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Abstract

This study analysed the impact of education human capital development on economic growth in Nigeria from 1980 to 2020. The study specifically used secondary school enrolment as a comprehensive measure of education human capital, while life expectancy at birth was used as a measure of health human capital. By employing annual secondary time series data, the research aimed to assess the relationship between education human capital and economic growth in Nigeria. The data, obtained from the World Development Indicators of the World Bank, were subjected to appropriate descriptive and econometric techniques, including the Autoregressive Distributive Lag method. The findings revealed a significant positive correlation between education human capital development, as measured by secondary school enrolment, and economic growth in Nigeria. Therefore, the study recommends that government expenditures be directed towards human capital development, with a particular emphasis on education, to promote increased, sustainable, and equitable economic growth. In summary, this research highlights the importance of gender analysis in understanding the effects of human capital developments on economic growth in Nigeria. By recognizing the specific impact of education and health on economic growth, policymakers can make informed decisions to foster sustainable economic development.

Keywords: Development; Economic growth; Gender; Human capital; Investment;

1 The views expressed in this working paper are those of the authors and do not necessarily represent those of the ASPROWORDA, its Executive Board, or its management.

1. Introduction

Human capital development has been widely recognized as a crucial driver of economic growth in various economies (Orisadare, Olabisi, & Olanrewaju, 2017). This study aims to build upon and complement the work of Orisadare et al. by investigating the gender-specific effects of human capital development on economic growth in Nigeria. Previous researchfocused on the relationship between gender, human capital, and economic growth using secondary school and tertiary enrolment rates for education human capital and survival rates for health human capital(e.g., Ejemeyovwiet al, 2018; 2019).This study takes a gender-disaggregated approach, using only secondary school enrolment to measure education human capital among genders and life expectancy rates for health human capital. Our objective is to gain a deeper understanding of the nuanced impact of gender disparities in secondary school education and health on Nigeria's economic performance.

The process of nurturing and enhancing these skills, education, and experiences among individuals to foster economic prosperity is known as human capital development (Okojie, 2008). According to the Organization for Economic Co-operation and Development (OECD, 1996), human capital comprises the contributions of knowledge and skills that individuals offer to their country's economy. In essence, it involves the collective input of knowledge, skills, and experiences that contribute to a nation's economic growth (OECD, 1996). Given its significance, human capital plays a crucial role in endogenous growth models, alongside labour and capital.

Since Nigeria gained independence in 1960, it has continually pursued avenues to bolster economic growth and achieve sustainable development. Notable policies and strategies, such as Free Universal Basic Education and Health for all (Primary Health Care Scheme), underscore the critical role of education and health sectors in nurturing the nation's human capital stock. It is widely recognized that a country's development cannot surpass the education level of its citizens (UNDP, 2010), prompting Nigeria to prioritize efforts towards enhancing education and health for optimal human capital development.However, challenges persist in the education sector, with inadequate attention to physical infrastructure and qualitative aspects of the system (Dauda, 2010). This has resulted in overcrowded and poorly managed classrooms, limited teaching aids, outdated curricula, and the employment of unqualified teachers. Considering the vast potential of Nigeria's human resources, it is essential to maximize and efficiently utilize them to drive economic growth.

The neglect witnessed in the education and health sectors poses significant challenges, with poor infrastructure and lack of qualified teachers hindering progress.

Numerous empirical studies have explored the relationship between human capital and economic growth, yielding divergent results. While some scholars propose a positive link between human capital and economic growth in both the short and long run, others suggest a negative impact.For instance, a study by Yahya, Anagun, and Olubunmi (2023) examined the relationship between human capital development and economic growth in Nigeria (1981-2020). Their findings revealed significant positive effects of public educational expenditure and human capital development on economic growth, both in the short and long run. Additionally, Oladipo et al (2023) conducted a study on gender-specific human capital development in Nigeria during the period 1997 to 2020, discovering a significant relationship between human capital development (particularly in health and education) and economic growth.

