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ABSTRACT
Since the coming of the Buhari administration in 2015, Nigeria has consistently amassed huge internal and external debts thereby jacking up its debt repayment and servicing obligations. The huge debt obligations have had adverse effect on the general economy. Research indicates that this state of affairs is partly responsible for the poor state of human capital development indices and has unfortunately earned the country the inglorious title of the poverty capital of the world. Against this backdrop, this paper investigates the impact of external debt stock and debt servicing on human capital development (HCD) in Nigeria from 1960-2019. To achieve the objective, this paper collect data from the archives of the Central Bank of Nigeria (CBN), the National Bureau of Statistics (NBS) and the debt management office (DMO) for various years. The Ordinary Least Squares (OLS) regression technique was used to test eight hypotheses. Results revealed that external debt servicing has an inverse relationship with HCD whereas external debt stock has a significantly positive impact on HCD. All other variables in the model contributed to the increase in public spending on education and health. The paper recommends among others that non-politicised feasibility studies should precede every request for funds that would require external or internal financing at both levels of government with non-partisan projects monitoring units that will involve the communities where such projects are sited to supervise the execution of such projects. Further, it is recommended that the federal government should borrow only to finance productive capital projects that have the capacity to generate enough returns to pay off the debt over time.

Keywords: Human capital development, debt servicing, economic growth

1. INTRODUCTION
As a global player, Nigeria has since the past 59 years had an unrestrained access to external borrowing. She has also had an unrestrained access to internal borrowing from her citizenry. Her debt profile has for a fact risen tremendously from independence. Recently, Nigeria’s debt rose astronomically to an unenviable height particularly since 2015. Nigeria’s external debt is considered to be an important constraint to the growth of human capital development in Nigeria. Comparatively, it can be said that Nigeria’s external debt vis-a-vis the world standards may be small, it however imposes a heavy burden on its economic growth and development and renders delivery of social goods and services to the poor less effective (Adam, 2002) as was witnessed in 2020 during the Coronavirus (COVID-19) pandemic given her low annual national productivity growth rate.

As at 2019, Nigeria’s external and domestic debt was reported to be humongous. Her total external debt which stood at $8,938,210,283 in 1980 and $28,467,535,604 in 1997 (Ajayi & Iyoha, 1998) now stands at $54,832,397,402 in 2019. The extent of the problems associated with indebtedness is demonstrated by the present value of debt which exceeded 220% of exports in 1993. Nigeria’s debt service due presently
The act of debt on the fragile Nigerian economy can be seen to be improved over the years, they are, however, far behind the population living in extreme poverty. Nigerians are among the 600 million of those identified within SSA (Adam, 2002). The risks reported to have low or minimal effects on GDP are found in the northern part of the country so much so that Nigeria is today regarded as the poorest of the poor in the world. Nigeria is among the 74% countries in the Sub-Saharan Africa (SSA) classified by the World Bank as low-income economies and also of the 79% countries within the SSA classified by the United Nations development programmes (UNDP) as human development. Out of the 41 countries in the world classified as heavily indebted poor countries (HIPCs) by the World Bank and IMF, Nigeria is mentioned within the SSA countries.

40% of the amount disbursed by the federation accounts and allocation committee (FAAC) was reported by the Nigerian extractive industries transparency initiatives (NEITI) to be used for debt servicing. NEITI expressed concern over Nigeria’s level of indebtedness, declaring that Nigeria’s debt in relation to revenues appears to have reached a critical level. Quantitative review which focused on disbursement from FAAC disclosed that a total of NGN513bn was spent on debt servicing by the three tiers in the first quarter of 2017 compared to a total disbursement of NGN1,276bn. This means that debt servicing gulped up 40.27% of FAAC’s disbursement for the first quarter under review. Debt servicing as a proportion of total FAAC allocations/disbursements is generally higher in the quarter of the year after it fell to lower levels. Domestic debt servicing made up over 93% of total debt servicing in Nigeria.

According to the international monetary fund (IMF), Nigeria’s plan to increase its foreign borrowing to reduce debt-serving cost is only a fallacy that could raise its exchange rate risks. Nigeria issued a US$5.5bn dollars-denominated bonds/debt by the end of 2017 to reference its existing domestic debt. The implication is that the exercise more than doubled Nigeria’s existing and outstanding debt in dollar bonds to about $9bn in her attempted strategy to shift the economy’s debt profile by doubling the portion of foreign debt to 40% of the total (Daya, 2017). Nigeria’s interest-to-revenue ratio rose from 33% in 2015 to 59% in 2016 (World Bank, 2018).

The bottom line is that over 100 million people inhabiting Nigeria are among the poorest in the world. Nigerians are among the 600 million of those identified within SSA (Adam, 2002). The implication is that majority of Nigerians are not only poor but that Nigeria is also reported to have low or negative rate of growth of per capita income (Iyoha, 1999). Why is Nigeria’s performance rating in human
capital development so dismal compared to its old counterparts like China, Brazil, Singapore, and Malaysia? Therefore, this paper postulates that Nigeria’s poor human capital index rating is partly as a direct result of the huge debt repayment and debt servicing over time. Consequently, the objective of this paper is to investigate the impact of external debt servicing on the investment in education and health as proxies for human capital development (HCD). Thus, the next logical research question is: What is the impact of debt servicing and external debt stock on human capital development in Nigeria?

