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The Nigerian Manufacturing Sector in the Era of Globalisation: Evidence from an Error Correction Model

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Abstract

Purpose: Globalization has been adjudged to be an exploitative instrument used by the Western world to advance their economy at the expense of the developing countries. In view of this, this study was developed to examine the impact of globalisation on the Nigerian manufacturing sector. **Method:** The study adopted the Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) to estimate and analyse the long and short-run impacts of globalisation on manufacturing value added in Nigeria using data collected from **KOF Swiss Economic Institute**, and **World Bank Development Indicators (WDI)**, covering the period from **1981 to 2020**. **Findings:** The estimated model established that globalisation has a positive connection with manufacturing value added in Nigeria both in the short and long-run, though not statistically significant. Based on the t-statistics of the individual variables, the study came to the conclusion that although globalisation had impacted more positively on the Nigerian economy, there were still rooms for improvement, especially as regards infrastructural development, which shows a negative connection with manufacturing value added. **Originality:** The study adds to the existing literature on the globalization-growth nexus by looking at the manufacturing sector of the economy, an aspect which most researchers have been neglecting.

Key words: Development, Economic growth, Globalization, Industry, Manufacturing, Nigeria

JEL Classification: F02, F13, L10

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1. Introduction

In recent years, academics and organisations have paid close attention to the idea of globalisation as well as its participants, practices, and implications for developing nations. The International Monetary Fund (IMF) lists four key aspects of globalisation: commerce and business dealings; financial and investment travel; movement and human mobility; and knowledge dissemination. Every country on the globe focuses on achieving a certain set of macroeconomic goals with the intention of raising its inhabitants' quality of living and fostering economic expansion. Interaction with the world economies on a global scale is one way to do this. Thus, the contact and integration of people, businesses, and governments from around the world is how globalisation is defined

(**Konyeaso, 2016**). Although economic stabilisation measures had been in place since the late 1970s, the Structural Adjustment Programme (SAP), which was launched in 1986 under General Ibrahim Babangida's administration, marked Nigeria first attempt to open-up its economy to the global economy (**Joseph and Andrew, 2019**; Ifeanyi, 2004, in **Essien and Mozie, 2012**).

Prior to SAP, the manufacturing sector had yearly growth of 8.4% of GDP in 1980, a decrease to 5.29 percent in 1989, and then a final increase to 4% in 1993. It saw negative growth from 1994 to 2004 and zero growth in 2005. (**CBN, 2020**). Prior to SAP, the exchange rate was 1.60 to 1.00. It fell to 4.6 to 1.00 in 1986, 128.65 to 1.00 in 2006, and roughly 365.00 to 1.00 as of 2018.

(CBN, 2020). Nigeria attracted \$588 million in foreign direct investment in 1990. It was \$1.07 million in 1995 but had fallen to \$930 million by 2000. Nigeria only received \$1.1 billion, or 0.13 percent, of the \$823.8 billion global FDI flow in 2001. (UNCTAD 2002, in Emmanuel and Eguavoen, 2007). This low figure demonstrates the nation's exclusion from the mainstream of capitalism.

Over time, the manufacturing sector's GDP contribution has decreased, from a peak of 13% in the early 1980s to an average of 4% from 2008 to 2011. (Indexmundi, 2020). Nigeria's official manufacturing industry produced a total of N6.84 trillion in manufacturing in 2010, according to the Manufacturers Association of Nigeria (MAN, 1989). In 2011, it increased by N1.3 trillion (19.37%) to N8.17 trillion, and by N1.65 trillion (20.22%) to N9.82 trillion in 2012. Food, Beverage, and Tobacco Activity output dominated the manufacturing sector in all three years, accounting for N4.93 trillion or 72 percent of total output in 2010. Regardless of activity growth of N488 billion (9.91%) in 2011 and N712.7 billion (13.15%) in 2012, the overall production share fell to 66.32 percent and 62.42 percent in 2011 and 2012, respectively.

