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Research Article

Manufacturing Sector and Economic Growth in Nigeria

Oluwatoyosi Tolulope Olurin[1], Comfort Omowunmi Akande[2] and Abolade Francis Akintola*[3]

[1]Department of Accounting, Babcock University, Ilishan-Remo, Ogun State, Nigeria
[2]Department of Finance, Babcock University, Ilishan-Remo, Ogun State, Nigeria
[3]Department of Finance, Babcock University, Ilishan-Remo, Ogun State, Nigeria
*Corresponding Author Email: akintolaa@babcock.edu.ng

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Abstract: The paper investigated relationship between manufacturing sector and economic growth in Nigeria from 2010 to 2019. Secondary data obtained from Central Bank of Nigeria Statistical Bulletin was used for the study. The study employed regression analysis to evaluate the relationship between independent and dependent variables. Result of the study revealed that there is positive relationship between the manufacturing sector and economic growth (represented by real gross domestic product). The study therefore recommended that government through Central Bank of Nigeria should ensure that sectoral allocation of loans and advances by banks to the manufacturing sector be increased in order to increase production in the manufacturing sector.
Keywords: Manufacturing sector, economic growth, average capacity utilization, gross domestic product, share of manufacturing to RGDP.

1.0 Introduction

Dandana and Nwelle (2011) stated that economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It conventionally measured as the percent rate of increase in the real gross domestic product (GDP). Of more importance is the growth of the ratio of GDP to population (GDP per capital which is also called per capital). An increase in growth caused by more efficient use of inputs (such as physical, population or territory) is referred to as intensive growth.

A growing economy produces more goods and services in each successive time period. Thus, growth occurs when an economy's productive capacity increases which in turn, is used to produce more goods and services. The four of the most important determinants of growth of total output are as follows: Growth in the labour force such as occurs when the population grows or participation rate rises. Investment in human capital such as formal education and on the job experience. Investment in physical capital such as factories, machines, transportation and communication facilities. Technological change brought about by innovation that introduces new products, new ways of producing existing products and new forms of business organization (Echekoba, Kanayo & Ifeoma, 2015).

Manufacturing sector is crucial for employment generation, wealth creation and raising the quality of life of Nigerians. However, the sector remains weak due to some challenges including poor state of the nation's infrastructure which imposes high cost of production, weak technical support and low level of innovations which lead to production of low-quality products (Okwori, Ochinyabo & Sule, 2014). Manufacturing sector refers to those industries which are involved in the manufacturing and processing of items and indulge or give free rein in either creation of new commodities or in value addition. The manufacturing sector of any economy worldwide is reputed to be engine of growth and

a catalyst for sustainable transformation and national development. This is because of its enormous potentials as a tool for creating wealth, generating employment, contributing to the country's Gross Domestic Product as well as alleviating poverty among the citizenry (Banjoko, Iwuji & Bagshaw, 2012).

The performance of the Nigerian manufacturing sector since independence has been unimpressive, the scenario is a mixture of initial mild growth and subsequent introgression. The Nigerian business environment is far from being friendly and congenial for manufacturing activities to thrive. The availability of critical infrastructures necessary to support the sector is far from being adequate. Import of essential raw materials are problematic and government bureaucracy is very cumbersome (Ojo & Ololade, 2014).

The dismal performance of the manufacturing sector in Nigeria could be attributed to massive importation of finished goods and inadequate financial support for the sector, which ultimately has contributed to the reduction in capacity utilization of the manufacturing sector in Nigeria. The insignificant contribution of the sector to gross domestic product could be as a result of continued deterioration in infrastructural facility as well as lack of access to cheap finance (Nwandu, 2016).

