

## Manufacturing Sector and Globalization Nexus in Nigeria: An Empirical Study



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**ABSTRACT:** Globalization is meant to efficiently allocate resources around the world to enable economic growth. Hence, the study took as its objective to examine the relationship between globalization and the Nigerian manufacturing sector. To achieve this, the study utilized annual time series data from 1986 to 2019. The analytical method followed the Paseran, Shin, and Smith (2001) ARDL approach. Bound cointegration test revealed that stable long run relationship exists among the variables. The result shows that overall globalization and economic globalization had negative and significant impact on manufacturing output growth in the long run. However, in the short run only economic globalization has a positive significant impact on manufacturing in Nigeria. Based on these findings, the study, therefore recommended that, the government should adopt proactive trade policies to protect and give competitive advantage to the domestic manufacturers.

**KEYWORDS:** Exchange rate, development globalization, manufacturing sector, trade openness.

### 1.0 INTRODUCTION

The concept globalization has attracted the attention of many scholars from diverse fields and has been explained differently by these scholars. The globalization phenomenon is a multi-dimensional process which includes political, economic, social, and cultural dimensions that have been variously explained in different terms and context (Akinboye, 2008). Although the political, cultural, social, and environmental aspects of globalization are no doubt important, the economic aspect is perceived to be the heart of the globalization process and most discussed (Obadan, 2008).

Globalization is the intensification of cross border trade, increased financial flows across border, and foreign direct investment (FDI) flows among nations, promoted by rapid advances in trade liberalization and in communication and information technology (Islam, 2002). It is the process of integrating economic decision making across the world and creating a global marketplace in which all nations participate. Thus, globalization entails a borderless world or global village with attendant increase in international trade and capital flows among countries of the world (Kwanashie, 1998). Globalization is therefore the integration of the world economy, and it involves the interdependence of nations around the world through borderless transactions and increased financial flows.

Globalization phenomenon, over the years, has been a contentious issue. It has been widely criticized by some, and widely praised by many others, because of its experiences and consequences which varies from country to country. Globalization has influence on industrialization, especially, in developing economies where there is shortage of capital and technology for production of goods and services. Today, as part of the moving trend of globalization Nigeria is a member of and signatory to many multilateral and regional trade agreements such as International Monetary Fund (IMF), World Trade Organization (WTO), Economic Community of West African States (ECOWAS), just to mention a few.

Despite all her efforts to meet up with the demands to these economic partnerships in terms of opening her borders, industrialization of the Nigerian economy is still a mirage. Manufacturing sector output contribution to GDP continues to fall annually, as employment share of the sector. It therefore creates doubt as to the contribution globalization to industrialization and the development of the manufacturing sector in Nigeria. Hence the following question quickly comes to mind: does globalization have any positive significant impact on manufacturing sector development in Nigeria? This work therefore seeks to investigate the effect of globalization on manufacturing development with special attention to Nigerian economy.

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This study will be of immense benefit to all research students, and the Nigerian Government. To the government, it will enable them to know globalization is affecting economy and what policy to implement in other to reap the benefit of globalization. The remaining part of the paper is structured into four sections as follows: section two (2) is the literature review. Section three (3) presents the empirical methodology, while section four (4) is the presentation of empirical results and discussion of findings. Section five (5) is devoted to the summary and conclusion from the study.

### **2.0 LITERATURE REVIEW**

The theoretical and empirical literature reviews of the study are presented in this section. First, we present the theoretical literature followed by the empirical literature.

#### **2.1 Theoretical Literature**

Theoretically, there are two main schools of thought on the argument about the role of globalization and economic growth. The classical economists from Adam Smith to Ricardo advocated the need for free trade and removal of all trade barriers to allow for free flow of goods and services across international geographical boundaries. Their main proposition is that free trade will institutionalize economies of scale, division of labor, along the line of absolute advantage or along the line of comparative advantage and increase output level. In other words, globalization, according to the classical economists, will stimulate productivity and overall growth in the economy and the world at large.

The classical economists were mainly concerned with economic growth, the role of the three primary factors of production and their shares in the national income. They concluded that apart from the important role of these factors of production, the size of the market matters for division of labor, productivity, and output growth. Hence, they advocate for free trade to encourage growth. Within the context of the globalization, the classical economists are in support of globalization.

