# **Impact of Government Expenditure on Human Capital Development in Nigeria**

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# Abstract

This study assessed the impact of government expenditure on human capital development in Nigeria over the period 1990 to 2019. The objective of this study is to examine the impact of government expenditure on human capital development in Nigeria. The study applied Autoregressive Distributed Lag Model for the analysis The results revealed that Government Education Expenditure (GEE) showed significant positive impact on Human Development index (HDI), precisely, a unit change in GEE will bring about 0.158620 percent significant increase in HDI in the long-run, while Government Health Expenditure (GHE) showed insignificant positive impact on Human Development (HDI), a unit change in GHE will cause 0.017656 insignificant increases in HDI. Based on the results, the study recommended that government should increase her budgetary allocation to education and health in order to develop its human capital significantly.

Key words: government expenditure, human capital, development, Nigeria, Impact

# Introduction

The notion of human capital, coined by Nobel laureate Gary Becker, underscores the idea that education, health, and skills are not only essential for individual well-being but also contribute significantly to economic growth and development. Government expenditure, as a powerful instrument of public policy, plays a pivotal role in shaping the trajectory of human capital formation. The allocation of financial resources to education, healthcare, social services, and

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skill development programs can profoundly influence the quality of the workforce, productivity levels, innovation capacity, and overall societal advancement.

The global human capital report (2017) states that Education and health stocks prepare people for the future of work. That is to say education and health expenditures are responsible for human capital development whose fruit is human capital. Fortunately Nigeria has been investing in education, health and skill acquisitions among other things in oder to boost human capital Development but Nigeria's investment in human capital development in terms of education expenditure has not been impressive over the years as shown in figure 1.1.



Figure 1.1Nigeria's Education expenditure 2000-2019, Source: data. worldbank.org2020

From the above figure, it is clear that education expenditures in Nigeria slowly took an upward trend from 2010-2017 and is taking a downward trend afterwards and this affects education outcomes/human capital development (Bognet, Adamu, Auta & Njirforti 2022). Similarly, the expenditure on health is low and is also below the WHO's 15% of total budgetary allocation recommendation.

Studies have confirmed generally that there is a high positive relationship between a rise in government expenditure and human capital development. Empirical studies by Becker (2010); Ahuja, (2012); Adediran (2014); Quah (2018);World Bank (2019),and Ihejirika (2020) have confirmed that human capital contributes as high as 75% of growth in East Asian economies (Olusdum & Anulika, 2020). But the question begging for answer is: Is this relationship obtainable in Nigeria? The relationship between public expenditure and Human capital Development in Nigeria is still unclear despite the existence of literature in the area. This is because most of previous studies use school enrolments as proxy for human capital development and do not also use institutional quality like control of corruption as a moderating/control variable. Examples of such studies are Bognet, Adamu, Auta & Njirforti (2023), Wuyah and Ahmad (2020), Okwu, Nissi, Joy & Adejola (2022), and Samuel and Ngozi (2019).

The country has been spending money in building and maintaining schools and hospitals, aside spending on staff salaries and others. Despite the government's annual spending, Staff Unions of the Schools and Hospitals have been going on strike with the aim of calling on government to improve the two sectors.

Sustainable economic development in the state cannot be achieved without substantial spending on the education and health of the people. Realizing that public expenditure plays a significant role in ensuring effective human capital development, there is need for a study to investigate the relationship between public expenditure and human capital development in Nigeria since economic development is tied to human capital development. Therefore, this paper attempts to examine the relationship and impact of education and health expenditures on human capital development in Nigeria

As Nigeria aspires to diversify its economy, reduce poverty, and harness the demographic dividend, a deep understanding of the interplay between government expenditure and human

capital development is indispensable. This study holds significance not only for policymakers but also for researchers, economists, and development practitioners who are interested in fostering sustainable growth, equitable development, and improved living standards in Nigeria and beyond.

This study is divided into five sections. Section one is the introduction, the second section which is the literature review showed the conceptual clarification, review of relevant theories and empirical literatures. Section three focuses on research methodology which includes the theoretical framework, model specification, Source of data collection and Method of data analysis, while Section four focuses on data presentation, analysis and the discussion of results. Section five summarizes the major findings with conclusion, and policy recommendations.