2. Literature Review
2.1. Conceptual Review
Literarily, debt servicing refers to the compelling legal obligation of the state (country) who is the borrower to pay the interest on a loan as and when due and also to effect repayment of principal (Egungwu, 2018) in accordance with a certain schedule (Aybarc, 2019). Debt servicing is an aftermath of a debt owed. Nations, just like the individuals, owe debts. When a nation borrows, it is called public debt. Public debt occurs when a nation/government borrows money to finance some of its expenditures. So, when a nation undertakes deficit financing of its expenditure it is known as public debt (Musgrave & Musgrave, 1984). Public debts are characterised by both domestic and international debts, and as the name indicates they are debts borrowed from the domestic and international financial markets respectively to finance domestic investment (Uzochukwu, 2006). Public debts are also characterised by high and variable interest rates, and shorter maturities and grace periods (Obadan, 2004).

Countries all over the world become indebted due to shortage of available financial resources needed to prosecute national development. Usually, the state is faced with the public sector deficit due to reasons such as large infrastructure investments, war, development financing, natural disasters, economic crises, budget deficits, as well as the ever-increasing ordinary public expenditures (Aybarc, 2019). To overcome this situation, often times, governments resort to borrowing (Salsman, 2017). But in the case of Nigeria, public debt has arisen essentially because of budget deficit and public treasury looting by government officials both at the federal and state levels. Therefore, public indebtedness occurs as a natural consequence arising from economic activities created when a nation seeks to invest capital in excess of its available financial resources (Diallo, 2007). Such a shortfall and finance gap is bridged by both internal and external borrowing (Egungwu, 2018).

Public debt literature classifies public borrowings into three broad groups – maturity, sources, and voluntariness. But each of these categories can further be categorised into various types according to their characteristics (Aybarc, 2019) as depicted in figure 1. For example, public debt that is classified according to maturity is time-bound and so can be explained in terms of the length of time the debtor is to commence repayment of both the principal and interest. In this sense, there is the short-term public debt which refers to debts within a time frame up to 1 year such as treasury bills and treasury guaranteed bonds. There is the medium-term public debt which covers debts ranging from 1-5 years time frame, and the long-term public debts covering debts of more than 5 years tenor such as government bond. Public debt that is classified according to sources is either a domestically or internally borrowed debt or an externally borrowed debt. The third category of public debts is that classified as voluntary. This category is in two groups – voluntary and obligatory. It is voluntary when it is lent to the country out of its own will and desire whereas it is obligatory when it is lent by force as in the case of a government issueing bonds in times of war, natural disaster or economic crises.

Some nations do have the capacity to redeem their debt obligations. In such cases, the accumulation of arrears will be nonexistent hence there won’t be a case of debt overhang which usually cripples economic growth of nations particularly developing economies such as Nigeria. In specific terms, debt servicing involves payment of interest on the loan, repayment of the outstanding loan, refinancing of the borrowed loan/debt and most times especially for poorer nations, rescheduling of debt (Abubakar, 1990). Both the interest payment and principal repayment are a drain on the financial resources and capacity of the debtor nation. The higher the debt stocks of a country, the higher the severity of impact of debt servicing obligations on the country (Egungwu, 2018). This creates a huge financial burden on the nation’s resources which naturally affects its ability to meet other financial responsibilities and obligations to its citizens including the ability to provide public social goods and services such as quality education and adequate health care service delivery to the people. These two basic social goods that culminate into human capital development index (HCDI)
By way of definition, human capital is that invaluable and non-physical asset possessed by and embedded in human beings. The intangibility is such that despite its invaluable contribution to the success of organisations, it is never listed on the balance sheet (Sonnenshein, 2020). The human capital is an intangible asset with enormous economic value in a human being or an employee in the form of experience and skills acquired through education, training, intelligence, skills, health, and such other things like loyalty and punctuality which the employers may value. The World Bank defines human capital development index (HCI) as a measure of how such skills and experiences (human capital) contribute to the productivity of the next generation of workers based on health, quantity and quality of education and prospects of what a child born today will achieve by the age of 18” (World Bank, 2018). The index is modelled to capture three main human capital outcomes that contribute to productivity, survival, education, and health. Although it is true that human capital is broader than the aforementioned three components and that it includes for example, socio-emotional skills and job-specific skills, digital literacy, and other aspects of health, this present research is however limited to analysing how human capital development can be affected by external debt stock and servicing.

**Figure 1:** Classification of Public Debt

**Source:** Adapted from Aybarc, S. (2019): Theory of public debt and current reflections, DOI: http://dx.doi.org/10.5772/intechopen.82730, p.3.
2.2. Theoretical Review

