FINANCIAL DEEPENING AND THE MANUFACTURING SECTOR OUTPUT IN NIGERIA

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ABSTRACT

This paper investigates the effect of financial deepening on manufacturing sector output in Nigeria. One of the challenges faced by the manufacturing sector is inadequate finance because most incipient entrepreneurs do not have the financial capacity therefore they look at the financial institutions for assistance. So the specific objective of the study are to examine the effect of the ratio of private sector credit to gross domestic product and the total number of banks on the manufacturing sector output in Nigeria. Quarterly time series data were utilized for the period 1985q1 to 2018q4 for the analysis. The Autoregressive Distributed Lag (ARDL) technique was employed for the estimation. The results obtained show a positive but insignificant relationship between the manufacturing sector output and the total number of banks, the ratio of the broad money supply to GDP and the ratio of market capitalization to GDP both in the long run and the short run. However, a negative relationship exists between the ratio of private sector credit to GDP, the prime interest rate and ratio of savings to GDP and the manufacturing sector output both in the long run and short run. The recommendations made among others are that the private sector credit and the broad money supply should target the manufacturing sector in the economy and also the prime interest rate should be at a single digit level so that the manufacturers can access adequate credits.

KEY WORDS: *Financial, Deepening,, Manufacturing, , Output*

JEL Classification: *D22, D53, E23, E44, E51, E65*

1. INTRODUCTION

The manufacturing sector in Nigeria is viewed as one of the sub-sectors of the Nigerian economy that can help to turn the economy around if given the necessary attention and adequate

financial assistance to increase production that will be competitive. It is a known fact that one of the challenges facing the sector is finance needed to purchase modern equipments, inputs, feasibility research and employment of quality labour. This is so because for finance, most incipient entrepreneurs or emerging manufacturing firms rely on personal or family savings, contribution from friends which is often too small to support meaningful production (Jhingan, 2005)

The Nigerian manufacturing sub-sector depends excessively on imported inputs. Its performance therefore, depends on the cost and availability of foreign exchange needed for the importation of raw materials, spare parts and machinery. With much reduced foreign exchange earnings in the 1990s, brought about by the substantial fall in crude oil prices, the capacity of Nigeria local industries to import inputs declined sharply with a corresponding fall in manufacturing output. Nzotta and Okereke (2009) opined that financial deepening is the ability of financial institutions in an economy to effectively mobilize savings for investment purposes.

However, due to the paucity of funds to the manufacturing sector, the bank reforms and the consolidation policy of the Central Bank of Nigeria of 1986 as part of the structural adjustment programmes (SAP) for appropriate real finance policy and the broadening of the markets were seen as reforms that would ease the access to funds and also made the funds available and affordable. So the Nigeria government, through the Central Bank of Nigeria (CBN), introduced different policies and reforms such as the rural banking programme in 1977, the People's Bank in 1989 as well the community banks in the 1990s. In order to improve the banking habit of a large number of the country's population, the non-interest banking was also introduced. There were other initiatives introduced and implemented by financial regulatory authorities which include E-banking services such as the use of Automated Teller Machine (ATM), credit card, phones, E-wallets etc and Point of Sale (POS) services, and implementation of cashless policy (Iganiga & Uzomba, 2019). It was expected that the different programmes and policies introduced by the government and the central bank of Nigeria would translate to the development of the different sectors of the economy but this is not the case.

In order to substantiate and to give credence to the above assertion and relying on available statistics, it was discovered that in 1985 the ratio of the manufacturing sector output to the gross domestic product (GDP) was N1416B while the broad money supply was N16.6B, the credit to the private sector was N 9.7B, and the market capitalization was N 4.96B and the prime interest rate was 9.25%. By 1990, the manufacturing output increased by 15.2% to N 1679.73B , while broad money declined by 48.2% to N 11.2B, credit to the private sector reduced to N 7.1B which is about 36.6% while prime interest rate increased to 25.5% which is about 63.7% increase. The values continue to fluctuate over the years and by the year 2000 which is about ten years after, the value of the manufacturing output declined to N1505.66B that is a decrease of about 11% while broad money supply increased marginally to N 13.1B

representing about 14.5% . Similarly, the credit to the private sector increased to N 7.9B representing an increase of 10.1% and the market capitalization also experienced an increase to 7.03 from N 4.96B representing about 29.4% while the prime interest rate in the same year decreased to 17.98% which is about 41.8%. The fluctuating trends continued and by 2018 the ratio of the manufacturing sector output to the GDP stood at only N 6471.07B while the broad money supply was N 20.02B, the private sector credit was N20B and the market capitalization was N 17.53B while the prime interest rate was still as high as 16.82%. This trend analysis has showed the inadequacies in the dept of financial deepening as the ratio of the manufacturing output to the GDP is still substantially very low that can make a significant impact on the economy.

