GOVERNMENT EDUCATION EXPENDITURE AND HUMAN CAPITAL DEVELOPMENT IN NIGERIA: AN EMPIRICAL INVESTIGATION

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ABSTRACT

A nation's human capital captures all obtainable expertise, resource knowledge, work proficiency and quality of labour possessed by her citizen through education. Studies on the impact of human capital development on economic growth have been performed in the past with only few considering the state of education as a factor of human capital development. The effect of government education expenditure on human capital development in Nigeria was investigated in this study. The research employed secondary data from 1990 to 2020. The dependent variable in the analysis was gross secondary school enrolment rate, the independent variables were recurrent and capital expenditure on education, and the control variable was recurrent expenditure on health. The stationarity of the variables was tested using the Augmented Dickey-Fuller (ADF) test, and the variables were found to be stationary at various levels. The Autoregressive Distributed Lag Model (ARDL) was adopted to estimate the model. The result of the estimated model showed that recurrent expenditure on education and capital expenditure on education had negative insignificant effects on gross secondary school enrolment rate while recurrent expenditure on health had a positive but insignificant effect. However, the independent variables had joint effects on the dependent variable. The study recommended the implementation of education spending policies with the focus on filling the gaps the education sector has in affecting human capital development in

Nigeria significantly. Policy makers should also strive in formulating policies to boost institutional capacities to increase enrolment in schools and improve the provision of healthcare services.

Keywords: Human Capital, Education Expenditure, Stationarity test, ARDL.
JEL Classification: E24, J24, P36

1 INTRODUCTION

The role of the education sector to the economy of any nation is indispensable. The ability of a nation to attain maximum production is dependent on the level of education and skills of each labour unit in its markets. Education improves labour productivity, increases chances of employment, the quality of life and standard of living which in turn promotes human capital development. Thus, human capital development is primarily subject to the impact of education, making it a function of education expenditures (Nggada, Yusha'u & Shehu Ya'u (2021); Omosivie (2021)). Human capital is the repository measurement of all available skills, resource knowledge, work proficiency and quality of labour possessed by an individual cumulatively. All these are intangible yet valuable contributions towards economic development. According to Harbison (1973), "human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organization and carry forward national development". Human capital development thus entails the enhancement of a country's human capital in terms of skills, education, health, and individual well-being.

There have been several calls for the world at large and Nigeria, as a third world nation to re-strategize its sectoral policies and formulate developmental frameworks on its key sub-sectors in order to directly improve human development (Kgakge-Tabengwa (2014); Perna, Orosz, & Jumakulov (2015); Yazid, Selman & Tatsiana (2016); Edeh, iloka & Nnamani (2017); SeyedSoroosh (2018); Adejumo, Asongu & Adejumo (2021), Eneisik (2021); Bai, Zhang, Sun & Xu (2021)). Summary from the studies showed that to attain this, governments of many countries have upheld responsibilities of allocating a significant number of resources towards education majorly in public sectors. Essentially, it is the responsibility of government to allocate a substantial percentage of its annual budget to facilitate the establishment and development of educational facilities and structures. "Promoting the education sector normally entails increasing public spending on education" as stated in the International Monetary Fund (IMF) working paper by Jung and Thorbecke (2001). Hence, public spending on education otherwise called government education expenditure is the amount of the total government budget allocated to the education sector for the basis of development of the sector as well as to create ripple effects on other economic sectors.

Although Nigeria ranks very low on the Human Development Index (HDI) scale, there have been indications of a slow climb towards improvement. The 2019 published HDI of Nigeria, places the country at 161th position out of 189 nations and boundaries at 0.539, no doubt making her a low human capital development country (UNDP, 2020). Usually an increase in skilled and educated workers leads to an outward shift in the demand curve for labour; this is not the case in Nigeria. Discoveries and studies undertaken have traced the cause for this abnormality to the poor standards of the country's education sector. Nigeria's education sector is characterized by unequipped libraries, dilapidated school buildings, shortage of

qualified educational staff, and unconducive learning environments. In 2013, Nigeria recorded its highest gross secondary school enrolment rate at 56.21% and since then, the rate has never exceeded this. According to Adekola (2014), the federal government's spending on education as a proportion of nominal GDP was less than 2% from 1961 to 1973, less than 5% from 1974 to 2012, and less than 3% for the entire duration of civilian rule from 1999 to 2012. It is also very distressing to note that the federal government has never allocated more than 8% to its human capital expenditure as a percentage of GDP. This is a brief breakdown of what the allocation to the education sector have looked like in these last few years; 7.04% of total budget- ₦606 billion (2018), 7.4% of total budget- ₦448.01 billion (2017), 6.01% of total budget- ₦367.73 billion (2016) (CBN Statistical Bulletin, 2019), The United Nations Educational, Scientific, and Cultural Organization's (UNESCO) benchmark for funding of education was 26 per cent of the national budget and 6 per cent of the gross domestic products (GDP), while Nigeria has been allocating 6 per cent of the national budget to the funding of its education (Laleye, 2018); hence government's failure is a contribution to the low human development index.