This work is anchored on the views of John Maynard Keynes and the Classics on public borrowing or national debt. Aybarc (2019) reported that public borrowing in the 13th century was first scientifically examined by Charles Davenmont in 1710. Since then, economists like David Hume, Adam Smith, David Ricardo, Malthus, J.S. Mill, J.B. Say, A.P. Lerner, and A.G. Hart among others have also written on public borrowing. While some supported public borrowing, others totally opposed public borrowing. Specifically, Smith and Ricardo had argued that public borrowed funds are spent irresponsibly because it is seen as an easy income. The duo further argued against public borrowing because according to them it gives rise to wasteful capital, and that the burden of debt is transferred to the next generations due to the inefficiency of public expenditures (Sugözü, 2010). Others defended public borrowing asserting that borrowing could be necessary in certain circumstances such as government trying to finance large infrastructure investment and war while emphasising, however, that borrowing should be limited. Both Keynes and the Classics argued that public debt/borrowing should occur as a war financing exigency and in some cases for large infrastructure investment emphasising though that there should be a limit to such borrowing. The reason is that public borrowing leaves a great burden on the next generations as it brings along with it the debt-interest cycle, poverty, and crises to the debtor nation (Aybarc, 2019). Following this 18th century proposal, a process that eventually led to public borrowing becoming an indispensable source of governments financing all over the world was begun by Keynes during World War I (1914-1918) and the Great Depression (in the 1930s). The pathetic situation arising from public debt burden on developing countries especially in the Sub-Saharan Africa (SSA) as at today justifies the classics/Keynes’ argument that public debt causes capital waste, transfers the misery of capital and interest repayment burden to the next generations, and causes deterioration in the functioning of economic life of the people. Hence, this theory underpins this present research endeavour.

2.3. Empirical Review

An overview of the studies conducted on the impact of debt servicing on human capital development (HCD) shows how these studies have progressed over time. Indications are that there has been multiplicity of conflicting results based on the formulated models and variables used as proxies for human capital development (HCD). Debt service burden can be measured using different distinct ratios. For instance, there is the debt service as a percentage of foreign exchange earnings. This measures the ratio of debt service to foreign exchange earnings of a country. There is the debt service as percentage of receipts from exports of goods and services. The import of this measure is to determine a nation’s credit worthiness and its capacity to repay its debt. In this sense, there is an international threshold limit of the level of indebtedness beyond which a nation cannot go. The upper limit is 20% of its export earnings. Any amount beyond the upper threshold is deemed unsustainable. The third measure and perhaps the most important indicator, in view of its ability to determine the long-term results, is the debt service-to-GDP ratio. This measure determines the burden of debt service on the country’s total national output or total national income.

Atueyi (2019) examined the effect of external debt on human capital development in Nigeria. Using the Ex-post facto research design to collect data spanning 32 years (1986-2017) and employing OLS regression technique to analyse data, the study found that external debt has a negative and significant effect on human capital development in Nigeria. At the same time, debt financing was found to have a negative insignificant effect on human capital development. Conversely, the gross fixed capital formation was reported to have positive insignificant effect on human capital development. The study, however, asserts that with government’s enormous investment in human capital through research & development, training and technology and education and health sector, government can actually facilitate and increase productivity.

Egungwu (2018) on his part investigated the impact of increase in external debt stock and debt servicing on human capital development in Nigeria. Ex-post facto research design was adopted and time series data spanning 30 years (1986-2015) were processed. The ordinary least square (OLS) regression technique was used to test the hypotheses. The study found that both external debt stock and external debt servicing
had significant negative effect on human capital development. It further reported that external debt stock borrowed from Paris club and multilateral creditors had insignificant negative effect. Muhammad Sallahuddin and Nor (2016) analysed the impact of external debt on the growth and development of capital formation in Nigeria. The result indicated that external debt had a negative and statistically significant impact on capital formation while savings came out as the only variable with a bi-directional causal relationship amongst the variables investigated. Interest rate was found to be statistically significant though weak.

Kgagke-Tabengwa, (2014) empirically examined the implications of shocks to public debt and government expenditure on the development of human capital and growth in some selected developing countries. Using a model that tended to recognise the role of fiscal constraints by introducing government budget constraint for a set of selected developing countries from 1980-2013, the study captured fiscal challenges facing developing countries in their efforts to develop human capital; a variable fundamentally vital for sustainable growth. The results showed that high stocks of public debt, beyond the 30-40% debt/GDP threshold, depressed the effect of human capital on output growth through limiting government expenditure resources available for developing human capital. The study further finds that government expenditure has a positive role to play in developing human capital, but how such policy role can be sustained can only be imagined particularly for countries with fiscal constraints. Thus, the study concluded that developing countries which face fiscal challenges such as high public debt servicing and poor revenue prospects needed to attain sustainable government expenditure unfortunately cannot solely develop human capital based on the strength of their domestic resources.

Murshed and Saleh (2013) investigated factors responsible for low public sector human capital investment in Pakistan. Debt servicing burden and high debt stock were found to impact human capital expenditure significantly. In the study, a debt-net-cost-index was developed to measure the evolving net cost of public debt using regime type, frequency of elections, quality of democracy, international aid preferences, elite captured in terms of industrial concentration, military burden and external hostility indices as proxies for political factors. The study found that political factors rather than economic factors (burden of debt servicing) accounted for the observed low levels of human development expenditure. Indeed, it was found that only during the period of civilian rule that economic factors (debt servicing burden) accounted for low levels of expenditure in human capital development. This is because civilian governments are often saddled with inherited debt from predecessor military rulers. Pakistan's military regimes have been less resource constrained because of greater external flows, allowing them to spend more on everything, leading to a disproportional rise in human development expenditures vis-à-vis the quantum rise in resources during the intervening period (Ezema et al, 2018)

Imran et al. (2012) using co-integration and Granger Causality model investigated the relationship and direction of causality between social spending (Proxy for human capital) and economic growth. Results indicate that GDP is co-integrated with public expenditures on education and health, gross fixed capital formation indices & debt service payments for a specified time period. The study further found a long term relationship between GDP and social spending in Pakistan. Hence, it recommended that government should increase public expenditures on both health and education sub-sectors so as to obtain the required level of productivity that would ensure sustainable economic growth.