The neoclassical economists examined the concept of economic growth from a different perspective. For the neoclassical economists, economic growth results from three main sources. The first source is the increase in quantity and quality of labor. The second source is the increase in accumulation of capital stock, and the third is technological. In the long run, increasing capital cannot grow the economy. Any increase in saving rate results in temporary economic growth during the transition period. However, because of the diminishing returns, the per capita income grows until the steady state. Once steady state is reached, economic growth becomes zero. To have growth, there must be technological progress.

The sources of the technological progress are the main argument between the exogenous and endogenous strands of the neoclassical growth theorist. The endogenous growth theory, proposed by Romer (1986) exerts that technological progress is endogenous. It comes from within; it results from investment and knowledge accumulated in the economy. Technological progress does not suffer from diminishing returns, and it has zero marginal cost once it has been produced. What this implies is that it is costless to multiply, and more application yield more output. With respect to globalization, the theory emphasizes domestic investment in capital goods, and R&D to engender technological progress and economic growth beyond the steady state. So, globalization is not important. What matters is investment to drive growth. The theory failed to address the case where there is insufficient domestic savings for investment. In this case, capital, and capital goods would have to be imported. The free movement of goods and services, and financial assets is now important.

The Solow–Swan (1956) exogenous model contradicts the Romer model. The argument of the Solow-Swan model is that technological progress arises from research and development activities around the world. Economies that are open will grow faster through interaction with outside world; while closed economy will grow slowly. Thus, close economies impede FDI flows, R&D, technological diffusion, and adoption. This will retard growth and underdeveloped economy. Therefore, opening the economy for the flow of FDI, good and services will accelerate growth and development in the developing countries. The theory gives significant importance to trade liberalization, and the globalization mantra as a strategy for development of the less developed countries.

#### **2.2 Empirical literature**

There is a plethora of empirical literature on the effect of globalization on manufacturing sector output at the national level using time series data, at the sectoral level, and using panel data in cross sections studies. The results of the studies vary in methods and findings. Some of the studies and their findings are summarized in Table 2.1

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**Table2.1:** Empirical Literature Review Summary

Author(s)/Year	Unit of Analysis	Period	Method	Globalization Variables used	Result
Offori-Atta (2017)	Ghana	1985-2013	Ordinary Least Squares (OLS) regression	FDI	Globalization had negative effect on Ghanaian manufacturing sector
Erumebor(2016)	Nigeria	1986-2010	Ordinary Least Squares (OLS) regression	trade openness and exchange rat	globalization has also had negative effects on Nigeria's industrial sector development
Odebode and Aras (2019)	Nigeria	2010Q1-2018Q4	Structural Vector Autoregressive (SVAR	Trade Openness and exchange rate	manufacturing output reacted negatively to Trade openness and exchange rate fluctuations
Gygli et al. (2019)	92 developing economies	2000-2016	Panel data approach	FDI, Trade Openness, exchange rate	globalization had a negative impact on economic growth in developing countries.
Olaniyi, Sakariyahu, & Ariyo. (2016)	Nigeria	1980-2014	OLS method	Exchange rate, and Trade openness	globalization has a positive impact on the performance of the Nigerian capital market
Nyeche and Ekine (2018)	Nigeria	1985-2016	ARDL	trade openness exchange rate and FDI	Trade openness and exchange rates had negative effect on GDP while FDI and exert insignificant influence on GDP
Bakare et al. (2020)	Nigeria	1981-2017	Vector Error Correction Model (VECM). Regression Techniques	trade openness index	Trade openness caused increase in the manufacturing output in Nigeria
Odebodeeta (2019)	Nigeria	2010-2018	Structural Vector Autoregressive (SVAR	Exchange rate and FDI	manufacturing output reacted negatively to exchange rate fluctuations.
Ali, Obayori and Obayori (2018)	Nigeria	1980-2016	Error Correction Model (ECM) analysis techniques	Trade openness index, and Exchange rate	The result shows that there is a short-run and long-run casual effect between globalization and manufacturing growth in Nigeria
Jonathan et al. (2015)	Nigeria	1980-2013	Vector Auto Regression (VAR) model	Trade openness, foreign direct investment, exchange rat	The result shows that globalization had positive and significant impact on manufacturing sector output

**Source:** Researcher' compilation.

It is noteworthy that the results from the empirical literature are, however, mixed. There is no consensus of the effect of globalization on manufacturing sector, both for Nigeria and other countries.