The situation of Nigeria's health sector is not very far from that of its education sector. As an African Union (AU) nation, Nigeria is expected to allocate at least 15% of its yearly national budget to health as agreed during the African Union meeting in April, 2001 and by the World Health Organization (WHO). However, as at 2020, the Federal Government of Nigeria failed for the umpteenth time to meet this target, even though it was expected of them to allocate even more, given the circumstance of the Covid-19 Pandemic during the year. Despite this, only 4.526% of the National budget was allocated to the health sector. A further breakdown of this budget indicated that only ₦2,960 was budgeted for the medical care of each Nigerian for the period of 12 months- One year. That is to say, ₦246,715 per month and ₦8.2 per day (Manya, 2020). In addition to this is the plague of unemployment in the country, co-habited by the country's meagre minimum wage of 30,000 naira ($79) in an inflation-bound economy. The Federal Government's inadequacy in allocations made to health have also been noted in years past, in 2008, 3.7% of Nigeria's GDP was allocated to health, in 2010 and 2011, 3.3% was allocated, a decline from the previous value. In more recent years, this proportion has risen but at extremely slow rates, ranging from 0.12% increases to 0.98% increases but not exceeding the agreed target of 15%.

It is on the backdrop of these existing facts and figures that an investigation of the extent to which government expenditure influences the level of human capital development is needed and will serve to emphasize the importance of allotting sufficient government expenditure into the education and health sectors with a targeted intent of boosting human development.

2. LITERATURE REVIEW

2.1 Conceptual Literature

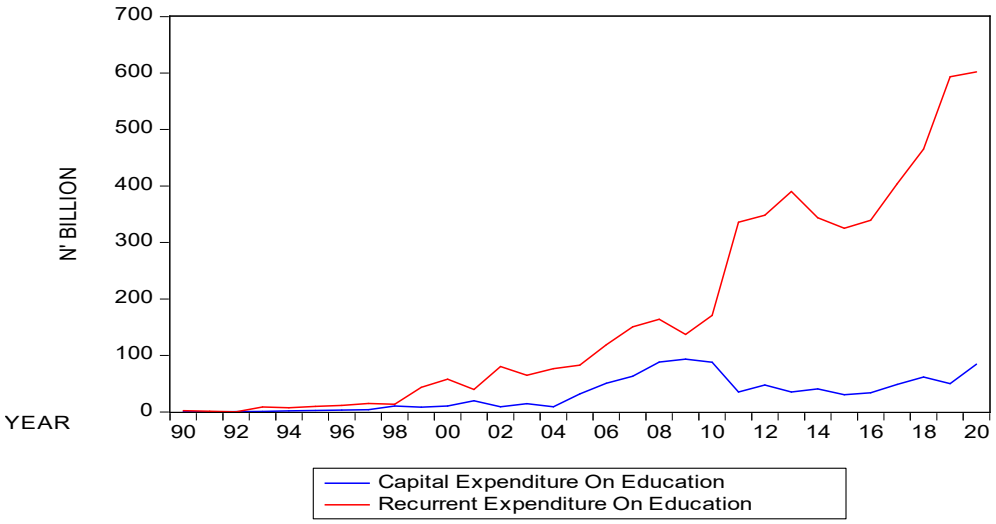
Government expenditure refers to the allocated resources handled by the government for its own interest and the nation at large (Adewumi & Enebe, 2019). It connotes the achievement of government roles. The roles of government include the provision of social services, protective and welfare functions, the achievement of these roles require huge amount of resources to be expended (Kairo, Mang, Okeke & Aondo, 2017). Government expenditure on education are of two types, recurrent expenditure on education and capital expenditure on education.

Recurrent expenditures refer to the financial disbursements required for daily management of government related businesses (Okere, Uzowuru & Amako, 2019). These are payments made by governments for all purposes except capital costs. These expenses are made more than once, and may even be on a scheduled basis. Recurrent expenditure on education includes purchase of current goods and services, maintenance of school buildings, maintenance of school vehicles, regular payments made on education, among others.