Retrospectively, some studies find no significant relationship between human capital and economic growth, indicating the need for further research on this vital aspect.Moreover, disparities exist in the variables used to assess the impact of human capital development on economic growth. Some studies focus solely on education or health spending, overlooking other crucial variables like literacy and life expectancy rates (Yahya et al 2023). Others consider school enrolment rates and life expectancy without accounting for expenditures on education and health sectors, potentially leading to an inadequate measurement of human capital (Musibau&Rasak, 2005; Bakare, 2006; Campbell, 2007; Umoru&Odjegba, 2013, Oladipo et al, 2023).Previous studies in Nigeria have predominantly utilized secondary school and tertiary education enrolment rates as indicators of education human capital (Orisadare et al., 2017). However, using this approach may not provide a comprehensive assessment of education human capital development, especially in a developing country like Nigeria, where only 17% of the young population has attained post-secondary education (Statista, 2022).

To address these gaps, our study aims to contribute to the growing body of knowledge by focusing on an inclusive dimension of human capital development, utilizing secondary school enrolment level as a measure of education human capital from a gender-disaggregated approach. Notably, statistics indicate that more than half of Nigeria's young population is enrolled in or has completed

secondary school education (Statista, 2022). Thus, we contend that analysing education human capital development using secondary school enrolment offers a more comprehensive measure of human capital development in the country. As we embark on this study, our goal is to shed light on the critical role of human capital in Nigeria's economic growth and contribute to the formulation of well-informed policies and strategies for the nation's sustainable development.

2. Insights from Empirical Literature

2.1 Human Capital and Economic Growth in Developing countries

Numerous studies have explored the link between human capital and economic growth, seeking to understand the mechanisms through which human capital contributes to an economy's development. Orisadre, Olabisi, and Olanrewaju (2017) conducted a comprehensive study on the gender-specific relationship between human capital development and economic growth in Nigeria, focusing on overall education and health indicators. Their research utilized the ARDL method to analyze data from 1981 to 2014, revealing a positive association between human capital development and economic growth. However, their study did not encompass data beyond 2017. To extend and enrich the analysis, our research incorporates gender disparities in education by using secondary school enrolment levels and health indicators represented by life expectancy rates. We utilize data spanning from 1981 to 2020, aiming to offer a more comprehensive understanding of the gender-based impacts on economic growth in Nigeria.

The significance of the human capital and economic growth nexus becomes crucial, especially given the disappointing growth performance experienced in many developing countries, including the Nigerian economy. Challenges such as deficient infrastructure, weak institutions, and high poverty levels have hindered economic progress in these nations (Azariadis and Stachurski, 2004; Perry et al., 2006).

Human capital, as defined by the Organisation for Economic Co-operation and Development (OECD, 1996), encompasses the knowledge, skills, competencies, and attributes embodied in individuals that contribute to personal, social, and economic well-being. It includes various acquired skills, competencies, and knowledge gained through learning and experience, as well as innate abilities. Human capital covers aspects such as education, health, on-the-job training, and

skills acquired through interactions between individuals and societies. This accumulation of innate abilities, knowledge, and skills acquired throughout an individual's lifetime holds various economic and non-economic benefits, including improved firm performance in terms of financial and productivity levels (Marimuthu et al., 2009; Zuhir et al., 2017; Khana and Quaddus, 2018), reduced income inequality (Gilberto et al., 2018), enhanced political participation, and inclusive growth, contributing to sustainable development (Oludumila et al., 2018).

Bloom, Khun, and Prettner (2018) emphasized that investing in human capital, particularly in health, leads to increased longevity, subsequently stimulating higher labor force participation and workforce productivity. The health of children can influence their education and, consequently, their participation in productive activities, while women's health has significant intergenerational effects, impacting women's empowerment and health at older ages. These factors also have implications for retirement and care, ultimately influencing economic growth positively or negatively.