Manufacturing sector in Nigeria is expected to play crucial role in the economy by way of generating employment, create foreign exchange earnings through export of its products and improve the standard of living of people. Unfortunately, many factories in Nigeria have reduced their scale of operations completely and even some had to close down due to several challenges confronting them and this has made manufacturing sector in Nigeria not to play the major role expected of them in terms of contribution to economic growth of the nation. Given the importance of high productivity in boosting economic growth and standard of living of the people, this study evaluates performance of the Nigerian manufacturing sector in economic growth of Nigeria.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Manufacturing

Manufacturing sector refers to those industries which are involved in the manufacturing and processing of items and indulge or give free rein in either the creation of new commodities or in value addition. The manufacturing sector of any economy worldwide is reputed to be the engine of growth and catalyst for sustainable transformation and national development (Banjoko, Iwuji & Bagshaw, 2012). Manufacturing output is a pre-requisite for economic development of any nation.

Investment in manufacturing sub-sector depends upon the rate of interest involved in getting fund from the financial institutions. Interest rate play an important role in the economic lives as it is the cost of borrowing for those who need resources and reward for lending to those with savings. Higher interest rates tend to restrict the growth of credit, making it harder for manufacturers to get financing and for individuals to find and keep their jobs (Bache & Barnhardsen, 2009).

The contribution of the manufacturing industries in the economy cannot be overemphasized when considering its employment potentials and financial impacts on the economy. Apart from its role of building grounds for development by laying solid foundation for the economy, it also serves as import substituting industry and provide ready market for intermediate goods (Ojo & Ololade, 2014). The Nigerian manufacturing sector is characterized by high geographical concentration, high production costs, and low value-added, serious capacity under-utilization, high import content of industrial output and low level of foreign investment in the manufacturing sector (Nwandu, 2016).

2.1.2 Economic Growth

Economic growth is the positive and sustained increase in aggregate goods and services produced in an economy within a given time period (Uwakaeme, 2015).

Kadar (2011) defined economic growth as the yearly rate of movement in a country's real gross domestic product (GDP). Mladen (2015) looked at economic growth as the changes in material production during a relative short period of time, usually one year.

The Solow neoclassical growth model in particular represented the seminal:
$Y = K^a (AL)^{1-a}$

Where:
Y = Gross Domestic Product
K = Stock of capital (which may include human capital as well as physical capital)
L = Labour
A = Labour productivity, which grows at an exogenous rate
1-a = The elasticity of output with respect to capital

According to traditional neoclassical growth theory, output growth results from one or more of three factors: increase in labour quantity and quality (through population growth and education), increases in capital (through savings and investment), and improvements in technology (Todaro & Smith, 2004).

2.2 Theoretical Review

2.2.1 Neo-Classical Growth Model

This model was first devised by Robert Solow. This model states that a sustained increase in capital investment increases growth only temporarily, because the ratio of capital to labour goes up i.e. there is more capital for each worker to use and so become self-employed, shortening labour supply which is in it a prerequisite for growth. Neo-classical economics who subscribed to the Solow model believe that to raise an economy's long term trend rate of growth requires an increase in the labour supply and also a higher level of productivity of labour and capital. Thus, for the Nigerian economy, an improvement of capital and labour productivity in proportionate ratios is very important for economic growth. Where one exceeds the other, instead of growth, stagnation would occur. Labour without sufficient capital leaves it disorganized and unused, posting many hands without work. Neo-classical theory concluded that labour and capital need to grow in harmony for the optimal health of the economy.

2.2.2 Endogenous Growth Theory

An economic theory which argues that economic growth is generated from within a system as a direct result of internal processes. More specifically, the theory notes that the enhancement of a nation's human capital will lead to economic growth by means of the development of new forms of technology and efficient and effective means of production. Endogenous growth theory holds that economic growth is primarily the result of endogenous and not external forces. Endogenous growth theory holds that investment in human capital, innovation and knowledge are significant contributors to economic growth. The theory also focusses on positive externalities and spillover effects of a knowledge-based economy which will lead to economic development.

One of the main failings of endogenous growth theory is the collective failure to explain conditional convergence reported in the empirical literature (Romer, 1994).

