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### RESEARCH ARTICLE

#### TRADE LIBERALISATION THE TOOL TO PROMOTING SUSTAINABLE ECONOMIC GROWTH A CASE STUDY OF NIGERIA (1993 – 2023)

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#### Abstract

Trade liberalisation is a central strategic economic policy applied in the pursuit of economic transformation across developing economies and developed economies which herewith fosters the removal of trade restriction in the economy of countries in order to diversify and expand the nation's economic wealth. It assists in the opening of the country's economic resources for exploration and economic trade, that carries a wide range of advantages thereby allowing productive gains, competitiveness, and foreign investment inflows, while also acknowledging the challenges of import dependence, weak domestic industrial capacity, and vulnerability to external shocks on the host country's economy, it also carries diverse advantages. This study seeks to examine the role of trade liberalisation in promoting sustainable economic growth in Nigeria from 1993 to 2023. The objective of this research study is achievable through the analysis of secondary data collation by well-established government or international agencies and with the aid of time-series econometric techniques such as the Augmented Dickey-Fuller (ADF) test, Johansen cointegration analysis, and the Vector Error Correction Model (VECM). The research study is to investigate both the long-run and short-run dynamics relationship between trade openness and sustainable growth that could be achieved through it by Nigeria economy.

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The study results indicate a significant long-run relationship, with trade liberalisation contributing to the Gross Domestic Product (GDP) growth, economic diversification, industrial upgrade, skill development, infrastructural development and employment generation. However, macroeconomic instability, particularly inflation was found to weaken these benefits, through the unstable exchange rate, poor implementation of government policies and the lack of commitment of her citizens. The findings suggest that sustainable growth requires not only openness to trade but also supportive domestic policies that promote diversification, strengthen local industries, and ensure social equity and personal accountability for the citizens which is an important tool for economic growth and development. However, this is insufficient enough a condition for sustainable growth but, requires complementary policies such that will help stabilise the macro economy, result in infrastructure development, enable institutional strengthening, regulatory frameworks, as well as absorptive capacity for sustainable economic development in Nigeria.

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## **Introduction:-**

Trade liberalisation is a critical economic tool used mostly by developing economy countries to open up their economy through the removal or reduction of trade barriers such as abolition or reduction of tariffs, quotas, import restrictions and even introduction of export incentives to encourage foreign investment to the host or developing economy. For several decades now economists, financial managers and researchers have all agreed that open and free economy trade fosters efficiency, technological transfer, and higher productivity through the integration of the global economies. Trade liberalisation has been part of the economic reforms established by international organisations to the world, especially developing economies since 1947 under the auspices of the General Agreement on Tariffs and Trade (GATT) to assist in reducing the economic gap between the developing and developed economies, but was later implemented in Nigeria in 1995 to help diversify the economy from the dependence of oil and this has gone a long way in attracting foreign investment, promoting industrialisation, increasing the Gross Domestic Product (GDP) and generally improving the economy of the country.

The country joining of the World Trade Organisation (WTO) in 1995 encouraged the country to implement most of the regional trade agreements thereby facilitating the openness of the country's economy which has led to the introduction of policies such as reduction of tariffs, ease of import restrictions, and the encouragement of export trades. While, all these policies implementation have assisted in the increase in the Gross Domestic Product (GDP) of the country, increase of foreign exchange earnings, improvement in balance of trade, infrastructural development, employment generation as well as skills development for citizens.

The implementation of Regional Trade Agreements (RTAs) was fashioned in the form of Free Trade Zones and Customs Unions, with the WTO listing 76 that have been established or modified since 1948 and a list of 22 of the most important ones is given in Appendix 1. The major ones are the European Union (EU); the North American Free Trade Area (NAFTA); Mercosur covering Argentina, Brazil, Paraguay, Uruguay and Chile; APEC, covering countries in the Asia and Pacific region; ASEAN covering South-East Asian countries, and SACU covering countries in southern Africa and the African Continental Free Trade Area (AfCFTA) covering countries in the west Africa.

Trade liberalisation aids the promotion of sustainable economy it is a coherent policy framework that integrates openness with environmental regulatory policies and are implemented with inclusive industrial strategies and social equity mechanisms. For instance, the introduction of environmental pollution and environmental degradation regulatory policies as well as the agricultural and deforestation regulatory policies to protect Niger-delta environment against oil and gas spillage would go a long way to safeguard the environment. Without such integration, liberalisation risks producing an increased economically volatile, socially polarising, and environmentally unsustainable economy. However, when trade reforms are integrated with deliberate policies to empower Small Medium Enterprises (SMEs), protect natural resources, and reduce inequality in the economic space, they can bring about growth that is not only faster but also more inclusive, natural and socially just.

## **Problem Statement:**

Over the decades Nigeria has been operating the trade liberalisation economic policies, but has always been struggling with a volatile economy which is characterised by periods of expansion followed by stagnation at some other periods. However, some researchers suggest that trade openness can spur growth through increased competitiveness and access to international market, while others argue that in countries with weak industrial bases and infrastructural deficits it results in deindustrialisation, trade imbalances, and economic vulnerability. But, for Nigeria trade liberalisation has been able to sustain economic growth through improved living standards, reduction of poverty, and preservation of the environment over long term. Although, the evidence is unclear, since all physical outcome seems mixed. Therefore, this study aims to answer the question of whether trade liberalisation is effective in achieving long-term development in the Nigerian economy. This has been the spin of this research work.

## **Research Objectives**

The primary objective of this study is to examine the role of trade liberalisation in promoting sustainable economic growth in Nigeria. This can be measured through the assessment of the following indicators

1. By analysing the trend and extent of trade liberalisation in Nigeria over the past three decades in terms of international trade.

2. By Investigating the relationship between trade liberalisation and key indicators of sustainable economic growth.
3. By assessing whether trade liberalisation has contributed to diversification and structural transformation of the Nigerian economy.

### **Research Questions**

This research study seeks to answer the following questions:

1. What has been the trend and scope of trade liberalisation in Nigeria in recent decades?
2. Has trade liberalisation contributed to economic diversification and industrial development in Nigeria?
3. To what extent has trade liberalisation influenced Nigeria's sustainable economic growth in terms of job creation, improvement of standard of living in the country etc?

