INDUSTRIAL SECTOR GROWTH AND ECONOMIC PERFORMANCE IN NIGERIA

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ABSTRACT
The Study analyzes the nexus between industrial sector growth on economic performance in Nigeria between the periods of 1981-2021. Specifically, investigate the impact of crude petroleum and natural gas growth, solid mineral growth and manufacturing sub-sector growth on the performance of Nigerian economy. The following test were conducted, Unit root test, co-integration test and error correction model. The study finds out that crude petroleum and natural gas growth, Solid mineral growth and Manufacturing sub-sector growth has positive and significant impact on the performance of Nigerian economy. The study recommend, that federal

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government and policy makers should stimulate economic growth in Nigeria through increased output in crude petroleum and natural gas. Creating a conducive environment to achieve strong performance of the solid mineral sub-sector. Government should hasten and implement its diversification plan to stimulate manufacturing sector output. Sustaining efforts at generating local materials for infant industries and support the campaign of local contempt initiative.	

1. INTRODUCTION

The critical role of the industrial sector is predicated on the fact that it acts as an engine of growth by broadening the productive and export base of the economy, reducing unemployment and stemming rural-urban drift as well as helping to reduce poverty (Umoro & Eborieme, 2013). Industrialization has been accepted as the major driving force of the modern economy. In most modern economies, industrial sector serves as the vehicle for the production of goods and services, the generation of employment and the enhancement of incomes. Hence, Kayode (1989) described industry and in particular the manufacturing sub-sector, as the heart of the economy. Countries develop their industrial sectors because of many reasons like industries have more backward and forward linkages to the other sectors of an economy, they exhibit increasing returns to scale and their ability to diffuse technology in the economy is wider than the primary sector. Industrialization is a sin qua non for sustainable economic growth in Nigeria and it is what the present regime needs to achieve its transformation agenda.

In the light of the above, Nigeria has employed several strategies which were aimed at enhancing the productivity of the sector in order to bring about economic growth and development. For instance, the country adopted the import substitution industrialization strategy during the First National Development Plan (1962-1968) which aimed at reducing the volume of imports of finished goods and encouraging foreign exchange savings by producing locally, some of the imported consumer goods (CBN, 2003). The country consolidated her import substitution industrialization strategy during Second National Development Plan period (1970-74) which actually fell within oil boom era. At this time, manufacturing activities were so organized to depend on imported inputs because of the weak technological base of the economy. However, as a result of the collapse of the world oil market in the early 1980s, there was a severe reduction in the earnings from oil exports. Consequently, the import-dependent industrial structure that had emerged became unsustainable owing to the paucity of earnings from oil exports which could not adequately pay for the huge import bills.

Various policy measures were adopted to ameliorate the above situation, such as the stabilization measures of 1982, the restrictive monetary policy and stringent exchange control measures of 1984, all proved abortive. This led to the introduction of the Structural Adjustment Programme (SAP) in 1986 (CBN, 2003). One of the main reasons for the introduction of SAP was to reduce the high dependence of the economy on crude oil as the major foreign earner, by promoting non-oil exports, particularly manufactured goods. But the contribution of the manufacturing sub-sector to GDP has declined steadily, due to a number of factors like existence of trade barriers in industrial countries, general poor macroeconomic performance of the economy which means weak aggregate demand, demand for local manufacture because of poor quality products and the influx of relatively cheaper import: The high price of domestic manufactures is caused due to increased cost, inefficient old equipment, inadequate infrastructure and depreciation. As a result, government introduced many other economic policies. Despite these efforts of the government, the performance of the industrial sector is still not clear. The study therefore seeks to determine the industrial performance in Nigeria for sustainable economic development.

The realization that industrialization is a *sine qua non* in a nation's desire to achieve the degree of self-reliance which can guarantee the stability needed for economic development has attracted the interest of governments to laying a solid foundation for the development of the industrial sector. However, to ensure that industrialization leads to beneficial economic and social development, industrial growth has to be regulated and guided through appropriate policies. Towards this end, Nigeria since independence has adopted a number of strategies of industrialization in her development efforts. Some of these strategies include Import Substitution Strategy, Export Promotion Strategy and Local resource-based Strategy. In pursuance of these objectives, the government has initiated a number of incentives aimed at positively influencing the performance and productivity of the industrial sector. Some of these incentives include tax holidays, tariff protection, import duty relief, total ban on certain foreign goods, provision of accelerated depreciation allowance, direct government participation, export incentives, approved user scheme, establishment of special industrial development financial institutions, building of industrial estates (export processing zones) and Industrial Raw Material Research and Development Council (IRMRDC) (Egbon 1995, Egwaikhide, 1997; Ayodele, & Falokun, 2003; Udah, 2010).