2.3 Empirical Review

Opaoluwa, Umeh and Almen (2010) studied the impact of exchange rate volatility on manufacturing sector in Nigeria between 1986 and 2005. The study focused principally on manufacturing gross domestic product (GDP) as the dependent variable and manufacturing foreign private investment, manufacturing employment rate and exchange rate as the explanatory variables. Findings from the study showed that exchange rate and manufacturing foreign private investment adversely affect the performance of manufacturing sector in Nigeria.

Udoka and Roland (2012) investigated interest rate volatility on economic growth in Nigeria from 1970 to 2010, the research collected data from CBN statistical Bulletin. *Ex-post facto* research design was employed, while Ordinary Least Square (OLS) multiple regression was used to arrive at finding of the study. The study found that interest rates and economic growth have an inverse relationship.

Lawal (2016) analyses the effect of exchange rate fluctuations on manufacturing sector output in Nigeria from 1986 to 2014. Data on manufacturing output, Consumer Price Index (CPI), Government Capital Expenditure (GCE) and Real Effective Exchange Rate (REER) were sourced from Central Bank of Nigeria Statistical Bulletin and analyzed through Auto-regressive Distribution Lag (ARDL). The study discovers that exchange rate fluctuations have long run and short run relationship on manufacturing sector output. The result shows that exchange rate has a positive effect on manufacturing sector output but not significant.

The study recommends that government should strategize to encourage exports and discourage imports in order to achieve a favourable balance of payment.

Ndu-Okereke and Nwachukwu (2017) studied the effect of exchange rate fluctuations on the Nigerian economy. Employing the use of Vector Auto Regression (VARs) models on the time series data, the result revealed that supply of foreign exchange has a positive and significant relationship with output level of Gross Domestic Product (GDP), while the demand for foreign exchange has a negative relationship with gross demand product. The study recommended an aggressive expansion of the Nigerian economy especially investment in the agricultural and manufacturing sectors of the Nigerian economy.

Mlambo (2020) carried out a study on exchange rate and manufacturing sector's performance in SACU States. The Southern African Customs Union (SACU) encompass four small members including Bostwana, Lesotho, Namibia and Swaziland (BLNS). Panel data for the period of 1995 to 2016 was used in the study. The result of the study revealed that manufacturing in SACU countries is hindered by structural limitations like exchange rate and some other factors, and imports, foreign direct investment (FDI) and exchange rate had a negative relationship with manufacturing performance, while inflation and exports had a positive relationship with manufacturing performance.

3.0 Methodology

The main objective of this study was to examine the relationship between manufacturing sector and economic growth in Nigeria from 2010 to 2019 *Ex-post facto* research design was adopted in this study.

Secondary data obtained from Central Bank of Nigeria Statistical Bulletin was used for this study.

3.1 Data Analysis Technique

The data analysis technique used to investigate the relationship of the independent variable on the dependent variable is Ordinary Least Square (OLS) Regression method.

3.2 Model Specification

The main issue in the investigation is the functional relationship between dependent variable (real gross domestic product) and the independent variables (share of manufacturing to GDP and average capacity utilization).

To determine the relationship between the dependent and independent variables, mathematical model specified below was used.

RGDP = *f* (SHMU, AVCU)

Statistical form:
$RGDP = \beta_0 + \beta_1 SHMU + \beta_2 AVCU$

Econometric form
$RGDP = \beta_0 + \beta_1 SHMU + \beta_2 AVCU + \mu$

Where:
RGDP–Real gross domestic product
SHMU–Share of manufacturing to GDP
AVCU-Average capacity utilization
β_0–is the constant
β_1 & β_2–the coefficient of the independent variables

4.0 Data Analysis and Discussion of Findings

Table 1. Real Gross Domestic Product (RGDP), Share of Manufacturing to RGDP (SHMU), Average Capacity Utilization (AVCU)