### 3.0 METHODOLOGY

This paper will adopt Ex Post Facto Research Design. The variables used in this research are properly outlined in table 3.1. The time series data which covers the period of 1986 to 2019 for the different variables will be subjected to a unit root test to determine their stationarity level. The model was then subjected to a bounds cointegration test to determine the long run relationship between globalization and the manufacturing sector in Nigeria. The result of the bounds test will lead to a short run analysis where the error correction mechanism of the model will be specified. Finally, post estimation tests will be conducted to

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check the integrity of the analysis. Residual normality test, autocorrelation test, heteroskedasticity test and Ramsey reset test will all be carried out under 5% probability level.

### 3.1 Model Specification

The analytical framework of the study is based on the Solow-Swan model in which economic growth results from factors outside the economy. It proposes that economic growth is primarily determined by external and independent forces. Therefore, playing on the world stage would afford a country the capacity to grow. The model is derived from conventional Cobb- Douglas production function in which foreign resources is introduced as an input in addition to labor and domestic capital. In the usual notation the production function can be written as follow

$$Y=AK^{\alpha}L^{\beta} \quad (3.1)$$

Where, K is capital formation, L is labour force, and A is the Solow Residual or Total Factor Productivity (TFP).  $\alpha$  and  $\beta$  are output elasticity with respect to capital and labour and  $\alpha +\beta= 1$ . According to Keller and Yeaple (2003), the TFP is a separately additive function of several variables including level of technology, institutional quality, foreign direct investment, foreign aid, and trade openness. Hence, we simplify and specify the functional model of globalization -manufacturing sector output growth nexus in Nigeria as:

$$MVA=f(GI ,EG,FDI TOP EXR) \quad (3.2)$$

We transform the implicit function above to explicit econometrics model as follows:

$$MVA_i=\beta_0 +\beta_1 GI_i+\beta_2 EG_i+\beta_3 FDI_i+\beta_4 TOP_i+\beta_5 EXR_i +\mu_i \quad (3.3)$$

Where  $MVA_i$  is manufacturing sector value added to GDP,  $GI_i$  is overall globalization index,  $EG_i$  is economic globalization,  $FDI_i$  is foreign direct investment,  $TOP_i$  is trade openness, and  $EXR_i$  is exchange rate.  $\beta_0$  is a constant,  $\beta_1 \dots \beta_5$  are model parameter estimators, and  $\mu_i$  is a white noise error term.

**Table 3.1:** Explanation of Variables

Variable	Measurement	Sources of Data
Manufacturing Sector Output (MVA)	Manufacturing sector value added to GDP per annum. It is measured in billions of naira	Central Bank of Nigeria Statistical bulletin (various issues)
Globalization Index	Composite index of economic, social, and political dimensions of globalization	KOF Index of Globalization (2019)
Economic Globalization	Composite index of trade flows portfolio investment, and level of trade restrictions that applies to a country	KOF Index of Globalization (2019)
Foreign Direct investment	FDI Inward flow is the value of foreign investors equity in Nigeria and net loans to enterprises in Nigeria it is measured in U.S dollars	Central Bank of Nigeria Statistical bulletin (various issues), UNCTAD, OECD
Trade Openness	Export plus import divided by GDP, it is an index ranging from 1 to 100	World Bank's World Dev. Indicator (WDI)/CEIC global data base . OECD
Exchange rate	The amount of naira given up in exchange for one dollar	Central Bank of Nigeria Bulletin

Source: author's compilation

All data are secondary in nature and were collected from 1990 to 2019.

## 4.0 EMPIRICAL RESULTS AND DISCUSSION

This section of the study presents the empirical results and discussed the findings as follows:

### 4.1 Unit Root Test Results

The result of the Augmented Dickey-Fuller (ADF) is contained in table 4.1 below. The critical t- statistic at 5% probability level is 3.6220.

Table 4.1: Unit Root Test Results

Variable	Augmented Dickey Fuller (ADF)		
	Level	First Diff	Order
MVA	-1.2144	-5.0479	I (1)
GI	-1.5410	-5.9151	I (1)
EG	-2.4892	-6.9929	I (1)
FDI	-4.1324	-	I (0)
TOP	-2.7721	-6.4581	I (1)
EXR	-1.5153	-3.8783	I(1)

Source: E-view computer output

The unit root test shows that all the variables, apart from FDI, have unit root at level for the Augmented Dickey-Fuller (ADF) test. Foreign Direct Investment (FDI) is stationary at level. However, all the other variables, apart from FDI, are first difference stationary, that is, they are I (1) series, or integrated of order 1. FDI is integrated of order 0 and therefore is I (0) series. The next step is to examine the integrated variables for cointegration, to see if there is any stable long run relationship among the variables.

