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THE IMPACT OF CONSTRUCTION ON THE GROSS DOMESTIC PRODUCT (GDP) OF NIGERIAN ECONOMY FROM 2015 TO 2018

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ABSTRACT

The study examined the impact of construction industry contribution to the Gross Domestic Product (GDP) to the Nigerian economy. The objectives is to determine factors driving the growth of construction towards its contribution to the national economy and gross domestic products for sustainable development. The paper explained the various approach for arriving at the GDP, Cross-border comparison and purchasing power parity, standard of living and GDP, and how the gross domestic product (GDP) accounts for contribution in the construction sector. The result shows that the contribution of construction sectors shows a progressive increase from 3.6 percent in 2015 to 4.1 percent in 2017 with a growth rate of 14.51 percent. In time of recession when there are less construction activities there is a low contribution of the construction to GDP. There is need for implementing policy reforms to prioritize investments in infrastructure and human capitals to foster inclusive and sustainable growth in Nigeria.

KEYWORDS: Cross Domestic Product, Construction Sector, Sustainable Infrastructure and development.

1.0 INTRODUCTION

One of the largest industries in both developing and developed countries is construction in terms of investment, employment and contribution to Gross Domestic Product (GDP) of any nation. The impact of construction on the environment is considerable particularly in areas of energy use. Soil degradation, loss of agricultural land, forests and wild lands, air and water pollution, and depletion of non-renewable energy sources and minerals (Ametepy, Ansah and Gyadu-Asiedu, 2020). The construction industry accounts directly and indirectly for nearly forty percent (40%) of material flow entering the world economy, Cheng and Hong, 2018);

and in developing countries for around fifty percent (50%) of the total energy consumption (Ametaphy et al., 2020; Ibrahim and Price, 2005).

There is virtually no economic activities in any Nation that will not take place under a shelter. The Natural Environment has a lot of challenging conditions like sun intensity, heavy rainfall, winds effects, and other features which may pose hazard to most economic activities. In these circumstances shelter which is part of construction activities, shelters these activities to adverse weather conditions. The construction sector is one of the top five sectors used in measuring the National Gross Capital Formation (NGCF) and the GDP of any country and its effect on every other sectors makes it a significant front for sustainable development (Musaku, Kehinde and Kwroshi (2006) Construction is the major engine driver that activates all activities in almost of sectors that contributes to the Gross Domestic Products (GDP) of the Nigerian economy. All the sectors of commercial, industrial, agricultural/agro-allied, mining, education, transports, bridges, roads, railways, aviation, telecommunication, Banking, trade/investments, government activities, health etc. have some input of construction to provide a conducive environment for such business to thrive. However, in order to discuss the impact of construction on the Gross Domestic Product of construction in the Nigerian Economy it is pertinent to describe what is Gross Domestic Product (GDP), how it operates, arrived at and the impact of construction activities/contributions to GDP.

The organization for Economic Cooperation and Development (OECD) defines Gross Domestic Product (GDP) as an aggregate measure of production equal to the sum of the gross values added of all resident and institutional unit engaged in production and services (plus any taxes, and minus any subsidies, on products not included in the value of their outputs)" **(OECD, 2014). (Callen, 2016)** in IMF publication states that, "GDP measures the monetary values of final goods and services that are bought by the final user-produced in a country in a given period of time (say a quarters or a year).Total GDP can also be broken down into the contribution of each industry sector of the economy **(Dawson, 2006). (Lepenies 2016)** further explains that, the ratio of GDP to the total population of the region is the per capita GDP and the same is called mean standard of living. GDP is considered the world's most powerful statistical indicator of National Development and Progress.

Gross Domestic Product (GDP) is the total monetary or market value of all the finished goods and services produced within a country's boarders in a specific time period. As a broad measure of overall domestic production, it functions as a comprehensive scorecard of a given

country's economic health. The Gross Domestic Product (GDP) is usually calculated on quarterly and annual basis. Summarily the Gross Domestic Product (GDP).