The manufacturing of textiles, clothes, and footwear comprised the second-largest portion of industrial output in 2010, contributing 11.58 percent to the total output of N792.69 billion. A total of N1.19 trillion, or 14.57 percent of total output, was produced in 2011, an increase of N398 billion or 50.21 percent. Due to an increase in output of 38.81%, 2012 saw a further increase in this percentage, with N1.65 trillion representing 16.82% of total output. In 2010, the production of manufactured goods totaled N392 billion (11.58 percent of the total) and N187 billion (5.73 percent) correspondingly. In addition, poor infrastructure, brought on by a lack of cash as a result of the financial market's undercapitalization, has reduced the manufacturing sector's output yield. As a result, over the past 20 years, the manufacturing sector in Nigeria has been considered to have deindustrialized. As a result, it is now necessary to assess whether an industry based on manufacturing can withstand the challenges and expectations of globalisation. Consequently, this study's goal is to investigate how globalisation has impacted Nigeria's manufacturing sector over the time frame under discussion.

Existing research suggests that by enabling many economies to open their borders and permit free trade within them, globalisation has benefited the industrial sectors of many economies. However, many other nations have experienced significant difficulties in benefiting from globalisation. Among the challenges are structural issues, inadequate and incorrect economic policies, and a high rate of embezzlement in the nation. They struggle to compete successfully in the global movement as a result of all these internal issues, and they are more prone to experiencing the negative effects of globalisation (Lee & Vivarelli, 2004).

In view of this, the study tends to answer the following research questions:

- What is the impact of globalization on manufacturing sector performance in Nigeria?

- What is the causal relationship between globalization and manufacturing sector in Nigeria?

The above questions shall be the focus of this study. The remaining part of the study is organized as follows: Section two looks at the existing literature, Section three highlights the methodology used for the study, Section four presents the results, while Section five concludes and make some policy recommendations.

2. Literature survey

2.1 Conceptualising globalisation

As various scholars and advocates have portrayed it from various angles, the idea of globalisation encompasses the entire spectrum of academic thought. Globalization involves the internationalisation and liberalisation processes (Ali, Awdini, and Adan, 2012; Orogwu et al, 2021). However, Ali et al. (2012) assert that the world has continuously shrunk due to the dynamics of competition for ends and growth brought on by globalisation. The geographical expansion of economic activity over a national country's boundary is also referred to as "globalisation" (Ruzzier, Hisrich & Antoncic, 2006). The term "globalisation" was first used, according to Ruzzier et al. (2006), when imperialism was gradually superseded as the predominant framework for businesses describing cross-border interactions between market economies. The process of business-to-business interaction and integration that has social and cultural implications is known as globalisation (Konyeaso, 2016). Without a doubt, the development of communication and transportation technologies has facilitated globalisation. Stronger global ties have led to an increase in international trade, ideas, and culture. According to the concepts given above, globalisation is defined in this study as the interaction and integration of individuals, businesses, and governments from around the world.

2.2 Empirical literature

A study on the effects of globalisation on the total factor productivity (TFP) performance of the Malaysian manufacturing sector from 1990 to 2008 was conducted by Sulaiman, Ismail, and Abidin (2012). The factors included in the study to indicate globalisation included FDI, technology, foreign labour, and economic openness. The manufacturing sector and 15 industries within that sector made up the first half of the analysis. The results demonstrated that FDI and economic openness were statistically significant and positively influenced the TFP of the manufacturing sector. However, there was no statistically significant difference between the number of technology agreements and foreign labour. The manufacturing sector's TFP performance was unaffected by either of the two variables. When analysing influences on TFP performance by industry, three sectors stood out: machinery and equipment products; scientific and measuring equipment products; and electronic and electrical products.

Using annual time series data, **Asuamah, Pinkrah, and Abbey (2016)** examined the stable long-run hypothesis between globalisation and manufacturing sector productivity for Ghana for the years 1961 to 2013. The Ganger causality test, the Augmented Dickey Fuller (ADF), the Kwiatkowski-Phillips-Schmidt-Shin (KPSS), the OLS regression, the Johansen test (long run analysis), the Vector Error Correction Model (VECM), and the Johansen test (short run analysis) were all utilised. The study's conclusions showed that while globalisation has had a favourable impact on the productivity of the manufacturing sector, the manufacturing sector has not profited from it. Globalization does not have a consistent long-term or short-term impact on the productivity of the industrial sector. According to the authors, neither the measures to boost the productivity of the manufacturing sector nor those to achieve globalisation are having the desired effects. Additionally, between 1962 and 2009, **Umaru, Hamidu, and Musa (2013)** examined the effects of globalisation on certain significant sectors of the Nigerian economy. The study found that while certain economic sectors, including agriculture, transportation, and communication, have benefited from globalisation, others, particularly those related to petroleum, manufacturing, and solid minerals, have suffered.