From the above it is glaring that Nigeria's quest to become self-reliant and an industrialized economy has resulted to the adoption of liberation policies over the years towards opening it to industrialized world. It is therefore imperative to examine economic liberalization policy implemented in 1986 through the adoption of the structural adjustment programme and the successive reforms aimed at further liberalizing the economy. With the liberalization policy, it is expected that Nigerian economy would be further open to the rest of the world with the attendant economic growth. But the reverse is the case as the country is still faced with epileptic power supply, low manufacturing capacity utilisation, infinitesimal marginal productivity in the agricultural sector and monumental infrastructural decay. More importantly this precarious situation has been in the face of increasing indexes of aggregate industrial production, manufacturing production and mining production. For instance, The value for Manufacturing, value added (annual % growth) in Nigeria was -4.32 as of 2018, over the past 34 years this indicator reached a maximum value of 26.22 in 1985 and a minimum value of -30.93 in 1983 (World Bank National Accounts Data, 2018). The above developments have been in the presence of liberalized financial sector and external trade; increased capital accumulation and foreign private investments

and importantly, increased efforts by government to further liberalize the economy thus raising puzzles and not solely to industrial growth.

1.1 Statement of the Problem

Successive governments in Nigeria, since independence have been quite consistent, at least in theory, through an expression in annual budgets, in pursuance of an industrial policy that aims at ensuring economic growth and development. Beginning from the import substitution industrialization [ISI] policy of the immediate post-independent era to the policy of the development of export-oriented industries in the 1980s, the momentum has not subsided at the policy development level. Despite the implementation of four development plans from 1962-1985, as well as rolling plans that came with the Structural Adjustment Programme [SAP] in 1986, through the1990s, the industrial sector of the Nigeria economy has not been transformed to reflect the objective of the sector. It still requires a radical structural transformation from its current role of mere assembling of imported components to an integrated industry with the domestic economy as its base and propeller.

Specifically, Nigeria started the quest for industrialisation immediately after independence in 1960 with the import-substituting industrialization (ISI) strategy embedded in the first National Development Plan for the period 1962-68. Despite many projects commissioned to provide important infrastructure for the young industrial sector, agriculture still dominated as the mainstay of the Nigerian economy. Consequently, the import-substituting industrialization (ISI) strategy had to give way for the Second National Development Plan (1970-74), which was meant to promote public sector-led industrialization as against the private sector-led characteristic of the first plan. The main motivation of the government policy then was the new status as a major petroleum producing country with the attendant huge foreign exchange inflows. The oil boom in the late 70's encouraged the launching of the Third National Development Plan (1975-80) with the same objective of ensuring public sector-led industrialization. The enormous foreign exchange earnings during the period made Nigeria to open it borders to endless imports which negatively affected the real growth of industry in serious way.

The failure of Third National Development Plan to significantly foster industrial development led to the introduction of the Fourth National Development Plan (1981-85) at the exact period of global economic recession. The fall in exchange earnings acted as a shock that seriously hit the import based manufacturing sector, hence, the sector could only contribute 18.34% to the Gross Domestic Product (GDP). When it was evident that the Fourth National Development Plan had failed to attain the industrial development target, the structural adjustment programme (SAP) was adopted as an alternative development paradigm in 1986. SAP instead aimed to ensure private sector-led development, stimulation of non-oil exports, industrial sector efficiency, among others in order to correct the defects of the past plans. To facilitate this, a national science and technology (S&T) policy was designed and it became operational in the same 1986 to increase public awareness in S&T and its importance for national development. However, due to some factors, S&T policy did not succeed (Bamiro, 1994; & Oyelaran-Oyeyinka, 1997).