Friday, Fidelis, Udeme, and Olumide (2016) supported the potential of human capital to drive economic growth, even when compared to sectors like agriculture, which provide substantial livelihood opportunities. Barro (2001), considering the level of economic growth measured by GDP, agreed that a higher initial stock of human capital tends to generate higher growth by facilitating the adoption of superior technologies from advanced economies. Countries with a higher ratio of human to physical capital tend to grow rapidly by adjusting upwards the quantity of physical capital.

Empirical studies on the causal relationship between human capital and economic growth have yielded mixed and inconclusive results. Jeffrey (2018) found a unidirectional causality from education expenditure (a measure of human capital) to economic growth in Cote d'Ivoire. Conversely, Zerihun (2014) reported unidirectional causality running from economic growth to health provision and feedback causality between education and health provision as measures of human capital in Ethiopia. Uche,Ihugba, and Nwosu (2013) observed that granger causality runs from economic growth to education expenditure (human capital) in Nigeria without reverse causality. Abhijeet (2010) reported bi-directional causality between education expenditure (human capital) and economic growth in India.

Zahari and Sudirman (2017) found that increased government spending on education led to a decline in the human development index in Indonesia, while increased expenditure on health significantly improved the human development index. Additionally, access to quality healthcare and prevention services plays a crucial role in alleviating poverty and fostering economic growth, as healthy individuals can plan for their security, development, and economic advancement. Abada and Ugwunta (2016) reported a positive but insignificant influence of public budgetary allocations to the health sector on life expectancy in Nigeria.

2.2 Human Capital and Economic Growth: Insights from Cross-Country Studies

One fundamental question arises: how much higher income can be achieved with a given increase in human capital investment? Dsouza et al (2019) demonstrated that the answer to this question is straightforward in a steady state. Since the Human Capital Index (HCI) measures worker productivity relative to the maximum, the increase in income per capita is directly proportional to the rise in the HCI. For instance, a country that elevates its HCI from 0.5 to 0.75 would experience a 50% increase in income per capita compared to what it would have been with constant human capital investment.

Jeffrey (2018) conducted an investigation on the relationship between education expenditure and economic growth in Côte d'Ivoire from 1970 to 2015. Using the bounds testing approach, an ARDL model, and the Toda and Yamamoto (1995) Causality Test, the study found evidence of a negative and significant long-term effect of government education expenditure on economic growth during the specified period. Additionally, there was a non-significant positive effect of government education expenditure on economic growth in the short term. The results indicated a unidirectional causality relationship between education expenditure and economic growth, with causality running from education expenditure to economic growth.

Komain (2007) examined the relationship between government expenditures and economic growth in Thailand. The results demonstrated that aggregate government expenditures had a causal effect on economic growth, but economic growth did not cause government expenditures to expand. In other words, there was a unidirectional causality between government expenditures and economic growth in Thailand. Further analysis using the ordinary least square method indicated that

government spending and its one-period lag variable had a highly significant impact on economic growth, confirming the results from the causality test.

Oriakhi and Ameh (2014) assessed the influence of government expenditure on the education sector in Nigeria between 1980 and 2011. The co-integration results indicated a long-run relationship between the variables, and they were statistically significant. The Granger Causality test revealed that the various variables caused changes in literacy rates in Nigeria. The study found a unidirectional causality between capital expenditure on education and literacy rate, and bidirectional causality between recurrent and capital expenditure on education. Additionally, no causality was observed between economic growth and recurrent expenditure on education, while bidirectional causality was reported between economic growth and capital expenditure on education.

