.38 percent in the long run. The constant coefficient of -0.024746 indicated that if all the explanatory variables are held constant, manufacturing sector performance will decline to the tune of 2.47 percent; though this is not statistically significant considering the P-value of 0.8846.

The coefficient of determination R<sup>2</sup> indicated the proportion of total variations in the dependent variable that was explained by the independent variables. From the result, R<sup>2</sup> of 0.471127 implies that 47 percent of the total variations in manufacturing sector performance was explained by the explanatory variables while the remaining 53 percent was explained by other exogenous factors not included in this study but were captured by the error term. The Durbin-Watson statistic of 1.99 indicated that there was no problem of serial correlation of any order in this study.

The overall significance of the model was analyzed using the F-statistic in order to examine the combined effect of the explanatory variables on the explained variable. The result showed that the explanatory variables were statistically significant in explaining the variations in the dependent variable. This is as given by the F-statistic of 4.632223 and P-value of 0.003726. This implies that financial deepening has significant effect on manufacturing sector performance in Nigeria.



## V. Summary, Conclusion and Recommendations

This study investigated the effect of financial deepening on manufacturing sector performance in Nigeria from 1981 to 2017. Time series secondary data was sourced from Central Bank of Nigeria (CBN) statistically bulletin and World Bank Development Index. Manufacturing sector performance, being the dependent variable, was proxy by ratio of manufacturing value added to GDP while the independent variables include ratio of credit to private to GDP, ratio of market capitalization to GDP, ratio of value of transaction to GDP and interest rate. The study adopted error correction mechanism (ECM) to estimate the effect of the independent variables on the dependent variable. It was found that the ratio of credit to private sector to GDP and ratio of market capitalization to GDP had positive effect on manufacturing sector performance while ratio of value of transaction to GDP and interest rate had negative effect on manufacturing sector performance.

The study thus concluded that financial deepening has significant effect on manufacturing sector performance in Nigeria. Therefore, deposit money banks and other financial institutions should make more credit available to private sector, especially manufacturing sector, at affordable interest rate. In addition, more manufacturing firms should be listed on the capital market to further boost the market capitalization of the sector on the capital market and also to improve the aggregate market capitalization of the market. This structural change cannot be overemphasized.

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