#### LITERATURE REVIEW

#### **Conceptual Clarification**

**Government Expenditure:** Government expenditure which is also known as public expenditure is defined as the financing of government activities (Ayanwuocha, 1998). It also refers to expenses that accrue to government for its maintenance, sustaining society and the economy at large and for helping other countries. This involves financial operation of government, development and meeting corresponding activities of the government. Black (2003) sees government expenditure as expenses by government at all levels, which includes real goods and services expenses such as defense, administration, education, retirees pension, unemployed and disabled persons; subsidies expenses and grant to industries; and debt service. The National Bureau of Statistics (NBS) defined government expenditure as a flow of financial resources out from the government to other sectors of the economy, whether requited or unrequited (NBS, 2009). In this study, Expenditure is defined as the total expenses incurred by the government in order to achieve set goals in a sector or MDA.

**Human Capital :** The original idea of Human Capital can be traced to Adam Smith in (1776) while the modern-day conceptualization owes its birth to the writings of notable economists like Jacob Mincer, Theodore Schultz, Gary S. Becker in their respective works: "wealth of Nations 1776", 'Investment in Human Capital and Personal Income Distribution" in 1958, 'Investment in Human Capital' in 1961, and 'Human Capital' in 1964," essentially.

Becker (1993) defined Human Capital as the 'knowledge, information, ideas, skills, and health of individuals. To her, Human capital represents the knowledge, skills and ability that make it possible for people to do their jobs. It is about recruiting, supporting and investing in people using a variety of means including education, training, coaching, mentoring, internship and others. Schultz (1961) referred to the term as the stock of productive knowledge and skills possessed by workers. Schultz definition would have been outstanding with the inclusion of "health and abilities". It would have read thus as human capital is the stock of productive knowledge, skills, health and abilities possessed by workers. Here, abilities refer to the skills, knowledge/education, attributes, experiences, well-being, competencies, attitudes etc possessed by an individual requisite for production. Human capital refers to the skills and knowledge of human beings. It is the endowment of abilities to produce that exists in each human being. Human capital consists of the knowledge, skills, and health that people accumulate over their lives, enabling them to realize their potential as productive members of society.

**Human Capital Development:** (HCD)refers to the building of Human capital. The process of acquiring and increasing the number of people with the stock of knowledge, skills, experience and health/well-being required for productivity. HCD is measured using school enrolments. The relationship between Government Education and Health Expenditures and Human Capital Development is shown diagrammatically in figure 2.



**Figure 2:** Relationship between Education and Health Expenditure and Human Capital Development. **Source**: Author 2023

# **Theoretical Review**

The reviewed theories are

- Adolph Wagner's theory of increasing state activities, also known as Wagner's Law, it posits that as a society undergoes economic development, the role and scope of the state's activities expand. This expansion is driven by rising public demand for services like education, healthcare, and infrastructure, leading to increased government expenditure and intervention in the economy to meet these growing needs. Wagner's theory highlights the connection between economic growth and the expansion of the state, a phenomenon observed in many developed and developing nations. Adolph Wagner's theory of increasing state activities which states that Economic Growth (EG) is a function of Public expenditure (PE) but public expenditure grows faster than economic growth and causality runs from EG to PE Symbolically EG=F(PE),
- Lucas Model of Human Capital development: The Lucas Model of Human Capital Development, proposed by economist Robert Lucas, highlights the role of education and knowledge accumulation in economic growth. It posits that individuals invest in education to increase their future earning potential,

thereby contributing to a nation's overall productivity. This model underscores the significance of human capital in driving economic advancement.

#### **Empirical Review**

Bognet, Adamu, Auta & Njirforti (2023) investigated the impact of Government expenditures on education and health on human capital development in Kaduna State using primary school enrollment data analyzed through the lens of autoregressive distribution lag (ARDL) Model. The study's results revealed that in the long-run, education expenditures had significant positive impact on human capital development while health expenditures had insignificant positive impact on human capital development in the State. Overall, in the short-run, both education and health expenditures had positive and significant impacts on human capital development in the State. The study recommended increased budgetary allocations to both sectors in order to ensure continuous boost of human capital development (HCD).

Okwu, Nissi, Joy & Adejola (2022) Investigated the effect of government education expenditure on human capital development in Nigeria 1990 to 2020 using the Autoregressive Distributed Lag Model (ARDL). The result of the analysis showed that Education's recurrent and capital expenditures had insignificant negative impact on Human Capital development(HCD) while Health's recurrent expenditure had insignificant positive impact on HCD.