Altiner and Toktas (2017) investigated the impact of human capital on economic growth in 32 selected developing countries using panel data analysis covering the period 2000-2014. The empirical analysis revealed a positive effect of human capital on economic growth. Moreover, the positive effect of human capital on economic growth decreased as education levels increased. Conversely, the results indicated that physical capital had a positive impact on economic growth, while labor had a negative effect on economic growth in the studied countries. The study concluded that economic growth depended not only on physical capital but also on human capital.Khan, Naeem, and Khan (2015) examined the role of human capital in the economic growth of Pakistan from 1971 to 2012, using Granger Causality test as the analytical technique. The study used research and development (R&D), education, and health as proxies for human capital. The results confirmed the role of human capital, particularly Research and Development (R&D), in driving economic growth during the study period. Unidirectional causal relationships were found among different levels of education, physical capital, R&D, and economic growth.

Ubi-Abai and George-Anokwuru (2018) empirically examined the determinants of human capital formation using Nigerian data and applied three-stage least squares. They reported a bi-directional positive and significant relationship between health expenditures and growth. Mortality rate showed negative growth rates but had a positive relationship with health expenditures. For education expenditures, a bidirectional negative and significant relationship with growth was

found, despite the education sector experiencing growth in spending over the years. Primary enrolment experienced negative growth, while secondary and tertiary enrolments experienced positive growth rates in Nigeria.

Bouhari and Soussi (2017) explored the direction of the relationship between economic growth, education, and investment in five MENA countries from 1975 to 2014. They used econometric panel data approach and Granger causality within a panel model framework. The empirical results indicated strong causality running from education and investment to economic growth, with no feedback effects from economic growth to education and investment. The results also showed a short-run bi-directional causality between investment and education, supporting the feedback hypothesis that investment drives education and vice versa in the mentioned countries. An increase in investment contributed to education and economic growth during the sample period.

Adekoya (2018) examined the impact of human capital development on poverty alleviation in Nigeria from 1995 to 2017, utilizing the Granger causality test through a vector Error Correction Mechanism (VECM). The result indicated that there was no causality, either uni-directional or bi-directional, between government expenditure on education and health, infant mortality, gross enrolment ratio, and per capita income. However, cases of uni-directional causality were found for literacy rate, life expectancy, and per capita income. Kotásková et al. (2018) evaluated the relationship between education and economic growth in India from 1975 to 2016, focusing on primary, secondary, and tertiary levels of education. The study utilized econometric estimations with the Granger Causality Method and the Co-integration Method. The findings revealed a positive connection between education levels and economic growth, with tertiary education being the main causal force in India's economic growth, particularly for the male population.

In summary, numerous studies have empirically examined various drivers of human capital-economic growth within Africa and beyond, establishing the nexus between human capital and economic growth. However, few studies have delved into the impact of disaggregated components of human capital on economic growth in Nigeria. This study seeks to expand the scope and knowledge frontier by disaggregating human capital components within the context of health and education and their impact on economic growth in Nigeria.

3. Theoretical Framework and Methodological Approach

This section outlines the methodology employed to investigate the relationship between human capital development and economic growth in Nigeria. The study begins with a theoretical framework, followed by model specification, variable definitions, measurement, estimation technique, and data sources.

3.1 Theoretical Framework

This study adopts the endogenous growth model proposed by Mankiw, Romer, and Weil (1992), which integrates human capital as an independent factor of production into the human capital-augmented Cobb Douglas production function. This theory posits that economic growth results from the accumulation of physical capital, expansion of the labour force, and technological progress as an exogenous factor.

Various scholars have developed conceptual frameworks that incorporate human capital as a determinant factor of economic growth. Barnanke and Gurkaynak (2001) utilized the Cobb-Douglas production function to analyse the relationship between human capital and economic growth, considering labour, physical capital, and human capital as independent variables affecting output. Similarly, Griffin and Knight (1990) considered health and education as determinants of gross domestic product, recognizing the value of education, good health, and longevity in influencing output.