4.2 ARDL/Bound Co integration Test

The ARDL/Bound Cointegration Test approach was adopted to examine the integrated variables for cointegration. The result is presented in Table 4.2.

Table 4.2: ARDL/Bound Test Result

F-Bound Test	Null Hypothesis: No levels relationship	Actual Sample Size: N= 29		
Test Statistic	Value	Signif.	I(0)	I(1)
F-Statistics	4.1340			
K	5	10%	2.331	3.417
		5%	2.804	4.013
		1.00%	3.900	5.419

Source: E-view computer printout

The ARDL/Bound test result in Table 4.2 shows that the variables are cointegrated. The empirical F-Statistics is greater than the upper critical bound statistics at 5% probability level, thus, the null hypothesis which says there is no level relationship is rejected at 5% probability level. This implies that there is a fixed long run relationship among the variables of globalization and manufacturing sector performance in Nigerian economy. We proceed to presenting the long run impact coefficients of the effect of globalization on Nigeria’s manufacturing sector during the period under review.

4.3 ARDL Model Parameter Estimates

Having identified that the variables in the empirical model are cointegrated. We proceeded to estimate and present the model parameter estimates. First, the long run coefficients and second the short run coefficients. The long run and the short run coefficients are presented in Table 4.3 and 4.4 respectively.

Table 4.3: Long Run Coefficients

Variable	Coefficient	St. Error	t-Statistics	Prob.
GI	-0.6424	0.2861	-2.2456	0.0427
EG	-0.2058	0.0861	-2.3897	0.0327
FDI	0.0000	0.0000	0.2354	0.8175

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TOP	-0.1053	0.0442	-2.3826	0.0331
EXR	-0.0572	0.0250	-2.2873	0.0396

Source: E-view computer output

The long run coefficients presented in Table 4.3 above show the effect of globalization variables on Nigeria's manufacturing sector performance in terms of output. The table reveals that globalization index (GI) negative and significant impact on manufacturing sector output. This is in line with the a priori expectation for the variable and economic theory. This implies that increase in overall globalization had positive impact on the Nigerian manufacturing sector. Specifically, increase in Nigeria's globalization index led to increase in Nigeria's manufacturing sector output by 0.6424. The relationship between economic globalization and manufacturing sector output is negative, but significant. This implies that increase in Nigeria's economic globalization index (EG) had negative impact on Nigeria's manufacturing sector output during the period under review.

The impact of FDI on the Nigerian manufacturing sector in the long run is positive. But insignificant it implies that the inflow of FDI to Nigeria during the period under review has not been beneficial to the Nigerian manufacturing sector. The impact of Trade Openness (TOP) on Nigerian manufacturing sector out is negative and statistically significant. The implication is that the openness of Nigerian economy during the period under review had negative impact on the Nigerian manufacturing sector. This is contrary to the a priori expectation for the variable. The relationship between Naira's exchange rate (EXR) and the manufacturing sector output is negative, but significant. The sign of the variable coefficient conforms to the a priori expectation for the variable. The result implies that. During the period under review, variations of the value of the Nigerian currency had negative effect on the Nigerian manufacturing. In all, the impact of globalization on the Nigerian manufacturing sector in the long run is negative. We proceed to examine the short run impact of globalization on manufacturing sector.

### Short Run Coefficients

Variable	Coefficient	St. Error	t-Statistics	Prob.
D(EG(-1))	0.0487	0.0196	2.48192	0.028
D(EXR(-1))	0.0329	0.0085	3.86137	0.002
D(FDI(-2))	0.0001	0.0542	0.00184	0.173
D(TOP(-1))	0.0000	0.0251	0.0039	0.459
CointEq(-1)*	-0.4171	0.0641	-6.50339	0.000

Source:

The short run impact of globalization on manufacturing sector output as presented in Table 4.7 reveals that Economic Globalization (EG), exchange rate Variations (EXR), Trade Openness (TOP), and foreign direct investment (FDI) had positive effect on manufacturing sector output. However, the impacts of FDI and trade openness were statistically insignificant in the short run. Overall globalization index had no short run effect on manufacturing sector out. The insignificant impact of FDI and TOP is a direct consequence of the fact that FDI and Trade Openness have long and significant impact lags. This will make their impact insignificant in the short run, but significant in the long run after adjustments. The coefficient of the Error correction mechanism (CointEq (-1) \*) is negative and statistically significant. The coefficient of the variable is appropriately signed and significant. The absolute value of the coefficient, -0.4171, implies that the speed of adjustment of the model to the long run equilibrium value is about 4% within one year.