Wuyah and Ahmad (2020) examined the impact of government expenditure on education on human capital development in Kaduna State using Ordinary Least Square (OLS) technique. The regression results indicated that government expenditure on education have significant impact on human capital development in Kaduna State and therefore recommended increased capital and recurrent expenditures on education.

Samuel and Ngozi (2019) studied the impact of education and health expenditures on human capital development in West African Countries from 1985 -2016. The results obtained after using ARDL technique of analysis shows that increased government education and health expenditures has positive and significant impact on Human Capital Development in the selected 13 countries. This study provided an insight into the impact of public expenditure on human capital development among 13 West African countries only. The result might be different if more countries are added to the selected countries and a country by country analysis would have given a better outlook on the impact being measured.

Innocent, Job, Okeke and Aondo (2017) empirically studied the relationship between Human Capital Development and government expenditure using ARDL model and impulse response function. The results of their findings showed that government expenditure is positive but has insignificant impact on human capital development in Nigeria both in the short and long runs between1990-2014 and thus recommended increased spending in providing quality education and health services to change the status quo

Okafor and Ogbonna (2017) examined the long run relationship between governmental expenditure in education and health and Human Capital Development in Nigeria. The result of the VAR model shows that the tests point out that HDI is significant in the current year (-1) but tends to converge insignificantly in the previous years. On the other hand, the value of the joint significance indicates that the current values of EDU and HTH are most influencing factors that determine the current values of HDI (-1). This indicates that what influence Human Capital Development in Nigeria are the nature, pattern and level of governmental expenditure in education and health because the model reveal their insignificant direct impact on the human capital development index.

None of the studies used Corruption as a moderating variable looking at how corruption can affect the development of human capital. The Studies also did not use School enrolments or Number of graduates as proxy for human Capital development as done by some of the related literature.

## METHODOLOGY

#### Nature and Sources of Data

The study made use of annual time series data for the analysis over the period 1990 to 2019. The data were obtained from Central Bank of Nigeria statistical Bulletin, 2019, World Governance Indicators, 2019 and World Development Indicators, 2019.

#### **Theoretical Model**

The study adopted the Endogenous Growth Model by Lucas (1988) as its theoretical framework. The model emphasised that adequate investment on education and health can lead to the development of human capital which may subsequently accelerate growth and development in an economy. The model is based on the assumption that workers who received proper training would be more productive in carrying out their work or duties which may also increase the productivity of capital in the economy as a whole. And that it is the developments of the human capital not the physical capital that generate the spill over effect which accelerate the technology level in the economy.

The functional form of the Lucas Endogenous Growth Model is shown below in equation  $3.1Y_i = f[A(k_i).(H_i).H^e].....3.1$ 

Where:

Y<sub>i</sub>=Output

A=Technical coefficient

K<sub>i</sub>=Physical capital

H=Human capital

H=Average level of human capital in the economy

e=Strength of the external effects from human capital to each firm's productivity

The above model suggests that every firm has constant returns to scale but the economy as a whole faces increasing return to scale. In the same manner, every firm gains from the average level of human capital in the economy, not from the total level of human capital

#### **Model Specification**

The model used by this study was specified in line with the work of Ogbonnaya,Ebele and Ama (2017) on the impact of government spending for the development of human capital in Nigeria. The model was specified both in a functional and econometrics form as shown below in equation 3.2 and 3.3 respectively.

Where:

HDI=Human Development Index (Proxy for human capital development) GEE=Government Expenditure on Education GHE=Government Expenditure on Health RGDP=Real Gross Domestic Product INFR=Inflation rate HDI<sub>t</sub> =  $\hat{a}_0 + \hat{a}_1$ GEE<sub>t</sub> +  $\hat{a}_2$ GHE<sub>t</sub> +  $\hat{a}_3$ RGDP<sub>t</sub> +  $\hat{a}_4$ INFR<sub>t</sub> +......3.3

Where:

GEE, GHE, RGDP and INFR are as in equation 4.1,  $\hat{a}_0 - \hat{a}_4$ =Parameters to be estimated, = Error term, t= time period

The study used the adopted model in equation 3.3 above and introduced one control variable (Control of Corruption) into the model. Control of Corruption is introduced because the impact of the expenditure can be affected by corruption. The introduction of the Control of Corruption gave rise to a new model as follows:

 $HDI_{t} = \dot{e}_{0} + \dot{e}_{1}GEE_{t} + \dot{e}_{2}GHE_{t} + \dot{e}_{3}RGDP_{t} + \dot{e}_{4}INFR_{t} + \dot{e}_{5}COCR_{t} + \mu_{t,...,3}.4$ 

```
Where:
HDI=Human Development Index (Proxy for human capital development)
GEE=Government Expenditure on Education
GHE=Government Expenditure on Health
RGDP=Real Gross Domestic Product
INFR=Inflation rate
COCR=Control of Corruption
\hat{a}_0-\hat{a}_5=Parameters to be estimated,
\mu= Error term, t= time period
```

| Table | 3.1 | Summary | of | variables | for | the | Ob | iective |
|-------|-----|---------|----|-----------|-----|-----|----|---------|
|       |     | ,       |    |           |     |     |    |         |

| Variables                           | Measurement                         | Apriori Expectation |
|-------------------------------------|-------------------------------------|---------------------|
|                                     | Dependent Variable                  |                     |
| Human Development Index             | Scale from 0 to 1                   |                     |
|                                     | Independent Variables               |                     |
| Government Expenditure on Education |                                     | Positive            |
| Government Expenditure on Health    |                                     | Positive            |
| Real Gross Domestic Product         | Constant 2010 <del>N</del> Billions | Positive            |
| Inflation rate                      | Annual percentage                   | Negative            |
| Control of Corruption               | Scale from -2.5 to 2.5              | Positive            |

# Measurement and Justification of Variables

# a. Dependent variable

**Human Development Index**: This is an index which rate countries in terms of their level of development in education, health and better standard of living. The index ranges from 0 to 1 where 0 represent the poor developed nations in terms of education level, health and better standard of living while 1 represent the most developed nations in terms of education level, health and better standard of living. Empirical study by Ogbonnaya, Ebele and Ama, (2017) considered Human Development Index as a better proxy for Human Capital Development.

# b. Independent Variables

- i. Government Expenditure on Education: This is the total expenditure of government on education. Empirical studies such as; Adamu (2012), Ogbonnaya, Ebele and Ama, (2017) among others revealed that Government Expenditure on Education has an impact on Human Capital Development. It is expected to have a significant positive impact on human capital development.
- **ii. Government Expenditure on Health**. This is the total expenditure of government on health. Empirical study by Ohwofasa, Obeh and Atumah (2012) revealed that Government Expenditure on Health has an impact on Human Capital Development. It is expected to have a significant positive impact on human capital development.
- **iii. Real Gross Domestic Product:** This is the gross domestic product that takes the effect of inflation into consideration and it is measured at 2010 constant price. Empirical study by Ogbonnaya, Ebele and Ama, (2017) revealed that Real Gross Domestic Product has an impact on Human Capital Development. Data on this variable was obtained CBN statistical bulletin, (2019). It is expected to have a significant positive impact on human capital development.
- **iv. Inflation Rate.** Inflation is measured by comparing the price in two different periods, of a fixed basket of goods and services which is written in percentage. Empirical study

by Omoredo (2019) revealed that inflation rate has an influence on Human Capital Development. Data on inflation rate was sourced from World Bank Development Indicators 2019. It is expected to have negative impact.

v. Control of Corruption: control of corruption through different government policies. Data for this variable was sourced from the World Governance Indicators (2019). It is expected to have a positive impact

# Techniques of Data Analysis

# i. Unit Root Test

Since most time series data are not stationary, the study first checked the stationarity state of the variables by using both the Augmented Dickey -Fuller and Phillips-Perron method unit root method. The unit root test would enable the study to apply the appropriate estimation techniques for the analysis of data so as to avoid having spurious results (Gujarati etal, 2009).

# ii. ARDL Bounds Test to Co-integration

The study conducts co-integration test so as to determine whether the variables have long run relationship by using the ARDL Bound test to co-integration method. This technique was applied based on the fact that the variables used for the analysis are integrated of order one as suggested by the unit root test carried out. The ARDL Bounds test to co-integration can accommodate variables that are purely I(1) or even variables that have the combination of I(1) and I(0) (Pesaran and Shin, 2001).