Ayodele et al. (2017) looked into how globalisation affected Nigeria's industrial expansion. The OLS regression analysis approach and time series data gathered from 1981 to 2014 were used in the study. Despite the fact that trade openness has a tendency to spur industrial growth, the results showed that Nigeria has not reaped the full benefits of globalisation. According to the results, trade openness, foreign direct investment, and the currency rate all significantly influenced industrial growth. Additionally, the nation was overly dependent on imports.

Notably, **Tran and Nguyen (2018)** investigated how globalisation affected Vietnam's economic growth from 1995 to 2014. The findings demonstrated that, as measured by the KOF index, globalisation encouraged economic growth and that Vietnam benefited from integration into the global economy. The economic growth of Vietnam was significantly and positively impacted by the globalisation index as a whole. The findings also showed that during the study period, economic globalisation had a highly beneficial impact on economic growth. The results demonstrated that while the balance of trade had a negative impact on economic growth, foreign direct investment and the exchange rate had a beneficial impact.

In their 2014 study, **Akinmulegun and Oluwole** evaluated Nigeria's industrial sector throughout the globalisation era. This study looks into how the manufacturing industry has contributed to Nigeria's economic expansion in the age of globalisation. Data on significant variables, including manufacturing production, trade openness, and current account balance, were examined using the Ordinary Least Square (OLS) econometric approach. It is anticipated that manufacturing output will increase as globalisation progresses. Even though Nigeria's manufacturing sector benefited from globalisation, the study discovered that the sector's level of development was extremely low. In other

words, the economic expansion of the industrial sector is mostly unaffected by globalisation. According to the study, efforts should be concentrated on enhancing the nation's macroeconomic, socio-infrastructure, and institutional environments as well as creating a strong connection between domestic and foreign institutions in order to properly channel funding into the creative manufacturing sector.

Konyeaso (2016) examined how Nigeria's industrial performance was impacted by the neoliberal globalisation of African countries. Contrary to what the World Bank said, the study's findings indicate that the globalisation process had a detrimental effect on the economic performance of manufacturing firms during that time. According to the findings of **Ali, Obayori, and Obayori's (2018)** research, combinations of the underlying explanatory variables of globalisation are accurate predictors of changes in the expansion of the manufacturing sector. In their 2016 study, **Agu, Anichebe, and Maduagwu** examined how globalisation has affected Nigeria's manufacturing industry. According to the data, trade liberalisation has a significant negative impact on Nigerian product consumption, although technology has a positive impact on product quality in the country's manufacturing sector. According to the report, globalisation is a double-edged sword that can improve or harm a developing nation's economic activities. **Okpokpo, Ifelunini, and Osuyali (2014)** explored globalisation as a significant driver of economic growth in Nigeria, using non-oil (agricultural and manufacturing) exports as a reference point. Utilizing data from 1970 to 2011 and OLS regression, the study demonstrated that during the study period, globalisation had little to no effect on non-oil exports. The findings show that the growth of Nigeria's non-oil exports has not been significantly influenced by globalisation.

Skare and Soriano (2021) examined how adoption of digital technologies is impacted by globalisation. The enhanced panel data model was employed to apply country-level data from the digital adoption index, KOF globalisation index, total factor productivity, and global competitive index to 183 countries. According to the study, globalisation has a significant impact on technical spillovers, digital technology adoption, and transfers across all countries. This suggests that nations that experience considerable technological change always exhibit convergence in the adoption of digital technologies.

In Nigeria, the effects of globalisation on technology were studied by **Oruma and Amah in 2021**. They examined various perspectives on globalisation as well as the types of technology available and further examined its ramifications in the context of Nigeria. According to the report, technological globalisation accelerates Nigeria's economic growth and provides enormous advantages for both the public and commercial sectors of the country's economy. This has made it possible for the Nigerian government to revive the economy's declining sectors through international trade and investment, while also encouraging the export of raw commodities, which are often in plentiful supply.

