POLAC ECONOMIC REVIEW (PER)
DEPARTMENT OF ECONOMICS
NIGERIA POLICE ACADEMY, WUDIL-KANO

IMPACT OF INDUSTRIALIZATION ON ECONOMIC GROWTH IN NIGERIA

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Abstract

The study examined the Impact of Industrialization on Economic Growth in Nigeria for the period of 1981-2021. The study adopts ex-post factor design in order to answer the research questions. The study utilizes secondary sources of data extracted from the central bank of Nigeria statistic bulletin 2022. The study undertakes unit root test employing augmented Dickey-Fuller (ADF) method to determine whether the variables are stationary or not in order to avoid spurious results. To achieve this, the study employed the Auto regressive distributed lag (ARDL) method for estimation. The findings showed that information and communication industry (INC) has positive and significant impact on economic growth in Nigeria during the period under study, similarly the findings showed that manufacturing industry (MIN) has positive and insignificant impact in determining economic growth in Nigeria during the period under review and furthermore the findings showed that arts and entertainment industry (AET) has positive and significant impact on economic growth in Nigeria during the period of investigation. Therefore, the study found that industrialization generally has positive impact on economic growth in Nigeria over the period of the study. The study recommends that Efforts should be geared towards provision of more advance technology that will be used to enhance production capacities of industries in Nigeria that will create employment, revenue that will boost the economic growth. The study also suggests the need for prudent management of industries in Nigeria to ensure judicious use of the funds for economic growth in the country. Besides, there is need for government to put in place appropriate legal policies and framework that would prevent corrupt individuals from embezzling public expenditure on industries, which can negatively affect the growth of the Nigerian economy.

Keywords: Budget Deficit, Multilateral, Bilateral, Borrowing, Development Assistance, Economic Growth

1. Introduction

Industrialization is the bedrock of economic growth, thus, the process of economic development usually begins with industrialization. Development efforts require consciously systemized plan, and in similar way industrialization is an outcome produced from national planning, the efforts are usually deliberate as it aims at certain macroeconomic goals beginning with economic growth. Industry is usually grouped into primary and tertiary production. Primary production has to do with the mining and extraction of deposits of mineral resources while tertiary production anchors on manufacturing which is the conversion and transformation of raw materials or primary products into finished consumable or tertiary products. CBN (2012) classifies industrial output in the Nigerian economy into three namely: crude petroleum and natural gas, solid mineral mining, and manufacturing. Industrialization is synonymous with manufacturing and it is the process of building up of a nation's capacity to convert raw materials and other input into finished goods either for further production or for final consumption.

In this case the closest appropriate measures and indicators of industrialization will include manufacturing, solid mineral mining, crude petroleum and natural gas as indicated in the classification by CBN (2015), and then to take into consideration the human capital factor manufacturing employment rate could also form a variable. The effort towards industrialization began in the pre-colonial period. During the post-independence period of 1960s government policy of import substitution gained prominence and after the civil war of 1970s huge

foreign exchange flowed in from the export of crude oil, which provided avenue for direct government investments in manufacturing activities. The import substitution policy was followed by the indigenization policy programme aimed at making Nigerians assume full control of many firms operating in the country. Other strategies and incentives have been adopted by government such as export promotion, tax holidays, duty reliefs, provision of loans etc. These efforts saw industry including crude petroleum and natural gas accounting for large percentage of foreign exchange earnings and federally collected revenue.

Besides the goal of driving industrialization, manufacturing and solid minerals mining subsectors are also expected to address unemployment concerns, being that one of the basic features of industrialized nations is low unemployment rate. NBS (2010) states that only about 3 million persons are in employment under the manufacturing, crude petroleum and natural gas, and solid mineral mining subsectors; of this number 2million are Nigerian male, about 500,000 are Nigerian female while the rest are Non Nigerians. This underemployment could be attributed to lack of adequately trained human capital and as such, the contribution to economic output has remained low. Human capital development is undoubtedly the pivot for any meaningful programme of economic development of Nations and indeed of Nigeria (Ejere, 2011). The contribution of manufacturing to total output in Nigeria has fallen short of its goal in driving economic growth where in 2010 and 2013, it could only manage a meager 4% and 6.5% contribution to GDP. Thus it has failed to engineer the industrialization yearnings of Nigeria. In the stages of growth theory, it is said that industrialization could only be said to have occurred where the share of agricultural contribution to GDP has fallen and that of manufacturing rises up and above it forming a large percentage of the GDP (NBS, 2012). The history of industrial development and manufacturing in Nigeria is a class illustration of how a nation could neglect a vital sector through policy inconsistencies and distractions attributable to oil discovery (Adeola, 2005). The absence of locally sourced inputs has resulted in low industrialization and some of the constraints faced include: high interest rate, unpredicted government policies, unstable foreign exchange rate, and non-implementation of existing policies, infrastructural inadequacies, dumping of cheap products, unfair tariff regime and low patronage. Over the years, successive governments have been paying near lip service to the actualization of Nigeria's Industrial Revolution Plan, and making Nigeria one of the 20 most developed economies in the world by the year 2020.The development of Raw Materials-Based Clusters is one of the core programmes of the Raw Materials Research and Development Council (RMRDC) towards attaining this laudable objective (Gwarzo, 2015).