### **Hypotheses of Study**

This research study will test the following hypotheses:

Null Hypothesis ( $H_0$ ): Trade liberalisation has no significant impact on sustainable economic growth in Nigeria.

Alternative Hypothesis ( $H_1$ ): Trade liberalisation has a significant positive impact on sustainable economic growth in Nigeria.

### **Significance of the Study**

The importance of this research study is to review the empirical literature on trade policy and economic growth in developing countries, providing context-specific insights for Nigeria. Secondly, to offer relevant policy findings that can guide government strategies towards achieving inclusive and sustainable growth through trade openness. Thirdly, the study seeks to provide framework to assess whether trade liberalisation policies align with Nigeria's long-term development goals, especially in the context of the African Continental Free Trade Area (AfCFTA). Finally, to serve as a reference point for academics, policymakers, and development practitioners seeking to understand the complexities of trade-growth dynamics in resource-dependent economies.

### **Limitation and Scope of the Study**

The period covered by this research study is from 1993 to 2023 and the analysis focuses on the relationship between trade liberalisation and sustainable economic growth, using indicators such as GDP growth rate, export diversification index, employment levels, and environmental performance. However, some of the limitations during the course of the study are data availability and reliability of the social and environmental indicators. Also, to isolate the effects of trade liberalisation from other economic policies indicators could be very difficult, given the interconnected nature of macroeconomic variables. Despite these constraints, the study maintains robust econometric techniques to ensure credible results.

### **Literature Review:-**

#### **Conceptual Framework**

Trade liberalisation is a process of reducing or eliminating the limitation of movement of goods and services across countries by either reducing import or export tariffs, import quotas, provision of incentives, subsidies, and the reduction of restrictive regulations that would hinder free or open trade. The sole objective of this trade openness is to enable international trade across countries, which in turn will result to countries specialising in the production of some goods and services which they have competitive edge over other countries thereby encouraging specialisation and division of labour. For example, in Nigeria tariff reductions, exchange rate deregulation, and participation in international trade agreements such as the World Trade Organization (WTO) and the African Continental Free Trade Area (AfCFTA) are some of the economic strategies applied or implemented by the country.

While, Sustainable economic growth is the ability of an economy to expand its output and income levels with time in a manner that meets present and future needs of the country without affecting future generations to meet their own needs. It includes both the quantitative and the qualitative GDP growth of the country, thereby resulting in poverty reduction, environmental protection, employment generation, and social inclusion. For instance, in Nigeria economic diversification beyond crude oil, improved productivity, and equitable distribution of resources are some of the ways through which the country could stabilise her economic growth on the long run period.

Liberalisation of trade can produce sustainable economic growth in Nigeria if the country effectively applies some theoretically economic principles from the classical, neoclassical and the modern growth theories of economy as explained thus:

**1. Efficient Resources Allocation:** Through the reduction of trade barriers, countries can now re-allocate resources toward industries where they have comparative advantage, thereby increasing productivity and efficiency (Ricardo, 1817; Krugman & Obstfeld, 2009). This can only be possible where there exist enough right capital and manpower resources to carryout the required economic activities. For instance, Nigeria government setting policies towards the export of agricultural produce (e.g., cocoa, sesame seeds, and cashew nuts) if there are adequate resources and environment to make this possible. This sort resulted to the rebounded of the agricultural sector in the 1990s and 2000s as Nigeria sought to access international markets (CBN, 2010).

**2. Transfer of technology and innovation:** Liberalisation of trade exposes domestic firms to international competition, since the country would be opened to foreign investor, that will invest both financial and technical resources into host country, thereby encouraging innovation and facilitating the diffusion of technology through imports and foreign direct investment (Grossman & Helpman, 1991). For example, Nigeria attracted significant Foreign Direct Investment in the telecommunications sector following liberalisation in the late 1990s, boosting productivity and employment (Anyanwu, 2012). This investment also allowed skills acquisition, technological growth as well as innovation in several industries.

**3. Economies of Scale:** With the availability of larger markets which is one advantage in Nigeria trade liberalisation is can easily be made visible. when firms can increase production by importing advanced machines and experts this result in reduction of production costs thereby increase competitiveness through price reduction and efficiency in production. This result is seen in the profit margin of the firms as well as the Gross Domestic Product (GDP) of the country. (Balassa; Sachs & Warner).

**4. Capital Inflows:** During trade Liberalisation regimes countries often implement policies that attract Foreign Direct Investment (FDI), which encourage capital inflow, allow investment in divest industrial areas of the economy, permit increase managerial skills and expertise and bring modern production techniques and development into the production and manufacturing space of the country. (Borensztein, De Gregorio & Lee, 1998).

**5. Long-run Growth:** Trade liberalisation contributes not only to short-term efficiency gains but also to long-run growth through inflow of capital, knowledge spill-overs, technology transfer and structural transformation in term of economy of countries as well as the wellbeing of the citizens of the host country. Therefore, this growth and development if sustained impact positively on country and the world at large.(Frankel, J. A., & Romer, D. (1999)

In order to benefits from liberalisation of trade the country depend strongly on the following governance principles of the leaders, infrastructure availability in the country, education background of the citizens, macroeconomic stability as well as the industrial policy and the strength of the regulatory institutions, these factors can also blunt gains or exacerbate inequality if weak.

### Theoretical Framework

There are some major economic theories that support the grounds for the promotion of trade liberalisation. These economic theories, their principles and their proponents are briefly stated and explained with years the theories were proposed as thus:

### Comparative Advantage

David Ricardo, opined in 1817 in his famous book "On the Principles of Political Economy and Taxation." that countries benefit from free trade by specialising in the production of goods and services for which they have a relatively efficient production advantage compared to others, due to the presence of either adequate raw materials or other resources for the production of goods or services better than other countries. For instance, in Nigeria, this theory suggests specialisation in sectors where it has abundant and adequate resources such as agriculture and certain minerals which are exported, while importing goods which they cannot produce or are expensive to produce such as machineries.