Capital expenditures are expenses that are used as investments in construction programs that use a lot of capital techniques (Omodero, 2019). These are expenses on assets and projects that last for a long period of time. Projects like construction of road and bridges, railways, building of schools and hospitals among other Capital expenditures on education include infrastructures like building of schools and other education institutions, construction of educational libraries and bookstores, among others.

Government expenditures allocated to the education sector are expressed as a percentage of the total government expenditure on all sectors of the economy. This amount is utilized for structuring, maintaining and facilitating educational activities in the country. Government education expenditure also includes expenditure funded by transfers from international sources to government.

Figure 1: Trend of Capital Expenditure and Recurrent Expenditure from 1990 to 2020



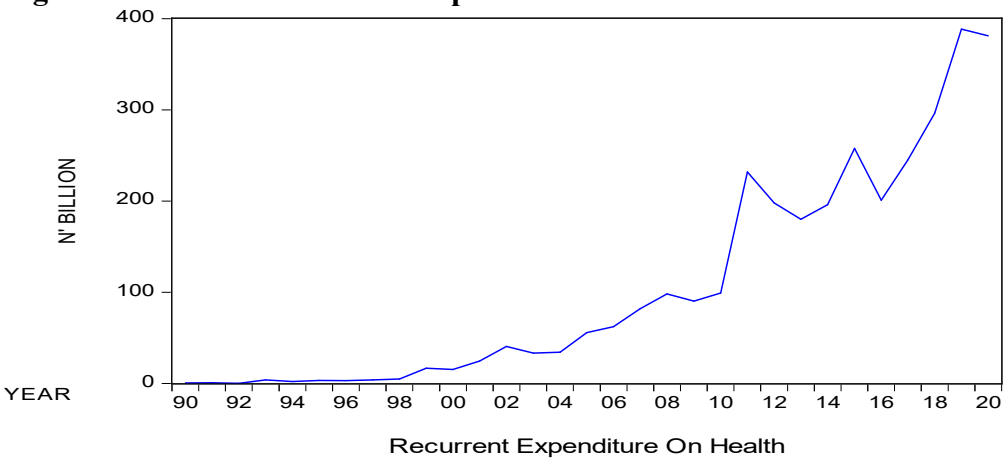
Source: Researcher's analysis (2021) using E-Views 11.0

Figure 1 shows the trend in recurrent expenditure and capital expenditure allocated to the education sector in Nigeria between 1990 and 2020. From 1990 to 1992 Nigeria records decline in this allocation to the education sector as seen from the CBN Statistical Bulletin. The lowest allocation made was in 1992 which was followed by a sudden increase in 1993. After a decline in 1994, the allocated amount continued to trend upward with an increase for six years consecutively. In 2001, there was a sudden drop in REOE which was followed by various fluctuations between 2020 and 2005. By 2006, another increase was recorded for three consecutive years by the CBN. After falling again in 2009, the amount increased for another four consecutive year period. This was followed by a decline in 2014 and a further decline in 2015.

However, from 2016 till 2020 there was continuous rising in the value recorded , REOE rose and has continued to increase till its last recorded value in 2020. While allocation to capital expenditure cannot be compared to recurrent expenditure, it witness series of continuous fluctuations from 1990 to 2020.

Government expenditure on health are the expenses on health care and other health related services incurred by public funds (OECD, 2001). Government expenditures on health are expressed as a proportion of overall government spending in all sectors of the economy. This amount is utilized for maintaining and facilitating the administration of healthcare services in the country. Although human capital development is dependent on education, the health factor cannot be neglected in terms of human development. It is when an individual is in a complete state of wellbeing can he/she be well educated hence, only recurrent expenditure on health will be utilized in this study and it will be treated as a control variable. Recurrent expenditure on health is the amount of expenditure allocated to the health sector for the provision of basic or daily healthcare services and facilities such as purchase of drugs, maintenance of health equipment, maintenance of health service vehicles, purchase of new health tools, among others.