However, the perennial and incessant complaints of inadequate fund or non-accessibility of funds to the entrepreneur and the manufacturing sectors have made scholars to doubt the effectiveness of the financial reforms. Akinmulegun and Akinde (2019) in conformity with the doubt that have been expressed said that despite all the measures to improve the depth of the Nigerian financial system in terms of provision and availability of adequate funds to the different sectors of the economy in recent time it is still not encouraging as evident from the fluctuations and inadequate funds in the ratio of broad money supply to GDP, inadequate credit to the private sector, low market capitalization and high interest rate which has constantly remained in a double digit. The manufacturing sector is expected to be a major beneficiary of the policy for the growth of the economy. But the situation cannot be said to be very cheering and this has attracted the attention of scholars and researchers to ask some pertinent questions about the effect of financial deepening on the manufacturing sector output in Nigeria. So the questions addressed in this paper are:

i.   What is the effect of financial deepening on the manufacturing sector output in Nigeria?
ii.   What is the relationship between the ratio of private sector credit to GDP and manufacturing sector output in Nigeria?
iii.   What is the effect of total number of banks on the manufacturing sector output in Nigeria?

Consequently, the broad objective of this study is to examine the effect of financial deepening on the manufacturing sector output in Nigeria, while the specific objectives are to investigate the relationship between the ratio of private sector credit to GDP and total number of banks on the manufacturing sector output in Nigeria. The outcome of this study will be very valuable to the manufacturing sector, the government, entrepreneurs, investors and households. To achieve the set objectives of this study, the paper is organized into five (5) sections. Section two (2) focuses on the review of related literature on financial deepening and the manufacturing sector, section three (3) examines methodology and theoretical framework and section four (4) deals with empirical analysis and discussion of results while conclusion and recommendations are in section five (5).

2. LITERATURE REVIEW

Conceptually, financial deepening means an increase in the supply of financial assets in the economy. Therefore, the sum of all the measures of financial assets gives the approximate size of financial deepening (Ndebbio, 2004). Nzotta and Okereke (2009) opined that financial deepening is the ability of financial institutions in an economy to effectively mobilize savings for investment purposes. Similarly, (Ohwofasa & Aiyedogbon, 2013) financial deepening is the improvement in the supply of financial services with an array of choice of services in all sectors of the economy. This implies that the widest range of such assets as broad money supply, value of shares in the stock market, money market funds, etc, will have to be included in the measure of financial deepening. Therefore, if the increase in the supply of financial assets is small, it means that financial deepening in the economy is most likely to be shallow, but if the ratio is big it means that financial deepening will eventually be high. That is where we have the difference between the developed economies which is characterized by high financial deepening and the less developed economies with low financial assets and hence low financial deepening.

From the observation above, there is no doubt that financial deepening is guided by some theoretical framework like the supply - leading hypothesis by Robbison (1955) and Patrick (1966) who suggest that financial deepening spur economic growth while the demand-following - hypothesis by (Gurley and Shaw (1955) view the development of the financial markets as a lagged response to economic growth, or put clearly that growth generates demand for financial products. While the theory of financial intermediaries was viewed by Gurley and Shaw (1955) as 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, Adeyefa & Obamuyi, 2018).

Empirical studies have been carried out by scholars on the effect of financial deepening on economic growth but not so much research have been done on its effect on a specific sector like the manufacturing sector in Nigeria. Campbell and Asaleye (2016) investigated the effects of financial sector reforms and output growth in manufacturing in Nigeria using vector error correction mechanism (VECM) method for the estimation. The results revealed that the financial deepening proxy by the ratio of market capitalization to GDP is negatively related to the ratio of manufacturing sector to GDP. Also a negative correlation was observed in the other variables such as credit to the private sector, the ratio of broad money to GDP and ratio of reserve money deposit while a positive correlation was observed with the prime interest rate. All the variables had low coefficients; this result suggests that the developments in the manufacturing sector under financial reforms in Nigeria have not been impressive.