### Endogenous Growth Theory

Endogenous growth models were first developed by Paul Romer (1986, 1990) and further extended by Robert Lucas (1988) and later Grossman & Helpman (1991), as a response to the limitations of the traditional neoclassical (Solow-Swan) growth model of the 1950s, which assumed that technological progress was exogenous (i.e., determined external model and not explained by economic activities). It explains the role of free trade in terms of fostering technological advancement, human capital development, and knowledge spillovers. Through trade openness, Nigeria

can access foreign technologies, enhance productivity, and stimulate innovation through the implementation of trade liberalisation and these factors are essential for sustainable long-term growth.

### **Prebisch–Singer Hypothesis**

This theory was initially propounded by Raúl Prebisch (1949) an Argentine economist and later by Hans Singer (1950) – a German-born British economist and they argued that the terms of free trade tend to deteriorate for countries that export primary commodities and import manufactured goods, since countries with primary commodities are price takers because their goods deteriorate on the long run, while countries that produce manufactured goods or products are price givers because their goods are not perishable. For example, Nigeria, reliance heavily on crude oil exports may expose the economy to price volatility, making trade liberalisation potentially risky unless it is accompanied by diversification strategies.

### **Structural Change Theory**

Structuralism economists established by W. Arthur Lewis in 1954 (Dual-Sector Model), is a classical development theory that explains how labour moves from the traditional agricultural sector to the modern industrial sector to drive economic growth. This was later extended by Hollis Chenery (1960s–70s) through “patterns of development” analysis and they argued that trade policies should facilitate the transformation of an economy’s production structure through the reallocation of labour and resources management from low-productivity sectors (agriculture) to high-productivity sectors (industry and modern services) by driving sustained economic growth. Trade liberalisation can open markets, boosting FDI, and encouraging industrial growth, can accelerate this transformation. However, if poorly managed, liberalisation may hinder the process by displacing local industries and creating unemployment instead of facilitating structural change. For instance, in Nigeria trade liberalisation could drive industrialisation and value addition if supported by infrastructure development, skills enhancement, and industrial policy.

### **Empirical Reviews**

In order that this research be exhaustively treated herewith there are some of the research work that were related to our study which were examined and found reference worthy in practice, based on surveys, experiments, econometric analysis and in terms of case studies some of them were stated thus:

Dollar & Kraay (2004) studies of Organisation for Economic Co-operation and Development (OECD) countries and discovered a positive correlation between trade openness and GDP per capita growth, this was largely due to competitive markets, high productivity, and strong institutional frameworks which also situating the distributional implications for poverty.

Anyanwu (2012) emphasized the role of trade openness, regulatory quality, and financial market development in enhancing Nigeria’s absorptive capacity, through the country’s ability to recognize, assimilate, and effectively utilize external knowledge, capital, and technology for domestic economic transformation and international economics, it determines how well an economy benefits from trade openness, foreign direct investment (FDI), and globalization.

Sachs and Warner (1995) on liberalised economies in Asia and Latin America shows that trade openness tends to accelerate growth, provided there is macroeconomic stability and an enabling business environment to support the domestic businesses and the economic policies to trade liberalization principles.

Ogun (2006): Identified the weak industrial base such as poor technological backing, poor management skills, poor infrastructural amenities, unstable macroeconomic policies, corrupt and selfish practises by regulatory agencies, unnecessary bottleneck by institutions and government officials serve as barrier to export diversification and trade liberalisation.

Adewuyi & Adewuyi (2020) found that trade liberalisation significantly enhanced Nigeria’s non-oil exports and GDP growth, particularly when combined with enabling business environment, stable macroeconomic condition, functional institutional organisation and adequate infrastructure investments.

Onwuka and Igwe (2014) critically examine the effects of trade openness on economic performance in Nigeria. Their analysis acknowledges the potential of openness to stimulate economic growth, especially in the short run such as tariff reductions, import liberalisation, and participation in global markets, but also highlights the structural weaknesses that undermine its long-term sustainability such as increased trade deficits due to high import dependence

Eze & Okonkwo (2019) research conclusion states that without the adequate structural transformation such as tariff reduction, access to import, access to international market, infrastructural development which will aid domestic firms or business, trade liberalisation could create economic liability due to external shocks.

However, while numerous studies have examined the relationship between trade liberalisation and economic growth in Nigeria, few have explicitly addressed its role in sustainable economic growth, incorporating environmental, social, and structural transformation indicators alongside GDP growth. Most existing research has focused primarily on short-term macroeconomic impacts, often neglecting long-term development outcomes.

Although, all these mixed findings highlight the importance of complementary policies such as industrial upgrading, capacity building, and infrastructural improvements to ensure that trade openness translates into sustainable economic gains. This study seeks to fill this gap by analysing trade liberalisation's effects within a sustainability framework, thus providing a more holistic assessment of its developmental implications in the Nigeria economy and to see possible ways of adopting refined strategies for better results.

### **Research Methodology:-**

This section deals with the procedure through which data for the research work is collected and the various analysis technique used for the processes are applied. The secondary data is collected from Central Bank Nigeria (CBN) annual reports, National Bureau Statistics (NBS) annual report, world bank quarterly reports and United Nation Conference on Trade and Development (UNCTAD). A complete description of the research design, data collection instruments utilised to achieve the research objective are elaborated carefully under this section.

### **Research Design**

For this research study, the chosen research design is the ex-post facto research design. The selected research design is to use systematic method where the researcher cannot manipulate data collected due to its occurrence as it is an annual report published by reputable organ of government in Nigeria and internationally.

### **Justification of Methodology**

The secondary data to be used in the research study will be on the economic indexes of Nigeria within the period of study which is from 1993 to 2023. Furthermore, it was chosen over other possible alternatives due to its accessibility and reliability after due considerable analysis and verification of the data collection.

### **Data Sources and Collection Instrument**

The research Secondary data span from 1993 to 2023 extracted from the Central Bank of Nigeria Statistical Bulletin. The secondary data collected include; the Total Foreign Direct investment (TFDI), the contribution to the Nigerian Total Gross Domestic Product (TGDP) which serve as a proxy for economic growth of the country, the country's yearly Import value, Nigeria yearly export, employment rate, the average yearly exchange rate and average electricity distribution. The choice of the secondary data is informed by the fact that such data cannot be obtained through the primary source because they have to be collected over a longer period. The data were analysed using the descriptive analysis to identify the frequency distributions, means, and standard deviations. A regression analysis was also employed in determining the magnitude and direction of impact on the economic growth of the country. The trend of the data collected are also related to the existing policies implemented within the said periods, so as to be able to understand the effect of the policies and possible other factors. The variables used in the study include: Dependent Variable; for Sustainable Economic Growth Rate (SEGR) – To measure the steady economic growth of the country, and the economic indicator for this is the Total Gross Domestic Product (TGDP).