2. Literature Review

2.1 Conceptual Issues

The most important definition of industry was given by Michael Porter (1979) as a group of competitors producing substitutes that are close enough that the behaviour of any firm affects each of the others either directly or indirectly. Porter (1979) later defined the term more precisely as a group of industries offering products or services that are close substitutes for each other, that is, products or services that satisfy the same basic customers' needs. The new definition emphasizes the importance of industry borders and industry's role as a market supplier or producer of goods and services, as distinguished from a market, defined as a consumer of goods and services. Furthermore, inside every industry there are groups of companies that follow similar strategies. This strategic group has differences in entry barriers, bargaining power with buyers, suppliers, skills, and resources. In addition, these strategic groups compete against each other within the industry because of these differences.

Industry can be defined as commercial production and sale of goods or a specific branch of production and trade. In these sense, industry refers to a collective term for a group of activities directed to the production of a given class of commodities or a group of firms engaged in the same area of production. All industries are undergoing changes. Structural changes such as mergers and acquisitions occur every day in business life and often in industries where few large industries dominate. There are, however industries experiencing even greater changes. Due to new technology and new products, entire industries are transforming and their very business ideas are being redefined. New

communication technologies and new media are examples of innovations that create new or reformed industries.

Industrialization refers to an increase in the share of manufacturing in the Gross Domestic Product (GDP), and in the occupations of the economically active population. It could also be used to describe the development of economic activity in relatively large units of production, making much use of machinery and other capital assets, with the tasks of labour finely divided and the relationships of employment formalized (Kirk-Greene 1981). In either case, industrialization is concerned with the expansion of a country's manufacturing activities, including the generation of electricity and the growth of its communications network. It is also a process of reducing the relative importance of extractive industries and of increasing that of secondary and the tertiary sectors (Adejugbe 2004, Amechi & Azubuike 2017).

The economic growth of a country is the increase in the market value of the goods and services produced by an economy over time. The Gross Domestic Product (GDP) of a country is the total value of all final goods and services produced within a country over a period of time. Therefore an increase in GDP is the increase in a country's production. Growth doesn't occur in isolation. Events in one country and region can have a significant effect on growth prospects in another.

According to Kindleberger (1996), "Economic Growth means more output and changes in the technical and institutional arrangements. Growth not only implies more output but also more efficiency and more inputs. While Economic Development is a wider concept and it goes beyond the changes in the structure of output and allocation of inputs". In the early stage, any economy that grows is likely to develop and that which develops is likely to attain growth. But the countries that have already developed as US, UK, Germany, France and Australia etc., are desirous to keep on growing. While in the case of underdeveloped countries which have low incomes, growth and development go side by side.

Economic growth is an increase in the production of economic goods and services, compared from one period of time to another. increase in capital goods, labour force, technology, and human capital can all contribute to economic growth. Economic growth is commonly measured in terms of the increase in aggregated market value of additional goods and services produced, using estimates such as Gross Domestic Product (GDP).

2.2 Empirical Review

Gylych and Enwerem (2016) investigate the impact of industrialization on economic growth: experience of ten countries in ECOWAS between the periods of (2000-2013), revealed that industrialization has had a negative impact on economic growth in Nigeria in the long run. The methodology adopted was the use of Ordinary least square (OLS) technique. The study recommended that government should redirect its industrial and investment policy so as to increase output of the domestic production (RGDP), flexible exchange rate and control inflation rate since that showed that increase in exchange and inflation rate, decreased output. Also industrial and investment policy should be flexible on infant industries so as to encourage productivity and improve GDP. A study by Isiksal and Chimezie (2016) indicated that no country particularly the developing ones has attained a level of economic growth without sub-sector linkage. They evaluated the Impact of Industrialization in Nigeria from 1997-2012 using the Johansen co-integration testing approach which demonstrated a significant long-run relationship between the three variables used. The results reveal that agriculture, industry and services have a significant positive relationship with GDP.