In order to promote competition among local firms on one hand, and between domestic import-competing firms and foreign firms on the other hand, the trade and financial liberalization policy was enacted in 1989. The policy led to a reduction in tariff barrier and removal of non-tariff

barriers. Besides, the policy also ensured the commodity marketing boards was scrapped, exchange rate was market determined and interest rate deregulated to ensure both the industrial and financial sectors was more efficient. To reverse some of the Nigerian indigenization policy provisions and encourage foreign direct investment (FDI), the National Economic Reconstruction Fund (NERFUND) was also set up in 1989. It can be observed that the protection of the local manufacturing firms as enshrined in the import substitution strategy had a negative effect on the manufacturing sector. The sector could only contribute an average 17.89% to the GDP in the period 1986-1990 which is lower than 18.34% on average it contributed in the period 1981-85.

With the advent of democracy in 1999, a new economic reform agenda was started in the period 1999-2007 with the launching of the National Economic Empowerment and Development Strategy (NEEDS). Despite this reform, the contribution of the industrial sector to the GDP as shown on Table 1 fell to an average of 22.22% in the period 1999-2007 as against 28.06% it recorded in the previous period 1991-1998. Besides, the average manufacturing sector contribution to the GDP fell to an average of 8.71% in the period 1991-1998 against 14.57% in the period 1991-1998. This led to the design and launching of the current economic policy blueprint – Nigeria Vision 20:2020

Development economics literature hold that increasing government expenditure promotes industrial growth, while some other theories asserted that increasing government expenditure leads to dwindling economy. It is observed that the prevailing factors are the problems of externalities and market failure, lack of well-developed factors and products markets, worsening terms of trade and domination by the multinationals producing at a decreasing cost which has a compounding negative impact on domestic industrial performance. With all these problems besetting the economies of the third world countries (Nigeria inclusive), it therefore became a topical issue whether market mechanism alone can perform all the adjustment functions needed in the economy. Also, it was discovered from literature that most government administrations in Nigeria embarked on unproductive expenditures which are did not aid industrial growth and economic development. Although, several studies such as Adenikinju and Chete (2002), Udegbunam (2002), Bakare and Fawehinmi (2011), Tamuno and Edoumiekumo, (2012), Obioma, *et al* (2015) among others, have examine the relationship between economic growth and Nigerian industrial sector based on straight line regression using aggregated variables, research on the influence of manufacturing subsector output on economic growth in Nigeria is very scanty. In this study, manufacturing subsector growth is considered as important variables, which appears to be one of the major indicators of industrial sector performance in any economy. This study therefore examines the impact of industrial performance on the Nigerian economy as a whole, and the various subsectors of manufacturing, mining and quarrying, and power with the aim of accounting for the possible structural change, policy shift may have caused.

1.2 Objectives of the study

1. Investigate the impact of crude petroleum and natural gas growth on the performance of Nigerian economy.
2. Establish the impact of solid mineral growth on the performance of Nigerian economy.
3. Determine the impact of manufacturing sub-sector growth on the performance of Nigerian economy.

2. LITERATURE REVIEW

2.1 Conceptual Literature

Industrial Sector Growth

The insatiable desire to industrialize continues to permeate both developed and developing countries' policy space as industrial development remains a driver of structural change and long run growth for two reasons as posited by Dijkstra (2000) and Zattler (1996). First, industries (especially manufacturing) have higher productivity growth and technology development than other sectors of the economy, and also technological spillovers. Second, countries that neglect industry depend on primary exports which are subject to long-run deterioration of the terms of trade. However, the extent of industrialization depends on the prevailing macroeconomics environment, the dynamic and complementary nature of economic policies targeted at shifting resources from low productivity to high productivity sectors. One of the surest ways to achieve the afore started goal is through massive investment in public infrastructure capital, as leverage to competitiveness of the industrial sector. A growth industry is that sector of an economy which experiences a higher-than-average growth rate as compared to other sectors. Growth industries are often new or pioneer industries that did not exist in the past. Their growth is a result of demand for new products or services offered by companies in the field. An example of a growth industry is the technology sector, whose products have become runaway hits with consumers and led to multibillion-dollar valuations for tech companies in the stock market. Several factors are responsible for catalyzing a growth industry.