Sultana and Turkina (2020) investigated the relationship between FDI and technological development to determine whether the receiver's capacity for absorption is important. Global FDI networks were employed in the investigation from 2009 to 2016. Regression analysis and instrumental variable estimate methods were utilised to confirm the validity of their findings. Empirical data they gathered revealed a basic structure in the global FDI network, with core nations being more developed technologically than peripheral countries. The results also demonstrated a positive association between a country's equilibrium position in the global FDI network and its level of technical development, although this relationship may be mitigated by a country's capacity for absorption. The finding clarifies absorptive capacity and shows how a nation could win from FDI by replicating the factors that affect absorptive ability.

According to the analysis above, there are few empirical studies that examine the performance of Nigeria's manufacturing sector in relation to globalisation. It is vital to thoroughly explore the true effects of globalisation on Nigeria's manufacturing sector because the majority of the world's industrialised nations today attained industrialisation through globalisation or by adapting to other nations' methods of production. This is necessary as studies on globalisation have no agreement on the true impact of globalisation on growth, especially in developing countries, including Nigeria. More so, and in

disparity with most previous works, this study will be using the KOF globalization index for its analysis. Moreover, most previous studies often evaluate the impact of globalisation through various indicators such as foreign direct investment, trade openness, foreign labour, exports, technology, trade and financial liberalization, etc., but each of which only reflects one aspect of globalisation. The present study is an attempt to fill this gap by using a composite globalisation index as given by the Swiss Institute. This study is expected to provide information and input in the policymaking of the effort to increase manufacturing performance in Nigeria. The authors also expect this paper to provide valuable references for further studies on globalisation and manufacturing sector performance.

3. Data and methodology

3.1 Data

The sources of data for this study are the **KOF Swiss Economic Institute** and **World Bank Development Indicators (WDI)**. The time dimension for this study is from the years 1981 to 2020. Since the data is in secondary format, it would be measured as presented by the statistical recording source and analysed using E-views12 statistical software. The definition of variables used and the sources of data are presented in **Table 1**.

Table 1 Sources of data and description

Brief	Description	Source
MANV	Manufacturing, value added (% of GDP)	WDI
GLOB	KOF Swiss Economic Institute globalization index	KOF
GFCF	Gross fixed capital formation (% of GDP)	WDI
HCAP	Human capital index, based on years of schooling and returns to education	WDI
INFR	Electricity production from oil, gas and coal sources (% of total)	WDI

3.2 Methodology

A four-step technique was used in the econometric methodology for this study. To begin with, a unit root test was employed to examine the degree of integration among the variables under investigation. This is necessary since regression carried out with variables that are not stationary will yield spurious results. Second, a co-integration technique was applied to examine the casual long-run connection amongst the variables using the Bounds testing technique. Third, after establishing the existence of a long-run relation among the variables, the Error Correction Model (ECM) was applied. And lastly, the study ran a Granger Causality test between globalisation and manufacturing sector performance in Nigeria. Some diagnostic tests will be carried out in order to ensure that the model for this study is appropriate. These include the

tests for autocorrelation, heteroscedasticity, and the functional form of the model.

3.2.1 Model specification

The purpose of this study is to examine the impact of globalisation on the Nigerian manufacturing sector's performance between 1981 and 2020. The theoretical foundation of this work is the production function and Heckscher-Ohlin trade theory. To establish the relationship between globalisation and manufacturing sector performance, we use the implicit function:

$$MANV = f(GLOB, GFCF, HCAP, INFR) \quad (1)$$

The econometric form of the function will be given as:

$$MANV_t = \alpha_0 + \beta_1 GLOB_t + \beta_2 GFCF_t + \beta_3 HCAP_t + \beta_4 INFR_t + \mu_t \quad (2)$$

The above model will be used to answer the first objective of the study. That is, to investigate the impact of globalization on the Nigerian manufacturing sector performance. Where: MANV = Manufacturing value added, GFCF = Gross fixed capital formation, HCAP = Human capital index, INFR = Infrastructure development, α = Constant term, μ_t = Stochastic error term, $\alpha_0, \beta_1, \beta_2, \beta_3, \beta_4$, are the parameters to be estimated, t = The time period ($t = 1981, 1982, \dots, 2020$).