1. Is the monetary value of all finished goods and services made within a country during a specific period,
2. Provides an economic snapshot of a country, used to estimate the size of an economy and growth rate,
3. Can be calculated in three ways, using expenditure, production, or incomes approach. It\ can be adjusted for inflation and population, or incomes. It can be adjusted for inflation and population to provide deeper insights,
4. Although it has limitations, GDP is a key tool to guide policymakers, investors, and business in strategic decision making.

The calculation of a country's GDP encompasses all private and public consumption, government outlays, investments, additions to private inventories, paid in construction costs, and the foreign balance of trade (Experts are added to the value and imports are subtracted). Also there are several types of GDP measures

1. **Nominal GDP:** GDP evaluated at current market prices.
2. **Real GDP:** Real GDP is an inflation-adjusted measure that reflects both the value and the quantity of goods and services produced by an economy in a given year.
3. **GDP Growth Rate:** The GDP growth rate compares one quarter of a country's GDP to the previous quarter in order to measure how fast an economy is growing.
4. **GDP per Capita:** GDP per Capita is a measurement of the GDP per person in a country's population; it is a useful way to compare GDP data between various countries.

Real GDP is calculated using a GDP price deflator, which is the difference in prices between the current year and the base year. Nominal GDP which is usually higher is divided by the deflator, yielding real GDP. Nominal GDP is used when comparing different quarters of outputs within the same year, while the Real GDP is a better method for expressing long-term National Economic Performance.

1.2 Types of Gross Domestic Product (GDP) Calculations

a. The Expenditure Approach i.e

GDP = C+G+I+Nx (where C = Consumption

G = Government spending; I = Investment and NX = net exports).

Consumption refers to private consumption expenditures or consumer spending; Government spending represents government consumption expenditures and gross investment, (ie equipment, infrastructure and payroll); Investment refers to private domestic investment or capital expenditures; Net exports refers to subtracting total exports from total imports.

b. The production (output) Approach is a reverse of expenditure approach. The production approach estimates the total value of economic outputs and deducts the cost of intermediate goods that are consumed in the process (like those of materials and services). The expenditure approach projects forward from costs, the production approach looks backward from the vantage point of a state of completed economic activity.

c. The Income Approach represents a kind of middle ground between the two other approaches to calculating GDP. The income approach calculates the income earned by all the factors of production in an economy, including the wages paid to labour, the rent earned by land, the return on capital in the form of interest, and corporate profits. The income approach factors in some adjustments for those items that are not considered-as payments made to factors of production such as sales taxes, property taxes, and depreciation are added to National Income.

A Common formula for Income approach is

GDP = Compensation of employees + gross operating surplus + gross mixed income + taxes less subsides on production and imports.

GDP = COE + COS + GMI + Tp&m - Sp&m.

(i) (Compensation of employees (COE) measures the total remuneration of employees for work done. It includes wages and salaries, as well as employers contributions to social security and other such programs.

(ii) Gross operating surplus (GOS) is the surplus due to owners of incorporated businesses often called profits, although only a subset of total costs is subtracted from gross output to calculate GOS.

(iii) Gross mixed income (GMI) is the same measure as GOS, but for unincorporated businesses. This often includes most small businesses.

The sum **of COE, GOS** and GMI is called total factor income, it is the income of all the factors of production in society. It measures the value of GDP at factor (basic) prices. The difference between basic prices and final prices (those used in expenditure calculation) is the

total taxes less subsides on production and imports converts GDP (I) at factor costs to GDP(I) at final prices.

Total factors income is also sometimes expressed as: Total factor income = employee compensation + corporate profits + proprietor's income + rental income + net interest (BEA 2009).

1.3 Nominal GDP and adjustments to GDP

The raw GDP figure as given by the equations above is called the nominal, historical, or current, GDP. When one compares GDP figures from one year to another, it is desirable to compensate for changes in the value of money - for the effects of inflation or deflation. To make it more meaningful for year-to-year comparisons, it may be multiplied by the ratio between the value of money in the year the GDP was measured and the value of money in a base year.

