TRADE LIBERALIZATION AND MANUFACTURING SECTOR OUTPUT IN NIGERIA: EVIDENCE FROM 1981–2023

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ABSTRACT
The manufacturing sector is widely regarded as a key driver of economic activities, yet its growth in Nigeria has remained sluggish despite various trade reforms and strategies. This study investigated the impact of trade liberalization on manufacturing sector output in Nigeria from 1981 to 2023. Employing annual time series data and the Dynamic Ordinary Least Squares (DOLS) estimation technique, the study analysed the relationship between trade liberalization and output growth, incorporating variables such as average tariff rate, exchange rate, inflation rate, interest rate, and foreign direct investment. The result revealed that the coefficient of Trade Liberalization Dummy (TLD) was found to be -17.14423 with a p-value of 0.8535 indicating that, on average, the period of trade liberalization in Nigeria was associated a 17.14 unit decline in manufacturing output growth. Besides, although individual explanatory variables were found to be statistically insignificant, the overall model was statistically significant, indicating that the joint effect of these variables plays a significant role in explaining variations in manufacturing sector output. The findings suggested that trade liberalization alone may not significantly influence the sector unless complemented by broader macroeconomic and structural policies. The study recommended a holistic and integrated policy approach rather than isolated trade reforms to enhance the performance and competitiveness of Nigeria's manufacturing sector.

Keywords*: Trade Liberalization, Output growth, Manufacturing sector, Dynamic OLS, foreign direct investment*

1. Introduction

Trade liberalization has emerged as a central pillar of global economic policy, driven by the belief that reducing or eliminating trade barriers would stimulate growth, enhance efficiency and deepen integration into the world economy. Across both developed and developing nations, the shift toward more open trade regimes

has reshaped industrial structures and influenced sectoral performance, particularly in manufacturing. In sub-Saharan Africa, and Nigeria in particular, the transition from protectionist policies to liberalized trade frameworks since the early 1980s has generated considerable debate regarding its impact on domestic industrial output.

Nigeria's move toward trade liberalization gained popularity with the Structural Adjustment Programme (SAP) introduced in 1986, which discouraged protectionist trade policies, and introducing economic reforms including tariff reduction, currency devaluation, and removal of import licensing (Emerenini & Ohadinma, 2018). While these reforms were intended to boost competitiveness and diversify the economy, the manufacturing sector experienced notable setbacks. For instance, manufacturing's share of GDP, which stood at approximately 10.5% in 1982, declined to around 6.5% by 1995, despite the liberalized trade regime. Between 2000 and 2010, Nigeria's average manufacturing growth rate hovered around 5%, but this momentum was short-lived, declining to 2.4% by 2020, according to the National Bureau of Statistics (NBS, 2020). The introduction of the African Continental Free Trade Area (AfCFTA) in 2021 has reinvigorated discussions around trade liberalization, offering Nigerian manufacturers access to market of over 1.4 billion people with combined GDP exceeding $3.4 trillion (Asongo, Jamala, Joel, & Waindu, 2013). This promising access to a vast regional market still raises concerns about Nigeria's readiness to compete effectively in the international market, particularly as many local firms remain ill-equipped to contend with cheaper and more efficiently produced imports from other countries.

The adoption of trade liberalization policy was expected to boost industrial productivity and diversify the economy. However, the manufacturing sector has continued to underperform, exhibiting declining output, reduced contribution to GDP, and rising import dependence. Despite decades of liberalization, structural weaknesses and competitive pressures have limited the sector's growth, raising concerns about the effectiveness of these policies. This raises important questions about the effectiveness of liberalization in the Nigerian context and underscores the need for a critical assessment of the policy's impact on output growth of the manufacturing sector in Nigeria.

This paper therefore seeks to investigate the impact of trade liberalization on manufacturing sector output in Nigeria from the period 1981 to 2023. To achieve this objective, the paper has been structured into five sections with section one as the introduction. Section two is the literature review. Section three discusses the methodology of the study. Section four is the presentation and discussion of findings. Section five forms the concluding and policy recommendation of the paper.