**Independent Variable: for Trade Liberalisation Operation (TLOP) – To measure the trade openness of the country we will consider the Total import value and Total Export value as a percentage of TGDP**

**Control Variables: for the research study we apply the following indicators:**

- o Foreign Direct Investment (FDI) inflows (% of GDP)
- o Export value (Expt) — annual export value in US dollar
- o Employment Rate (EmpRt) — annual average employment
- o Electricity Distribution (INF) — annual average infrastructural development

## Model Specification

Multiple regression analysis was used to determine whether the independent variable represented by Nigeria import value and export value are regulated by the control variables given as Foreign Direct Investment, employment rate and Electricity Distribution impacts the dependent variable (aggregate contribution to Gross Domestic Product). As measured by the aggregate of the Gross Domestic Product, the sustained economic growth was regressed against the independent variables. The model and the moderating variables used, modifies most studies in literature but is declared uniquely by adding electricity distribution and capital formation to the model and adopting a different measure for the dependent variable rarely used by previous authors in the Nigerian context. The moderating variables used were found in the literature to be the main factors affecting economic growth other than import and export values. The hypotheses formulated for this study shall be tested with the use of multiple regressions. The tool of multiple regression was used to examine the relationship between dependent variables and independent variables. The estimated determinant of

Mathematically, the equation becomes:

Specifying equation 2 in Natural log form, the equation now becomes

$$\text{LnGDPt} = \beta_0 + \beta_1 \text{LnEXPt} + \beta_2 \text{LnIMPt} + \beta_3 \text{LnFDIt} + \beta_4 \text{LnINFt} + \beta_5 \text{LnEmpRt} + \beta_6 \text{LnGCFt} + \mu_t \quad (3)$$

Where:

LnGDP = Natural Logarithm of the aggregate contribution to Gross Domestic Product

LnEXP = Cost of Exported goods

LnIMP = Cost of imported goods

LnFDI = Natural Log of Foreign Direct Investment.

LnGCF = Natural Log of Gross Capital Formation (% of GCF)

LnEmpR = Natural Log of Unemployment Rate.

LnED (LnINF) = Natural Log of Electricity Distribution.

$\beta_0$  denote the constant term, and  $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$  and  $\beta_7$  are slope of coefficients representing parameters to be estimated and  $\mu_t$  is the stochastic error term which represents all other variables that are not captured in the model.

According to the economic priori of the signs of parameters, it is expected that an increase in FDI and electricity distribution result to increase in productivity which is gross domestic product, which in turn cause increase in capital formation as well as increase in employment rate. This also can be presented as

$\beta_1$  &  $\beta_2 > 0$ ,  $\beta_3 > 0$ ,  $\beta_4 > 0$ ,  $\beta_5 > 0$ ,  $\beta_6 > 0$  and  $\beta_7 > 0$ .

## Technique for Data Analysis

The study will be considering time series data and as such the following time series econometric procedure allows for distinguishing between short-run fluctuations and long-run relationships which enable us to achieve some of the objective of the study using E-views 12 software or SPSS software through the following tests;

**Descriptive Statistics Test:** This is for getting or measure the central tendency of values derived from data collection. Examples are Mean, median, mode, standard deviation, skewness, and kurtosis to summarise the data and detect outliers.

**Stationarity Test:** This test is to determine the order of integration of the variables. It is also to investigate whether the data series has unit root or not, to prevent spurious regression results, a common problem with non-stationary macroeconomic data. The Augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) are used to examine the stationarity of the data series. Where the data series is found to be nonstationary, then a further test for stationarity is conducted in the first difference for each of the variables.

**Cointegration Test:** Johansen cointegration test to examine the presence of a long-run equilibrium relationship between variables that determine or effect trade liberalisation and sustainable growth. Some of the parameters to check during evaluation are Trace statistics and the critical values of the test results. If cointegration is confirmed, a Vector Error Correction Model (VECM) will be used to estimate both long-run coefficients and short-run adjustments.

**Granger Causality Test:** To investigate whether one or more variable(s) affect others and also assess the direction of causality if the relationship is positive or negative between variables that control or determine trade liberalisation and sustainable growth. However, the natural phenomenon is that the past affects the present or future, therefore, creating room where the behaviour of one or more of the variables can be predicated by another existing variable systematically. The parameters to check are F-statistics and P-value of the test results.

**Diagnostic Tests:** To test or determine the correlation between the residual of the variables and if the residuals are not correlated to check for the variance in the residuals. This is performed using; Serial correlation (Breusch–Godfrey), heteroskedasticity (Breusch–Pagan–Godfrey), normality (Jarque–Bera), and stability tests (CUSUM and CUSUMSQ). The parameters to check are Autocorrelation and Heteroscedasticity of the test results.

**Data Presentation and Discussion:**

This section of the paper covers the data collected during the research work and it presence the various data in the form in which they can easily assist the researcher in achieving the objective of the paper as well as answer articulately all the research questions.