For example, suppose a country's GDP in 1990 was $100 million and its GDP in 2000 was $300 million. Suppose also that inflation had halved the value of its currency over that period. To meaningfully compare its GDP in 2000 to its GDP in 1990, we could multiply the GDP in 2000 by one-half, to make it relative to 1990 as a base year. The result would be that the GDP in 2000 equals $300 million x one- half = $150 million, in 1990 monetary terms. We would see that the country's GDP had realistically increased 50 percent over that period, not 200 percent, as it might appear from the raw GDP data. The GDP adjusted for changes in money value in this way is called the real, or constant, GDP.

The factor used to convert GDP from current to constant values in this way is called the **GDP deflator.** Unlike **consumer price index,** which measures inflation, or deflation in the price of household consumer goods, the GDP deflator measures changes in the prices of all domestically changes in the prices of all domestically produced goods and services in an economy including investment goods and government services, as well as household consumption goods.

Constant-GDP figures allow us to calculate a GDP growth rate, which indicates how much a country's production has increased (or decreased, if the growth rate is negative) compared to the previous year.

Real GDP growth rate at year n = (GDP in year n) - (Real GDP in year n -1)] / (Real GDP in year n - 1)

Another thing that it may be desirable to account for is population growth. If a country's GDP doubled over a certain period, but its population tripled, the increase in GDP may not mean that the standard of living increased for the country's residents; the average person in the country is producing less than they were before. Per-capita is a measure to account for population growth.

1.4 Cross-border comparison and purchasing power parity (PPP)

The level of GDP in countries may be compared by converting their value in national currency according to either the current currency exchange rate, or the **purchasing power parity** exchange rate.

(i) Current currency exchange rate is the exchange rate in the international foreign exchange market.

(ii)Purchasing power parity exchange rate is the exchange rate based on the purchasing power parity (PPP) of a currency relative to a selected standard (usually the United States dollar). This is a comparative (and theoretical) exchange rate, the only way to directly realize this rate is to sell an entire **CPI** basket in one country, convert the cash at the currency market rate & then rebuy that same basket of goods in the other country (with the converted cash). Going from country to country, the distribution of prices within the basket will vary; typically, non-tradable purchases will consume a greater proportion of the basket's total cost in the higher GDP country, per the **Batassa-Samuelson** effect.

The ranking of countries may differ significantly based on which method is used.

(i)The current exchange rate method converts the value of goods and services using global currency exchange rates. The method can offer better indications of a country's international purchasing power. For instance, if 10% of GDP is being spent on buying hi-tech foreign arms, the number of weapons purchased is entirely governed by current exchange rates, since arms are a traded product bought on the international market. There is no meaningful 'local' price distinct from the international price for high technology goods. The PPP method of GDP conversion is more relevant to non-traded goods and services. In the above example if hi-tech weapons are to be produced internally their amount will be governed by GDP (PPP) rather than nominal GDP.

There is a clear pattern of the **purchasing power parity method** decreasing the disparity in GDP between high and low income (GDP) countries, as compared to the current exchange rate method. This finding is called the Perm effect.

1.5 Standard of living and GDP: wealth distribution and externalities

GDP per capita is often used as an indicator of living standards.

The major advantage of GDP per capita as an indicator of standard of living is that it is measured frequently, widely, and consistently. It is measured frequently in that most countries provide information on GDP on a quarterly basis, allowing trends to be seen quickly. It is measured widely in that some measure of GDP is available for almost every country in the world, allowing inter- country comparisons. It is measured consistently in that the technical definition of GDP is relatively consistent among countries.

GDP does not include several factors that influence the standard of living. In particular, it fails to account for:

(i)Externalities - Economic growth may entail an increase in negative externalities that are not directly measured GDP industrial output might grow GDP, but any pollution is not counted.

(ii)Non-market transactions - GDP excludes activities that are not provided through the market, such as household production, bartering of goods and services, and volunteer or unpaid services.