Figure 2: Trend of Recurrent Expenditure on Health from 1990 to 2020



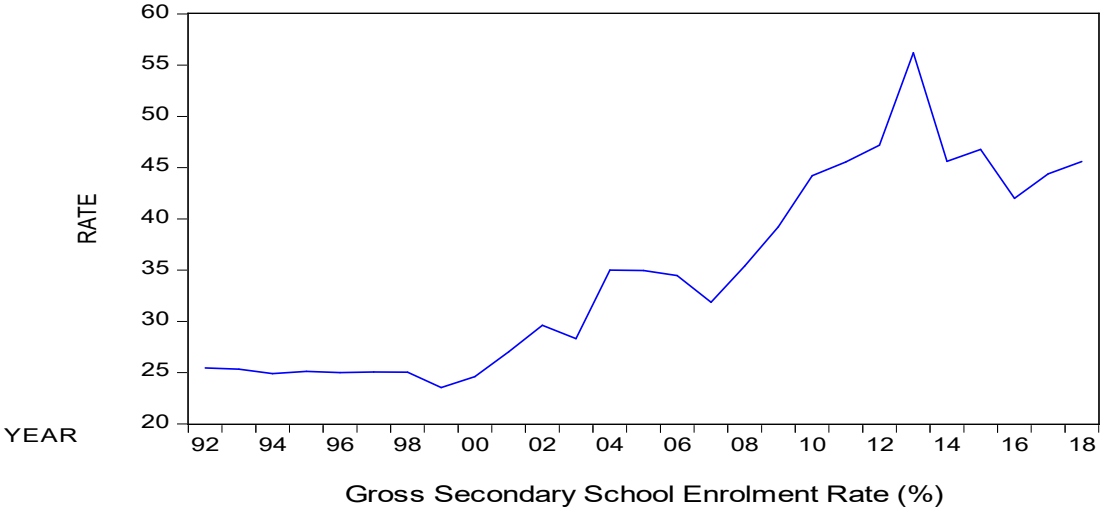
Source: Researcher's analysis (2021) using E-Views 11.0

Figure 2 showed that expenditure on health was at its lowest in 1993 but rose the next year in 1994 and continued to rise and fall till 1997. In 1998, there was a rise in the allocated amount followed by a further increase in 1999. This continued fluctuating thereafter with three consecutive year increments from 2009 to 2011. The amount has never remained stable even up till 2020; the periods in between are depicted as periods of fluctuations as shown graphically above

Human capital refers to a country's human resources' abilities and skills (Kairo et al., 2017; Keghter, Oliver & Afamefuna (2020)). Human capital is an inherited commodity resulting from learning that translates into skills, capabilities, and technological innovations that make up a country's labor force and are beneficial to the country's economic growth. It is also the process of raising human beings' values in an economy in order to build a normal, educated, and stable workforce capable of providing consistent solutions to national and economic problems (Omodero, 2019; Uzomba, & Ibeinmo (2020)). For the purpose of the study, secondary school

enrolment rate was adopted as proxy for the human capital formation of the country as there was no data to employ for the tertiary education level for the period under study.

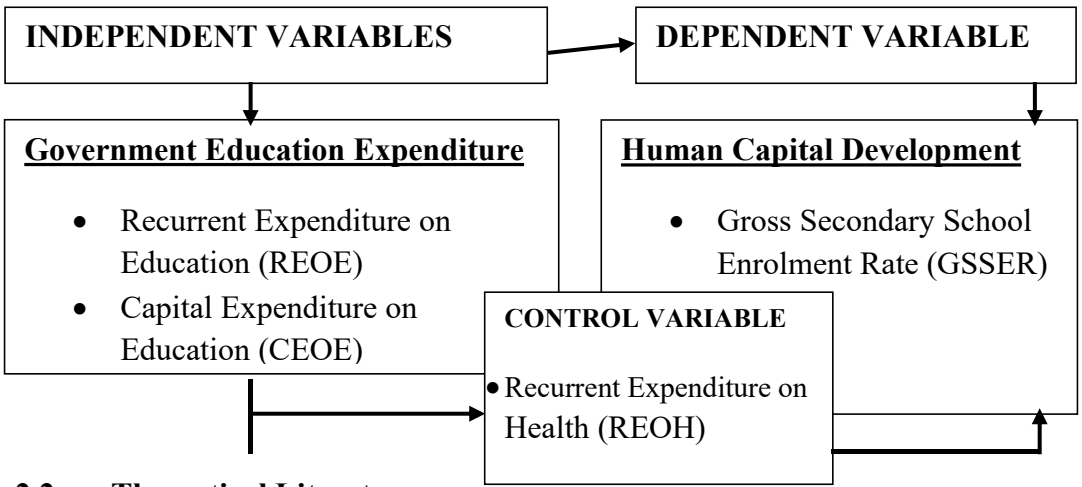
Figure 3: Trend of Gross Secondary School Enrolment from 1990 to 2020



Source: Researcher's analysis (2021) using E-Views 11.0

Figure 4.1 shows the trend of gross secondary school enrolment rate in Nigeria from 1990 to 2020. The graph showed that there had been fluctuations in the number of students enrolled in secondary school from 1990 to 2005. From 2005 to 2008, three consecutive declines were recorded. There was steady increase between 2008 and 2013 however; it was followed by a sudden drop in 2014 followed by an increase and then a decrease again. It was in 2013 Nigeria recorded its highest ever gross secondary school enrolment rate at 56.21%. The value has never exceeded this up till its last recorded percent in 2020 at 45.29%.