3.2.2 Method of Estimation

The model adopted for this study is the Autoregressive Distributed Lag (ARDL) Model. Following this, our model is specified as:

$$\Delta MANV_t = \alpha_0 + \sum_{i=1}^p \lambda_1 MANV_{t-1} + \sum_{i=0}^q \beta_1 \Delta GLOB_{t-1} + \sum_{i=0}^q \beta_2 \Delta GFCF_{t-1} + \sum_{i=0}^q \beta_3 \Delta HCAP_{t-1} + \sum_{i=0}^q \beta_4 \Delta INFR_{t-1} + \delta_1 MANV_{t-1} + \theta_1 GLOB_{t-1} + \theta_2 GFCF_{t-1} + \theta_3 HCAP_{t-1} + \theta_4 INFR_{t-1} + \mu_t \tag{3}$$

Suffice it to reiterate that co-integration provides the theoretical foundation for the error-correction model. Specifying equation (3) in the spirit of the error-correction model, we have:

$$\Delta MANV_t = \alpha_0 + \sum_{i=1}^p \lambda_1 MANV_{t-1} + \sum_{i=0}^q \beta_1 \Delta GLOB_{t-1} + \sum_{i=0}^q \beta_2 \Delta GFCF_{t-1} + \sum_{i=0}^q \beta_3 \Delta HCAP_{t-1} + \sum_{i=0}^q \beta_4 \Delta INFR_{t-1} + \beta ECM_{t-1} + \mu_t \tag{4}$$

The model above is used to adjust the estimation until the ECM turned negative. The negative sign of the coefficient of the error correction term ECM (-1) shows the statistical significance of the equation in terms of its associated t-value and probability value.

Objective 2: Determine the causality connection between globalization and manufacturing sector performance in Nigeria.

The Granger Causality test will be carried out to ascertain whether globalization contains any useful information for predicting manufacturing sector capacity utilization or whether it is manufacturing sector capacity utilization that contains useful information for predicting globalization.

The hypotheses to be tested include:

H_0 : Globalisation DOES NOT Granger cause Manufacturing Value Added

4. Results and discussions

4.1 Descriptive Statistic

It is necessary to describe the nature of the data used in its raw form in order to observe the variability and distribution of the variables. This is presented in **Table 2**.

Table 2 Summary Statistics

	MANV	GLOB	GFCF	HCAP	INFR
Mean	14.31	47.95	35.74	1.52	70.53
Minimum	6.55	36.99	14.17	1.19	58.14
Maximum	21.10	57.52	89.39	1.98	82.41
Std. Dev	5.10	7.26	19.19	0.27	7.56
Skewness	-0.02	-0.14	1.06	0.29	0.22
Observations	40	40	40	40	40

Source: Authors' computation

A cursory look at the summary statistics of the variables shown in **Table 2** above shows that the minimum and maximum manufacturing value added (MANV) was 6.55, recorded in 2010, and 21.10, recorded in 1985, respectively, with an overall average of 14.31. The standard deviation of 5.10 shows that MANV varied across the years. The Globalisation index (GLOB) ranges from 36.99 to 57.52 within the period under study, with an average of 47.95 and a standard deviation of 7.26. Gross fixed capital formation (GFCF) has a minimum value of 14.17 and a maximum value of 89.39, with an average of 35.74 and a standard deviation of 19.19. The Human capital index (HCAP) ranges between 1.19 and 1.98 with an average of 1.52. Going further, the infrastructure development index (INFR) has a minimum value of 58.14 and a maximum value of 82.41, with an average of 70.53. MANV and GLOB are negatively skewed, while GFCF, HCAP, and INFR are positively skewed.

4.2 Stationarity test of variables

This section begins with the test for stationarity of the variables in the model employing the ADF unit root test. The ADF test consists of estimating the equation:

$$\Delta Y_t = \alpha + \beta_t + \delta Y_{t-1} + \sum_{i=0}^m \phi_i \Delta Y_{t-1} + \mu_t$$

Where α represents the drift, t represent deterministic trend with a lag length large enough to ensure that μ_t is a white noise error term (**Gujarati, 2004**).

Table 3 ADF unit root test

Variables	ADF test statistics	5% Critical value	Order of integration
MANV	-7.54	-3.53	I(1)
GLOB	-5.59	-3.53	I(1)
GFCF	-3.72	-2.93	I(0)
HCAP	-4.43	-3.29	I(1)
INFR	-7.24	-2.94	I(1)

Source: Authors' computation. **Note:** MANV is manufacturing value added, GLOB is Globalisation index, GFCF is Gross fixed capital formation, HCAP is Human capital index, and INFR is Infrastructure development index.