(iii)Non-monetary economy - GDP omits economies where no money comes into play at all, resulting in inaccurate or abnormally low GDP figures. For example, in countries with major business transactions occurring informally, portions of local economy are not easily registered. Bartering may be more prominent than the use of money, even extending to services.

(iv)Quality improvements and inclusion of new products - by not fully adjusting for quality improvements and new products, GDP understates true economic growth. For instance, although computers today are less expensive and more powerful than computers from the past, GDP treats them as the same products by only accounting for the monetary value. The introduction of new products is also difficult to measure accurately and is not reflected in GDP despite the fact that it may increase the standard of living. For example, even the richest person in 1900 could not purchase standard products, such as antibiotics and

cell phones that an average consumer can buy today, since such modern conveniences did not exist then.

(V)Sustainability of growth - GDP is a measurement of economic historic activity and is not necessarily a projection.

(vi)Wealth distribution - does not account for variances in incomes of various demographic groups.

It can be argued that GDP per capita as an indicator standard of living is correlated with these factors, capturing them indirectly. As a result, GDP per capita as a standard of living is a continued usage because most people have a fairly accurate idea of what it is and know it is tough to come up with quantitative measures for such constructs as happiness, quality of life, and well being.

1.6 GDP and the Construction Sector

Construction sector is one of the components of Gross Domestic Product in any country including Nigeria. The construction industry is vital to the economy, and achievement of national socio-economic development goals of providing shelter, infrastructure, and employment. Construction activities affect nearly every aspect of the economy and essential to the continued growth of the economy. The role of construction industry and its activities are vital to the achievement of National socio-economic development goals of providing shelter, infrastructure, and employment (Anaman and Osei-Amponsah, 2007). Khan (2008) asserts that, the construction sector and construction activities are considered to be one of the major sources of economic growth, development, and economic activities. Construction and engineering services industry play an important role in the economic uplift and development of the country. The construction industry is also a prime source of employment generation offering job opportunities to millions of unskilled, semi-skilled, and skilled workforce. Park (1989) asserted that the .construction industry generates one of the highest multiplier effects through its extensive backward and forward linkages with other sectors of the economy. Ofori (1990) emphasize the importance of construction in the national economy and attributed it to the high linkages with rest of the economy. The construction industry is regarded as an essential and high visible contributor to the process of growth (Field and Ofori, 1988). World Bank, (1984) stated that the importance of the construction industry stems from its strong linkages with other sectors of the economy. However, the construction sector is one of the most neglected sectors as policy makers have not promoted this industry

as a driver of economic growth as reflected in lack of attention given to it in government policies.

The construction industry can mobilize and effectively utilize local, human, and material resources in the development and maintenance of housing and infrastructure to promote local employment and improve economic efficiency (Anaman and Osei-Amponsah, 2007). In many developing countries, it is often seen as a driver of economic growth. The Nigerian construction sector accounted for about 40% of the total capital formation in the pre-independence era, and in the post independent era, the proportion increased to more that 50% on the average (Aboyade, 1966). **Construction Contribution** to the nation's Gross Domestic Products (GDP) ranges between 3 and 6% from independence to the 80's before dropping to 1% in the 1900's. However, from year 2000 there was an upward progression in its actual contribution which stood at about 3% in 2012, due to improved budgetary implementation and private sector participation (Isa *et al,* 2013). Building and construction sector is one of the top five sectors used in measuring the National Gross Capital formation (NGCF) and the GDP of any country and its effect on every other sectors, makes it a significant front for sustainable development (Mosaku *et al,* 2006). The size of the industry, the nature of its operation, the job creation potentials and its presence in every developmental activity have made construction an attractive area of experimentation in enhancing the effectiveness of governance and cooperative works towards sustainable economic development and contribution to the Gross Domestic Product (GDP). Oluwakiyesi (2011), stated that, the secondary activities in Nigerian economy comprising manufacturing, building and construction, which traditionally have greater potential for employment generation, broadening the productive base of the economy and generating sustainable foreign exchange earnings and government revenues account for a mere 4.14 and 20% of gross output, respectively.