Conceptual Framework



2.2 Theoretical Literature

In an attempt to determine the causative factors that drive human capital development, the human capital theory and the endogenous growth theory were reviewed.

Human Capital Theory

The major propellers of this theory were, Schultz (1961), Becker (1962) and Mincer (1958). The theory of human capital proposed by Schultz (1961) lays strong emphasis on education as a major component of human capital. Schultz believed that human capital could be invested in through education and training, resulting in a boost in production quality. In 1962, Gary Becker made contributions to this theory. Becker emphasized on investment in human capital in the form of education, employee trainings and health. He believed that organizations or firms have major roles to play in human capital development especially in the state a poor education system. These investments will affect industries profits and the economy in general.

A major supporter of this theory is Adman Smith. In fact, the human capital theory is often thought of as an extension of wage differentials explained by Adam Smith to be the net advantages and disadvantages associated with different employments. Adam Smith believes that the difference in the capacity level of each unit of workforce is what differentiates the wages among labour.

Human capital theory has attracted so many criticisms in the past especially from sociologists of education and training. In the past where economic strength was perceived to depend largely on tangible physical assets such as land, equipment, machineries, among others, the human capital theory was very hard to validate then and was also contradictory to this belief given its intangible nature.

As at the time Theodore Schultz and Gary Becker proposed the human capital theory, some liberal academicians at the Chicago did not seem to agree with this theory, some had even perceived it to have negative links to slavery. Before the twentieth century, the liberal philosopher John Stuart Mill opposed it, claiming that the human being is the object for which wealth exists, rather than wealth itself. J. S. Mill concluded that since man creates wealth, he cannot be wealth. People cannot be separated from their intelligence, talents, health, or ideals in the same way that physical and financial properties can. Schultz later referred to these liberals as sentimentalists and argued that human beings are considered human resources. Also, human capital may be difficult to study through mere observation, this is as a result of its inconsistent nature because human capital can be stored but not fully utilized at all times which makes it harder to observe.

Endogenous Growth Theory

The study was also underpinned under the endogenous growth theory by Romer (1994) (Charles, 2019). Endogenous growth theory promotes a view that economic growth and development are majorly derived from within the system. The endogenous growth theory improves on the exogenous growth theory. The theory ascribes economic growth in any given economy as dependent on investments made in human capital, innovation and knowledge management. Hence, the theory holds that for government to affect the growth of its economy in the long run, it must invest in capital, research development and education.

Romer thought of ideas to be more valuable than natural resources. He used the example of Japan, where natural resources are scarce but the country is open to international ideas and technologies. Romer's demonstrates this using a model expressed in terms a technological production function for easier understanding:

$\varsigma A = f(K_A, H_A, A)$

Where ΔA represents the changes or increase in technology;

K_A represents the amount of capital invested in the manufacturing of a new design;
H_A represents the amount of human capital or workforce deployed in the research and development phase of the new design;
A represents the existing technology designs and;
f represents the technology production function.
Technology was represented as endogenous in this production function. An increase in the amount of human capital engaged in the research and development of new designs will result in an increase in technology, thereby increasing A. Furthermore, an increase in capital invested in research laboratories and facilities for the development of the new design would result in a greater increase in technology, resulting in the ΔA. Furthermore, the development of new technology A will be facilitated by established technology ΔA.
Supporters of the endogenous growth theory include Robert (1988) and Sergio (1991), these people are majorly dissatisfied with the common accounts of long term growth attributed to exogenous factors only. These theorists accrued growth in their models to the indefinite investments in human capital.
Paul Krugman criticized the endogenous growth theory for being nearly impossible to obtain its validity by empirical evidence. He stated that too much of it involved the assumptions on how unmeasurable things affected other unmeasurable things. This was in line with the fact that factors pertaining to endogenous growth such as education, human capital and R&D cannot be easily measured or quantified and growth itself is another difficult term to accurately measure.
The theory was also criticized based on the fact that it made no clear distinction between physical capital and human capital. Capital goods, according to Romer's model, promote economic development. The accumulation of human capital and its embodiment with physical capital, according to Romer, would become a driving force. He does not, however, specify which of them, is the driving force.