Fosu (2007) used a five-year panel data covering 1975-1994 to investigate how binding debt service constraint has impacted educational budget in 35 Sub-Saharan African (SSA) countries. The study found that external debt servicing appeared as a major constraint in many developing countries, especially SSA, raising the concern that fiscal allocation for education may have been severely limited. While actual debt service has little or no effect on education spending, predicted debt service that reflects the debt burden exhibits a substantial adverse impact. It was further found that there is an upward trend in education expenditure, contrary to the popular belief that the structural adjustment programmes undertaken in many SSA countries may have reduced expenditures going to the social sector including education. This may be because a number of SSA countries may have managed to circumvent the external debt constraint via debt rescheduling, for example. The results also suggest that removing the debt constraint is consistent with the heavily-indebted-poor country initiative to boost spending in the social sector.
Tito et al. (2010) looked at how debt overhang affects highly indebted countries in developing countries. They examined how the debt-growth relation varies with indebtedness levels vis-a-vis the quality of policies and institutions operated in those countries. The main findings are that, in countries with good policies and institutions, there is evidence of debt overhang when the net present value of debt rises above 20-25% of GDP but however, debt overhang becomes irrelevant when it rises above 70-80%. In countries with thresholds appear to be lower, but the evidence of debt overhang is weaker and so the study could not rule out that debt is always irrelevant. The study therefore concluded that investment level in countries with bad policies and institutions as well as those countries with high indebtedness levels does not depend on debt levels. Hence, the study suggested that not all countries are likely to profit from debt relief and so there cannot be a one-size-fits-all debt relief approach for all countries.

Ranis et al. (2000) investigated the connections between economic growth and human development form two trajectories. Cross-country regressions show a significant relationship in both directions, with public expenditures on health and education, notably female, especially important in the chain from economic to human development; and the investment rate and income distribution significant in the human development to economic growth chain. This gives rise to vicious cycles, with good or bad performance on human development and economic growth reinforcing each other. Evidence over time has strong sequencing implications: countries initially favouring economic growth lapse into the vicious category, while those with good human development and poor economic growth sometimes move into the virtuous category. Where choice is necessary human development should be given sequencing priority.

Some researchers have also examined the effect of debt and debt overhang on the economic growth of nations. Economic growth here is used as measure of the capacity of a country to develop its strategic national infrastructure and be able to provide social goods and services to its citizens. For example, researchers have argued that there is a reasonable level of indebtedness a nation can have that would help to finance productive investment which in turn will enhance economic growth and reduce the poverty level of the citizenry (Obadan, 2004; Adam, 2002). But any additional debt beyond this reasonable threshold level is likely to hinder subsequent growth and consequently affect the capacity to provide social welfare to the people (Adebiyi, 2002; Musgrave & Musgrave, 1987; Aboyade, 1983). Oke and Sulaiman (2012) examined the impact of external debt on the level of economic growth and volume of investment in Nigeria between 1980 and 2008 employing the Debt-Growth model and investment model adopting the econometrics analysis techniques of multiple regressions. The overall conclusion was that there is a positive relationship between external debt, economic growth and Investment in Nigeria. In specific term, the study found that the then existing external debt-to-GDP ratio stimulated growth in the short run, the private investment which was a measure of real and tangible development was declining. It was recommended that “government should ensure that appropriate measures are put in place to achieve optimal use of borrowed funds so that servicing such funds will not invoke economic crises and erode the level of private investment which is central to the overall economic growth and development” (Oke & Sulaiman, 2012:74). In his empirical study of the effect of public debt on the poverty level in Nigeria, Uzochukwu (2011) observed that domestic debt, external debt, and debt service rates continuously grew and increased while investment rates and secondary school enrolment rates were on the decline. He conclusively suggested that the values of all variables in the study indicated poverty escalation in Nigeria. In the light of the findings from the comprehensive review of previous empirical literature, this study argues that there is overwhelming empirical evidence to validate the claim that public debt stock and debt servicing impact the ability of government to adequately invest in human capital development infrastructures worldwide (World Bank, 2018). This study, therefore, identifies some variables to be investigated so as to verify how such variables apply to Nigeria for the intervening period (1960-2019) as we specify some hypotheses in the next section.

3. METHODOLOGY

Human capital development (HCD) in this study is measured in terms of primary, secondary and tertiary education expenditures separate from the non-education capital expenditures (Adebiyi, 2002). It is also measured in terms of government investments in health services. Government makes a choice between
the discrete levels of health and education to invest in as against the non-health and non-education expenditures in order to demonstrate its preference for social welfare functions. While both types of expenditures are categorised as consumption expenditures, the quantum of expenditure to either of both sides of expenditure would determine the intent of government towards delivering social goods and services to the poor (World Bank, 2018). For a government that is pro human capital development would have a strategic policy put in place that would ensure sustainable increase in education and health care capital expenditures. In this study, both education and health subsectors are considered. Data for this study were collected from the archives of the central Bank of Nigeria (CBN), Nigerian Bureau of Statistics (NBS) and Debt Management Office (DMO) data banks for different years.