The construction sector contribution to GDP output was 3.8% in 1960, then rose to 4.22%, 4.38 and 5.7% in 1965, 1970 and 1975 respectively. The percentage share of GDP rose massively to about 20% from 1979 to 1980 and significantly declined to an average of 4% in the late 1980's and 1990's due to slump in oil earning forcing the suspension of many projects (Uwechue, 1991). The Nigerian construction sector is estimated to be about $3.15 billion in 2008. This annual growth rate is among the highest in Nigeria, with a remarkable 12.17% growth in 2005, which is more than double the growth of the GDP of 5.6%. The sector is

projected to continue to grow very high and the development of physical infrastructure remains high in so far as the international price of oil remains high on the government's agenda (BM, 2007, Dantata, 2008). Nigeria construction sector is forecasted to enjoy the fastest growth rate in the world even faster than India and China in their construction output up to 2020. However, the Corona Virus Disease Pandemic (COVID-19) in the first and second quarter of 2020 resulted to a very sharp drop in oil revenue and drastic reduction in the level of construction activities which in turn affected adversely the Gross Domestic Product (GDP) of Nigeria and many countries of the world.

1.7 Construction Linkages to Gross Domestic Product (GDP)

The construction industry has strong linkage with other sectors that contributes to the Gross Domestic Products (GDP) of the Nigerian Economy. Bynoe (2009) affirmed that the construction sector is an important element of many countries' macroeconomic growth strategy. It is a major source of employment, and also lays the foundation for economic growth by providing the infrastructural and commercial framework needed for development. Lean (2001) asserts that there is evidence of a set of directional causal relationships, which are considered to be essential drivers of economic growth, between the construction sector and other sectors of an economy that contributes to the Gross Domestic Product (GDP). The output in construction in supplying the infrastructure needed for the development of various sectors of the economy.

Construction has been used extensively by policy makers as a tool, and changes to the portion of public spending going towards building activity has been a feature of various governments' fiscal policy measures. In most developing countries where evidence suggests that the share of construction output to National GDP output is highest and of greater importance, due to its size, provides investment goods with government involvement. The sectoral composition of output, the linkages between the different sectors and their combined impact on GDP growth and development have been of interest because there is unbalanced growth among supporting sectors of the economy.

The construction outputs is a major component of investment and part of fixed capital which are important factors for a continuous economic growth. Products of construction require a long gestation period and are expected to supply services for a period of time. Investments in construction assume major importance since any expansion in the economy requires infrastructure investment as a precondition for potential economic growth (Ive and

Gruneberg, 2000, Hillebrandt, 2000). Therefore, construction industry is frequently used as a tool by various governments to manage the local/national economy. The effect in expansion of construction activities is felt largely within the construction sector and only subsequently on the aggregate economy. This implies that the construction sector and GDP do not move independently of each other in the long run, instead they share a common trend.

1.8 The imperatives of Construction to Gross Domestic Product

Allaffrica.com (2010) and Oluwakiyesi opined that construction industry can be spurred towards sustainable development which would impact on the GDP with the following:

A. **Strong growth and economic diversification:** In agricultural and other non-oil sectors including construction.
B. **Rapid urbanization:** Nigeria is undoubtedly one of the fastest urbanizing countries in Sub-Saharan Africa with close to 50% of Nigeria's population now live in urban areas that heralds more demand for infrastructure.
C. **Demographic and housing demand:** With a median age of 19years and approximately 55% of the population in working age, Nigeria's population distribution portends strong potential for continuing growth.
D. **Relatively strong commodity prices in the long run:** Will improve the economic base of the country with emergence of other sources of fuel and energy other than oil.
E. **Increasing capacity in cement production:** Local building materials input of cement and steel will surely bring about significant growth in construction activities in Nigeria GDP.
F. **Public Private Partnership (P.P.P):** PPP medium will deliver physical and social infrastructure to people by bridging the gap from public funding.