Economic Growth

The output growth of an economy is measured by its growth rate. Economic growth is defined as the increase in the inflation-adjusted market value of a country's goods and services over time. It is commonly expressed as a percentage rate of increase in real GDP, or Gross Domestic Product. The geometric annual rate of growth in GDP between the first and last year over a period of time is referred to as the "rate of economic growth". This growth rate represents the trend in the average level of GDP over time, ignoring fluctuations in GDP around the trend (Oyerinde & Fagboro, 2020). Economic growth is the heartbeat of economic development in any country, according to Agboola, Bekun, Osundina, & Kirikkaleli (2020). It is measured by the growth rate of a country's national income; a higher national income should translate to higher benefits for citizens. It is the most powerful tool for creating jobs, reducing poverty, and improving the standard of living through improved health and educational attainment, according to Rahman, Rana, and Barua (2019). In essence, it is critical, particularly in developing countries/regions where unemployment is high and poverty persists. As a result, the single most important factor in reducing poverty and stimulating development is rapid and consistent economic growth.

2.2 Theoretical Literature Review

(1) The Solow's Growth Theory

The Solow's Growth Theory was introduced by Robert Solow in 1956. In this model savings/investment and population growth rates are important determinants of economic growth. Higher saving/investment rates lead to accumulation of more capital per worker and hence more output per worker. On the other hand, high population growth has a negative effect on economic

growth simply because a higher fraction of saving in economies with high population growth has to go to keep the capital-labour ratio constant. In the absence of technological change and innovation, an increase in capital per worker would not be matched by a proportional increase in output per worker because of diminishing returns. Hence capital deepening would lower the rate of return on capital. The Solow model focuses on four variables: output (Y), capital (K), labour (L) and "knowledge" or which is also considered as the "effectiveness of labour" (A). At any time, the economy has some amounts of capital, labour and knowledge and these are combined to produce output. The production function of the Solow growth model takes the form; Y(t)= F(K(t),A(t)L(t)), where the t denotes time and the model identifies two possible sources of variation, either overtime or across parts of the world.

The Augmented Solow Growth Model growth model was introduced by Mankiw, Romer and Weil (1992) to empirically compare the performance of the basic Solow model and the augmented Solow model by the use of real data. According to this model, the differences among countries in per capita income should be explained by the variability in both the physical and human capital investment as well as labour growth including variables involved in the Augmented Solow Model. This model explains the income differences between countries and makes sensible I conclusion about the magnitude with which physical and human capital investment rates and labour growth rates influences the per capita income. Mankiw et al, (1992) supported the growth model by assuming that, consumption is forgone for human capital accumulation, Human capital depreciates at the same constant rate with physical capital and the output can either be used for consumption or investment in physical or human capital Mankiw (2003).

(2) The Endogenous Growth Theory

The Endogenous Growth Theory came into existence from the contribution of Romer and Lucas (1988). It is an improvement of the traditional neoclassical growth theory. The puissance of the neoclassical growth model in defining the sources of long term growth and the absence of technological advancement led to the evolution of the endogenous growth theory also referred to as the new growth theory. This growth theory is based on some of the assumptions of the neoclassical growth theory. Furthermore, unlike the neoclassical growth theory that thinks that capital accumulation undergoes diminishing returns, the theory is also based on the central preposition that broad capital accumulation does not experience diminishing returns (Romer, 1986).

Romer's endogenous growth theory sought to create another model of growth where the long run growth of income per capita depends on investment purpose rather than unexplained technological progress, Romer (1990). In Romer's endogenous growth model, the aggregate production function is shown mathematically as: Y=f(K, L, A) where Y is the aggregate output, K represents the aggregate capital stock, L is the aggregate labour and A represents technology which is regarded as an endogenous input. Hence, aggregate output in the Romer model depends on labour, capital and technology. The growth of knowledge (technology) is said to depend on the growth of capital because capital deepening develops technological spillovers that raise the production productivity of capital over the economy as a whole.

(3) Trade-Off Theory of Capital Structure

The concept of trade-off theory was introduced and used by various researchers to explain a family of related theories. Among these theories, Graham (2003) posited that, firms make conclusions by

estimating the various costs and benefits of other leverage plans. It is often thought that an interior solution is obtained so that marginal costs and marginal benefits are in equilibrium. This theory initiated from the argument over the Modigliani-Miller theorem, when corporate income tax was added to the initial proposition, a benefit for debt is that it served to shield earnings from taxes that will be composed. Since the firm's objective is linear and there is no making up for cost of debt, this means 100% debt financing. To avoid this extreme forecasting, an offsetting cost of debt is needed. However, Kraus and Litzenberger (1973) supplied a classic idea of the theory that, optimal leverage reflects a trade-off between the tax gains of debt and the deadweight loss of bankruptcy. According to Myers (1984), a firm that follows the trade-off theory puts in place a target debt-to-value ratio and then step by step moves towards the target. The target is decided by balancing debt tax shields against costs of bankruptcy.