Ebong, Udoh and Obafemi (2014) using time series for five decades (1960-2010) based on the Eagle-Granger two steps and Johansen co integration test, and the vector auto regression technique studied globalization and industrial development in Nigeria. Findings clearly showed that globalization had significant impact on industrial development. They suggested that increasing the level of trade with the rest of the world would create opportunities to export local raw materials and import necessary input into the industrial process and that financial liberalization enhances industrial development. Hence, recommended that policies are required to reserve the tide of capital flight from the country and channel resources toward the industrial sector.

Enwerem, Jelilov and Isik (2016) researched on the impact of industrialization on economic growth in Nigeria for the period 2000-2013. The study sets three major objectives, which include investigating the effect of fiscal and monetary policy on Gross Domestic Product (GDP), determining the relationship between government spending and industrial development and to determine the effect of budget on investment or employment generation. The study only utilized secondary data from the 2011 Central Bank of Nigeria Statistical Bulletin and the Nigerian National Bureau of Statistics. The study specified a workable model, which has GDP as the dependent variable while industrial output, foreign direct investment, interest rate, foreign exchange rate and inflation rate were independent variables. Ordinary least square (OLS) technique, F-test was used as analytical techniques. The study revealed that industrialization has a negative impact on economic growth in Nigeria in the long run. The study recommends amongst others, that the government should redirect its industrial and investment policy so as to increase output of the domestic production (RGDP), flexible exchange rate and control inflation rate since that showed that increase in exchange and inflation rate, decreased output, industrial and investment policy should be flexible on infant industries so as to encourage productivity and improve GDP.

Aliyal and Odoh (2016) studied the impact of industrialization in Nigeria. The objective was to analyze the relationship between GDP, agriculture (AR), industry (ID) and services sector (SV) in Nigeria. The Johansen co-integration testing approach demonstrates a significant long-run relationship between these three variables. The results reveal that agriculture, industry and services have a significant positive relationship with GDP. The Causality results demonstrate a bidirectional causal relationship between GDP, AR, ID and SV. It is suggested therefore that it is important to develop the agricultural sector to provide the needed support to the industrial and services sectors. Such a strategy can be expected to encourage the development and economic growth of a developing country.

2.3 Theoretical Review

The study was anchored on the theory of "big push" which was propounded by Roden (1943) for the sake of getting out the small countries from non-industrialized trap by expanding their domestic markets. The theory covered that there is a minimum level of resources that must be devoted to a development programme if it is to have any chance of success. Launching a country into a self-sustaining growth is a little like getting an airplane off the ground. There is a critical ground speed which must be passed before the craft can become airborne proceeding bit by bit will not add up in its effects to the sum total of the single bits. A minimum quantum of investment is necessary though not sufficient, condition of success". According to him, to overcome limitation of the market as a demand source for the products of other sectors and so each sector can produce under the advantage of scale economy. Limitation of market accounts for an important obstacle in the way of industrialization of many Third World countries which have limited population and a very small effective demand on account of low per capita income and highly unequal distribution of income within them. On the other hand, they are faced with high tariffs and other impediments like stiff competition from industrialized countries in the way of export of their industrial products. In other words, "when domestic markets are small and world trade is not free and costless, firms may not generate enough sales to make adaptation of increasing returns technologies profitable, and hence industrialization is stalled".

3. Methodology

3.1 Research Design

The study adopted quasi-experimental research design to achieve the objectives of the study which provide a platform for the study to answer the raised research questions.

3.2 Data and Sources

The study utilized annual time series data sourced from the publications of Ministry of Education, Central Bank of Nigeria (CBN) statistic bulletin (2022), National Bureau of Statistics (NBS), and Budget Speeches as well as relevant journals and related papers for the period of 1981-2021.