Akinmulegun and Akinde (2019), Adeyefa and Obamuyi (2018), Olanrewaju, Aremo, Bernard and Adenuga (2016), Aiyegbusi (2015) and Ogar, kamare and Effiong (2014) examine

the effect of financial deepening on manufacturing sector performance in Nigeria by using time series data and adopting the different techniques such as auto regressive distributed lag (ARDL), error correction mechanism (ECM) and ordinary least squares (OLS) respectively for their estimation, their results revealed that financial deepening indicators had a positive and significant effect on the manufacturing sector performance in Nigeria in the long run.

In a similar study, Elijah and Uchechi (2012), Campbell and Asaleye (2016) and Imoughele and Ismaila (2014) also relied on time series data using autoregressive distributed lag (ARDL) method, ordinary least squares (OLS) and VAR techniques respectively concluded that financial deepening exhibited negative and insignificant relationship with manufacturing sector in Nigeria although some of the financial deepening indicators exhibited significant relationship.

Scholars and researchers like Demirguç-Kunt and Levine (1996), Allen and Gale (2004) and Demirguç-Kunt and Maksimovic (2002) have also studied the comparative importance of bank-based and market-based financial systems as they concern the role of financial development in the manufacturing sector The financial deepening indicators selected show both positive and negative effects on the manufacturing sector. So what clearly stands out from the empirical review is that there is no consensus on the effect of financial deepening on the manufacturing sector output because some researchers such as Aiyetan and Aremo (2015) and Dada, (2015) reported positive relationship, while others like Ogunsakin (2014) and Campbell and Asaleye (2016) concluded that there is negative relationship between the dependent and the independent variables.

It was also observed that none of the studies used quarterly data for estimation in addition to neglecting the role of the total number of banks (a proxy for financial intermediaries) as a relevant variable for their estimation .It should be noted that the measure of effectiveness of financial deepening is by the efficiency and competitiveness of the financial sector on the manufacturing sector performance. So this is a major shift from previous studies and thus forms the gap that is filled in this study.

3. RESEARCH METHODOLOGY
3.1 Theoretical Framework

The theoretical framework of the study was anchored on the Gurley and Shaw (1955) financial intermediation theory. This theory explains the functions of bank credit in the growth and development of an economy. The emphasis is that the business of financial services in any modern economy is to provide a vibrant mechanism to draw financial flows from financially exceeding agents to the financially bereft in the economy. A liberalized financial system is expected to have an efficient and effective intermediation process that could facilitate the business of lending and borrowing in the economy, and that is the thrust of financial intermediation theory as reiterated by Shaw (1973) and corroborated by Mckinnon (1973).

3.2 Model Specification

In line with the theoretical framework, the effect of financial deepening on manufacturing sector output in Nigeria is examined. The study adopts the model of Campbell and Asaleye (2016) with some modifications. They specified their model in a functional form thus:

M1 = f (CRPSY, BM2Y, SMCY, IRS, LLY) ------------------------------------- (3.1)
Where:
　M1 = Output of manufacturing sector as percentage of total GDP;
CRPSY= Credit to Private Sector;
　BM2Y= 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 (3.1) is modified and the functional form is given as:
MANOP = f(BMSSP, PSCRP, MCRP, FSRP, INTR, TNB) -------------------- (3.2)
Equation (3.2) is linearly expressed in a log form as follows:

$$\text{Ln}(MANOP_t) = \alpha_0 + \alpha_1 \ln(PSCRP_t) + \alpha_2 \ln(BM2SP_t) + \alpha_3 \ln(MCRP_t) + \alpha_4 \ln(FSRP_t) + \alpha_5 INTR_t + \alpha_6 TNB_t + \mu_t$$
--- (3.3)

Where:
$MANOP_t$ = Manufacturing sector output
　$PSCRP_t$ = Ratio of private sector credit to GDP
$BM2SP_t$ = the Ratio of broad money supply to GDP
　$MCRP_t$ = Ratio of Market Capitalization to GDP
　$FSRP_t$ = Ratio of Financial Saving to GDP
　TNB_t = Total number of banks (proxy for financial intermediaries)
　$INTR_t$ = Prime Interest rate
　Ln = natural logarithm
　　α_0 = constant
　α_1 - α_6 = the parameters of the long run model to be estimated