2. Literature Review

2.1 Conceptual and Theoretical Considerations

Trade liberalization is conceptualized in this paper as the systematic removal or reduction of restrictions on the free exchange of goods and services between nations. These restrictions include tariffs, import quotas, subsidies, and non-tariff barriers. While manufacturing sector output is conceptualized as the total value of goods produced by manufacturing industries within a country over a given period. It serves as a key indicator of industrial performance and is typically measured by the sector's contribution to Gross Domestic Product (GDP), growth rates, and capacity utilization. In Nigeria, manufacturing output reflects the overall health and productivity of the sector and is central to assessing the impact of economic policies such as trade liberalization.

This study is anchored on a blend of the Comparative Advantage Theory, the Infant Industry Argument, and insights from the Endogenous Growth Theory, to explain the dynamics between trade liberalization and manufacturing sector output in Nigeria. The Theory of Comparative Advantage, as proposed by David Ricardo, posits that countries gain from trade by specializing in the production of goods they can produce more efficiently and trading for others. In theory, trade liberalization should enable Nigeria to benefit from increased market access, lower input costs, and improved resource allocation, thereby boosting manufacturing output. However, the applicability of this theory to Nigeria has been challenged by the country's structural weaknesses, evident in limited access to capital, inadequate infrastructure, and low technological capacity.

To address these contextual limitations, the Infant Industry Argument offers a complementary perspective. This theory suggests that emerging domestic industries in developing countries often lack the capacity to compete with established foreign firms and may require temporary protection to mature. The premature and broad application of liberalization policies, particularly during the post-1986 Structural Adjustment era, may have exposed Nigeria's manufacturing sector to import pressures without adequate safeguards for growth and competitiveness.

Furthermore, the Endogenous Growth Theory provides a long-term perspective by emphasizing the role of policy, innovation, and knowledge spillovers in driving growth. In a liberalized trade environment, manufacturing output can grow through technology transfer, foreign direct investment, and improved productivity, provided the right domestic policies are in place to harness these gains. In Nigeria's case, weak policy implementation and institutional gaps may have limited these potential benefits.

Together, these theories form a comprehensive lens through which to examine whether trade liberalization has acted as a catalyst or a constraint on

aggregate manufacturing output in Nigeria over the study period. The framework allows the study to explore both the theoretical benefits of openness and the practical challenges faced by Nigeria's industrial sector as globalization continues to increase.

2.2 Empirical Review

A number of empirical works on trade liberalization has been carried out by different scholars with divergent opinions, for instance Akintunde, Akanbi, Oladipo, and Adedokun (2021) examined the impact of trade openness on manufacturing sector output across 12 selected developing countries using panel data analysis. The study employed the Pooled Mean Group (PMG) estimator within the ARDL framework, the study investigated both short- and long-run dynamics. Results revealed a significant positive long-run relationship between trade openness and manufacturing output, suggesting that liberalization can promote industrial growth when complemented by appropriate policy and structural conditions. However, the short-run effects were mixed or negative in several cases, highlighting the adjustment challenges and structural constraints faced by developing economies. The study underscored the importance of supportive macroeconomic environments and institutional frameworks in translating trade liberalization into sustained manufacturing growth.

In the same vein, Adekunle and Akinwale (2019) investigated the relationship between trade liberalization and the performance of the manufacturing sector in Nigeria over the period 1986 to 2018. Using the Autoregressive Distributed Lag (ARDL) model, the study assessed the long-run and short-run effects of trade liberalization, proxied by trade openness on manufacturing output. Findings of this study indicated that trade liberalization had a negative and statistically significant effect on manufacturing output in both the short and long run. The authors attributed this adverse impact to the premature exposure of Nigeria's nascent manufacturing sector to international competition, in the absence of adequate infrastructure, weak industrial policy support, and the dominance of imported goods.

Using firm level data, Goldar, Chawla and Behera (2020) set out to assess the impact of trade liberalization on the productivity of Indian Manufacturing firms. The Levinsohn-Petrin method was used to estimate the total factor productivity of the firms. Explanatory variables such as output, tariff rate, import and export intensity were utilized for the estimation of the econometric models. Results of this research revealed a significant positive effect on the productivity of manufacturing firms in India. Reduction in tariff exhibited a greater beneficial impact on total factor productivity in Indian manufacturing firms.