3.3 Model Specification

The Auto Regressive Distributive Lag (ARDL) model developed by Pesaran and Shin (1999) and further

extended by Pesaran et al. (2001). The ARDL is a model of time series data that include the lagged value(s) of the dependent variable, the current and lag values of regressors as explanatory variables. The ARDL model can be specified if variables are integrated of different orders. That is a model having a combination of variables with I(0), I(1) and I(ii) order of integration. The ARDL model can also be computed if all variable are stationary at I(I) but cannot be computed if the variables are integrated at I(2).

The general form of the ARDL model is:

$$Y_t = \beta 0 + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \beta_K Y_{t-K} + \delta_o + \delta_1 X_t + \delta_2 X_{t-1} + \delta_2 X_{t-2} + \delta_k X_{t-k} + \mu \quad (1)$$

Where: β0 is constant, β and δ are parameters, t-k represents optimal lag length while μ is the error term.
In line with the Auto Regressive Distributive Lag (ARDL) model developed by Pesaran and Shin (1999) and further extended by Pesaran et al. (2001), we stipulate that economic growth proxied by gross domestic product (GDP) is a function of industrialistion.
Thus, our model is hereby specified in functional form below:

GDP = f(INC, MIN, AET) (2)

The mathematical and econometric form of equation 1 gives:

$GDP = \alpha + \beta_1 INC + \beta_2 MIN + \beta_3 AET + \mu$ (3)

Taking logarithms of equation 3 gives:

$\ln GDP = \alpha + \beta_1 \ln INC + \beta_2 \ln MIN + \beta_3 \ln AET + \mu$ (4)

The above equation is represented in logarithmic form to enable the researcher standardize all the values and interpret the variables' coefficients as elasticity.

The ARDL model specification of the above functional form is;

$$\Delta \ln GDP_t = \alpha + \sum_{i=1}^{n} \beta 1 \Delta \ln INC_{t-I} + \sum_{i=0}^{n} \beta 2 \Delta \ln MIN_{t-i} + \sum_{i=0}^{n} \beta 3 \Delta \ln AET_{t-i} + \mu_t \quad (5)$$

The co-integrating ARDL long-run relationship can be estimated using the following specifications:

$\Delta \ln GDP_t = \alpha + \beta_1 \ln INC_{t-i} + \beta_2 \ln MIN_{t-i} + \beta_3 \ln AET_{t-i} + \mu_t$. (6)

The next step is to estimate the short run dynamics of the parameters using the Error Correction Model (ECM). This is specified below:

$$\Delta \ln GDP_t = \alpha + \sum_{i=1}^{n} \beta 1 \Delta \ln INC_{t-I} + \sum_{i=0}^{n} \beta 2 \Delta \ln MIN_{t-i} + \sum_{i=0}^{n} \beta 3 \Delta \ln AET_{t-i} + \text{Ø} ECM_{t-1} + \mu_t \quad (7)$$

Where:

GDP= Gross Domestic Product

INC = Information and communication industry income

MIN = Manufacturing industry income

AET = Arts and Entertainment industry income

μ= Stochastic Term

α, β_1, β_2, β_3 = Parameters

n = Optimal lag order of the model
Δ = Difference operator
μ = Stochastic Term
ECM is the error correction term.
Ø = Speed of adjustment parameter
Our a priori expectations are that each of the parameters is positive that is, β_1, β_2, β_3,> 0.

If the p-value is less than 5%, the study should reject the hypothesis otherwise, the hypothesis should be accepted.

4. Results and Discussion

The data used for regression were time series on information and communication industry income (INC), Manufacturing industry income (MIN), Arts and Entertainment industry income (AET) and gross domestic product (GDP) for the period 1981 and 2021 in Nigeria. The data were used for the descriptive analysis and estimation of regression results.

4.1 Unit Root Test Result

Presented below are the results of the various analyses carried out.

Table 1: Augmented Dickey Fuller (ADF) Unit Root Test Result

Unit Root at Level I(0)						Unit Root at First Difference I(1)			
SN	Series	Critical value	ADF Stat	p-value	Remarks	Critical value	ADF Stat	p-value	Remarks
1	GDP	-2.938987	11.04073	1.0000	Accept Ho	-3.533083	-4.051889	0.0151	Reject Ho
2	MIN	-1.950687	7.485074	1.0000	Accept Ho	-2.945842	-3.856943	0.0055	Reject Ho
3	INC	-2.960411	-4.759228	0.0000	Reject Ho	--3.536601	-4.752284	0.0026	Reject Ho
4	AET	-2.963972	4.348030	1.0000	Accept Ho	-1.949856	-2.202292	0.0284	Reject Ho