# iii. Autoregressive Distribution lag (ARDL) Model

The study used ARDL Model estimation technique for the analysis. ARDL Model is shown below in equation 3.8.

$$\Delta HDI_{t} = \alpha_{0} + \sum_{i=1}^{n} \alpha_{1i} \Delta HDI_{t-i} + \sum_{i=1}^{n} \alpha_{2i} \Delta GEE_{t-i} + \sum_{i=0}^{n} \alpha_{3i} \Delta GHE_{t-i} + \sum_{i=0}^{n} \alpha_{4i} \Delta RGDP_{t-i}$$
$$+ \sum_{i=0}^{n} \alpha_{5i} \Delta COCR_{t-i} + \sum_{i=1}^{n} \alpha_{6i} \Delta INFR_{t-i} + \beta_{1}HDI_{t-i} + \beta_{2}GEE_{t-i} + \beta_{3}GHE_{t-i}$$
$$+ \beta_{4}RGDP_{t-i} + \beta_{5i}COCR_{t-i} + \beta_{6i}INFR_{t-i} + \xi_{t} \dots \dots 3.8$$

| Variables | Test<br>Statistics<br>at Level | 5% Critical<br>Value at<br>Level | P Value<br>at Level<br>(5%) | Test Statistics<br>at First<br>Difference | 5% Critical<br>Value at<br>First<br>Difference | P Value<br>at First<br>Difference<br>(5%) | Order of<br>Integration |
|-----------|--------------------------------|----------------------------------|-----------------------------|---|--|---|-------------------------|
| log(HDI)  | -2.198983                      | -3.574244                        | 0.4724                      | -5.380746                                 | -3.580623                                      | 0.0008                                    | I(1)                    |
| log(GEE)  | -3.515536                      | -3.574244                        | 0.0564                      | -3.956153                                 | -3.580623                                      | 0.0227                                    | I(1)                    |
| log(GHE)  | -0.120612                      | -3.612199                        | 0.9912                      | -6.032855                                 | -3.612199                                      | 0.0003                                    | I(1)                    |
| Log(RGDP) | -1.849116                      | -3.580623                        | 0.6535                      | -3.635823                                 | 3.430623                                       | 0.0417                                    | I(1)                    |
| COCR      | -1.712330                      | -3.574244                        | 0.7198                      | -5.466194                                 | -3.580623                                      | 0.0007                                    | I(1)                    |
| Log(INFR) | -2.898748                      | -3.574244                        | 0.1774                      | -4.341444                                 | -3.580623                                      | 0.0096                                    | I(1)                    |

#### Augmented Dickey-Fuller Unit Root Test at Trend and Intercept

#### Phillips-Perron Unit Root Test at Trend and Intercept

| Variables | Test<br>Statistics<br>at Level | 5% Critical<br>Value at<br>Level | P Value<br>at Level<br>(5%) | Test Statistics<br>at First<br>Difference | 5% Critical<br>Value at<br>First<br>Difference | P Value<br>at First<br>Difference<br>(5%) | Order of<br>Integration |
|-----------|--------------------------------|----------------------------------|-----------------------------|---|--|---|-------------------------|
| log(HDI)  | -2.335797                      | -3.574244                        | 0.4030                      | -5.379179                                 | -3.580623                                      | 0.0008                                    | I(1)                    |
| log(GEE)  | -3.515536                      | -3.574244                        | 0.0564                      | -3.956153                                 | -3.580623                                      | 0.0227                                    | I(1)                    |
| log(GHE)  | -3.039649                      | -3.574244                        | 0.1393                      | -34.65573                                 | -3.580623                                      | 0.0000                                    | I(1)                    |
| Log(RGDP) | -2.041924                      | -3.574244                        | 0.5549                      | -3.972862                                 | -3.360623                                      | 0.0402                                    | I(1)                    |
| COCR      | -1.646845                      | -3.574244                        | 0.7486                      | -5.852392                                 | -3.580623                                      | 0.0003                                    | I(1)                    |
| Log(INFR) | -3.088305                      | -3.574244                        | 0.1277                      | -4.318145                                 | -3.580623                                      | 0.0101                                    | I(1)                    |

**Source:** Author's Computation, 2023 using Eview 9.**Where:** Log=Logarithms, HDI=Human Development Index, GEE=Government Education Expenditure, GHE=Government Health Expenditure, RGDP=Real Gross Domestic Product, COCR= Control of Corruption, INFR= Inflation Rate.

Unit root test was conducted using both Augmented Dickey-Fuller and Phillips-Perron method both at levels and at first difference using 5 percent level of significance as shown in Table 4.2. From the results, both the Augmented Dickey-Fuller and Phillips- Perron test results showed that the variables used for the analysis are all I(1) at first difference. This is because the P-values for each of the variables at first difference are all less than 5 percent.