The impact of globalization on manufacturing output in Nigeria was analyzed by Aras and Odebode (2019) using quarterly data spanning the period 2010Q1 to 2018Q4. The study utilized the baseline Structural Vector Autoregressive (SVAR) model and variables employed consisted of trade openness as a proxy for globalization, financial integration, oil revenue, manufacturing output, exchange rate, and real transportation. Findings from the responses of the variables revealed that manufacturing output, financial integration and transportation responded significantly to the exchange rate shocks emanating from globalization. It established that manufacturing output reacted negatively to exchange rate fluctuations, implying that exchange rate is very important to manufacturing sector in Nigeria.

Siyakiya (2017) conducted an empirical investigation into the impact of trade openness on national productivity in selected African countries. Using panel data, the study applied the Fixed Effects and Generalized Method of Moments (GMM) estimation techniques to address potential endogeneity and unobserved heterogeneity. The results revealed a positive but weak relationship between trade openness and national productivity, suggesting that while openness has the potential to enhance productivity through channels such as technology transfer and competitive pressures, these effects are often constrained by structural deficiencies. Siyakiya emphasized that the gains from trade openness are contingent upon factors such as human capital development, infrastructure quality, and institutional strength.

Shaikh, Ram, Syed and Shah (2015) carried out an analysis of trade liberalization and South Asian Free Trade Agreement (SAFTA) on textile and rice production in the Pakistan economy, using the Global Trade Analysis Project (GTAP) model for the analysis. Result of this study revealed a positive relationship between SAFTA, textile and rice production in Pakistan.

While numerous studies have examined the relationship between trade liberalization and manufacturing performance in Nigeria and other developing economies, significant gaps exist. For instance, the study of Adekunle & Akinwale (2019) and Siyakiya (2017) focused on relatively short or segmented timeframes, often excluding more recent trade developments and their long-run effects. Additionally, most studies emphasized on either trade openness or aggregate productivity, without fully exploring the long-term sector-specific outcomes of liberalization on manufacturing output, particularly in the Nigerian context. Some of the studies reviewed were cross-country analyses which provide broad insights but lack the depth of country-specific outcomes.

This study addresses these gaps by providing a comprehensive, country-specific analysis of trade liberalization on manufacturing output over an extended period (1981–2024). It captures both the pre- and post-liberalization eras, offering a historical and empirical perspective on how liberalization has shaped the

performance of Nigeria's manufacturing sector over time. The study also contributes to knowledge by emphasizing the macro-structural context within which liberalization policies operate, thereby offering policy recommendations rooted in Nigeria's economic reality.

3. Methodology

This study utilized annual time series data such as output growth of the Manufacturing sector (OGM), Trade Liberalization Dummy (TLD) used to proxy Trade Liberalization, Average import tariff collection rate (ATR), Exchange rate (EXR), Inflation rate (INF), Interest rate (INR), and Foreign direct investment (FDI) from 1981 to 2023. Data was collected from secondary sources mainly from the Central Bank of Nigeria (CBN) Statistical Bulletin of various years and the World Development Indicator (WDI) while data on FDI was sourced from Index Mundi. Trade liberalization was proxied by a dummy indicator which is binary in nature. This means that trade liberalization dummy will take only the values 0 and 1. The use of dummy indicator helps the researcher to incorporate qualitative information into a regression analysis. In addition, to achieve the objective using the Dynamic OLS (DOLS) method of analysis.

3.1 Model Specification

To achieve the objective of examining the impact of trade liberalization on output growth of the manufacturing sector in Nigeria, the model was specified as follows:

$$OGM = F(TL) \quad (1)$$

But

$$TL = TLD, ATR, EXR, INF, INR, FDI \quad (2)$$

Then

$$OGM = F(TLD, ATR, EXR, INF, INR, FDI) \quad (3)$$

Where:
$OGM =$ Output growth of the manufacturing sector
$TLD =$ Trade Liberalization Dummy used to proxy Trade Liberalization.
$ATR =$ Average import tariff collection rate
$EXR =$ Exchange rate
$INF =$ Inflation rate
$INR =$ Interest rate
$FDI =$ Foreign direct investment

Hence, equation 3 is further re-specified into econometric form as:

$$lnOGM_t = \beta_0 + \beta_1 TLD_t + \beta_2 ATR_t + \beta_3 EXR_t + \beta_4 INF_t + \beta_5 INR_t + \beta_6 FDI_t + \varepsilon_t \quad (4)$$

Where:
ε_t = Error Term
β_0 = Intercept
$\beta_1, \ldots, \beta_6$ = Elasticity coefficients of the explanatory variables TLD, ATR, EXR, INF, INR, and FDI, respectively.