Source: Author's Computation 2023, using E-view 12.0 version

** denote rejection of Null hypothesis at 5% level of significance

The ADF test results presented in table 1 above reveals that when tested at level, the four variables (GDP, MIN, INC, and AET) were having augmented dickey fuller statistics which is less than their critical values and at the same time having p-values which are greater than 5% level of significance, except INC that was otherwise. We, therefore, do not reject Ho and conclude that the series variables GDP, MIN, INC, and AET have unit root and are not stationary at level, I(0) This, therefore, calls for the need of first differencing. When tested at first difference I(1) with the conventional 5% level of significance, the whole four variables (GDP, MIN, INC, and AET) became stationary. This is evident by their values of the augmented dickey-fuller statistics, which are greater than critical values in absolute terms with p-values less than 0.05 levels of significance. We, therefore, reject the Ho and conclude that the series variables (GDP, MIN, INC, and AET) have no unit roots and hence, are stationary. Since all the variables integrated at mixed order, this implies that they have a stochastic trend and good for (ARDL) model analysis.

4.2 Cointegration Test Result

Table 2: Cointegration Test Result

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	9.610397	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Actual Sample Size	36		Finite Sample: n=40	

Source: Author's Computation 2023, using E-view 12.0 version

The results of the ARDL bounds testing approach to cointegration in table 2 above shows that the computed F-statistic of **9.610397** exceeds the upper (**3.67**) and lower (**2.79**) critical bounds at 5% levels. This reveals the existence of long run relationship among the variables (MIN, INC, AET, and GDP). Therefore, the null hypothesis of no long run relationship is strongly rejected at the 5% level of significance.

4.3 Regression Results

Presented in table 3 are results of the ARDL estimation of the variable's coefficients.

Table 3: Autoregressive Distributed Lag Regression Results

Dependent Variable: GDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
INC(-1)	8.063124	2.196339	3.671166	0.0015
MIN(-1)	0.019557	0.154217	0.126813	0.9004
AET(-1)	324.7314	69.79841	4.652418	0.0002
C	-60.69088	437.1617	-0.138829	0.8910
R-squared	0.999748	Mean dependent var		37858.30
Adjusted R-squared	0.999559	S.D. dependent var		46892.04
S.E. of regression	984.3070	Akaike info criterion		16.92285
Sum squared resid	19377206	Schwarz criterion		17.62664
Log likelihood	-288.6114	Hannan-Quinn criter.		17.16850
F-statistic	5294.251	Durbin-Watson stat		2.439814
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.

Source: Author's Computation 2023, using E-view 12.0 version

GDP = -60.69088 + INC8.063124 + MIN0.019557 + AET324.7314

The results on table 4.3 above reveal the following. The findings from the first hypotheses is positive because the coefficient of information and communication industry income (INC) has positive coefficient (8.063124), indicating positive relationship between information and communication industry income and gross domestic product (GDP) in Nigeria, and this is in line with a priori expectation. The coefficient of information and communication industry income is statistically significant since it p-value (0.0015) is less than 0.05 level of significance. Thus, reject the null hypothesis (Ho) and conclude that information and communication industry income has positive and significant impact on gross domestic product in Nigeria during the period under review. Hence, it can be concluded that information and communication industry income is a strong determinant of economic growth in Nigeria. The finding implies that gross domestic product increases as information and communication industry income rises proportionately.

The findings from the second hypotheses is positive because the coefficient of manufacturing industry income (MIN) has positive coefficient (0.019557), indicating positive relationship between manufacturing industry income and gross domestic product (GDP) in Nigeria, and this is in line with a priori expectation. The coefficient of manufacturing industry income is statistically insignificant since it p-value (0.9004) is greater than 0.05 level of significance. Thus, we accept the null hypothesis (Ho) and conclude that manufacturing industry income has positive and insignificant impact on gross domestic product in Nigeria during the period under review. Hence, it can be concluded that manufacturing industry income has weak influence on economic growth in Nigeria. The finding implies that gross domestic product increases as manufacturing industry income rises but less than proportionate.