## **ARDL Bounds Test to Cointegration**

# Table 4.3: ARDL Bounds Test to Cointegration

| Computed F- Statistic | K | 5% critical Bound Test value |             |
|-----------------------|---|------------------------------|-------------|
|                       |   | Lower Bound                  | Upper Bound |
| 4.927390              | 5 | 2.62                         | 3.79        |

Source: Author's Computation, 2023 using Eviews 9.

The study carried out cointegration test by using the ARDL Bounds testing approach and presents the results in Table 4.3 . The results from the table revealed that the estimated F. Statistic is more than the upper critical Bound value at 5 percent significant level which implied that there is long run cointegration among the variables such as; Human Development Index Government Education Expenditure, Government Health Expenditure, Real Gross Domestic Product, Control of Corruption and Inflation Rate over the study period.

## **ARDL Short-Run Estimate**

In order to estimate the short-run model, the study used Akaike Information Criterion for an optimal lag selection and finally selects ARDL (3, 2, 2, 0, 2, 1). The short-run ARDL estimate is presented in Table 4.4 below

| Variable         | Coefficient | Std. Error | t-Statistic | Prob.  |
|------------------|-------------|------------|-------------|--------|
| D(log(HDI(-1)))  | 0.493178    | 0.175316   | 2.813076    | 0.0283 |
| D(log(HDI(-2)))  | 0.397100    | 0.210505   | 1.886415    | 0.0602 |
| D(log(GEE))      | -0.004116   | 0.038769   | -0.106173   | 0.9174 |
| D(log(GEE(-1)))  | 0.138536    | 0.038695   | 3.580173    | 0.0043 |
| D(log(GHE))      | 0.050666    | 0.014346   | 3.531764    | 0.0047 |
| D(log(GHE(-1)))  | 0.042184    | 0.012439   | 3.391177    | 0.0060 |
| D(COCR)          | 0.002263    | 0.031230   | 0.072455    | 0.9435 |
| D(log(RGDP))     | 0.752893    | 0.233127   | 3.229541    | 0.0080 |
| D(log(RGDP(-1))) | -0.621652   | 0.941690   | -0.660145   | 0.0622 |
| D(log(INFR))     | -0.039417   | 0.014919   | -2.642131   | 0.0229 |
| ECT(-1)          | -0.692464   | 0.231498   | -2.991234   | 0.0123 |

## Table 4.4: ARDL Short-Run Estimate

R-squared=0.892668, Prob(F-statistic)= 0.000441

**Source:** Author's Computation, 2023 using Eview 9.**Where:** D=Difference, Log=Logarithms, HDI=Human Development Index, GEE=Government Education Expenditure, GHE=Government Health Expenditure, RGDP=Real Gross Domestic Product, COCR= Control of Corruption, INFR= Inflation Rate.

108

The results showed that the model has a good fit with an R-square value of 0.89 which suggests that about 89 percent of Human Development Index (proxy for human capital development) is being explained by Government Education Expenditure, Government Health Expenditure, Real Gross Domestic Product, Control of Corruption, and Inflation Rate in the short run. In addition, the F statistic also revealed low probability (0.000441)suggesting that the regressors have joint significant effect on Human Development Index.

Furthermore, the results also revealed that Human Development Index at lag 1 has significant positive impact on Human Development Index using 5 percent level of significance. The results also revealed that Government Education Expenditure (GEE) at lag 1 has significance positive impact on Human Development at 5 percent level of significance. Similarly, the result also revealed that Government Health Expenditure (GHE) at lag 1 and 2 have significance positive impact on Human Development Index at 5 percent level of significant. In the same manner, Real Gross Domestic Product at lag 1 showed significant positive impact on Human Development Index at 5 percent level of significance while Control of Corruption (COCR) revealed insignificant positive impact on Human Development at 5 percent level of significance. However, Inflation Rate (INFR) showed significant negative impact on Human Development Index at 5 percent level of significance

Specifically, the coefficients revealed that a unit change in GEE at lag 1 will bring about 0.493178 percent significant increase in HDI. In the same vein, a unit change in GHE at lag 1 and 2 will bring about 0.050666 percent and 0.04218 percent significant increase in HDI respectively. Similarly, a unit change in RGDP at lag 1 will bring about 0.75289 percent significant increase HDI. While a unit a unit change in COCR will bring about 0.039417 percent insignificant increase in HDI. However, a unit a unit change in INFR will bring about 0.039417 significant reductions in HDI.