Given the research objective and research question, this study hypothesises as follows:

- $H_01$: there is no negative relationship between HCD and Debt Servicing
- $H_02$: there is no negative relationship between HCD and external Debt stock
- $H_03$: there is no positive relationship between HCD and GDP
- $H_04$: there is no positive relationship between HCD and Inflation rate

Adebiyi (2002) developed a model to capture the relationship between government expenditure and debt burden in Nigeria by categorising government expenditure into education (EduExp) and non-education (NEduExp) expenditures. The decision of government to choose to increase EduExp over NEduExp is assumed to be a demonstration of government’s decision to maximise social-welfare for the citizenry. The opposite is the case when there is a decline in EduExp compared to NEduExp. Social-welfare expenditure (mainly in education) is fundamentally a profound way that government uses to develop its human resources and human capital. So, in this study, a reference to human capital development expenditure is a direct reference to education expenditure at the three levels of education in Nigeria. Also, Egumwu (2018) and Atueyi (2019) specified separate models to illustrate the effect of external debt on human capital development. The present model is adapted from and similar to the two aforementioned separate models with some modifications.

3.1. Model Specification

Previous researcher, for example, Egungwu (2018) developed a model expressing the relationship between human capital development and external debt as:

$$\text{HDI} = f(\text{ExtD} + \text{ExR} + \text{InfR})$$

Where:
- HDI = human development index
- ExtD = external debt stock
- ExR = exchange rate
- InfR = inflation rate

Also, Atueyi (2019) on his part expressed his model as $\text{HDI} = f(\text{EXD} + \text{DSV} + \text{GFCF})$

Where:
- HDI = human development index
- EXD = external debt
- DSV = debt servicing
- GFCF = gross fixed capital formation

Modifying the two models in line with the objective and research question, this study states that:

$$\text{HCD} = f(\text{Dsck} + \text{DSev})$$

Where:
- Dsck = debt stock
- DSev = debt servicing

The capacity to service and repay debt, and invest in education and health services depends on the national income expressed as the gross domestic product (GDP). Also, the worth (value) of the GDP can be determined by the prevailing inflation rate in the country (inf). Consequently, two models are derived
from (1) above. Model 1 is to test the hypotheses on the impact of external debt stock, debt servicing, GDP and inflation rate on the expenditure in education while model 2 is to test the impact of external debt stock, debt servicing, GDP and inflation rate on the expenditure in health. Given the above explanation, this paper expresses as follows:

HCD (EDUEXP) = f(DSck, DSer, GDP, Infr) ............................................................... Model (1)

Where:
HCD (EDUEXP) = human capital development (i.e. expenditure in education)
DSck = debt stock
DSer = debt servicing
GDP = gross domestic product
INFr = inflation rate

Thus, below is the equation from Model (1):

$$EDUEXP = \left[ a_0 + a_1 DSck + a_2 DSer + a_3 GDP + a_4 INFr + \mu \right]$$ ...........................................eqn (1)

$$\alpha_0 = \text{intercept, and } \alpha_1; \alpha_2; \alpha_3; \text{and } \alpha_4 \text{ are the coefficients/parameters of the regression equation.}$$

$$\mu \text{ is error term.}$$

**Apriority expectation:**
To examine the relationship between expenditure in education (one part of the proxy for human capital development) and external debt stock, debt servicing, GDP, and inflation in Nigeria, the following are the expected signs of the parameters or the a’priori expectations.

$$a_1 < 0; a_2 < 0; a_3 > 0; \text{ and } a_4 > 0$$

This means that debt stock ($a_1$) and debt servicing ($a_2$) are expected to have negative signs while GDP ($a_3$) and inflation ($a_4$) are expected to have positive signs. Given the signs, it is expected that debt stock and debt servicing will be inversely related to education expenditure (HCD) while GDP and inflation are expected to have a positive relationship with education expenditure (HCD). Also, in order to determine the impact of external debt stock, debt servicing, GDP, and inflation on government expenditure in health, this paper hypothesizes that

HCD (EXPHETH) = f(DSck + DSer + GDP + INFr) ............................................................... Model (2)

Where:
HCD = human capital development (i.e. expenditure in Health)
DSck = debt stock
DSer = debt servicing
GDP = gross domestic product
INFr = inflation rate

Thus, model (2) can be expressed as an equation thus:

$$EXPHETH = \left[ a_0 + a_1 DSck + a_2 DSer + a_3 GDP + a_4 INFr + \mu \right]$$ ...........................................eqn (2)

$$\alpha_0 = \text{intercept; } \alpha_1; \alpha_2; \alpha_3; \text{and } \alpha_4 \text{ are the parameters of the regression equation.}$$

$$\mu \text{ is error term.}$$

**Apriority Expectation:**
To examine the relationship between expenditure in health (the second part of the proxy for human capital development) and external debt stock, debt servicing, GDP, and inflation in Nigeria, the following are the expected signs of the parameters or a’priori expectations.