2.3 Empirical Literature

Kida and Angahar (2020) empirically evaluated the impact of industrialization on economic growth in Nigeria. Because of the link between industrialization and economic growth, both theoretical and econometric analysis were used to examine the contribution of industrialization to economic growth in Nigeria, using GDP as the dependent variable and crude petroleum and natural gas , manufacturing and solid mineral as independent variables from 1981-2013. The study adopted ordinary least squares (OLS) in formulating the model. The methods of analysis included, Augmented Dickey-Fuller (ADF) Unit Root test, Johansen Co-integration test and Error Correction Method (ECM). The results show that crude petroleum and natural gas, manufacturing and solid mineral, significantly contribute to economic growth. On power of the model is as high as 99%. Chukwuedo and Ifere (2017) investigated the nexus between manufacturing output and economic growth in Nigeria for the period 1981-2013 using an eclectic model consisting of both the Kaldor's first law of growth and the endogenous growth model. The variables of the study include real gross domestic product, manufacturing output, contract intensive money, gross fixed capital and labour force. The study discovered that output of the manufacturing sector, capital and technology are the key determinants of economic growth in Nigeria. The results also showed that labour force and quality of institutions do not influence economic growth in the economy. Emmanuel and Saliu (2017) investigated the impact of manufacturing sector on economic growth in Nigeria for the period 1981- 2015 by employing ordinary least square (OLS) technique. The study utilized the following variables such as gross domestic product as the dependent variable while the independent variables include manufacturing output, government expenditure, investment rate and money supply in the investigation of the impact of manufacturing sector on the Nigerian economic growth. The results showed that manufacturing output has positive effect on the growth of the Nigeria's economy. The results however, revealed that the major hazards facing the manufacturing sector in Nigeria include chemical hazards, physical hazard and psychosocial hazard.

Again, Obioma, Anyanwu and Kalu (2015) studied the effect of industrial development on economic growth in Nigeria for the period 1973-2013 using ordinary least square (OLS) technique. The variables used in the study include gross domestic product, total savings, industrial output, foreign direct investment and inflation rate. The results indicated that industrial output has insignificant and positive effect on economic growth whereas savings has positive and significant effect economic growth of the economy. More so, the results revealed that inflation has negative influence on the economy while foreign direct investment indicates positive and significant effect

on economic growth. Akinmulegun and Oluwole (2014) assessed the contribution of manufacturing sector to economic growth in Nigeria in the era of globalization using Ordinary Least Square (OLS) approach. The variables used in the study include trade openness, manufacturing output and current account balance. The results indicated that manufacturing sector has insignificant contribution to economic growth of Nigeria. This implies that globalization has insignificant influence on economic growth through manufacturing sector of the economy. Adofu, Taiga and Tijani (2015) examined the effect of manufacturing sector on economic growth in Nigeria from 1990 to 2013 through the application of ordinary least square (OLS) approach to determine the nexus between manufacturing including its components and economic growth in the economy. The variables employed in the investigation include real gross domestic product, average manufacturing capacity utilization rate, output of the manufacturing sector, interest rate, exchange rate, government expenditure and inflation rate.

2.4 Research Gap

Despite the inconclusive debate over the nexus industrial growth and economic performance in Nigeria. The most current study, however, covered the years 1981-2013. Previous studies in the literature that the researchers have encountered are for shorter periods of time than the current study. However, this study contributes to the present debate but differs from past studies in that it examines the nexus industrial growth and economic performance in Nigeria over a relatively long period of time, from 1981 to 2021. The trial will be extended until 2021, according to the researcher.