　μ_t = Error term
　t = Time Trend

The Autoregressive Distributed Lag (ARDL) technique is employed for the estimation to determine the long run and the short run equilibrium relationship between the dependent and independent variables. The study employs the econometric technique of bounds testing approach to co-integration within the framework of the ARDL models with some of the variables logged as follows;

$$\Delta \ln \text{MANOP}_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta \ln MANOP_{t-1} + \sum_{i=1}^{p} \beta_2 \Delta \ln PSCRP_{t-1} + \sum_{i=1}^{p} \beta_3 \Delta \ln BM\,2SP_{t-1}$$

$$+ \sum_{i=1}^{p} \beta_4 \Delta \ln MCRP_{t-1} + \sum_{i=1}^{p} \beta_5 \Delta \ln FSRP_{t-1} + \sum_{i=1}^{p} \beta_6 INTR_{t-1} + \sum_{i=1}^{p} \beta_7 \Delta TNB_{t-1}$$

$$+ \delta_1 PSCRP_{t-1} + \delta_2 BM\,2SP_{t-1} + \delta_3 MCRP_{t-1} + \delta_4 FSRP_{t-1} + \delta_5 INTR_{t-1}$$

$$+ \delta_6 TNB_{t-1} + \eta ECM_{t-1} + \varepsilon_t -----------------------(3.4)$$

where

$\Delta,$ = the first difference operator.

β_1 - β_7= the parameters   for the short run of the long run model to be estimated

η = The short run dynamic coefficient

ε_t = white noise

p = The ARDL lag length

The a'prori expectations and theoretical restrictions are given below

β_1 - β_5, and $\beta_7 > 0$, β_6, $\beta_8 < 0$

The other variables are as earlier defined.

3.3   Estimation Procedure

Before the estimation of the models specified above, the properties of the variables must be investigated with different econometric tools to avoid spurious regression results.

a) Unit Root Rest

The study conducted a test of order of integration for each variable to ascertain the time series properties of the variables using Augmented Dickey Fuller (ADF) and Phillip Perron (PP) approaches. Zhe (2007) made an observation that for a proper estimation of economic models that are based on time series analysis; the condition for stationary unit root process must be satisfied. This becomes necessary as put forward also by Granger (1986) that if time series variables are non - stationary, all findings with these time series variables will be at variance with conventional theory of regression with stationary series. Which means that the coefficients of the regression derived from such non - stationary variables will be spurious and deceptive.

(b)   Testing for Cointegration

The ARDL approach to cointegration is employed to investigate the presence of the long run cointegration relationship given its superiority over other cointegration test techniques such as the Johansen (1991) and Johansen and Juselius (1990) approach. The ARDL has several advantages over other alternatives. For example, this test can be applied whether the variable

is I(1) or I(0) or a mixture of both. This also eliminates the uncertainty on pre testing the order of integration. Another important feature of the bounds test ARDL is that it only accommodates variables whose order of integration is not greater than one and the long run and short run estimations are done simultaneously.

Data Sources

Quarterly time series data from 1985q1 - 2018q4 sourced from various issues of Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS) were utilized. The study focuses only on Nigeria and the dimension of the data base are however well chosen to include a much reasonable time length of observations which allows for enough degree of freedom.

4.   EMPIRICAL RESULTS AND DISCUSSION

The empirical investigation begins with the summary statistic of the variables used in the study. This is followed by the diagnostic tests such as the unit root, cointegration and bounds test results**.**

4.1   Summary Statistic of Variables

From table 4.1, the maximum and minimum values of the series are 23388.30 and 5.6000 respectively. The skewness of the distribution and the kurtosis show that the series do not deviate more than the normal distribution as the value range 0.35 and 1.40 and 1.83 and 4.96 for skewness and kurtosis respectively. The normal distribution of the variables is determined using the value of Jarque-Bera and the probability. It is very apparent that the hypothesis that all the variables are normally distributed cannot be rejected since all the values of the probability are less than the Jarque-Bera Chi -square at 5% level of significance.