In view of this, equation 4 was re-specified following Stock and Watson (1993) Dynamic Ordinary Least Square (DOLS) as:

$$lnOGM_t = \beta_0 + \beta_1 TLD_t + \beta_2 ATR_t + \beta_3 EXR_t + \beta_4 INF_t + \beta_5 INR_t + \beta_6 FDI_t + \sum_{j-q}^{p} \overline{\theta_1} \Delta TLD_{t-j} + \sum_{j-q}^{p} \overline{\theta_2} \Delta ATR_{t-j} + \sum_{j-q}^{p} \overline{\theta_3} \Delta EXR_{t-j} + \sum_{j-q}^{p} \overline{\theta_4} \Delta INF_{t-j}^{F} + \sum_{j-q}^{p} \overline{\theta_5} \Delta INR_{t-j} + \sum_{j-q}^{p} \overline{\theta_6} \Delta FDI_{t-j} + \mu_t \quad (5)$$

A priori Expectation: $\beta_1, and\ \beta_6 > 0\ while\ \ \beta_2, \beta_3, \beta_4, and\ \beta_5 < 0.$

4. Results and Interpretation

In this section, the various pre-estimation tests and data analysis were carried out while the post-estimation test assist in diagnosing the model.

4.1 Pre-Test

Descriptive Statistics

Descriptive statistics for output growth of the manufacturing sector (OGM), average tariff rates (ATR), trade liberalization dummy (TLD), exchange rate ($EXCR$), interest rate (INR), inflation rate (INF) and FDI was evaluated and the outcome is displayed on Table 1 which summarized the basic statistical features of the data under consideration to know the distinctive features of each of the variables that made up the sample data and to determine whether there exist outliers.

The descriptive statistics results in Table 1 revealed that OGM had a mean of 3.92 suggesting that a relatively strong growth in the manufacturing sector output and standard deviation of 6.36 which implied that output growth in the manufacturing sector is more sensitive to economic shocks or fluctuations. Similarly, it was revealed that ATR had both mean and standard deviation of 17.97 and 14.86. This outcome prelude that the average tariff rate is relatively high, but there is significant variation, indicating that tariff rates differ substantially across

various industries or products. EXR had an arithmetic mean of 116.68 and standard deviation of 126.09, this high standard deviation suggested significant volatility in the exchange rate, implying that businesses will find it challenging to predict future exchange rates; this outcome has the potential to affect trade and investment decisions. INF revealed both mean and standard deviation values of 18.41 and 15.69 respectively, the high mean of inflation rate suggested that the economy is experiencing significant price increases and standard deviation indicated that inflation rates are also highly volatile. Furthermore, it was found that INT had a mean and standard deviation of 18.37 and 5.06, the relatively stable interest rate (INT) mean that monetary policy is relatively consistent, which can help businesses and investors make informed decisions in an economy that embraced trade liberalization. FDI had a mean value of 1.41 and a standard deviation of 1.24. This low standard deviation value indicated an insignificant variation in FDI. This means that there is little inflow of foreign investment into the country. TLD had a mean of 0.86 and standard deviation coefficient of 0.35. The maximum and minimum values of 1 and 0 for TLD are attributed to the use of dummy variables as proxy for trade liberalization.

Result from the coefficients of skewness revealed that most of the coefficients were slightly higher than 0. This finding showed that the variables OGM, ATR, EXR, INF, INT and FDI had positive values suggesting that they tilted toward the right tail of the normal curve. This justifies the assumption of symmetry of the normal distribution curve. The coefficients of the kurtosis which measures the peak of the distribution revealed that most of the variables had their coefficient within the benchmark of 3, indicating that they had flat tops in line with the normality assumption. However, OGM, TLD, INF and FDI had their coefficients slightly equal to 3.