2.3 Empirical Literature

A limited number of empirical studies have been conducted in the past to evaluate the significance of government expenditure on education in stimulating human capital development. Many scholars have examined the discourse on the basis of how human capital development affects economic development. This study with an aim to bridging the gap in research focused on the effect that government education expenditure has on human capital development itself given that education is a subset of human capital development. This issue under review has been subjected to the works of other researchers and scholars in order to determine the gap in literature.
Omodero (2019) conducted a study to investigate the effect of government general expenditure on human development in Nigeria from 2003 to 2017. The researcher employed the multiple linear regression model and Ordinary Least Square (OLS) technique to analyze the data. The findings revealed that capital expenditure has insignificant negative effect and has a negative impact on HDI, while recurrent expenditure has a significant effect on HDI, while recurrent expenditure had significant positive effect on HDI. The conclusion was that recurring expenditures should be cut while investments in capital programs that will improve Nigeria's human capital should be made.
Maku, Ajike, and Chinedu (2019) conducted a research to assess the effect of human capital development on Nigeria's macroeconomic output from 1986 to 2015. The

study utilized the Augmented Dickey Fuller (ADF) unit root test to test for the stationarity, the Bound test was used to check the existence of a long run relationship and the Autoregressive Distributed Lag (ARDL) method was used to estimate the model. The study results revealed that in the short run, human capital development had insignificant negative effect on economic growth. the researchers suggested that Nigerian government should spend more money on improving education and health.

Elumah and Shobayo (2017) investigated the effect of education expenses and human capital development on economic growth in Nigeria from 1970 to 2015. The Augmented Dickey Fuller unit root test was used to check for stationarity and order of integration of each component, as well as the Johansen cointegration test, to see whether there was a long-run relationship between them and the Vector error correction model. According to the findings of this study, education spending and human capital development have no major impact on Nigeria's economic growth. The assumption is that even if education spending is increased, beneficial impacts on economic growth have yet to be seen. Based on these findings, the study concludes that the level of human capital of Nigeria can be develop if the standard of education and health are improved upon to meet the modern economy of the world.

Gugong (2017) conducted a study from 1984 to 2015 on human resource growth and national development in Nigeria. The ordinary least square regression, the augmented dickey fuller (ADF) test, and the Engel and granger cointegration test were used in the analysis. The findings revealed that investing in human capital through recurrent government spending has a long-term positive effect on national growth while capital expenditure of the government had an insignificant impact on national development. As a result, the study recommended that the government encourage non-governmental and private organizations to raise human capital investments as a force for driving the country's economic growth.

The study by Ehimare, Ogaga-Oghene, Obarisiagbon and Okorie (2014) was conducted on the Nigerian government expenditure on human capital development from 1990 to 2011. The study laid emphasis on the education component of human capital development. With the utilization of the Phillip Peron unit root test, Johansen cointegration test and Multiple Linear Regression model, the findings of the study revealed a significant reduction in the efficiency of government expenditure on the level of human capital development under the study scope. It was therefore recommended that more incentives should be provided to the teachers and trainers involved in the education sector and the government should fund the education sector above the minimum UNESCO benchmark of 26% budgetary allocation.

Torruam and Abur (2014) investigated the effect of human capital development on Nigerian economic growth. The variables' stationarity and order of integration were tested using the Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests. The Johansen approach of co-integration was used to test for the long-run relationship among the variables. The results of the estimate showed that overall spending on health and education is statistically important in changes in economic development. The research also discovered that human capital and economic development have a strong long-term relationship. In line with these findings, the study recommended quality institutions to invest in human capital and that investment in education and health should not be left to the public alone.

The study of Kgakge-Tabengwa (2014) examined the implications of shocks to public debt and government expenditure on the development of human capital and growth

for a selected number of countries from 1980 to 2013. The study adopted the multiple linear regression model. Discoveries revealed that an increase in public debt leads to a decrease in human capital especially when the public debt goes beyond the threshold of GDP. The study also indicated that government expenditure has a positive role to play in developing human capital, but its sustainability is questionable due to some fiscal constraints of the countries under study. The recommendations were for policy implementations to manage the GDP to debt ratios at proportions that are not detrimental to growth and human capital development.

Gebrehiwot (2014) examined the short and long term effects of human capital development on economic growth in Ethiopia from 1974 to 2011, using real GDP as a proxy for economic growth. To evaluate the degree of stationarity, the researchers used the Augmented Dicky-Fuller unit root test and the autoregressive distributed lagged (ARDL) approach to co-integration. It was discovered that when the ratio of public spending on health care and secondary school enrolment increases, economic performance improves by a large extent too. It was concluded that policymakers and the government should build institutional capacities in order to increase school enrolment rates, as well as work to develop the country's basic health services.