Table 4.1   Summary Statistic of Variables

	MANOP (=N= B)	BM2SP (=N= B)	PSCRP (=N= B)	MCRP (=N= B)	FSRP (=N= B)	INTR (%)	TNB
Mean	2903.62	5821.62	5435.53	2332.66	1416.22	18.7599	49.5441
Median	1843.70	1375.30	873.95	504.15	568.75	17.8300	54.0000
Maximum	6796.91	23388.3	22739.7	13357.5	5964.80	34.8700	99.0000
Minimum	1373.66	23.0000	13.0000	7.4000	5.6000	8.8300	25.0000
Std. Dev.	1813.34	7656.12	7599.89	3043.23	1951.67	4.3797	23.8122

Skewness	1.1589	1.1085	1.1556	1.1897	1.4014	0.6009	0.3468
Kurtosis	2.7653	2.7453	2.7737	3.4286	3.3924	4.9562	1.8330
Jarque-Bera	30.7519	28.2186	30.5601	33.1246	45.3891	29.8698	10.4429
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0054
Sum	394893	791740	739232	317241	192605	2551.35	6738.00
Sum Sq. Dev.	4.4400	7.9100	7.8000	1.2500	5.1421	2589.52	76547.7
Observations	136	136	136	136	136	136	136

Source: Author's regression output

4.2   Unit Root Test

The unit root test was conducted to determine the order of integration of each of the variables utilized for the study to avoid spurious and deceptive regression results. This becomes necessary because if time series data are non-stationary, all findings with such time series data will be at variance with conventional theory of regression with stationary series. There are different methods of testing the unit root but for this study, the Augmented Dickey Fuller (ADF) and Phillip Perron (PP) techniques were applied because they consider the dynamics of the data. The results are presented below.

Table 4.2   Unit Root Test Results

	ADF			PHILLIP PERRON (PP)			
VARIABLES	**LEVEL I(0)**	**1ST DIFF I(1)**	**CRIT. LEVEL 5%**	**LEVEL I(0)**	**1ST DIFF I(1)**	**CRIT. LEVEL 5%**	**ORDER OF INTEGRATION**
Ln(MANOP)	-0.1234	-3.2339	-2.9571	-0.5539	-3.3179	-2.9540	I(1)
Ln(BM2SP)	-1.7238	-5.1443	-2.9540	-1.8030	-5.2964	-2.9540	I(1)
Ln(FSRP)	-1.6207	-5.1282	-2.9540	-1.2647	-5.1841	-2.9540	I(1)
INTR	-4.1875	NA	-2.9540	-4.1825	-8.8637	-2.9540	I(0)
ln(MCRP)	-1.0814	-4.7473	-2.9540	-1.1444	-4.7037	-2.9540	I(1)
Ln(PSCRP)	-1.3845	-5.6888	-2.9540	-1.3148	-7.3748	-2.9540	I(1)
TNB	-1.6616	-5.2180	-2.9540	-1.8229	-5.2180	-2.9540	I(1)

Source: Author's regression output

From table 4.2 , the unit root test results show that interest rate (INTR) is stationary at level I(0) while the other logged variables of BM2SP, FSRP, MCRP, PSCRP and TNB are integrated of first difference I(1) at 5% level of significance. The results also show a mixture of I(0) and I(1) and none was integrated of second order I(2). This has met one of the important conditions of using the Autoregressive Distributed Lag (ARDL) technique thus indicating the suitability of the variables for the application of the ARDL technique.

4.3   VAR Lag Order Selection Criteria

The consistency of the parameters in the model is very important. To achieve this, the optimal lag length is utilized for the estimation. The result is presented below.

Table 4.3 VAR Optimal Lag Length Selection Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1143.238	NA	3405310.	17.8787	17.9010	17.8878
1	-766.1354	742.4213	9549.473	12.0021	12.0467	12.0202
2	-749.8217	31.8626	7517.360	11.7628	11.8297	11.7900
3	-744.6452	10.0295*	7042.54*	11.6976*	11.7867*	11.7338*
4	-744.3333	0.5994	7118.807	11.7083	11.8197	11.7536
5	-743.0445	2.4568	7086.958	11.7038	11.8375	11.7581
6	-742.2026	1.5916	7104.783	11.7063	11.8623	11.7697
7	-742.2003	0.0044	7216.792	11.7219	11.9001	11.7943
8	-741.2827	1.7061	7226.595	11.7232	11.9237	11.8047

(*) This indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion
 Source: Author's regression output using E-Views 9

Table 4.3 shows the result of the optimal lag selection test. The lag length selected is number two (3) as indicated by the AIC, SC and HQ criteria. The AIC is selected since it has the lowest value, because the lower the value the better the criteria for the model.