This research employs the augmented Cobb Douglas production function as follows:

$$Y_i = K_i^{\alpha} H_i^{\beta} (AL)_i^{1-\alpha-\beta}, \qquad \alpha < 0, \beta > 0, \alpha + \beta < 1 \tag{3.1}$$

Here, *Y* represents output, *K* is physical capital, *H* is human capital, *L* is the labour force (number of workers), and *A* is the level of technology. The *AL* component accounts for the effective units of labour and is expected to grow at the rate of $n+g$. α denotes the elasticity of physical capital with respect to output, while β represents the elasticity of human capital with respect to output. It is assumed that there are decreasing returns to capital, i.e., $\alpha+\beta<1$, and a constant fraction of output is invested.

Taking the logarithm of equation 3.1, we obtain:

$$Log\ Y_t = \alpha \log K_{t+}\ \beta \log H_t\ (1 - \alpha - \beta) log(AL)_t + e_t \quad (3.2)$$

In this equation, log(*Yt*) measures Gross Domestic Product Per-Capita (GDPPC), log(*Kt*) measures Gross Fixed Capital (GCF), and log(*Ht*) represents Human Capital, proxy by gender-disaggregated enrolment rate at secondary school (DSSE) to capture education human capital development and gender-disaggregated life expectancy rates (DALER) to capture health human capital development. log((*AL*)*t*) stands for the effective labour force, and *et* is the error term.

The apriori expectations are that $\alpha 1, \beta 1, \beta 2, \ldots, \beta 6 > 0$, indicating that human capital development variables have a positive functional relationship with economic growth, proxy by GDP per capita. The intercept values, *n* and *g*, could be either positive or negative, as they represent values when all exogenous variables are zero.

The equation (3.2) can be expanded to accommodate additional variables:

Hence, we have thus;

$$lnGDPPC = f(lnGCF_{t,} lnDSSE_{t,} \quad lnDALER_{t,} lnLAB_t) \quad (3.3)$$

Thus, the econometric model becomes:

$$lnGDPPC = \alpha_0 + \alpha_1 lnGCF_{t,} + \beta_1 lnDSSE_t + \beta_2 lnDALER_t + \beta_3 lnLAB_t \varepsilon t \quad (3.4)$$

In summary, this theoretical framework incorporates the endogenous growth model with the augmented Cobb Douglas production function to explore the link between human capital development and economic growth in Nigeria. By analysing these relationships, we aim to gain valuable insights into the impact of human capital on economic prosperity.

3.2 Estimation Technique

This research adopts the Autoregressive Distributed Lag (ARDL) bounds testing model, developed by Pesaran and Shin (1997, 1999, 2000), as the preferred approach for examining the relationship

between human capital development and economic growth. The ARDL model offers several advantages over the Johansen co-integration approach.

First, the ARDL approach can be applied regardless of whether the regressors are integrated of order one (I(1)) or stationary (I(0)). This flexibility is particularly valuable when dealing with mixed order of integration among variables.Second, unlike the Johansen co-integration techniques, which require large data samples for robustness, the ARDL procedure delivers statistically significant results even with small sample sizes (Pesaran and Shin, 1999; Udoh and Ogbuagu, 2012). This eliminates the problem of biased estimations often associated with small samples.Third, the ARDL procedure provides unbiased and valid estimates of the long-run model even when some of the regressors are endogenous (Pesaran and Shin, 1999). This is a significant advantage when dealing with complex relationships between variables.

Furthermore, the ARDL approach allows for the inclusion of a dummy variable in the co-integration test process, which is not possible in Johansen's method (Rahimi and Shahabadi, 2011). This enables the consideration of additional explanatory factors in the analysis.The framework for applying the ARDL approach in the context of human capital development and economic growth in Nigeria was found in a similar study conducted byOrisadare, Olabisi, and Olanrewaju (2017). We have followed the methodology and procedures outlined in their work for our own analysis.