3. METHODOLOGY

3.1 Theoretical Framework

Having examined several growth and industrial theories, the researcher came to term that Solo-Swan Theory will be the most suitable economic theory that cum relate industrial sector growth and economic performance or growth. That is this research work will employ Solo-Swan Theory in framing relevant model that will help in understanding the achievement of the aprio expectation and objective of this research work. The Solo – Swan (1956) growth model is a neoclassical model that identified the following as the source of growth:

(1) Capital accumulation
(2) Technological progress
(3) Population (labour)
(4) Increase productivity

Production function approach will be used to explain the importance of various factors for determining growth rate.

$$y = Af(L,K,N)$$

Where

y = Gross domestic product (GDP)
A = Total factor productivity
L = The quantity of labour input
K = The size of capital stock
N = The quantity of Natural resources

In the studies of sources of growth, the natural resources are taken as constant and human capital is added as a separate factor for determining growth. In Gross domestic product with these changes, the production function becomes

$$y = Af(L,K,N)$$

Where H = quantity of human capital

Solo –swan model provided variations from the believe that capital accumulation is the core or only factor that explained productivity and these variations are known as solo residual. The solo residual help in the formulation and understanding a model that allows the measurement of the causality and exogeneity of other sectors (Public sector expenditure) on the total factor productivity (TFP) of industrial sector performance in Nigeria. The TFP shows the contribution of different sectors to any permanent improvement that will promote improved management practices in factor input combination for an enhanced productivity over time. However, TFP cannot be estimated in isolation, It can only be estimated simultaneously in any Solow model along side with capital accumulation and any other factor input.

ALP (average labour productivity) and MFP (multifactor productivity) are the two TFP measuring metrics that are used in solo – swan model. The MFP provided the bases for the formulation of models that will help in achieving the objectives of this research work.

The choice of Solow -swan model in this research work are informed by its ability to provide theoretical frame work for understanding the source of long – run growth and changes in any economic environment and in economic policy. It also allows the introduction of other sectors in formulating models that will show trend, effect and long – run relationships among explanatory variables. Another reason is because it obeys "INADA CONDITIONS" of growth, stating that growth occurs in an economy when the marginal return to scale for inputs must be positive if consistency in growth is to be guaranteed. Secondly, long – run productivity growth is associated with technological progress in the economy.

3.2 Model Specification

Following the work of Obioma, Anyanwu and Kalu (2015), the linear production function could be expressed as follows:

$Log = F(GFCF, HCK)$ …… *(3.1)*

This can be expressed econometrically as:

$Log_t = \alpha_0 + \alpha_1 GFCF_t + \alpha_2 HCK_t + \mu_t$ …… *(3.2)*

Where:

GFCF = Gross Fixed Capital Formation

HCK = Human Capital

In other to achieve the objectives of this study equation (3.2) would be re-modelled as:

RGDP = *f*(SMR, MSS, CPNG)

Where,

RGDP = Real gross domestic product

SMR = Soild and mineral resources

MSS = Manufacturing subsector

CPNG = Crude petroleum and natural gas

f = Functional Notation

The above equation can be put in an econometric form as;

$RGDP_t = \beta_0 + \beta_1 SMR + \beta_2 MSS + \beta_3 CPNG + \mu$

Where
β_0 = Autonomous or intercept
β_1 = Coefficient of parameter SMR
β_2 = Coefficient of parameter MSS
β_3 = Coefficient of parameter CPNG
μ = Stochastic variable or error term

The model can also be stated in a logged form as:

$LRGDP = C + L\beta_1 SMR + L\beta_2 MSS + L\beta_3 CPNG + \mu$

3.3 Method of Analysis

The investigative approach adopted by this study consists of four major steps. First the Augmented Dickey-Fuller (ADF) was used to test for stationarity of the variables and their order of integration. Second; the Johansen cointegration technique would be used to test for long run relationship between the variables. Thirdly, the ECM would be applied to estimate the speed of adjustment.

The dataset for this study were drawn from the Central Bank of Nigeria (CBN) Statistical Bulletin, 2021 publication, and Annual Report and Statement of Accounts for various years. The data set covered the period 1981 through 2021. The Microsoft excels software for windows were used for data entering and E-Views 10 was used for the estimation.

4. DATA INTERPRETATION AND ANALYSIS

4.1 Unit Root Test

It is necessary to verify the stationary properties of the variables in order to determine their order of integration. The ADF unit root test has been carried out on levels and differences of relevant of variables. Each variable is tested for a unit root by employing the dickey –fuller approach with an intercept term. The null hypothesis underlying the unit root is that the variables under investigation have no unit root, while the alternative hypothesis is that it does. The table 4.1 below shows the stationary properties of the variables.