In addition, the coefficient of the Error Correction Term (ECT) is negative (-0.692464) with a low probability value (0.0123) which implied that the variables such as; Human Development Index, Government Education Expenditure, Government Health Expenditure, Real Gross Domestic Product, Control of Corruption and Inflation Rate have long run relationship as already established by the ARDL Bounds test to cointegration. The coefficient of the ECT explained that about 69 percent of the long run disequilibrium will be adjusted annually.

#### **ARDL Long-Run Estimate**

The ARDL long-run estimate is presented in Table 4.5 below.

| Variable  | Coefficient | Std. Error | t-Statistic | Prob.  |
|-----------|-------------|------------|-------------|--------|
| log(GEE)  | 0.158620    | 0.061478   | 2.580113    | 0.0256 |
| log(GHE)  | 0.017656    | 0.024619   | 0.717155    | 0.4882 |
| COCR      | 0.003268    | 0.045912   | 0.071174    | 0.9445 |
| log(RGDP) | -0.422398   | 0.246034   | -1.716824   | 0.0686 |
| log(INFR) | -0.077650   | 0.029890   | -2.597848   | 0.0248 |
| С         | 0.675754    | 0.894138   | 0.755760    | 0.4657 |

#### Table 4.5: ARDL Long-Run Estimate

**Source:** Author's Computation, 2023 using Eview 9.**Where:** Log=Logarithms, HDI=Human Development Index, GEE=Government Education Expenditure, GHE=Government Health Expenditure, RGDP=Real Gross Domestic Product, COCR= Control of Corruption, INFR= Inflation Rate.

The results revealed that Government Education Expenditure (GEE) showed significant positive impact on Human Development (HDI) in the long run at 5 percent level of significance. While Government Health Expenditure (GHE) and Control of Corruption (COCR) showed insignificant positive impact on Human Development (HDI) in the long run at 5 percent level of significance. However, Real Gross Domestic Product (RGDP) showed insignificant negative impact on Human Development (HDI) in the long run at 5 percent level of significance while Inflation Rate showed significant negative impact on Human Development (HDI) in the long run at 5 percent level of significance

To be precise, the coefficients showed that a unit change in GEE will bring about 0.158620 percent significant increase in HDI in the long-run. Similarly, a unit change in GHE and COCR will bring about 0.017656 percent and 0.003268 percent insignificant increase in HDI in the long-run. In the same vein, a unit change RGDP will bring about 0.422398 percent insignificant reduction in HDI in the long-run. Similarly, a unit change in INFR will bring about 0.077650 percent reduction HDI in the long-run

#### **Diagnostic Check**

The results in Table 4.6 showed that the probability value of the JarqueBera statistic is greater than 5 percent which suggests that the residual of the model is normally distributed. The results also showed that the observed R squares probability values for Breusch-Godfrey Serial Correlation LM test and Breusch-Pagan-Godfrey heteroscedasticity test are greater than 5 percent which suggests that the ARDL estimate does not have the problem of heteroscedasticity and serial autocorrelation. Similarly, the value of the Durbin-Watson stat is close to 2 which also suggest that the model does not have autocorrelation problem. The CUSUM plot in Figure 4.1 also suggests that parameters of the model are stable because the plot falls within the 5 percent critical bound. The above diagnostic test results suggest that the above estimated ARDL model is very reliable.

| Test                                     | Statistic            | P-Values |
|--|----------------------|----------|
| Jarque-Bera Sta.                         | 0.394604             | 0.820943 |
| Breusch-Godfrey Serial Correlation LM    | 14.94521             | 0.0621   |
| Heteroskedasticity:Breusch-Pagan-Godfrey | 16.85234             | 0.3278   |
| Durbin-Watson stat                       | 2.114205             |          |
| CUSUM Test                               | See Figure 4.1 below |          |

Table 4.6: Diagnostic Check

Source: Author's Computation, 2023 using Eview 9



Figure 4.1: CUSUM Test

#### **Conclusion and Recommendations**

The unit root test showed that all the variables were integrated of order one I(I) while ARDL Bounds Test to Cointegration showed that there is cointegration among the variables.