The generalized ARDL (p,q) model is presented as follows (Green, 2003) in equation (3.5):

$$Y_t = c + \alpha_0 Y_{t-1} + \alpha_p Y_{t-p} + \beta_0 X_t + \beta_q X_{t-q} + e_t \qquad 3.1.5$$

The ARDL model incorporates essential components, such as the intercept (c), representing the dependent variable (Y) when all independent variables (X) are zero, and the time trend (t), and accounting for systematic changes over time in Y. The error term (e) captures unexplained variability in the data. Both the dependent variable (Y) and independent variables (X) are assumed to be stationary, exhibiting consistent statistical properties over time.

The ARDL model includes two key independent variables, namely the disaggregate enrollment rate at secondary school, which proxies education human capital, and the disaggregated life expectancy rate for health human capital. These variables are expected to influence the dependent variable, typically economic growth (GDP per capita).Notably, the ARDL model is autoregressive,

as it incorporates lagged values of the dependent variable (Y) denoted by "p Tags of dependent variable," capturing the impact of past Y values on the current value. It is also a distributed lag model since it includes lagged values of the explanatory variable (X), denoted by "q lags of explanatory variable," accounting for the delayed effect of X on Y.

Following the Bound Testing approach to confirm long-run relationships, the study will proceed to construct a Vector Error Correction Model (VECM). The VECM is suitable for co-integrated variables, implying a long-run equilibrium relationship. By utilizing the VECM, the research aims to analyze both short-run dynamics and long-run equilibrium relationships between the co-integrated variables.Hence, in accordance with the ARDL method proposed by Pesaran and Shin (1997, 1999, and 2001), we have formulated the following model to examine and assess the long-run co-integration relationships among the variables.

$$\Delta lnGDPPC_t = \beta_0 + \lambda_1 lnGDPPC_{t-1} + \lambda_2 lnGCF_{t-1} + \lambda_3 lnDSSE_{t-1} + \lambda_4 lnDALER_{t-1} + \lambda_5 lnLAB_{t-1} + \beta_1 \sum_{i=0}^{n} \Delta lnGDPPC_{t-1} + \beta_2 \sum_{i=1}^{n} \Delta lnGCF_{t-1} + \beta_3 \sum_{i=2}^{n} \Delta lnDSSE_{t-1} + \beta_4 \sum_{i=3}^{n} \Delta lnDALER_{t-1} + \beta_5 \sum_{i=4}^{n} \Delta lnLAB_{t-1} + \beta_6 t + e_t \quad (3.6)$$

Where:

$\lambda_1, \lambda_2, \lambda_3, \lambda_4, and\ \lambda_5$Representcoefficients that measure long run relationships.

While, $\beta_1, \beta_2, \beta_3, \beta_4, and\ \beta_5$signify coefficients that measure short run relationships.

In order to examine the existence of a long-run equilibrium relationship between the variables, we will conduct the bounds test for co-integration, as suggested by Pesaran and Shin (1999 and 2001). The hypotheses for the bounds test are as follows;

$H_0 = \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = 0$Implies that there is no long run relationship among the variables

$H_0 = \lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 \neq 0$Denotes a long-run relationship among the variables.

We will employ the non-standard F-statistics to test the aforementioned hypotheses. The critical values for the F-statistics in this test can be obtained from Pesaran, Shin, and Smith (2001). If the calculated F-statistics exceeds the upper bound of the critical value, we reject the null hypothesis

of no co-integration. If it falls below the lower bound, we cannot reject the null hypothesis, and if it lies within the lower and upper bounds, the result is inconclusive. Once we confirm the presence of a long-run relationship among the variables, we will estimate the following stable long-run model:

$$\Delta lnGDPPC_t = \beta_0 + \beta_1 \sum_{i=0}^{n} \Delta lnGDPPC_{t-1} + \beta_2 \sum_{i=1}^{n} \Delta lnGCF_{t-1} + \beta_3 \sum_{i=2}^{n} \Delta lnDSSE_{t-1} + \beta_4 \sum_{i=3}^{n} \Delta lnDALER_{t-1} + \beta_5 \sum_{i=4}^{n} \Delta lnLAB_{t-1} + \beta_6 t + e_t \quad (3.7)$$