We expect that: $$a_1 < 0; a_2 < 0; a_3 > 0; \text{ and } a_4 > 0$$

It means that debt stock ($a_1$) and debt servicing ($a_2$) are expected to have negative signs while GDP ($a_3$) and inflation ($a_4$) are expected to have positive signs. Given the signs, it is expected that debt stock and
debt servicing will be inversely related to expenditure in Health (HCD) while GDP and inflation are expected to have positive relationships with expenditure in Health (HCD). In the two formulae, the included error term is assumed to have a mean value of zero (0) and that each of the sets of values of the error term is uncorrelated. It is also assumed that the values of the explanatory variables \((a_1, a_2, a_3, a_4)\) and the error term are uncorrelated. Furthermore, it is assumed that all variables and the error terms are normally distributed (Tabachnick & Fidell, 2013).

**4.0. PRESENTATION OF RESULTS**

**4.1. Trend and Structure of Foreign Debt in Nigeria**

Total external debt can refer to debt owed to non-residents repayable in currency, goods, or services (Egungwu, 2018). Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt (Atueyi, 2019). The growth of public debt has been hotly debated in public expenditure literature. Critics have persistently faulted deficit financing because it is not only responsible for national inflation, but that its accumulation also brings about a huge repayment burden on future generations. Nigeria started to experience external debt problems from the early 1980s when its foreign exchange earnings fell as a result of the collapse of prices in the international oil market. With the fall in oil prices, Nigeria went all out to borrow from external creditors such that between 1981 and 1989 (a space of 9 years), the country borrowed excess of US$188,440bn (see figure 2). This was how external loans began to be acquired indiscriminately (Obadan, 2004). In fact, data in figure 2 show that the growth rate of external debt stock in the country leapfrogged from 10.17 in 2015 to 15.72 in 2016, a 43.23% increase within one year and reached its crescendo in 2019.

Nigeria’s total external debt stock rose continuously from just US$836.7mn in 1970 to US8.9bn in 1980. There was an increase of 11.08% in 1990 from the 1989 level. The situation became worse in 2004 when the country borrowed around US$44.6bn about 8.38% rise from the 2003 figure. Earlier, there was an increase of 14.26% rise in 2003 from the 2002 debt level. The foreign debt profile of the country has become even more precarious since 2018 with an annual debt of US$50,451,835,888 in 2018 (16.81% increase from the 2017 level) and US$54,832,397,402 (8.68% increase from the 2018 level).

**Figure 2:** Public Debt Profile of Nigeria  
**Source:** CBN and NBS archives for various years

The general high debt profile has made the World Bank and the International Monetary Fund (IMF) to warn the country of the economic consequences of such huge debt. Even the National Bureau of Statistics
and the Nigerian Debt Management Organisation (DMO) have both warned that Nigeria’s high debt service-to-revenue ratio could trigger a debt crisis. Expectedly, however, the Minister of Finance, budget and national planning has been quick to describe the criticism as “politically motivated” and made a strong and persuasive case for more foreign loans for infrastructural development. Whereas economists believe that borrowing is healthy for any economy and may help to maintain economic growth and development, the 70.38% increase within five years since the coming of the Buhari administration is worrisome. Indeed, more worrisome is the lack of evidence that the borrowed funds are being properly utilised for the purpose they were granted (Obadan, 2004). Undoubtedly, this has negative implications for human capital development which, at any rate, has always been in a deplorable condition in the country as the revenues that should have been used for human development will now be channelled to debt servicing and payback. See figure 3.

![External Debt Servicing](image)

**Figure 3:** Graphical representation of Nigeria’s External Debt Servicing profile from 1970-2019  
**Source:** DMO & National Bureau of Statistics & CBN

The Debt Management Office has reported that the sources and instruments of government debt in the country vary. Before 2016, the government borrowed internally using only three instruments which were the Nigerian treasury bills, treasury bonds and federal government bonds. But in 2017, the government introduced three new instruments called the Federal Government of Nigeria (FGN) Savings Bond, FGN Sukuk, and the Green Bond (DMO, 2021 - [http://www.dmo.gov.ng/debt-profile](http://www.dmo.gov.ng/debt-profile)). The sources of external debt to the country include multilateral, bilateral, commercial, and others (see figure 1). In 2017, multilateral borrowing accounted for 47% of total debt, bilateral accounted for 18%, commercial accounted for 26%, and other sources accounted for 9% (DMO, 2021 - [http://www.dmo.gov.ng/debt-profile](http://www.dmo.gov.ng/debt-profile)). The Nigerian foreign debt profile has over the years worsened partly due to the continuous depreciation of its local currency, the naira (see figures 4), and rising inflation level (see figure 5) as a result of low and decreasing productivity level beginning from 2015 in recent past as depicted in figure 6 (the nation’s GDP). The implication is that Nigeria has the tragedy of repaying greater volume of the debt as well as having great difficulty to service the debt occasioned by these two factors. In order words, both the external debt stock repayment and debt servicing have increased in size due to these two factors compared to the revenue inflows.
While borrowing is a necessity in periods of national budgetary deficits and when there are expenditure needs, particularly during social strife, there is a need to adhere to the rules and principles that guide such borrowing. In 2007, the federal government enacted the Fiscal Responsibility Act (FRA) as a policy document for borrowing in Nigeria. It explicitly made provisions for debt and debt management, stipulating that the country can only borrow for the purpose of capital projects execution and human capital development. Such borrowing should be on concessional basis and must have a long period of amortisation subject to approval by the national legislature. According to the Act, the country’s debt is expected to be sustainable and have a maximum limit. Regrettably, however, DMO reported that most of the state governments flagrantly exceeded their maximum limit which is supposedly 50% of the state’s statutory revenue inflows as provided for in the 2007 FRA.
Among the 36 states and the FCT, Lagos recorded the highest foreign and domestic debt profile, accounting for about 37% and 10.39% respectively of the country’s total sub-national foreign debt. In 18 states, the debt profiles exceeded their statutory revenue by more than 200%. In Lagos, Osun and Cross River States, in particular, debts exceeded revenues by almost 500% (Udo, 2017).