4.4 Bounds Test for Cointegration

The bounds test is conducted to test for long run equilibrium relationship among the variables the results of the bound test are presented in table 4.4 below

Table 4.4. ARDL Bounds Test for Cointegration Analysis

ARDL Model (dependent variable)	Computed F-Statistic	Significant Level	Lower Bound I(0)	Upper Bound I(1)
D(MANOP)	3.8101	10%	2.12	3.23
		5%	2.45	3.61
		1%	2.75	3.99

Source: Author's regression output

From table 4.4, the bounds test for cointegration results shows the existence of long run cointegration relationship between the dependent variable (MANOP) and the independent variables. This is demonstrated by comparing the value of the computed F-statistic and upper bound result at 5% level of significance. The computed F- statistic of 3.81 is greater than the lower and upper bound values of 2.45 and 3.61 at 5% significant level respectively. Therefore, the null hypothesis of no cointegration is rejected and the alternative accepted.

4.5 Long Run Regression Results

Table 4.5. Long Run Estimates

Dependent Variable (MANOP)			
Variables	Coefficient	Std. error	Pro. value
Ln(PSCRP)	-0.3646 (-2.2396)*	1.5217	0.0211
Ln(BM2SP)	1.5938 (1.4883)	2.3157	0.1226
Ln(FSRP)	-1.1324 (-1.1849)	0.9557	0.2383
INTR	-0.0267 (-0.4724)	0.0566	0.6375
Ln(MCRP)	0.2632 (0.4056)	0.6490	0.6857
TNB	0.0083 (0.5374)	0.0153	0.5920
C	4.7073 (2.6384)*	2.8731	0.0103

Note: (i) * This indicates significant at 5% (ii) figures in parenthesis are the t-Statistic
Source: Author's Computation.

Table 4.5 presents the long run results of the effect of financial deepening on manufacturing sector output (MANOP) in Nigeria. The results indicate that the ratio of broad money supply to GDP (BM2SP), the ratio of market capitalization to GDP (MCRP) and the total number of banks (TNB) have positive but insignificant relationship with manufacturing sector output in Nigeria. The results show that a unit increase in BM2SP, MCRP and TNB led to an increase in MANOP by 1.59, 0.26 and 0.008 units respectively This is consistent with the apriori expectation and they confirm the result of Akinmulegun and Akinde (2019), Adeyefa and Obamuyi (2018), Olanrewaju, Aremo, Bernard and Adenuga (2016), Aiyegbusi (2015). However, a unit increase in the ratio of private sector credit to GDP (PSCRP), the ratios of financial saving to GDP (FSRP) and the prime interest rate (INTR) led to a decrease in MANOP by 0.36, 1.13 and 0.027 units respectively. The result confirms the findings of Ogar, Nkamare and Effiong (2014).

4.6   Short Run Estimation

Table 4.6 Short Run Estimates

Dependent Variable (MANOP)				
Selected Model: ARDL (2,0,0,0,0,0,1)				
Variable	**Coefficient**	**Std Error**	**t-Stat**	**Pro. Value**
DLn (MANOP(-1))	0.1157	0.0788	1.4677	0.1447
DLn (PSCRP)	-0.0161	0.0234	-0.2625	0.7934
DLn (BM2SP)	0.0269	0.0299	0.8995	0.3702
DLn (MCRP)	0.0174	0.0101	0.4408	0.6601
DLn (FSRP)*	-0.0191	0.0100	-1.9135	0.0480
D(INTR)	-0.1325	0.0009	-0.5074	0.6128
D(TNB)*	0.0118	0.0004	6.4218	0.0000
ECM (-1)*	-0.1686	0.0126	-1.3376	0.0013

Note: (i) ***** indicates significant at 5% level (ii) figures in parenthesis are the t-Statistic
Source: Author's regression output