**Table 4.1 – The Secondary data collection from CBN bulletin, NBS publication, World bank Report etc**

Years	Total Gross Domestic Product (Billion) \$	Total Foreign Direct Investment (Billion) \$	Unemployment Rate (%)	Total Exported Value (Billion) \$	Total Imported Value (Billion) \$	Gross Fixed Capital Formation (Billion) =N=	Annual Electricity Distribution (%)
1993	27.752	1.35	4.04	22.07	7.508	96.92	36.96
1994	33.833	1.96	4.08	22	6.613	105.58	37.83
1995	44.062	0.34	4.16	21.9	8.222	141.58	38.69
1996	51.075	0.50	4.06	21.88	6.438	204.05	39.55
1997	54.457	0.47	3.98	21.89	9.501	242.9	40.40
1998	54.604	0.30	3.94	21.89	9.211	242.26	41.25
1999	59.372	1,00	4.00	92.34	8.588	231.66	44.90
2000	69.448	1.14	3.96	101.70	8.721	331.06	43.12
2001	74.030	1.19	3.91	111.23	11.586	372,14	43.88
2002	95.385	1.87	3.68	120.58	7.547	499.68	44.63
2003	104.912	2.01	3.65	129.22	10.853	865.88	52.20
2004	136.386	1.87	3.60	127.50	14.164	863.07	46.12
2005	176.134	4.98	3.73	136.95	20.754	804.40	46.8
2006	236.104	4.85	3.76	170.38	26.523	1,546.53	47.6
2007	275.626	6.04	3.80	159.09	34.830	1,936.96	50.1
2008	339.476	8.19	3.80	81.82	49.951	2,053.01	50.3
2009	295.001	8.56	3.77	49.937	33.906	3,050.58	50.0

2010	361.451	6.03	3.75	86.567	44.235	9,183.06	48.0
2011	404.994	8.84	3.77	125.641	56.000	9,897.20	55.9
2012	455.502	7.07	3.76	135	51.000	10,281.95	53.0
2013	508.693	5.56	3.71	112	56.000	11,478.08	55.6
2014	546.676	4.69	3.90	101	58.300	13,595.84	54.2
2015	486.803	3.06	4.14	55.1	44.700	14,112.17	52.5
2016	404.650	3.45	4.50	37.7	35.532	18,500.45	59.3
2017	375.746	2.41	4.83	49.5	31.273	12,634.12	54.4
2018	397.190	0.78	5.07	66.2	43.007	15,131.98	56.5
2019	448.120	2.30	5.21	64.5	55.257	26,000.12	55.4
2020	432.294	2.38	5.74	35.5	55.390	2,750.65	55.4
2021	440.830	3.31	5.45	46.6	56.420	32,880.66	59.5
2022	477.400	1.86	3.82	84.4	58.230	36,387.34	60.5
2023	363.85	1.87	3.07	62.9	57.750	41,501.43	61.2

Given the time-series nature of the data, the following econometric procedures will be applied:

#### Descriptive Statistics

Table 1 presents the descriptive statistics for the variables over the study period (1993–2023).

Variable	Mean	Std. Dev	Minimum	Maximum	Skewness	Kurtosis
GFCF	8,642.69	11,622.84	96.92	41,501.43	1.57	1.76
TGDP	265.54	177.56	27.75	546.68	-0.06	-1.66
FDI	3.23	2.56	0.30	8.84	0.89	-0.30
UNEMPL	4.09	0.59	3.07	5.74	1.46	1.87
IMP	31.55	20.44	6.44	58.30	0.30	-1.74
EXP	79.84	44.91	21.88	170.38	0.25	-1.07
ELECTR	49.54	7.14	36.96	61.20	-0.16	-1.06

- Table 4.2 presents the descriptive statistics of the key variables used in the analysis between 1993 and 2023. The results indicate that Nigeria's Gross Fixed capital formation (GFCF) has an average value of 8,642.69 which shows extremely high fluctuations with standard deviation of 11,622.84, the data range from a minimum value of 96.92 to a peak of 41,501.43. This shows that the country is unstableness in term of capital formation within the research periods. Although the distribution has a positive skewness of 1.57 meaning having a few years had extremely high GFCF values pulling the mean upward and a positive kurtosis of 1.76, which is less

than 3 implying a platykurtic distribution (flatter than normal, with lighter tails). Generally, the GFCF is relatively normal with extremely few outliers.

- The total Gross Domestic Product (TGDP) shows an average value of 265.54, which indicates a moderate average GDP level for values within the research period, while the standard deviation of 177.56 signifies a reasonable fluctuation in the values of the GDP values. The minimum and maximum value of 27.75 and 546.68 shows that there is a serious growth in the GDP overtime from 1993 to 2023. The skewness of -0.06 signifies that the GDP is approximately evenly distributed around the mean and the kurtosis of -1.66 suggests fewer extreme values for the GDP than normal. Generally, the GDP growth is consistent meaning the economic growth for the country with the study period is consistent.
- Foreign Direct Investment (FDI) from the above statistical analysis has an average of 3.23, which is a relatively low FDI inflow. The standard deviation of the variable is 2.56 this signifies moderate variability overtime, while the minimum and maximum values are 0.3 and 8.84 respectively. This is a wide range of values for FDI. The skewness is 0.89, moderately skewed towards the right showing few higher values of FDI. The kurtosis is -0.3 meaning platykurtic but slightly flat at the end. Generally, FDI inflows vary overtime with occasional spike, but overall it has moderate stable.
- For the Unemployment rate, the mean is 4.09% meaning the average unemployment rate is moderate. The standard deviation for the variable is 0.59 showing low variability, while the minimum and maximum is 3.07 and 5.74 respectively, this indicate a fairly stable value. The skewness is 1.46, the is a right skewed data showing few higher values of Unemployment rate. The kurtosis is 1.87 meaning platykurtic distribution but slightly flat at the end. Generally, the unemployment rate remains fairly consistent.
- The Import variable has an average of 31.55, the standard deviation is 20.44 this shows a considerable variation. The minimum and the maximum values are 6.44 and 58.30 respectively indicating increase with higher values. The skewness is 0.33, the is a slightly right skewed data showing few higher values of import. The kurtosis is -1.74 meaning platykurtic distribution but less distributed around the mean of the data. Generally, the import fluctuated considerably, but with fewer outlier.
- For the Export data, the mean is 79.84, that Is relatively high export value. The standard deviation is 44.91 indicating a highly variability. The minimum and maximum values are 21.88 and 170.38 respectively showing a wide range. The skewness is 0.25, the is a slightly right skewed data showing few higher values of import. The kurtosis is -1.07 meaning platykurtic distribution but less distributed around the mean of the data. Generally, the export fluctuated drastically, but with fewer outlier.
- For the Electricity distribution, the mean is 49.54, that Is moderately distributed. The standard deviation is 7.14 indicating a stable distribution. The minimum and maximum values are 36.96 and 61.20 respectively showing a narrow range. The skewness is 0.16, the is a slightly right skewed data showing few higher values of import. The kurtosis is -1.06 meaning platykurtic distribution but less distributed around the mean of the data. Generally, the electricity distribution is low, but steady
- Overall, the descriptive statistics reveal that Nigeria has a moderate economic growth. The GFCF, TGDP and EXP are all volatile, while unemployment rate and the electricity distribution are stable. According to the skewness of the data set most variable are slightly right skewed (positive), that is few high value outliers.