From theoretical point of view, it is anticipated that an increase in government education and health spending may likely increase human capital development. The results of this study found out that Government Education Expenditure contribute significantly to an increase in Human Capital Development at 5 percent level of significance both in the short-run and longrun. This result is consistent with the work of Okafor and Ogbonna (2017) on the relationship between government health and education expenditure and Human Capital Development in Nigeria among others.

Similarly, this study also found out that Government Health Expenditure contribute significantly to an increase in Human Capital Development in the short-run at 5 percent level of significance but it showed insignificant positive contribution to Human Capital Development in the long-run which is consistent with the study of Ohwofasa, Obeh and Atumah (2012) on the impact of government expenditures on education and health and economic growth and human capital development in Nigeria among others. Furthermore, the results of this study also found out that Real Gross Domestic Product showed insignificant positive impact on Human Capital Development in the short-run while in the long-run it showed significant positive impact at 5 percent level of significance which is consistent with the apriori expectation of the study. In addition, the study also found that Control of Corruption showed insignificantly positive impact on Human Capital Development both in the short-run and long-run at 5 percent level of significantly negative impact on Human Capital Development both in the short-run and long-run at 5 percent level of significantly negative impact on Human Capital Development both in the short-run and long-run at 5 percent level of significantly negative impact on Human Capital Development both in the short-run and long-run at 5 percent level of significantly negative impact on Human Capital Development both in the short-run and long-run at 5 percent level of significantly negative impact on Human Capital Development both in the short-run and long-run at 5 percent level of significantly negative impact on Human Capital Development both in the short-run and long-run at 5 percent level of significance which is in line with the apriori expectation of the study.

Human capital is considered as a major factor that determines the growth and development of a nation (Oluwatobi and Ogunrinola, 2011). In the case of Nigeria, the country's level of investment on human capital over the years is of great concern because the key sectors of Nigeria's economy that defined human capital, precisely the education and health sector have received less monetary allocation than the one advocated by UNESCO which might have an influence on the country's level of human capital (Ehimare, Ogaga-Oghene, Obarisiagbon and Okorie, 2014).

Furthermore, in recent time corruption has been identified to have a connection with government expenditure and human capital development. This is because many political analysts are of the opinion that a lot of government officials are diverting public money being budgeted for the development of human capital for their own selfish use which might have an influence on the level of human capital development but it has not been sufficiently verified empirically. Therefore, this study seeks to assess the impact of government expenditure and corruption on human capital development in Nigeria over the period 1990 to 2019.

To achieve the objective one, which is to examine the impact of Government Expenditure on Human Capital Development in Nigeria, the study applied Autoregressive Distributed Lag Model (ARDL) for the analysis. The results revealed that Government Education Expenditure has significant positive impact on Human Capital Development at 5 percent level of significance both in the short-run and long-run. The results also showed that Government Health Expenditure has significant positive impact on Human Capital Development in the short-run at 5 percent level of significance but the impact was insignificant in the long-run.

Furthermore, the results also showed that Real Gross Domestic Product has insignificant positive impact on Human Capital Development in the short-run but the impact was significant in the long-run. The results also revealed that Control of Corruption showed insignificant positive impact on Human Capital Development both in the short-run and long-run at 5 percent level of significance. However, Inflation Rate showed significant negative impact on Human Capital Development at 5 percent level Development both in the short-run and long-run at 5 percent level.

Based on the results, the study concludes that government expenditure on education contributes significantly to the development of human capital in Nigeria both in the short-run and long-run. The study also concludes that government expenditure on health contributes significantly to the development of human capital in Nigeria in the short-run but in the longrun, the impact is insignificant.

Considering the results of the analysis, the study recommends the following:

There is a need for Nigerian government to place more priority to education and health sectors in her effort to achieve general welfare of her citizens because of how strategic these sectors are in achieving developmental goal and other major macroeconomic goals like employment generation, economic growth etc.

There is a need for government to expand her educational and health budgetary allocation in order to ensure that the two sectors significantly impact the development of human capital in Nigeria.

Again there is need for government to further continue improving in her anti-corruption policies in order to control corruption at maximal level otherwise all vision and effort to improve on human capital development in Nigeria may remain a mirage.

Also, government needs to always put useful monetary and fiscal policies that stabilize the prices of goods and services because of its' negative impact on the process of human capital development.

Finally from this study, there is need for government to ensure the growth of her Real Gross Domestic Product in her effort to building human capital as the finding shows a positive significant influence on the level of human capital development in Nigeria. This is indeed necessary because basic standard of living is part of the components required for Human capital Development.

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