Table 4.6 presents the short run estimation results of the effect of the financial deepening on the manufacturing sector output (MANOP) in Nigeria. The empirical results reveal that BM2SP, MCRP and TNB have direct but not significant relationship with the manufacturing sector output in Nigeria while the PSCRP, FSRP and INTR had negative relationship with

manufacturing sector output at 5% level of significance. The result reveals that a unit increase in the ratio of broad money supply to GDP (BM2SP), the ratio of market capitalization (MCRP) and total number of banks (TNB) induce MANOP to increase by 0.027, 0.017 and 0.012 units respectively in the short run. This is consistent with apriori expectation and the result confirms the findings of the study carried out by Adeyefa and Obamuyi, (2018) but it contradicts the findings of Werigbelegha and Ogiriki (2015). However, a unit increase in the ratio of private sector credit to GDP (PSCRP), the ratio of financial saving to GDP (FSRP) and the prime interest rate (INTR) cause MANOP to decline by 0.02, 0.02 and 0.012 units respectively. The ratio of financial saving to GDP (FSRP) and the prime interest rate (INTR) were also significant in the short run. This is consistent with the apriori expectation and it confirms the result of (Adeyefa and Obamuyi, 2018).

The error correction term (ECM_t (-1)) is well specified in the model and it is correctly signed. The error correction term measures the speed at which the dependent variable adjusts to changes in the explanatory variables before converging to the equilibrium level. A negative and significant error correction term implies that the adjustment process to restore to equilibrium is very effective. From the estimated result, the ECM_{t-1} is approximately -0.17 and statistically significant. This implies that about 17% percent departure from long run equilibrium is corrected in the short run and incorporated into the long run relationship within a quarter period of a year.

Table 4.7 Diagnostic Test

Key Variables		Key Variables	
R-squared	0.8761	Mean dependent var	7.8229
Adjusted R-squared	0.9031	S.D. dependent var	0.5371
S.E. of regression	0.0334	Akaike info criterion	-3.8838
Sum squared resid	0.1390	Schwarz criterion	-3.6676
Log likelihood	270.22	Hannan-Quinn criter.	-3.7960
F-statistic	3788.63	Durbin-Watson stat	1.9922
Prob(F-statistic)	0.0000		

Note: * (1) indicates significant at 5% (11) figures in parenthesis are the t- ratios
Source: Author's Computation using E-views 9.0

The diagnostic tests results reveal that the coefficient of determination R- squared (R^2) has a value of 0.8761 which means that 87.6% of the total variation in manufacturing sector output is explained by the regressors while the unexplained 12.3% is due to the error term. The adjusted R-squared (R^{-2}) result is given as 0.9031. This means that after the necessary adjustments the independent variables were able to explain 90%% of the total variation in the manufacturing sector output in Nigeria. The F-statistic (3788.63) shows the overall fitness of the model and it is statistically significant at 5% level of significance with probability value of 0.000 which is less than 0.05 critical values. The Durbin Watson result is 1.99 which is approximately 2 by rule of the thumb. This indicates that there is absence of serial autocorrelation in the models among the independent variables and the error terms.

5.   Conclusion and Recommendations

The yearning in the Nigerian economy in recent times is the need for the economy to diversify from the present over-dependence and over-reliance on a single product (petroleum products) as the major source of revenue. The sector for expansion that readily comes to mind is the manufacturing sector often regarded as "engine of growth" in most developed and emerging economies. However, the contribution of this sector to the economy has been grossly marginal and this poor performance has been attributed mostly to inadequate capital. This forms the basis for this study of the effect of financial deepening on the manufacturing sector output in Nigeria. After a thorough empirical investigation, it was discovered that both the long run and short run results, the ratio of broad money supply to GDP, the ratio of market capitalization to GDP, the total number of banks all have a direct but insignificant relationship with the manufacturing sector output in Nigeria.

However, there was a contrasting result of the effect of the ratio of private sector credit to GDP, the ratio of saving to GDP, and the prime interest rate on the manufacturing sector output in Nigeria. The empirical results reveal that both in the long run and short run, these variables have negative and insignificant relationship with the manufacturing sector output at 5% level of significance..

From the outcome of the empirical study, the following recommendations are made:

i.   The financial institutions should undergo constant monitoring by the appropriate authorities to ensure that the financial deepening indicators are operated at its optimal level. As observed from the results, the coefficients of most of the indicators are very low.

ii. The broad money supply should be made to target the manufacturing sector in the economy to prevent the diversion of a big chunk of such money to other service sector both in the short run and long run.

iii The number of banks in the country should increase by increasing the number of branches so that the difficulty of accessing their facilities will be minimized.

iv. The prime interest rate should be at a single digit level so that the manufacturers would be encouraged to access adequate credits from the financial institutions for competitive production.

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