The unit root result indicates that our variables are integrated of different orders. According to Pesaran and Shin (1999), which was later expanded by Pesaran, Shin, and Smith (2001), the best technique that allows the estimation of variables that are integrated into I(1) and I(0) is Autoregressive Distributed Lagged (ARDL). Therefore, the study adopted the Autoregressive Distributed Lagged (ARDL) and Error Correction Model (ECM) to estimate and analyse the long and short-run impact of globalisation on manufacturing value added in Nigeria. In addition, the Autoregressive Distributed Lagged (ARDL)-Bounds test procedure was used to examine the co-integration between globalisation and manufacturing value added in Nigeria.

4.3 ARDL co-integration bound test

Since it was observed that the variables are stationary in a different order, the study adopted the ARDL bound test to examine if there exists a long-run relationship among the variables of interest.

Table 4 ARDL bounds test

Table 5 Result of the ARDL model

Panel A: Long-Run Estimates – Dependent Variable: MANV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	-330.65	779.14	-0.42	0.68
GLOB	5.82	5.64	0.50	0.65
GFCF	2.85	5.64	0.50	0.62
HCAP	30.97	82.13	0.38	0.71
INFR	-0.94	1.98	-0.47	0.64

Panel B: Short-Run Estimates – Dependent Variable: Δ MANV

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Δ GLOB	0.30	0.33	0.88	0.39
Δ GLOB(-1)	0.78	0.32	2.43	0.03
Δ GFCF	0.30	0.11	2.75	0.02
Δ HCAP	64.02	82.11	0.78	0.45
Δ INFR	-0.12	0.24	-0.50	0.63
CointEq(-1)	-0.13	0.02	-7.58	0.0000

R-squared	0.85
Adj. R-Squared	0.71
F-statistic	3.730124
Durbin-Watson stat	2.015362
Prob(F-statistic)	0.001741

Source: Authors' estimation

4.5 Discussion of results

From the regression results obtained in Table 5, the values of the coefficients in Panel B revealed that the first lag of globalisation (GLOB(-1)) has a significant positive

Significance	Lower Bound Value	Upper Bound Value
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37
F-statistic	6.93	

Source: Authors' estimation

As presented in Table 4, the results reveal that the computed f-statistics (6.93) exceeds the upper bound (I(1)) at 1%, 5%, and even 10% levels. This therefore entails the rejection of the null hypothesis of no co-integrating relationship and hence concludes that there is the presence of a significant long-run relationship between globalisation and manufacturing sector performance in Nigeria.

4.4 Long-run and short-run model

With the establishment of the presence of a co-integrating (long-run) relationship between globalisation and manufacturing sector performance, the Autoregressive Distributed Lagged (ARDL) model was employed to examine the long-term and short-term behaviour of the variables. The optimal lag selection was guided by the Akaike Information Criterion (AIC) as ARDL (4, 4, 4, 3, 3).

impact on manufacturing value added (MANV) in Nigeria within the period under study. With a coefficient value of 0.78, the implication is that a unit increase in globalization index in the previous year will bring about 0.78 units increase in the value of the manufacturing value added in

the current year, all other factors remaining the same. In other words, an increase in the level of globalisation this year will result in an increase in the level of manufacturing value added in the coming year. The positive connection between globalization and manufacturing sector performance in the short-run is maintained in the long-run though not statistically significant. This finding is consistent with [Ebong \(2014\)](#), who used the Engle-Granger two-step and Johansen co-integration tests, as well as the vector auto regression technique, to investigate globalization and Nigeria's industrial development from 1960 to 2010. His findings demonstrated that globalisation has a substantial impact on Nigeria's industrial development. Trade openness, in particular, has had a significant impact on industrial development. There is no doubt that a well planned and executed collaboration either on a personal basis or international will yield positive results. As the great Economist David Richado puts it, countries gain when they interact with other countries of the world. This is made possible when a country concentrate only on those commodities in which she has comparative advantage over other countries, thereby leaving other goods for other countries with better comparative advantage to undertake and thereafter engage in exchange of the goods. Countries worldwide gain from this, as demonstrated by Richardo. This is what globalisation is capable of bringing to the table. Other related studies that agrees to this finding include: [Asuamah et al., \(2016\)](#); [Umaru et al., \(2013\)](#); [Ayodele et al., \(2017\)](#); [Tran and Nguyen \(2018\)](#); [Akinmulegun and Oluwole \(2014\)](#); [Oruma and Amah \(2021\)](#).