Year	RGDP (₦' million)	Share of Manufacturing to RGDP (₦' million)	Average Capacity Utilization Rate
2010	776332.21	32260.63	56.2
2011	834000.83	34680.54	55.8
2012	888893.00	37300.44	56.7
2013	912523.41	37523.56	57.1
2014	945261.86	38454.22	58.4
2015	985273.45	39968.72	59.1
2016	997281.83	40526.68	60.4
2017	1012345.12	41872.88	62.5
2018	1042535.62	43457.92	64.7
2019	1095231.82	45752.92	66.1
Source: Central Bank of Nigeria Statistical Bulletin (Various Years)			

5.0 Result of Regression Analysis

Table 2. Regression Analysis Results

Variable	Coefficient	Std. Error	t-test	P-value
Intercept (β_0)	4.322942	0.732246	5.903672	0.0000
SHMU	0.819940	0.112327	7.299584	0.0000
AVCU	0.178314	0.151626	1.176015	0.2534
F-statistic = 96.11899; Prob (F-statistic) = 0.000000; Durbin Watson = 0.169382				
Source: E-views Regression Output				

Arising from the regression analysis result above, the model of this study can be estimated as:
RGDP = 4.3222942 + 0.819940SHMU + 0.178314AVCU +e

The model above shows a positive relationship between the dependent variable (real GDP) and the independent variable (share of manufacturing to RGDP, average capacity utilization) i.e. an increase in share of manufacturing to RGDP or average capacity utilization will bring about an increase in RGDP. If the share of manufacturing RGDP increases by ₦1million, there will be a corresponding ₦0.81994million increase in the total RGDP. If average capacity utilization increases by ₦1million there will also be a ₦0.178314million increase in the value of RGDP. When the independent variables share of manufacturing to RGDP and average capacity utilization are zero, the value of RGDP will increase by ₦4.322942million.

5.1 Conclusion and Recommendations

The manufacturing sector plays an important role in the Nigerian economic growth. Based on the result of the regression analysis, there is a positive relationship between the manufacturing sector and real gross domestic product (RGDP) i.e. when the manufacturing sector output increases; there is also a corresponding increase in the RGDP figures. This simply means that if the governments of the nation encourage favourable fiscal and monetary policies, the manufacturing sector will grow.

5.2 Recommendations

Based on the result of this study, for the manufacturing sector to perform optimally, the following recommendations are made:

a) The government through Central Bank of Nigeria should ensure that sectoral allocation of loans and advances by banks to the manufacturing sector is increased.
b) All the government regulatory bodies should promote and encourage stability and continuity in policies i.e. a policy by an outgoing administration should not be thrown away by the incoming administration for steady growth in the manufacturing sector.
c) The government should focus more on improved infrastructural facilities and maintain existing ones like electricity, good road networks which are significant factors in the promotion of industrialization of any nation.
d) Manufacturing companies should be compelled to establish Research and Development departments (R & D). This in turn will bring modification to existing products/methods and discovery of new and better ones.
e) The government should endeavor to reduce dependence on importation of raw materials to reduce cost and increase 'value added'.
f) The government should reduce the tariffs on plants, machinery, and equipment to enable the manufacturing companies gain easy access to modern equipment's.
g) The government should encourage the establishment of more microfinance banks for easy access to micro credits by small and medium scale industries.

Conflicts of interest: The authors declare no conflicts of interest.

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Appendix

Department of variable: LOG (REPP)
Method: Least Squares
Date: 05/24/2022
Sample: 2010-2019
Included observations: 10

Variables	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	4.322942	0.732246	5.903672	0.0000
LOG (SHMU)	0.819940	0.112327	7.299584	0.0000
LOG (AVCU)	0.178314	0.151626	1.176015	0.2534
R-squared	0.905766	Mean dependent var		13.07481
Adjusted R-squared	0.896343	S.D. dependent var		0.325542
S.E. of regression	0.104811	Akaike info criterion		-1.552211
Sum squared resid	0.219706	Schwarz criterion		-1.404103
Log likelihood	20.85043	Hannan-Quinn criter.		-1.514962
F-Statistic	96.11899	Durbin-Watson stat		0.163982
Prob (F-statistic)	0.000000			
Source: E-views Regression Output				

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