**Figure 5:** Inflation Rate in Nigeria from 1970-2019  
**Source:** DMO, National Bureau of Statistics & CBN for various years

**Figure 6:** Nigeria’s Gross Domestic Product between 1970-2019  
**Source:** DMO, National Bureau of Statistics & CBN for various years
4.2. Tests of Hypotheses

<table>
<thead>
<tr>
<th>Variables</th>
<th>Expenditure in Education</th>
<th>GDP</th>
<th>External Debt Stock</th>
<th>External Debt Servicing</th>
<th>Inflation Rate</th>
<th>B</th>
<th>β</th>
<th>sr²</th>
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<tr>
<td>External Debt Servicing</td>
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<td>.531</td>
<td>1.000</td>
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<tr>
<td>Inflation rate</td>
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<td>-.292</td>
<td>.144</td>
<td>.151</td>
<td>1.000</td>
<td>.026</td>
<td>.026</td>
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<td>Means</td>
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\[ R^2 = .82^a \]

Adjusted \[ R^2 = .80 \]

\[ R = .91^* \]

**p<.01; *p<.05 (level of significance)**

Table 1: Standard Multiple Regression of Inflation rate, External Debt Stock, GDP, External Debt Servicing on Federal Government Expenditure in Education

<table>
<thead>
<tr>
<th>Variables</th>
<th>Expenditure in Health</th>
<th>GDP</th>
<th>External Debt Stock</th>
<th>External Debt Servicing</th>
<th>Inflation Rate</th>
<th>B</th>
<th>β</th>
<th>sr²</th>
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<td>Expenditure in Health</td>
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<tr>
<td>External Debt Stock</td>
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<td>.398</td>
<td>1.000</td>
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<tr>
<td>External Debt Servicing</td>
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<td>.531</td>
<td>1.000</td>
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<td>Inflation rate</td>
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<td>.025</td>
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<tr>
<td>Standard Deviations</td>
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<td>1.155</td>
<td>1.226</td>
<td>.679</td>
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</tbody>
</table>

\[ R^2 = .85^a \]

Adjusted \[ R^2 = .84 \]

\[ R = .92^* \]

**p<.01; *p<.05 (level of significance)**

Table 2: Standard Multiple Regression of Inflation rate, External Debt Stock, GDP, External Debt Servicing on Federal Government Expenditure in Health

4.3. DISCUSSIONS

Two rounds of standard multiple regression were performed between Federal government recurrent expenditures in education and in health (education and health were used as proxies for human capital development (HCD) and they served as the dependent variables (DV) while inflation rate, external debt stock, GDP, and external debt servicing are independent variables (IV). Analysis was performed using IBM SPSS (version 24) regression and explore for evaluation of assumptions.

Results of evaluation of assumptions led to transformation of all variables to reduce skewness, reduce the number of outliers, and improve the normality, linearity, and homoscedasticity of residuals. A natural log transformation was used on all the measures. With the use of p<0.001 criterion for Mahalanobis distance no outliers among the cases were found. No case had missing data and so suppressor variables were found with N = 50.
Tables 1 & 2 display the correlations between the variables, the unstandardised regression coefficients ($B$) and intercepts, the standardised regression coefficients ($\beta$), the semi-partial correlations ($r^2$), $R^2$, and adjusted $R^2$. Rs for the two regressions were significantly different from zero, $F(4, 45) = 50.64$, $p<.001$, with $R^2$ at 0.82 and 95% confidence limits for education (in table 1), and $F(4, 45) = 63.31$, $p<.001$, with $R^2$ at 0.91 and 95% confidence limits for health (in table 2). The adjusted $R^2$ value of 0.80 (80%) indicates that more than two thirds of the variability in human capital development through expenditure in education is predicted by inflation rate, external debt stock, GDP, and external debt servicing while the same IVs predict 0.91 (91%) of the variability in human capital development through the federal government expenditure in health care services and delivery. For the three regression coefficients that differed significantly from zero, 95% confidence interval (limits) were calculated. The confidence limits for (transformed) GDP were from 0.82 to 0.79, those for (transformed) external debt stock were from 0.66 to 0.65, and those of (transformed) external debt servicing were from 0.17 to 0.32 in relation to education expenditure whereas confidence limits for (transformed) GDP were from 0.545 to 0.821, those for (transformed) external debt stock were from 0.306 to 0.614, and those of (transformed) external debt servicing were from -0.285 to 0.001 in relation to federal government expenditure in the health sector.