Subsequently, we will estimate the vector error correction model (VECM) to capture the short-run dynamics and adjustment parameters that measure the speed of correction to the long-run equilibrium following a short-run disturbance. The standard estimation of the ECM is conducted as follows:

$$\Delta lnGDPPC_t = \beta_0 + \beta_1 \sum_{i=0}^{n} \Delta lnGDPPC_{t-1} + \beta_2 \sum_{i=1}^{n} \Delta lnGCF_{t-1} + \beta_3 \sum_{i=2}^{n} \Delta lnDSSE_{t-1} + \beta_4 \sum_{i=3}^{n} \Delta lnDALER_{t-1} + \beta_5 \sum_{i=4}^{n} \Delta lnLAB_{t-1} + \beta_6 t + \delta ECT_{t-1} + e_t \quad (3.8)$$

Where:

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 and\ \beta_6$ are Coefficients that represent the short run dynamics of the model.

ECT_{t-1} = Error correction term lagged by one period.

e_t =vector of white noise error terms and (n –g) denotes the optimal lag length of each variable in the autoregressive process.

δ = Error correction parameter measures the speed of adjustment towards the long run equilibrium.

The error correction term (ECT) is obtained by normalizing the coefficients of the corresponding long-run model.

3.3 Definition, measurement of variables and Data Sources

This study employs specific indicators to measure economic growth and human capital development in Nigeria from 1980 to 2020. Economic growth is represented by Gross Domestic Product per capita (GDPPC), while human capital development is captured using two main

variables: disaggregated enrolment rate at the secondary school level (DSSE) to measure education human capital development, and disaggregated life expectancy rate (DALER) to gauge health human capital development, both separately for males and females. Additionally, gross fixed capital formation (GCF) is used as a measure of investment in physical capital in the country, reflecting changes in the country's infrastructure and productive capacity. The active labor force is represented by the labor force participation rate (LAB) in Nigeria.

To conduct this analysis, time series secondary data was collected from the World Bank indicators and publications from the National Bureau of Statistics for the year 2020. The data covers the period from 1980 to 2020 and provides valuable insights into the trends and dynamics of economic growth and human capital development in Nigeria over the years. By utilizing this comprehensive dataset, the study aims to examine the distinct impacts of male and female human capital development on the country's economic growth, shedding light on potential gender disparities and their effects on overall economic prosperity.

4. Empirical Results

The results of the gender analysis on the impact of human capital development on economic growth in Nigeria over the study period (1980 to 2020) are presented in this section. The analysis begins with descriptive statistics, providing an overview of the data for the variables of interest. A correlation matrix is then presented to explore the relationships between these variables. Subsequently, tests for stationarity are conducted to determine the order of integration of the time series data. The appropriate lag order is selected to account for any time dependencies in the data.

The section further examines the trends in education and health indicators separately for males and females. This is achieved by identifying education human capital development with secondary school enrolment rates and health human capital development with life expectancy rate. The aim is to identify potential gender-specific differences in education and health outcomes, shedding light on disparities that might exist between males and females in these areas.

Moreover, the differential effects of human capital development on economic growth are analyzed. By comparing the impacts of education and health human capital on economic growth for males and females, the study seeks to understand how gender-specific human capital investments can influence the overall economic performance of the country.

4.1 Descriptive Statistics

The descriptive statistics of the data are shown in Table 4.1. The result shows that all the series display high level of consistency as the mean values (1318, 48.36, 47.38, 49.38, 31.93, 35.39, 28.27, 1.14E+10, 5.34E+10) fall consistently within the maximum and minimum values of the series. There seem to be evidence of significant variation as shown by huge difference between minimum and maximum values of some of the variables under consideration. Generally, from the 41 observations as seen in Table 4.1, the average of variables for the sample includes 1318, 48.36, 47.38, 49.38, 31.93, 35.39, 28.27, 1.14E+10 and 5.34E+10 for GDPPC, LIFE, LIFE_MA, LIFE_FE, SCHOOL, SCHOOL_MA, SCHOOL_FE, GOVT and INV, respectively.