Table 1: Results of Descriptive Statistics

	OGM	*TLD*	*ATR*	*EXR*	*INF*	*INT*	*FDI*
Mean	3.92	0.86	17.97	116.68	18.41	18.37	1.41
Standard Dev	6.36	0.35	14.86	126.09	15.69	5.06	1.24
Kurtosis	3.04	2.78	13.98	0.66	3.38	0.15	3.74
Skewness	0.14	2.16	3.33	1.22	1.96	0.19	1.82
Minimum	-13.00	0.00	8.22	0.61	5.40	9.25	0.19
Maximum	24.80	1.00	91.27	448.08	72.80	30.20	5.79
Count	43	43	43	43	43	43	43

Source: Researchers' Computation using *EViews 13*

Correlation Matrix

The correlation matrix suggested the existence of a significant weak correlation between the explanatory variables of trade liberalization. Some of the variables correlated negatively while others had positive association. The correlation matrix revealed that none of the variables had a correlation coefficient of up to 0.9. These coefficients of correlation are indicative that the estimated models which sought to establish the relationship between the dependent and independent variables were free from the problem of multicollinearity. This also presages that the explanatory variables of the independent variable were not correlated.

Table 2: Correlation Matrix

	OGM	*TLD*	*ATR*	*EXR*	*INF*	*INT*	*FDI*
OGM	1						
TLD	0.219	1					
ATR	-0.233	-0.399	1				
EXR	-0.076	0.374	-0.444	1			
INF	0.013	0.036	0.109	-0.274	1		
INT	0.141	0.670	-0.159	-0.224	0.326	1	
FDI	0.171	0.339	-0.122	-0.286	0.407	0.626	1

Source: Researchers' Computation using *EViews 13*

Unit Root Test

The study employed the Augmented Dickey-Fuller unit root test, and a summary of the obtained results is presented in Table 3.

Table 3: Augmented Dickey-Fuller (ADF) Test

Variable	**Coefficients**		**Order of Integration**
	@ Level	**@First Difference**	
OGM	-5.460358**	-8.149125**	1(0)
	(0.0000)	(0.0000)	
EXR	2.908253	-5.088599**	1(1)
	(1.0000)	(0.0001)	
ATR	-4.335755**	-4.945480**	1(0)
	(0.0013)	(0.0003)	
INR	-3.256645**	-2.696096	1(0)
	(0.0245)	(0.0845)	
INF	-3.063943**	-6.126784**	1(0)
	(0.0372)	(0.0000)	
FDI_GDP	-3.764092**	-8.455476**	1(0)
	(0.0064)	(0.0000)	

Source: Researchers' Computation using *EViews 13*

*Note: *** significance at 10%, ** significance at 5%, *significance at 1%*

The results of the ADF unit toot test revealed that most of the variables, that is OGM, ATR, INR, INF and FDI were stationary at level while EXR was found to be stationary at first difference. Furthermore, the results revealed a mixed order of integration, that is a combination of 1(0) and 1(1) order of integration. Consequently, the Dynamic Least Square (DOLS) estimation technique was considered appropriate because it takes into cognizance of lags and endogeneity properties.

Bounds Cointegration Test

The study used the bounds cointegration tests as the unit root indicated that the variables are stationary at level and after first difference. The F-statistic of 6.5551 exceeds all critical values for both I(0) and I(1) bounds (including the 1% level thresholds of 3.713 and 5.326), providing strong evidence of cointegration among the variables tested. This indicates a stable long-run equilibrium relationship exists. Based on this, the null hypothesis of no cointegration was rejected and concluded that there is a long-run relationship between trade liberalization and output growth of the manufacturing sector (OGM) in Nigeria.

Table 4: Bounds Cointegration Test

Test Statistic	**Value**		
F-Statistic	6.5551		
	Bounds critical value		
	10%	5%	1%
I(0)	2.254	2.685	3.713
I(1)	3.388	3.96	5.326

Source: Researchers' Computation using *EViews 13*

4.2 Discussion of Results

Table 5 presents the outcome of the DOLS analysis estimating for output growth of the manufacturing sector. The model was estimated using a 2 lag and 2 lead combination to capture the effects of past and future values of the independent variables on the dependent variable.