Furthermore, the findings of this study are consistent with [Ali, Obayori, and Obayori \(2018\)](#), who conducted research on globalisation and manufacturing sector growth in Nigeria. The findings clearly show that combinations of the underlying explanatory variables of globalisation are reliable sources for predicting changes in manufacturing sector growth. However, the result of this study contradicts some other studies that believe that globalisation has not been a blessing to Nigeria. These include: [Okpokpo, Ifelunini, and Osuyali \(2014\)](#); [Konyeaso \(2016\)](#); [Agu, Anichebe, and Maduagwu](#)

[\(2016\)](#). Their conclusion is that globalisation has not yielded the desired result in Nigeria and most developing economies.

In order to ensure that the results so obtained are robust, we introduced some control variables into our model. These include: gross fixed capital formation (GFCF), human capital index (HCAP), and infrastructural development (INFR). However, only gross fixed capital formation is said to have a significant positive connection with manufacturing sector performance in Nigeria in the short-run. This result is in agreement with the findings of [Orji et al. \(2019\)](#) and [Nwani \(2021\)](#). Human capital development showed a positive connection with manufacturing sector performance in the short-run, though not statistically significant, while infrastructure in Nigeria is said to be negatively connected with manufacturing sector performance in the short-run, also not statistically significant. All the control variables maintained their relationships in the long run.

The Error Correction Term (ECT), which assesses the speed of adjustment, is significant and negative. This reveals that the models have returned to their long-run equilibrium. Furthermore, the models corrected their short-run disequilibrium at a rate of 13% per year. The diagnostic test results of the ARDL model are also reported in [Table 6](#) and [Figure 1](#). All of the residuals meet all of the criteria, including normality, autocorrelation, and heteroscedasticity. As a result, conclusions can be derived from the models ([Dada, Olomola & Adedokun, 2021](#)). Furthermore, the R-squared and adjusted R-squared values are quite high, with a significant F-statistic, indicating the models' overall relevance. The cumulative sum of recursive residuals (CUSUM) test, introduced by [Persan and Pesaran \(1997\)](#), is also used to test the stability of the model parameters. This is aimed at ensuring that the models' parameters are stable. The CUSUM and CUSUM Squated curves remained between the two critical limits as shown in [Figures 2 and 3](#), confirming the model parameters' stability.

Table 6 Diagnostic tests

Test Statistics	Result
Autocorrelation: $\chi^2(2)$	1.169577(0.8665)
Heteroscedasticity: $\chi^2(1)$	0.590574(0.07)
Functional Form: Ramsey RESET F-stat (1, 148)	3.06857(0.0739)