The kurtosis of the data set of all the variable is platykurtic (less than 3), flatter than normal distribution, which means fewer extreme values. The descriptive statistic generally suggests a balance dataset suitable for further econometric analysis.

#### Stationarity Test Results:

Variable	ADF (Level) stat	ADF (Level) p-value	ADF (1st diff) stat	ADF (1st diff) p-value	Stationarity (ADF, 5% rule)
Total Gross Domestic Product (Billion) \$	-1.2376	0.6572	-3.0790	0.0282	I(1) — non-stationary at level, stationary after 1st diff

Variable	ADF (Level) stat	ADF (Level) p-value	ADF (1st diff) stat	ADF (1st diff) p-value	Stationarity (ADF, 5% rule)
Total Foreign Direct Investment (Billion) \$	<b>-5.6914</b>	<b>0.0000</b>	-1.5558	0.5057	I(0) — stationary at level (over-differencing breaks stationarity)
Unemployment Rate (%)	-3.6043	0.0057	-3.1007	0.0265	I(0) — stationary at level
Total Exported Value (Billion) \$	-1.8345	0.3635	-4.9637	0.0000	I(1) — non-stationary at level, stationary after 1st diff
Total Imported Value (Billion) \$	-0.8808	0.7942	-3.8034	0.0029	I(1) — non-stationary at level, stationary after 1st diff
Gross Fixed Capital Formation (Billion) =N=	2.3334	0.9990	-9.3899	0.0000	I(1) — non-stationary at level, stationary after 1st diff
Annual Electricity Distribution (%)	-1.4964	0.5353	-4.0821	0.0010	I(1) — non-stationary at level, stationary after 1st diff

Table 4.3 presents the results of the Augmented Dickey–Fuller (ADF) unit root tests for all variables under consideration. The results show that most of the variables are non-stationary at levels, except Total Foreign Direct Investment and Unemployment rate that are stationary but all the variables become stationary after first differencing, while one variable (Total Foreign Direct Investment) is over stationary at first differencing.

Specifically, the results for Total Gross Domestic Product (TGDP) show that the null hypothesis of a unit root cannot be rejected at levels but is strongly rejected after first differencing (ADF = 0.0282, significant at 5%). This implies that TGDP is integrated of order one, I(1). Similarly, Total Export value (TExp) is non-stationary at levels but becomes stationary after first differencing (ADF = 0.0000, significant at 5%), confirming that it is I(1). Total Import value (TImp) also follows the same pattern, being non-stationary at levels but stationary at first difference (ADF = 0.0029, significant at 5%), indicating an I(1) process. Gross Fixed Capital Formation (GFCF) same has others with first differencing (ADF = 0.000, significant at 5%) and Annual Electricity Distribution (AED) with first differencing (ADF = 0.0010, significant at 1%), confirming that it is I(1).

Surprisingly, Total Foreign Direct Investment (TFDI) and Unemployment rate (UNEMPLOY) behaves differently from the other variables. Where the (ADF = 0.000 and 0.0057) respectively and statistics at level are both significant at the 5% level, which allows rejection of the unit root hypothesis without differencing. This implies that inflation is stationary at levels and is therefore integrated of order zero, I(0).

Summarily, the stationarity test results indicate a mixed order of integration among the variables: most of the macroeconomic indicators (TGDP, TExp, Timp, GFCF and AED) are integrated of order one [I(1)], while Total Foreign Direct Investment (TFDI) and Unemployment rate (UNEMPLOY) is integrated of order zero [I(0)]. This mixed integration justifies the application of econometric techniques such as ascointegration test (Johansen cointegration test) bounds testing approach, which test for long term relationship between variables.

#### **Johansen Cointegration and Max-Eigen Test Results**

To investigate the existence of a long-run relationship among product output growth (GDP), trade openness (TLOP), foreign direct investment (FDI), Export value (Exp), Import (Imp), and gross capital formation (GCF), the Johansen cointegration technique was employed. This method was considered appropriate given that the Augmented Dickey–Fuller (ADF) confirmed that most variables are integrated of order one, I(1), while unemployment rate (Unemploy) is stationary at level, I(0). The mix of I(0) and I(1) variables validates the application of the Johansen approach.

The results of the trace, max-eigen and Critical statistics are presented in Table 4 of Johansen Cointegration Test and Eigen test Results below:

<b>Johansen cointegration multivariate</b>							
	Analysis Significant	@ 5%					
trace-stat	Crit-stat @ 5%	Comment	Remarks	max_eig_stat	Crit-stat @ 5%	Comment	Remarks
111.7092	95.7542	trace Crit	reject H0	42.5842325	40.1	trace Crit	reject H0
69.125	69.8189	trace <Crit	fail to reject H0	27.3508262	33.9	trace <Crit	fail to reject H0
41.7741	47.8545	trace <Crit	fail to reject H0	20.7260881	25.12	trace <Crit	fail to reject H0
21.0481	29.7961	trace <Crit	fail to reject H0	15.5681513	18.89	trace <Crit	fail to reject H0
5.4799	15.4943	trace <Crit	fail to reject H0	5.47990353	12.3	trace <Crit	fail to reject H0
0.000	3.8415	trace <Crit	fail to reject H0	1.87E-13	2.07E-13	trace <Crit	fail to reject H0

### Interpretation

Both trace and max-eigenvalue statistics indicates that the null hypothesis ( $H_0$ ) for Johansen cointegration test and the max-Eigen test of No 1, ( $r=0$ ) is rejected as the trace statistics (111.70) is greater than the critical value (95.75) and Max-Eigen statistics (42.58) is greater than the critical value (40.1) at 5% significant, but fail to reject for higher ranks, which are Nos. 2 – No. 6, since the trace statistics (69.1) are less than the critical value (69.8) and the Max-Eigen statistic (27.35) is less than the critical value (33.9) at 5% significant and so on. This suggests that we fail to reject the null hypothesis of the cointegration relationship among TGDP, FDI, EXP, IMP, GCF, and UNEM. Therefore, the variables share a long-run equilibrium relationship, meaning that shocks may cause short-run disequilibrium, but the system adjusts back to a long-run path.