Table 5: Results of Long-Run DOLS Estimates for OGM

Long Run Equation	Coefficient	Prob.
TLD	-17.14423	0.8535
ATR	-1.126155	0.7356
FDI	-5.749973	0.6029
INF	0.068720	0.9524
INT	-0.499713	0.8226
EXR	0.043122	0.5333
C	56.85966	0.5290
F-test	278.4519	0.000000**
N	43	

Dependent Variable: OGM
***Note**:* ***, ** and * indicate significance at the 1%, 5% and 10% levels respectively.
Source: Researchers' Computation using *EViews 13*

The coefficient for the trade liberalization dummy (TLD) in the regression estimating the relationship between trade liberalization policy and manufacturing output growth in Nigeria was -17.14423, with a probability (p-value) of 0.8535. This result suggests that, on average, the period of trade liberalization is associated with a 17.14-unit decline in manufacturing output growth, holding other factors constant. However, the very high p-value (well above the 5% significance level) indicates that the relationship is not statistically significant. This outcome may reflect the complex and possibly adverse effects of trade liberalization on Nigeria's manufacturing sector. Trade liberalization, particularly if not accompanied by complementary domestic policies, can expose local industries many of which are uncompetitive and under-capitalized to intense foreign competition. Without adequate infrastructure, access to credit, or technological capacity, Nigerian manufacturers may struggle to adjust, leading to output decline or stagnation. Additionally, the insignificance of the result suggests that trade liberalization alone does not explain variations in manufacturing growth, possibly due to other overriding domestic constraints such as poor power supply, weak regulatory institutions, and infrastructural deficits.

The regression results revealed that the average tariff rate (ATR) has a negative coefficient of -1.126155, implying that higher tariff rates are associated with a decline in manufacturing output growth in Nigeria. This aligns with economic theory, which posits that trade liberalization reflected in reduction of tariffs can enhance manufacturing performance by improving access to cheaper inputs, technology, and broader markets. However, the relationship is statistically insignificant, with a p-value of 0.7356, suggesting that changes in the ATR do not

have any meaningful impact on manufacturing output growth in Nigeria over the study period. The insignificant impact of tariff rates on manufacturing output in Nigeria may be attributed to how the Nigerian manufacturing sector continues to grapple with deep-rooted structural challenges such as inadequate infrastructure, erratic power supply, and high production costs, which constrain its responsiveness to tariff changes. Moreover, the sector's heavy reliance on imported raw materials, coupled with exchange rate volatility and foreign exchange constraints, often undermines the intended benefits of lower tariffs. Policy inconsistencies and weak domestic linkages further reduce the effectiveness of tariff reforms, as manufacturers face difficulties in planning and scaling operations. In addition, non-tariff barriers such as customs inefficiencies and regulatory bottlenecks may have neutralized the expected positive effects of trade liberalization on manufacturing output.

The study further found that the coefficient of FDI was -5.749973 with a p-value of 0.6029, indicating a negative and statistically insignificant relationship between FDI and manufacturing output growth in Nigeria. This suggested that, contrary to theoretical expectations, higher FDI inflows were associated with a decline in manufacturing output. However, due to the insignificance of the result, the study could not establish a reliable link between FDI and manufacturing performance. It was observed that the bulk of FDI in Nigeria tends to flow into the oil and gas sector, with limited direct impact on manufacturing. Additionally, weak domestic linkages, minimal technology transfer, and the repatriation of profits by foreign firms were identified as possible factors limiting the positive impact of FDI. The study also noted that macroeconomic instability, poor infrastructure, and a challenging business environment may have further constrained the effectiveness of FDI in promoting manufacturing output growth.

Inflation rate reported a coefficient of 0.068720, with a p-value of 0.9524. This indicated a positive but highly insignificant relationship between inflation and manufacturing output growth in Nigeria. The positive coefficient implied that, theoretically, a rise in inflation was associated with a marginal increase in manufacturing output; however, the extremely high p-value suggested that this relationship was not statistically meaningful. The study inferred that inflation had no significant impact on the output of the manufacturing sector during the period under review. This outcome may reflect the fact that inflation in Nigeria is often driven by supply-side factors such as exchange rate depreciation, rising energy costs, and food price shocks rather than demand-pull pressures that might stimulate production. It was also observed that persistent inflation could create uncertainty in production planning, increase input costs, and erode consumer purchasing power, all of which are detrimental to manufacturing output growth.

Results of this study revealed that interest rate had a negative (-0.499713) and statistically insignificant (0.8226 greater than 0.05) effect on manufacturing sector output growth in Nigeria. suggesting that a unit increase in the interest rate would lead to a 0.4997 unit decrease in manufacturing output growth. However, the obtained p-value of 0.8226 indicated that this relationship was not statistically significant at 5% confidence level. This outcome revealed that changes in interest rate does not have a significant impact on manufacturing output growth, implying that interest rate may not serve as a significant channel through which trade liberalization influences the performance of the manufacturing sector in Nigeria.