Sanusi (2012) empirically analyzed the impact of government expenditure on human capital development in Kano state. He applied the Augmented Dickey-Fuller (ADF) and Ordinary Least Squares (OLS) in his research and the results of the study showed a positive relationship between recurrent and capital expenditures on education and human capital development but of no significance. He recommended that adequate funding for the operations and maintenance and investment in the education infrastructure should be made to promote growth of the education sector and hence, lead to an improvement in human capital development.

The study of Isola and Alani (2012) examined the contribution of the different measures of human capital development to economic growth in Nigeria. The research used Augmented Dickey-Fuller (ADF) unit root test, ordinary least square (OLS) and the Durbin Watson test. The result of the empirical analysis showed that education, measured by adult literacy rate, and health, measured by life expectancy, had positive effects on economic growth. Based on the observation from the study, it was seen that government showed very little commitments to education and health due to their fluctuated values within the period. The study concluded that more attention should be paid to both the education and health sectors to ensure economic growth in the country.

3. METHODOLOGY

This section highlights the sources of data, model specification, model estimation as well as the method employed for data presentation and data analysis. The study made use of secondary data covering the period of 1990 to 2020 and obtained from CBN Statistical Bulletin (2020) and UNESCO Institute of Statistics (UIS) (2020).

Method of Data Analysis

The analysis of the study was divided into two parts; the descriptive and inferential analysis.

Model Specification

The study adopted the econometric model to determine the relationship between government expenditure in education on human capital development. The dependent variable was gross secondary school enrolment rate which served as a proxy for

human capital development and the explanatory variables were recurrent expenditure on education, capital expenditure on education and recurrent expenditure on health as a control variable.

Based on this specification, the functional relationship was expressed as follows:

$$GSSER = f(REOE, CEOE, REOH) \quad \text{----------} \quad (1)$$

The econometric form of the model can be expressed explicitly as:

$$GSSER = \beta_0 + \beta_1 LREOE + \beta_2 LCEOE + \beta_3 LREOH + \mu_t \quad \text{----------} \quad (2)$$

Where;

β_0 = Intercept which is the value of GSSER when all the independent variables are zero.

$\beta_1, \beta_2, \beta_3$ = Parameters or Coefficients of the independent variables which explains the effect of the independent variables on the dependent variable.

μ_t = Error or Stochastic term (with *t* time series) that explains variables not included in the model.

All the variables under study were logged in the model to prevent the regression from having a spurious result. Thus;

GSSER = Gross Secondary School Enrolment Rate

$LREOE$ = Log of Recurrent Expenditure on Education

$LCEOE$ = Log of Capital Expenditure on Education

$LREOH$ = Log of Recurrent Expenditure on Health

The a priori expectation is that all the independent variables; $LREOE$, $LCEOE$, and $LREOH$ will have a positive relationship with the dependent variable GSSER. This is thus stated; ($\beta_1, \beta_2, \beta_3 > 0$).

The Autoregressive Distributed Lag (ARDL) short run model components were expressed as:

$$\varsigma GSSER = \beta_0 + \varsigma GSSER_{t-1} + \varsigma LREOE_{t-1} + \varsigma LCEOE_{t-1} + \varsigma LREOH_{t-1} + \varepsilon_t \quad \text{----------} \quad (3)$$

Where ς denotes short run changes.

4 ANALYSIS AND DISCUSSION OF RESULTS

4.1 Stationarity Test

The Augmented Dicky-Fuller (ADF) unit root test was conducted to ensure the parameters were estimated using stationary time series data. Table 1 presents the results of the stationarity test.

Table 1: Augmented Dickey-Fuller Unit Root Test Result

Variables	5% Critical value	PP (Probability)	ADF T-statistics	Equation Specification	Order of Integration
GSSER	-2.967767	0.0000	-6.906232	Intercept	I(1)
LREOE	-2.986225	0.0025	-4.313395	Intercept	I(0)
LCEOE	-2.967767	0.0000	-6.481491	Intercept	I(1)
LREOH	-2.998064	0.0019	-4.492859	Intercept	I(0)

Source: Researcher's analysis (2021) using E-Views 11.0

Table 1 shows all series stationary at different levels hence, the Bounds ARDL test was adopted for cointegration test.

4.2 Bounds Cointegration Test

This test was conducted to ascertain whether cointegration existed between the variables in the study.

Table 2: Bounds Co-Integration Test Results

Test Statistics	Value	K
F-Statistics	1.614875	3
Critical Value of Bounds		
Significance	I(0) Bounds	I(1) Bounds
10%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
1%	3.65	4.66

Source: Researcher's analysis (2021) using E-Views 11.0

Table 2 shows that a 5% level of significance, the F-statistic was less than the lower bound critical value. The null hypothesis of no long run relationship was not rejected. The short run Autoregressive Distributed Lag (ARDL) model was estimated in the absence of long run relationship.