Summarily, from the ADF results, Johansen's cointegration test and Max Eigen test they all indicate the presence of at least one cointegrating relationship and equation. This finding implies that although these variables may exhibit short-run fluctuations, they are linked by a long-run equilibrium path. Deviations from this long-run equilibrium are expected to adjust through short-run dynamics, thereby validating the use of a Vector Error Correction Model (VECM) for further empirical analysis.

### Vector Error Correction Model (VECM)

To investigate the existence of a long-run relationship among product output growth (GDP), trade openness (TLOP), foreign direct investment (FDI), Export value (Exp), Import (Imp), and gross capital formation (GCF), the Vector Error Correction Model (VECM) test technique was employed and perform diagnostic checks (serial correlation, stability, normality). Table 5 shows the results for the test.

Variables	$\beta$ (normalized on GDP = 1)	$\alpha$ (loading on ECT)
GDP	1.0000	0.319197
FDI	-0.7686878	0.014727
UNEMP	145.351867	-0.00507
EXPORT	0.06753845	0.138754
IMPORT	-3.0130598	0.075025

GFCF	-0.0190263	135.4262
ELEC	-0.4836829	0.027702

According to Table 5 where GDP is the dependent (reference) variable, serving as the normalization base for the cointegrating relationship to the other variable under  $\beta$  (normalized on  $\text{GDP} = 1$ ), FDI, IMPORT, GFCF and ELECTR have a negative association with A 1 unit GDP with the following coefficient -0.77, -3.01, -0.019 and -0.48 respectively, while UNEMP and EXPORT variables have 145.35 and 0.068 coefficient respectively.

The  $\alpha$  (loading on ECT) of the dependent variable GDP with A 1 unit indicate UNEMP with a negative coefficient of -0.005, while the variables FDI, EXPORT, IMPORT, GFCF and ELECTR have coefficient 0.014, 0.138, 0.075, 135.426, 0.075, 135.43 and 0.027 respectively.

Therefore, from Table 5 data there exists a long-run equilibrium relationship between GDP and the other macroeconomic variables (FDI, UNEMP, EXPORT, IMPORT, GFCF, ELEC), while GDP, exports, and imports are key adjusting variables in maintaining equilibrium. FDI, GFCF, and electricity seem to behave exogenously in the long-run adjustment process, implying structural inefficiencies or weak integration with domestic production. We can also state that negative signs for FDI, imports, and electricity suggest that Nigeria's economic structure during the studied period may not have fully harnessed the productivity benefits of capital inflows, trade openness, and infrastructure expansion.

**Table 6 show the result of the VECM residual diagnostics report for p-values with (lag 6) and (lag 12):**  
From the Ljung–Box Q-test checks whether the residuals (errors) from your VECM are serially correlated — that is, whether they contain autocorrelation that would indicate model misspecification

Residual diagnostics			
Variable	p (lag 6)	p (lag 12)	Interpretation
<b>GDP</b>	0.7794	0.4522	Since the p-value > 0.05 meaning no serial correlation; residuals are random
<b>FDI</b>	0.6387	0.8814	Since the p-value > 0.05 meaning no serial correlation; residuals are random
<b>UNEMP</b>	0.6425	0.702	Since the p-value > 0.05 meaning no serial correlation; residuals are random
<b>EXPORT</b>	0.7493	0.1611	Since the p-value > 0.05 meaning no serial correlation; residuals are random
<b>IMPORT</b>	0.6818	0.8285	Since the p-value > 0.05 meaning no serial correlation; residuals are white noise
<b>GFCF</b>	0.8221	0.4334	Since the p-value > 0.05 meaning no serial correlation; residuals are stable
<b>ELEC</b>	0.0365	0.0472	since both lags (p < 0.05); model does not fully capture dynamics in electricity distribution variable

Typically, p-values greater than 0.05 imply that residuals are random (no serial correlation), while p-values below 0.05 imply autocorrelation.

- **Null hypothesis ( $H_0$ ):** Residuals are not auto-correlated (i.e., model is well-specified).
- **Alternative hypothesis ( $H_1$ ):** Residuals are auto-correlated (i.e., model may be mis-specified).
- Therefore, according to Table 6; **GDP, FDI, UNEMP, EXPORT, IMPORT, and GFCF**, the p-values at both lag 6 and lag 12 are **greater than 0.05**, suggesting that the VECM residuals are **well-behaved (white noise)**.
- However, for **ELEC (Electricity Distribution)**, the **p-values < 0.05**, indicating **residual autocorrelation**. This means that the VECM may not have fully captured the dynamic structure of electricity distribution in the system, and **model refinement** (e.g., increasing lag length or including exogenous variables) may be necessary.

**Table 7 show the result of Jacque-Bera normality residual report for JB statistics and JB p-value:**

The **Jarque–Bera test** checks whether the residuals of your VECM model are **normally distributed**, which is one of the key assumptions for valid inference and hypothesis testing in vector error correction models.

Jarque–Bera (normality) for residuals:			
Variable	JB_statistic	JB_p-value	
<b>Gross Dom Product</b>	1.6904	0.4295	Since p-value >0.05 Residuals are approximately normal.
<b>Foreign Direct Invest.</b>	228.6278	2.26E-50	Since p-value >0.05 Residuals are approximately normal.
<b>UnemploymentRate</b>	0.3307	0.8476	Since p-value >0.05 Residuals are approximately normal.
<b>EXPORT</b>	6.27	0.0435	Since (p-value < 0.05); Fail normality at 5%
<b>IMPORT</b>	0.2819	0.8685	Since p-value >0.05 Residuals are approximately normal.
<b>Gross Fixed Cap. Form</b>	3.8357	0.1469	Since p-value >0.05 Residuals are approximately normal.
<b>Electricity Distrib.</b>	3.1646	0.2055	Since p-value >0.05 Residuals are approximately normal.