The study indicated that exchange rate exerted a positive but statistically insignificant influence on the output of Nigeria's manufacturing sector. As exchange rate increases, manufacturing output also increases by 4.31 percent, implying that currency depreciation could potentially enhance the competitiveness of local manufacturers. However, the p-value of 0.5333 suggested that this relationship is not statistically significant at 5 percent confidence level. This weak impact may be attributed to structural challenges within Nigeria's manufacturing sector, such as heavy reliance on imported raw materials and machinery, which could offset any potential gains from exchange rate depreciation by increasing production costs. In essence, exchange rate was not identified as a significant driver of manufacturing sector output in the context of trade liberalization.

The F-statistic value of 278.4519 was reported with a corresponding p-value of 0.00000 indicating that the overall model was statistically significant. This result implies that the set of independent variables included in the model, jointly exert a significant influence on the output of the manufacturing sector in Nigeria. The result provided empirical justification for the model's validity in assessing the impact of trade liberalization on the manufacturing sector. It suggested that trade liberalization, along with other explanatory variables, play an important role in shaping manufacturing performance. The statistical significance of the model supports the conclusion that trade-related reforms and associated economic factors meaningfully influence output growth in Nigeria's manufacturing sector.

This outcome corroborates the works of Ogu et al. (2016), Ebenyi et al. (2017), and Akintunde et al. (2021) but disagrees with the findings of Umoru & Eborieme, (2013), Siyakiya (2017), Ogba, et al. (2018), Goldar et al. (2020) and Ogungbenle (2022). This result validates the new trade theory which stresses that trade openness must be supported by strategic domestic policies to improve productivity.

4.3 Post-Estimation Results

Diagnostics tests such as, Ramsey RESET, auto-correlation, heteroscedasticity as well as stability tests were conducted in this section. The outcomes of the post

estimation tests are presented on table 6 and it revealed that the model were well specified, linear and free of serial correlation.

Table 6: Post-Estimation Tests Results

Model MCU		
Diagnostic Test	**Statistic**	**p-value**
Ramsey RESET Test	0.015072	0.9904
Heteroscedasticity Test	0.728898	0.7331
Autocorrelation (Breusch-Godfrey LM test)	3.224678	0.3235
Stability (CUSUMSQ)	Unstable	

Source: Researchers' Computation using *EViews 13*

4.4 Test of Hypothesis

Hypothesis

H_0: Trade liberalization has no significant impact on the output growth of the manufacturing sector in Nigeria.

Decision Rule: If the p-value is less than the level of significance of 0.05, the null hypothesis is rejected.

Reject H_o if p-value < 0.05

Accept H_o if p-value > 0.05

The DOLS analysis in Table 6 revealed that the F-statistic employed to measure the combined impact of trade liberalization on manufacturing sector output growth showed a P-value of 0.8535. Hence, since the p-value is greater than the significance level of 0.05, the null hypothesis is not rejected, and the alternative hypothesis rejected. It is therefore inferred that Trade liberalization had no significant impact on the manufacturing sector output growth in Nigeria.

5. Conclusion and Recommendation

5.1 Conclusion

The primary focus of this study was to determine the impact of trade liberalization on the output growth of Nigeria's manufacturing sector. Evidence of the beneficial effects of trade liberalization on manufacturing sector output was investigated in the study. Despite the insignificance of individual variables, the overall models for output growth were statistically significant, indicating that the combined effect of the included variables is meaningful in explaining variations in manufacturing sector performance. This suggested the need for a holistic and integrated policy approach rather than isolated trade reforms to effectively stimulate Nigeria's manufacturing sector.

5.2 Recommendation

Based on the outcome of this investigation it was therefore recommended that The Nigerian Government through the Federal Ministry of Industry, Trade, and Investment (FMITI) should reassess its trade policies to better support local manufacturers to enhance productivity. This could be in form of investing in local skill development, industrial infrastructure, and low-interest credit to manufacturers to expand production and improve output in the Nigerian manufacturing sector. Investors in the sector should also collaborate to form industrial clusters and value chain networks to share infrastructure, knowledge and logistics. This will help lower operational cost and improve output and overall performance of the sector.

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