4.3 ARDL Test and Short Run Model Estimation

Table 3: ARDL Result Estimate

Variables	Coefficient	Std. Error	T-statistics	Prob.
LREOE	-1.735207	2.681034	-0.647216	0.5236
LCEOE	-1.728306	1.378326	-1.253916	0.2219
LREOH	1.900340	2.797817	0.679222	0.5035
C	7.967054	4.504650	1.768629	0.0897

Source: Researcher's analysis (2021) using E-Views 11.0

The Short Run Estimated ARDL Model:

$$GSSER = 7.967054 - 1.735207LREOE - 1.728306LCEOE + 1.900340REOH \quad (1)$$

The results of the ARDL model showed that REOH had an insignificant positive effect on GSSER. While both REOE and CEOE had insignificant negative effects on GSSER during the study period. The value of the intercept was 7.967054, the value of GSSER when the independent variables are zero (0). Approximately 88.4% of variations in the dependent variable are explained by the independent variables.

Table 4: Error Correction Form

Variables	Coefficient	Std. Error	T-statistic	Prob.
D(LREOE)	-1.735207	2.681034	-0.647216	0.5236
D(LCEOE)	-1.728306	1.378326	-1.253916	0.2219
D(REOH)	1.900340	2.797817	0.679222	0.5035
CointEq(-1)*	-0.237023	0.118297	-2.003629	0.0565

R-squared	0.903646	Mean dependent var	35.13167
Adjusted R-squared	0.883573	S.D. dependent var	9.586535
S.E. of regression	3.271067	Akaike info criterion	5.384966
Sum squared resid	256.7971	Schwarz criterion	5.665205

Log likelihood	-74.77449	Hannan-Quinn criter.	5.474617
F-statistic	45.01642	Durbin-Watson stat	2.450224
Prob(F-statistic)	0.000000		

Source: Researcher's analysis (2021) using E-Views 11.0

The error correction (EC) term represented as CointEq(-1)* was negative with a coefficient estimate of -0.237023. This captures the speed of adjustment and implies that about 23.70% of corrections can be made to off-set disequilibria in the economy.

5. CONCLUSION AND RECOMMENDATIONS

This study empirically estimated the short run relationship between government education expenditure and human capital development in Nigeria. Time series data from 1990 to 2020 was collected and the ARDL model was adopted for the estimation. The Bounds test was used to determine if a long run relationship exists between the variables and found out there was none. The results demonstrated that in the short run, government recurrent and capital expenditure on education are negatively insignificant to gross secondary school enrolment rate; implying they are also negatively insignificant to human capital development. While recurrent expenditure on health held as a control variable was found positive but insignificant to human capital development in Nigeria.

The research recommends that education spending policies need to be implemented with the focus on filling the gaps the education sector has in affecting human capital development in Nigeria. This is because an improvement of the education sector through these policies would cause the education sector to have a significant impact on human capital development. In addition to this, a careful scrutiny of public priorities should be done on the management and utilization of funds allocated to the education sector.

Since the study found an increase in recurrent expenditure on health will lead to an increase in gross secondary school enrolment rate, the research recommends that recurrent expenditures in the health sector such as good workable conditions in hospitals should be prioritized; this should also be narrowed down to the provision of primary health care especially in schools.

Policy makers should strive to create institutional capacities to increase school enrolments and improve the provision of basic healthcare services by strengthening the infrastructure of education and health institutions; this would largely impact the education and health sectors respectively and hence impact human capital.

Despite the fact that both recurrent and capital education expenditures had statistically insignificant effects on Nigeria's gross secondary school enrolment rate over the study period, the Nigerian government still needs to increase educational spending to at least the UNESCO guideline of 26% of annual gross domestic product (GDP). The government must take appropriate measures to ensure optimal allocation and utilization of money in the education sector in order to achieve meaningful and stable human capital development.

A big gap also exists between the formulation of sound policies and their implementations especially in the education and health sectors; this could diminish the expected positive effects on the development of human capital and hence, needs to be addressed. To erase this gap, accurate statistics should be provided to pave a direction on the areas in need of policies and aids and to also draw the concern of the government and the masses in pursuing different education disciplines, a monitoring

and evaluation unit capable of ensuring the execution of policies and duties promptly, coupled with immediate responses from the government is needed. This unit should also be responsible in overseeing formulated policies to the end and ensuring they are not thrown aside by political influences or instabilities.

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