The four IVs in combination contributed another 0.36 in shared variability in human capital development (through both education expenditure and health care expenditure). Altogether, 82% (80% adjusted) and 85% (84% adjusted) of the variability in human capital development through health and education expenditures respectively were predicted by knowing scores on these four IVs, the size and direction of the relationships suggest that increase in GDP and rise in external borrowing contributed more to government expenditure on education with GDP contributing 31% and external borrowing contributing 13% as indicated by the squared semi-partial correlations. Further, the size and direction of the relationships also suggest that increase in GDP and rise in external debt stock contributed significantly to government expenditure on health with GDP contributing 33% and external borrowing contributing 12% as indicated by the squared semi-partial correlations. External debt service was only significant at .05 $p<.10$.

In relation to the a’priori expectations, it was found that GDP and external debt stock have positive signs as expected meaning that they positively significantly contributed to an increase in HCD in Nigeria. On the contrary, external debt servicing led to 17% decrease in education expenditure and 13% fall in expenditure in health. Thus, for every one unit increase in external debt servicing, there is a 17% unit fall in education expenditure and 13% unit fall in health expenditure. The implication is that while GDP and debt stock have the capacity and potency to increase and improve human capital development (HCD), if properly and appropriately applied, debt repayment and servicing have negative effect on HCD.

5.1. CONCLUSION

The aim of this paper is to determine the impact of external debt stock, debt servicing, GDP and inflation rate on human capital development in Nigeria. Two different sets of regression analyses were undertaken in which two dependent variables (education and health expenditures) were regressed on four independent variables (external debt stock, external debt servicing, GDP and inflation rate) between 1970 and 2019; an intervening period of 50 years. Although external debt servicing has a statistically significant impact on HCD, the impact is negative meaning it has an inverse relationship with human capital development (HCD) in Nigeria. From this result, the null hypothesis ($H_01$) was rejected and accepted the alternative hypothesis. This result meets the a’priori expectation. Results of the tests of ($H_02$) and ($H_03$) showed that both external debt stock and GDP have statistically significant positive impact on HCD. $H_02$ was accepted because it revealed that there is no negative relationship between external debt stock and HCD both for the education and health perspectives. Further, the a’priori expectation was not met. Arising from the result, it can be concluded that though expenditure in education and health services (HCD) may have improved because of external borrowing, such an increase may have been as a result of its contribution to the payment of salaries of workers in both the education and health sectors rather than in real terms. As for $H_03$, the a’priori expectation was met and the null hypothesis was rejected. Result from the test of $H_04$
showed that inflation has a statistically positive inconsequential impact on HCD and therefore the null hypothesis was rejected.

5.2. POLICY RECOMMENDATIONS

Sequel to a comprehensive review of literature and the subsequent findings of this study, it is clear that the Nigerian government has been spending so much on debt servicing which has adversely affected the growth of human capital development in the country. Even though developing countries are usually advised to finance their national budgets through borrowing, because of their low capital stock and limited investment opportunities, such borrowing must be checked in order to not create debt crisis that may lead to debt overhang and crowding out effect of investments. Uncontrolled national indebtedness, especially the external debt component and the unavoidable burden of servicing the same debt can negatively affect both micro and macro-economic variables and therefore the entire national economy (Atueyi, 2019) if caution is not taken. Hence, there is need to explore alternative capital budget financing options which have proved to be effective in other countries like the United States of America, Japan, Indonesia, Malaysia, Singapore, India, Canada, United Kingdom, Ethiopia, China and even Nigeria among others (Lekan et al., 2013). These countries including Nigeria have used the build, operate and transfer (BOT) mechanism to close their various countries’ infrastructure gap at different times in their developmental strides. Nigeria has partly adopted the same mechanism although limitedly in some areas of development. For example, the construction of the Lagos-Ibadan expressway and the Lekki expressway (Lekki Toll Plaza) respectively are few of the successful stories of the use of BOT projects in Nigeria. Nigeria also applied the same BÔT in the power, energy, telecommunication and transportation projects (Lekan et al., 2013). Another alternative financing typology is the Diaspora bond (DB) mechanism which Israel used to finance some of her development projects in various industries including energy and transport (Mkansi, 2013; Ketkar & Ratha, 2001).

Therefore, this paper recommends as follows:

- That non-politicised feasibility studies should precede every request for funds that would require external or internal financing at both levels of government with non-partisan project monitoring units that will involve the communities where the projects are sited to supervise the execution of such projects.

- It has been established that the government of Nigeria has been spending larger part of its revenue on non-developmental and non-productive ventures thereby unnecessarily creating fiscal deficit (Atueyi, 2019) year in year out. With the numerous affluent human capital abound in Nigeria, the government can develop their potentials by investing heavily in human capital through research and development, and training in technology with the intent to facilitate and increase overall productivity.

- There is the suspicion that a chunk of monies purportedly borrowed by government whether externally or internally are not usually applied conscientiously, and in some cases, are completely diverted from the purpose for which they were approved, granted and borrowed. Therefore, we recommend that the federal government should borrow only to finance productive capital projects that have the capacity to generate enough returns to pay off the debt over time.

- While not completely condemning borrowing, we recommend that the government should adopt alternative capital budget financing measures such as public-private partnerships arrangement which include BOT, Diaspora bond, and any of the type. By adopting this alternative financing method, the enormous cost involved in debt servicing will be saved and possibly invested in some productive economic activity.

- Above all, we also recommend that the Federal Government should comply with the Fiscal Responsibility Act requirements in borrowing. This is essential because it will help in directing government loans to proper investments and also limit government from exceeding the loan ceiling.
REFERENCES