The findings from the third hypotheses is positive because the coefficient of arts and entertainment industry income (AET) has positive coefficient (324.7314), indicating positive relationship between arts and entertainment industry income and gross domestic product (GDP) in Nigeria, and this is in line with a priori expectation. The coefficient of arts and entertainment industry income is statistically significant since it p-value (0.0002) is less than 0.05 level of significance. Thus, we reject the null hypothesis (Ho) and conclude that arts and entertainment industry income has positive and statistically significant impact on gross domestic product in Nigeria during the period under review. Hence, it can be concluded that arts and entertainment industry income is a strong determinant of economic growth in Nigeria. The finding implies that gross domestic product increases as arts and entertainment industry increases.

The value of coefficient of multiple determination (R-square = 0.999748) shows that the variability in the explanatory variables (MIN, INC, and AET) account for 99 percent of the variability in GDP. This suggests

that the model is of good fit. The high value of F-statistic (5294.251) also underscores the good fit of the model. The value of Durbin-Watson stat (2.439814) indicates absence of spurious results prevalence in autocorrelation in time series data used for the study.

4.4 Stability Test Result

The variables stability test result is hereby shown in the figure below:

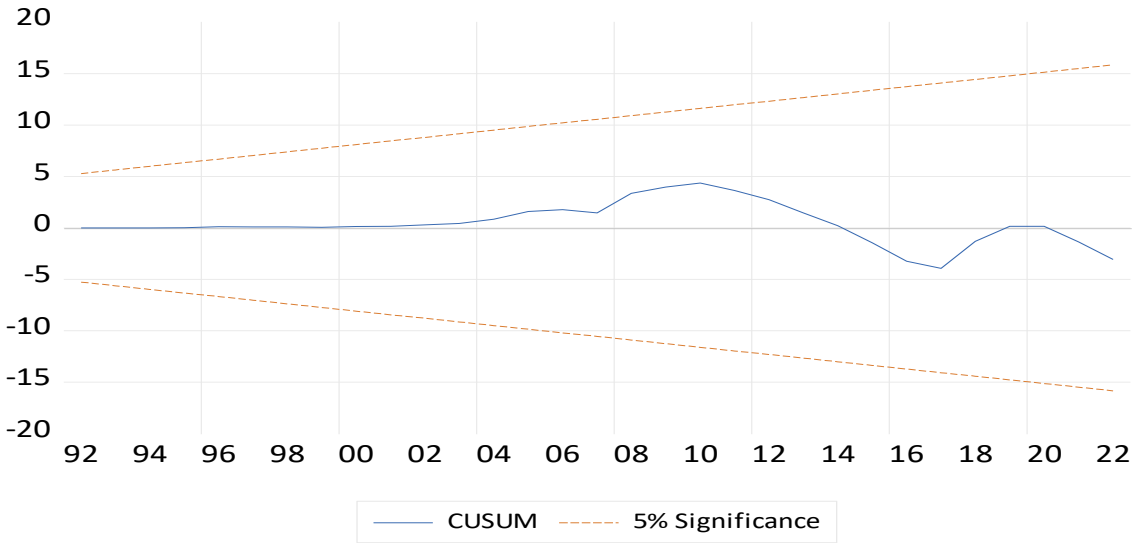

Fig 1: cumulative sum of the recursive residuals (CUSUM)

Source: Author's Compilation 2023, using E-view 12.0 version

The stability test result in figure 1 shows that the cumulative sum of the recursive residuals (CUSUM) lays between the two critical red lines at 5% level of significance. We therefore, reject H_0 of no parameter stability and conclude that the variable's parameters are stable and the model is stable for long-run forecasting. This signifies that the ARDL estimates are dynamically and structurally stable, consistent and reliable.

5. Conclusion and Recommendations

From the analysis of the results, it can be stated that industrialization, manufacturing industry income, information and communication industry income, and Arts and entertainment industry income have positive and significant impact on gross domestic product in Nigeria. Therefore, it can be concluded that industrialization generally has positive and strong influence on economic growth in Nigeria during the period of the study.

The government should double it effort and focus in developing more industries with enabling environment to attract more investors.

Efforts should be geared towards provision of more advance technology that will be used to enhance production capacities of industries in Nigeria. This will create employment, revenue that will boost the economic growth.

There should be prudent management of industries in Nigeria to ensure judicious use of the funds for economic growth in the country. Besides, there is need for government to put in place appropriate legal policies and framework that would prevent corrupt individuals from embezzling public expenditure on industries, which can negatively affect the growth of the Nigerian economy.

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