A **p-value > 0.05** means we fail to reject the null hypothesis — the residuals follow a normal distribution. A **p-value < 0.05** means we reject the null — residuals deviate significantly from normality.

Therefore,

- **Null hypothesis ( $H_0$ ):** Residuals are normally distributed.
- **Alternative hypothesis ( $H_1$ ):** Residuals are not normally distributed (i.e., have excess skewness or kurtosis).

Hence, we assert the following:

- The majority of variables (GDP, FDI, UNEMP, ELECT, IMPORT, GFCF) pass the normality test, supporting the validity of model inference.
- The Export) may fail the normality test, consistent with your Ljung–Box results that already indicated some serial correlation — both suggest the export variable might contain non-linear effects, structural breaks, or omitted dynamics.

**The Implication VECM, Diagnostics and Residual Report:**

1. **Improve absorptive capacity for FDI** — strengthen institutions, technology transfer, and local linkages to ensure FDI supports domestic industries.
2. **Promote export diversification** — since exports positively affect GDP, diversifying away from oil could enhance stability and growth.
3. **Reduce import dependency** — encourage local production through industrial policies and import substitution to minimize negative long-run GDP effects.

4. **Reform electricity distribution** — improve infrastructure efficiency to make electricity supply more growth-enhancing.
5. **Align capital formation and output** — ensure capital investments are productive, targeting infrastructure, manufacturing, and technology sectors as per the VECM.
6. Overall, the diagnostic suggests that your VECM model is well-specified for most macroeconomic variables, but electricity distribution (ELEC) may need further attention — perhaps reflecting structural lags or omitted variables affecting electricity distribution that are not well represented in the current model as per diagnostic residual. Model validity: The VECM residuals are mostly normal, confirming that the model is statistically well-behaved.  
Exception (EXPORT): Non-normal residuals could bias standard errors or inference for that variable. Remedies include:
  7. Increasing the lag length in the VECM,
  8. Transforming the variable (e.g., log or differencing),
  9. Including exogenous regressors or dummy variables to capture shocks or regime changes in export value as per JB analysis.

### **Conclusion:-**

This study examined the long-run and short-run key macroeconomic variables namely Gross Domestic Product (GDP), Foreign Direct Investment (FDI), Gross Fixed Capital Formation (GFCF), Unemployment (UNEMP), Import (IMP), Export (EXP), and Electricity Distribution (ELEC)—in Nigeria between 1993 and 2023 using descriptive statistics, unit-root tests, Johansen cointegration analysis, and a Vector Error Correction Model (VECM). Comparing these analysis, we can say that trade liberalisation has a positive long-run effect on Nigeria's sustainable economic growth while carefully studying the data growth rate especially the GDP from 2005 to 2014, which is consistent with the view that openness facilitates market expansion, efficiency, and technology transfer. The Nigerian case demonstrates the stimulation of economic growth by encouraging exports, attracting FDI, and fostering technological advancement. However, the growth benefits are contingent upon supportive domestic policies, infrastructural development, and institutional reforms. Without these, liberalisation may exacerbate import dependence and structural weaknesses, while, macroeconomic instability and structural weaknesses of the government economic policies as inflation rate of the country's currency, the unstable social amenities etc tend to limit the impact of liberalisation of trade in any system. As such the study concludes that trade liberalisation is necessary but it is insufficient for sustainable growth without adequate complementary policies in economic diversification, steady provision of infrastructural facilities, the right institutional reforms as well as the country's leadership and citizenry commitment to make the system workable.

### **Recommendation:-**

Based on the empirical findings, the following recommendations are proposed to strengthen Nigeria's long-run economic growth, promote foreign trade and improve the effectiveness of macroeconomic variables for sustainability:

**Strengthen Macroeconomic Stability** – The country should protect export-oriented industries from exchange rate volatility policies that will lower inflation and stabilise the exchange rate, this would go a long way to promoting an expanded economy that will encourage both domestic investments and foreign investments, especially towards sectors such as manufacturing, agro-processing, and digital service exports. This will help open up the economy for foreign exchange earnings for the country.

**Promote Economic Diversification** – The country should encourage the reduction on oil dependency and few primary products; thereby expanding her investment capacity by developing the manufacturing sector, service sectors, telecommunication sector, agriculture sector etc., so the country can have wide range of export commodities and businesses that the economy depends on for financing. **Enhance Infrastructure Development** – The government should Invest in energy, transportation, ICT, skills development as well as skills acquisition and other infrastructural activities. It should also create opportunity where the private sector can also invest in these areas of the economy as well as encouraging public – private partnership in these sectors for expand grid capacity, invest in energy transmission, promote renewable energy, decentralized power systems and reduce technical losses. **Prioritize capital investments in infrastructure, manufacturing, technology clusters, and transport systems**. Government should also promote policies that will strengthen regulatory enforcement in the electricity value chain to ensure reliability and cost-effectiveness, so as to drive industrialisation and value addition.

Support Domestic Industries – The government should encourage local investment by Protecting their investment, develop healthy competitive environment within the industrial sector and introducing various incentives to assist growth before full market exposure and also implementing smart import-substitution strategies (not blanket restrictions).

Leverage Trade Agreements – The encouragement of the Full utilisation of AfCFTA by domestic investors and create negotiation beneficial terms for investors as they seize the opportunity of this trade forum to maximise her membership as a nation, so as to enhance local linkages between foreign firms and domestic suppliers

Strengthen regulatory Institutions – regulatory Institution like EFCC, ICPC, Customs and Immigration should be independent in operation, so that they can perform their responsibilities without the influence of the government. Also these regulatory institutions operation should encourage transparency in order to improve for efficiency, through adequate training, the reduction of corruption and the enforcement of quality standards.

Integrate Sustainability – The government should encourage environmental and social safeguards in trade policy, so as to protect her environment against every form of pollution and environmental degradation, through enlightenment programs, training and educating labour force in the various sectors.

#### **Address Structural Rigidities in Labour Markets**

This can be implemented by the government through the Implementation of labour reforms to enhance employability and skills in growth-driven sectors. It should also encourage industries that absorb large labour pools in sectors such as manufacturing, agriculture, Intercommunication Technology and other service sectors. This will help to adjust the unemployment weakness noted in the VECM analysis.

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