Table 4.1 Result of the Unit Root Test

Variable	ADF statistic	Integration
RGDP	-5.405288	1(1)
SMR	-3.845760	1(1)
MSS	-6.287646	1(1)
CPNG	-5.196207	1(1)

Source: Author's computation using E-view version 10.1

From the table report above, it was observed none of the variables were stationary at level but eventually all the variables became stationary at level. This simply shows that all the variables are stationary at the order of integration stated above and they are at 1% level of significant respectively.

4.1.2 Co-Integration Test

The co-integration test is performed using the Johansen likelihood estimation equation which is done to test whether a long-run relationship exists amongst the variables. If it show at least one

co-integration equations exist amongst the variables under consideration, then a long-run equilibrium relationship exist amongst them. The table below shows the summary of Johansen co-integration tests conducted.

Table 4.2: Johansen Co-integration Test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 0.05	Prob.**
None*	0.651524	56.13252	47.85613	0.0069
At most 1*	0.266689	18.18180	29.79707	0.5527
At most 2*	0.127781	7.015137	15.49471	0.5759
At most 3*	0.056492	2.093403	3.841466	0.1479
Trace test indicates 1 cointegrating eqn(s) at the 0.05 level *denotes rejection of the hypothesis at the 0.05 level **Mackinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
None*	0.651524	37.95071	27.58434	0.0017
At most 1*	0.266689	11.16667	21.13162	0.6306
At most 2*	0.127781	4.921734	14.26460	0.7517
At most 3*	0.056492	2.093403	3.841466	0.1479
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level *****denotes rejection of the hypothesis at the 0.05 level ******Mackinnon-Haug-Michelis (1999) p-values				

Source: Author's Compilation Using E-views 10.1 Output

The result of the co-integration in table 4.2 shows that there is 1 co-integration relationships among the variables included in the model. This is confirmed by the results of both Trace test and the Max-eigenvalue test shown in table 4.2. Specifically, the result of the co-integration test suggests that the variables have long-run equilibrium relationship with each other. This evidence of co-integration among the variables rules out spurious correlations and applies that one directions of influence can be established among the variables.

4.1.3 Presentation of Regression Results

The full part of our regression result for this analysis is attached as an appendix to this study. However, the diagnostic tests or some key statistics or the variable that needs to be interpreted is shown below.

Table 4.3 Error Correction Model Result

Variable	Coefficient	Std.error	T-test	Prob
C	7.819046	0.243649	32.09146	0.0000
DLSMR(-1)	0.357784	0.073771	4.849917	0.0000
DLMSS(-1)	0.165096	0.042914	3.847138	0.0005
DCPNG(-1)	0.011142	0.052263	0.213195	0.0325
ECM(-1)	-0.503692	-0.165873	-3.036614	0.0047
R-Squared: 0.964899; Adjusted R-squared: 0.960511;F-statistic: 219.9137; Prob(F-statistic): 0.000000; Durbin-Watson Stat: 1.690631				

Source: Author's Compilation Using E-views 10.1 Output

The regression result shown in Table 4.3, shows a significant positive relationship between solid minerals resources and economic growth. The value for solid mineral resources is 0.357784; this implies that one percent increase in solid mineral resources, ceteris paribus, will lead to about 35 percent increase in Nigeria economic growth. This is consistent with apriori expectation. This

result supports the fact that increasing solid mineral resources enhances economic activities. Manufacturing sub-sector has a positive correlation with Nigeria economic growth. The value for Cement is 0.165096; this implies that one percent increase in manufacturing sub-sector, ceteris paribus, will lead to about 16 percent increase in Nigeria economic growth. This is consistent with apriori expectation. This result supports the fact that increasing manufacturing sub-sector improves the economic growth. Crude petroleum and natural gas has a positive correlation with Nigeria economic growth. The value for crude petroleum and natural gas is 0.011142, this implies that one percent increase in crude petroleum and natural gas, ceteris paribus, will lead to about 11 percent increase in Nigeria's economic growth. This is consistent with apriori expectation. This result supports the fact that increasing crude petroleum and natural gas output improves the economic growth.