The Nigeria construction sector witnessed an overwhelming upsurge in construction contracting dominated by expatriate companies with few indigenous companies (Idoro, 2009). The construction sector as a major source of capital formation can spur growth and development in Nigeria from public sector with the traditional approach in the major infrastructure procurement funding process through annual capital budgetary provision. The construction industry plays an important role in satisfying wide range of physical, economic, and social needs and contributes significantly to the fulfillment of various major national goals, in a drive for a diversified economy that can lead to true sustainability.

1.9 The Construction trend in Nigeria GDP from 2015 to 2018.

The construction growth rate (CNS) and the GDP growth rate on first, second, third and four quarters of 2015 are shown in Table 1 below.

In first quarter of 2015, the total real GDP is **₦16,050,602.38** million with a GDP growth of -11.57 from the previous quarters while the Total output in the construction sector is **₦697,366.62** million representing 4.34% contribution to GDP with construction growth (CNS) of 4.76 percent. The GDP increased to **₦18,533,752.07** million with growth of 3.10% and the total output in construction sector was **₦633,347.24** million representing 3.58% contribution to GDP with growth of 14.51 percent.

Table I: Real GDP and Construction sector data at 2010 constant basic price in quarter in 2015

Real GDP			Construction Sector		
Observation	**Total GDP (₦Million)**	**GDP Growth GDP (%)**	**Total output (₦Million)**	**% Contribution to GDP**	**Construction Growth (CNS) (%)**
2015ql	16,050,601.38	-11.57	697,366.62	4.34	4.76
2015q2	16,463,341.91	2.57	740,204.22	4.50	6.14
2015q3	17,976,234.59	9.19	579,297.92	3.22	-21.74
2015q4	18,533,752.07	3.10	663,347.24	3.58	14.51

Source: National bureau of statistics

The summary of Nigeria GDP from construction 2010 to 2020 Data shows the following data in million at 2010 constant prices.

Actual - 682791.74

Previous - 671110.60

Highest - 752833.66

Lowest - 369190.91

Source: National bureau of statistics

The GDP from construction in Nigeria increased to 682791.74 NGN Million in the first quarter of 2020 from 671110.60 NGN Million in the fourth quarter of 2019.

Table 2: Gross Domestic Product at 2010 Constant Basic Prices - Annual (Billion) to the construction sector.

Year	2015	2016	2017	2018
	2480.22	2520.85	2545.99	2605.29
% to GDP	3.6%	3.7%	4.1%	3.7%

Source: National bureau of statistics

The table 2 above shows that annual average contributions of construction sector are: 3.6%, 3.7%, 4.1% and 3.7% in 2015, 2016, 2017 and 2018 respectively based on 2010 constant basic prices.

The construction sector is one of the major drivers of all other sectors because its input is felt in these sectors.

CONCLUSION AND RECOMMENDATION

Construction is a driving for economic growth with associated economic, regulator and technological factors funding constraints, regulatory bottlenecks impede efficiency and competitiveness of construction projects. Infrastructure investment, regulatory reforms and capacity building on skills development, vocational training and education initiatives will drive sustainable growth in the construction industry to contribute more to the Gross Domestic Product (GDP) of the Nigerian economy.

Construction impact on the Gross Domestic Product (GDP) in the following ways:

A. The construction industry involved in infrastructure development boosts economic growth, are important and highly visible contributor to the process of growth.
B. Construction is a vital sector of any economy because of both size and the potential role it can play in development effort of the economy.
C. Since the construction sector has always been closely related to national economy, it follows that more construction will raise GDP through the multiplier, which in turn leads to a higher demand for construction orders.
D. The demand for construction is not autonomous rather it is determined by the level of GDP.
E. Construction is large sector of the economy responsible for millions of jobs and a significant proportion of GDP.

F. When construction is allied to other sectors and industries in material production and distribution, its impact on society and the environment and its influence on the character of our world are tremendous.

G. Although from available statistics the construction sector percentage to Nigeria GDP is still in single digit, in most developed economy, it is one of the highest contributors to the Nation's Gross Domestic Product (GDP).

H. The housing transportation and other sectors will always rely on construction for shelter, access to facilities and conducive Environment for any business to thrive in the economy.

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