Source: Authors' estimation

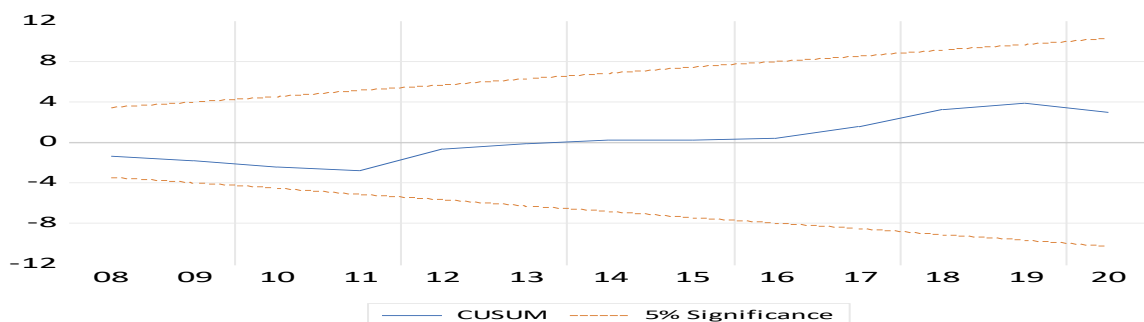


Figure 1: Stability test

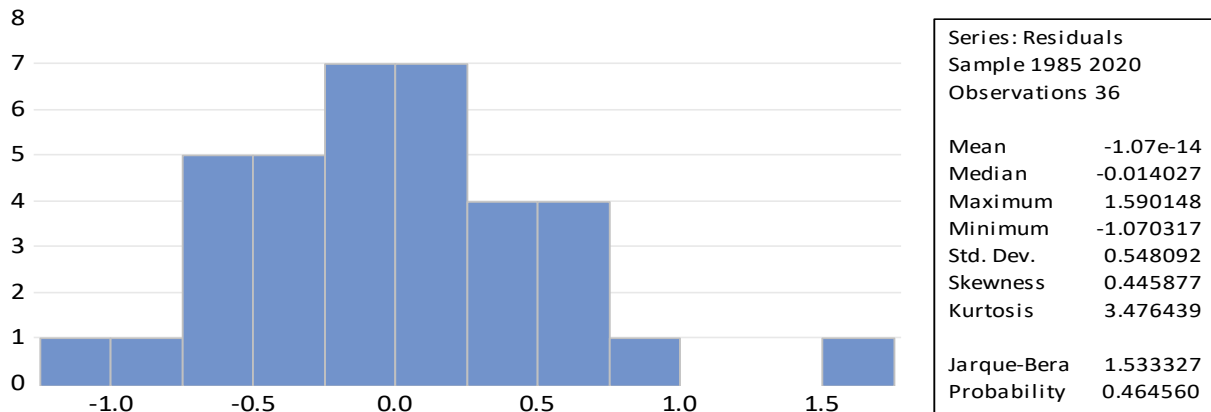


Fig 2: Plots of the cumulative sum (CUSUM) of recursive residuals

Table 7 Granger causality test

Null Hypothesis:	Obs	F-Statistic	Prob.
GLOB does not Granger Cause MANV	34	3.61956	0.0395
MANV does not Granger Cause GLOB		0.07016	0.0224

Source: Authors' estimation

With the probability levels of 0.03 and 0.02, the result indicates that we are rejecting the two null hypotheses. This implies that there is a causal relationship between globalisation and manufacturing value-added. In other words, globalisation spurs manufacturing sector value addition, while manufacturing value addition, in the same vein, spurs globalization.

5. Conclusions

This study investigated the role of globalisation on the manufacturing sector's performance in Nigeria. The focus on globalisation was informed by its central place in the policy advice offered to developing economies, including Nigeria, to drive broad-based growth and development in these countries. The results showed that globalisation has a positive connection with manufacturing value added both in the short-run and the long-run, though not statistically significant. The implication of this is that globalisation is a positive driver of manufacturing sector value added in Nigeria within the period under review, though the magnitude is insignificant. Therefore, in order to drive the productivity of the manufacturing sector, there is a need to focus more on globalisation since it is capable of turning around the manufacturing sector.

Owing to the findings, it is concluded that globalisation is good for a turnaround in the manufacturing sector, but a lot still needs to be done, especially in the area of infrastructural development, since it has been observed to have a negative impact on manufacturing sector performance in Nigeria. It is further recommended that

policymakers should ensure that Nigeria leverages the gains of globalisation by focusing on producing and exporting manufactured goods in which it enjoys a comparative advantage and cost effectiveness. Again, regulatory bodies should strive to limit the restrictions on capital goods in order to meet the macroeconomic objectives of boosting industrialization in Nigeria. The key players in the Nigerian capital market should strive to attract long-term capital and foreign investment by restoring confidence through transparency and international best practices.

Regardless of the government's strategies, foreign corporations have always been at the forefront of competitiveness in international and local markets due to their advantages in economies of scale over domestic competitors. As a result, if the country wants to gain the benefits of globalisation while avoiding its negative consequences, the government should provide some protection or subsidies for the new and domestic industries to avoid de-industrialization. These were the circumstances in China and other Asian countries during the start of their development. Trade liberalisation should be carried out in the areas where the country has a high comparative advantage compared to its trading partners. This will result in an increase in the market size for domestic output, which will, consequently, increase effective aggregate demand and lead to a reduction in the rate of unemployment. Firms operating within the areas of trade liberalisation should be given access to foreign exchange and the elimination of obstacles to their importation of raw materials.

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7. Competing Interests

Authors declare no competing interests.

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