From the result, the value of the coefficient of determination R^2 is 0.964899 which implies that 96% of the variation in economic growth is explained by the independent variables included in the model. While about 4 % are accounted for by variables outside our model. This further show that there is a high goodness if fit in the model. The *f*-statistics value of 219.9137 in the model, which are a measure of the joint significance of the explanatory variables, is found to be statistically significant at 1 percent level as indicated by the corresponding probability value of 0.000. This indicates there is a significant differences between the dependent and independent variables. Finally, the Durbin Watson test of autocorrelation shows an absence of serial autocorrelation. This is because the calculated value of DW (1.690631) falls between lower critical level (DW) and 2 at 1% significant level. Where DW= 1.7. With this result we reject the hypothesis that there is presence of serial autocorrelation in our model. Therefore, parameter estimates from our model are stable, efficient suitable for policy simulation. The result shows that the coefficient of ECM is negative -0.503692 and significant at 1% percent critical level. This shows that about 80 percent disequilibria in the economic growth in the previous years are corrected for in the current year. The significance of the ECM is an indication and a confirmation of the existence of a long run equilibrium relationship between economic growth and the independent variables used in this study. The robustness of the error correction method further buttresses that only 64percent is corrected in the previous year.

4.5 Discussion of Findings

The major finding of this study is that industrial output has a significant impact on economic growth and development in Nigeria. The issue of industrialization is one of the greatest challenges of our time, especially in developing countries. This is the movement towards higher-value economic activity in manufacturing, services and industry characterized by the use of technology, its continuous upgrade and its diffusion across society. The industrial sectors is in general, defined as composed of manufacturing, mining, services and construction, but the manufacturing sector is regarded as the component of industry that presents greater opportunities for sustained growth, employment and poverty reduction in Africa (Rodrik, 2007; Rowden, 2013).

The salient issue in industrialization is the capacity of manufacturing industry to create a forward linkage by providing inputs to other local industries and "backward linkages" by using inputs from the local economy, and engendering a local service economy (Hirschman, 1977). Anyanwu, et al., (1997) describes industrialization as the process of building up a nation's capacity to convert raw materials and other inputs to finished goods and to manufacture goods for other production or for

final consumption. industrialization enhances the utilization of productive inputs (labour, capital and raw materials) given the country's technology, to produce non-durable and durable consumer goods, intermediate goods and capital goods for domestic consumption, export or further production.

According to Lewis (1978), the more increase in the aggregate level of production of goods and services in an economy tell us nothing about the "quality of life" of a citizenry, given the threats of global pollution, abysmal top-sided distribution of aggregate output and income, environmental degradation, prevalence of chronic and deadly disease, abject poverty and the absence of freedom and justice. For such authors, attention should be focused not merely on the increase in aggregate output and income but also on the total quality of standard of living and that there is yet no satisfactory measure of "quality of life". That can be applied to quantitative measure of aggregate output and income which would be acceptable to all and sundry that will stand the test of the time. Notwithstanding, the consensus appears to be that the term economic growth refers to a positive increase in the aggregate level of output within a given time period in a country which economic development is seen as sustainable increase in the aggregate level of output and incomes, with due consideration given to the quality of life which hopefully takes account of such issues as equal distribution of income, healthcare, education, environmental degradation, reduction in global pollution, freedom and justice etc. therefore, economic development could be referred to as a process by which an economy experiences three main phenomena namely - sustained growth in output, structural changes and institutional changes, (Woodford, et al., 2000). If these three phenomena take place, it will lead to a rise in standard of living of the populace. That is why growth could be enjoyed by many countries but not all experience development.

5. CONCLUSION AND RECOMMENDATIONS

Based on the above revelation in this study, we conclude that the solid mineral resources growth, manufacturing sub-sector growth and crude petroleum and natural gas growth has positive significant impact on the performance of Nigerian economy.. To achieve the level of economic growth and development that is desired, the government have to strive to increase its level of investment which would increase economic growth and development in Nigeria.

Industrial sector has continued to be the backbone of economic growth and development based on this fact, and revelation from the empirical analysis conducted on this sector in Nigeria, the study makes the following policy recommendations.

1. The federal government and policy makers should stimulate economic growth in Nigeria through increased output in crude petroleum and natural gas.
2. Creating a conducive environment to achieve strong performance of the solid mineral sub-sector.
3. Government should hasten and implement its diversification plan to stimulate manufacturing sector output. Sustaining efforts at generating local materials for infant industries and support the campaign of local contempt initiative.
4. The deregulation of interest rate should be pursued to a local conclusion. This is because the problem of high interest rate has actually frustrates the efforts of prospective investors from acquiring loan for investment which has in turn affected and has negative implications for the economy.

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