### 4.4 Post Estimation Tests

Post estimation tests examine the model employed for the empirical analysis and the parameter estimates whether they meet the basic assumptions of the Ordinary Least Square (OLS) regression techniques. The diagnostic test carried out on the model and the parameter estimates are the residual normality test, autocorrelation test, heteroskedasticity, and model specification error tests. All tests were conducted at 0.05 level of significance. The summary of the results of the tests are presented in table 4.8 below.

Table 4.4 Diagnostic Test Results

Test	Method	Empirical Statistics	Prob.	Remarks
Residual Normality	Jacque-Bera(JB)	1.438	0.4871	Accepted

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Autocorrelation	Breusch-Godfrey Test	1.914	0.1666	Accepted
Heteroskedasticity	ARCH Test	0.093	0.7602	Accepted
Model Specification	Ramsey RESET	0.048	0.8303	Accepted

Source: E-view computer output

The Jacque- Bera (JB) test of residual normality shows that the estimated residuals have normal distribution. Thus, the null hypothesis is accepted at 0.05 level of significance. The autocorrelation test shows no evidence of autocorrelation among the estimated error terms. The Bresuch-Godfrey test statistic value is far much lower than the critical value at 0.05 levels. Thus, the null hypothesis of the test is accepted. The Autoregressive Conditional Heteroskedasticity (ARCH) test of heteroskedasticity supports the acceptance of the null hypothesis at 0.05 levels of significance. It therefore implies that there is no evidence of heteroskedasticity in the estimated error terms. The test of model specification error using the Ramsey Regression Specification Error Test (RESET) indicates that the model employed for the analysis was correctly specified. Based on the results of the model diagnostic test, we can confidently declare that the model parameter estimates are the Best Linear Unbiased and Efficient Estimators.

### 5.0 SUMMARY AND CONCLUSION

The study examined how globalization affects the performance of the Nigerian manufacturing sector between the period 1990 and 2019. The objective of the study was to estimate the effect of globalization on the Nigerian manufacturing sector output contribution to the GDP during the period under review. The study adopted Ex-Post research design approach using secondary data collected from various sources and a multiple regression model which has Nigerian manufacturing sector output contribution to GDP as the dependent variable, while overall globalization index, economic globalization, foreign direct investment, and trade openness were the independent variables.

The empirical model was estimated using the Pesaran, Smith, and Shin (2001) Autoregressive Distributed Lag/Bound test cointegration analysis techniques. The ARDL/Bound cointegration test shows that the variables in the model have stable long run relationship. Estimates of the long run coefficients revealed that the overall globalization index has positive and significant impact on the manufacturing sector out during the period under review. However, economic globalization index and foreign exchange variations have negative, but significant effect on the manufacturing sector output in the long run. Trade openness and foreign direct investment had negligible and insignificant impact on manufacturing sector out in the long run. The short run impact of economic globalization and exchange rate were found to be positive and significant, while FDI and trade openness were not significant.

Based on the findings from the study, it is evident that globalization had negative effect on the Nigerian manufacturing sector. The annual output of the sector declined heavily under the influence financial and trade liberalization. The sector lost it market in the West African region and the domestic market in the face of cheaper and more sophisticated products from European and Asian manufacturers. The problem has been compounded by huge infrastructure deficit, macroeconomic instability, exchange rate instability, galloping inflation, negative real interest rate, price instability, and sluggish economic growth. The manufacturing sector is important for job creation, industrial sector development, and economic growth, reserves conservation and foreign exchange earnings. The dwindling fortune of the Nigerian manufacturing sector has to be mitigated policy responses that protect critical the sectors from the raving influence of globalization and competitions from developed economies, while at the same time, not restricting international trade and consumers choices and variety space.

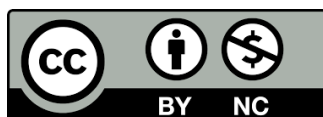
To achieve this, the government should adopt proactive trade policies, especially, policies that protect the domestic manufacturers and give competitive advantage to the manufacturers in the regional and domestic markets. Trade policies such as most rules of origin, most favored nations clauses, local content requirement, and high tariff on non-essential goods should be pursued to local manufacturers afloat.

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