Table 4.1:Descriptive Statistics

	GDPPC	LIFE	LIFE_MA	LIFE_FE	SCHOOL	SCHOOL_MA	SCHOOL_FE	GOVT	INV
Mean	1318.152	48.36166	47.38346	49.38268	31.92619	35.38866	28.26550	1.14E+10	5.34E+10
Median	902.2158	46.26700	45.38600	47.39600	28.84042	33.54792	23.77819	2.02E+09	4.33E+10
Maximum	3098.986	54.68700	53.78900	55.61900	56.20540	58.81061	53.51221	3.76E+10	1.47E+11
Minimum	270.2240	45.33300	44.09500	46.62700	13.67927	18.55489	8.700710	4.65E+08	1.23E+10
Std. Dev.	868.0657	3.151166	3.286040	3.012702	9.679419	9.152814	10.71860	1.38E+10	3.67E+10
Skewness	0.482562	0.853068	0.778774	0.931880	0.532609	0.474152	0.446528	0.819300	1.076928
Kurtosis	1.785346	2.159787	2.032302	2.311181	2.434020	2.401447	2.282490	1.971431	3.390587
Jarque-Bera	4.111699	6.178793	5.744096	6.744624	2.485662	2.148307	2.241967	6.394234	8.185748
Probability	0.127984	0.045529	0.056583	0.034310	0.288566	0.341587	0.325959	0.040880	0.016691
Sum	54044.23	1982.828	1942.722	2024.690	1308.974	1450.935	1158.885	4.67E+11	2.19E+12
Sum Sq. Dev.	30141520	397.1939	431.9223	363.0550	3747.646	3350.960	4595.536	7.66E+21	5.40E+22
Observations	41	41	41	41	41	41	41	41	41

All the variables are positively skewed which imply that the mean value is greater the median. Another use of mean is that it enables us to detect outliers, hence there are no outlier in the series for the study. The standard deviation measures the dispersion around the mean and vice versa. The skewness measures the symmetry of the distribution of the variable. A skewness value of zero

means that the variable follows a normal distribution while skewness greater than/less than zero means that the variable has a thick tail to the right/left. From the result, we see that the variables are combination of normally distributed and not normal distributed. Skewness along kurtosis which measure the degree of peakedness are combined to give us the Jacque-bera statistics which is the accurate measure of normality of our variables. The Jacque-bera statistics is based on a null hypothesis of normality. The results show that GDPPC, SCHOOL, SCHOOL_MA and SCHOOL_FE are normally distributed while LIFE, LIFE_MA, LIFE_FE, GOVT and INV are not normally distributed.

4.2 Correlation Matrix

The correlation matrix in Table 4.2 reveals a positive association between economic growth (GDPPC) and human capital development proxies for education (DSSE) and health (DALER). The values fall within the expected range of 0 to 1, indicating valid data and a potential role of human capital in fostering economic growth in Nigeria.

Table 4.2 Correlation Matrix

	GDPPC	LIFE	LIFE_MA	LIFE_FE	SCHOOL	SCHOOL_MA	SCHOOL_FE	GOVT	INV
GDPPC	1.000000								
LIFE	0.828136	1.000000							
LIFE_MA	0.829599	0.998932	1.000000						
LIFE_FE	0.824086	0.998558	0.995011	1.000000					
SCHOOL	0.800136	0.904583	0.910813	0.895016	1.000000				
SCHOOL_MA	0.808920	0.854846	0.859667	0.847060	0.972829	1.000000			
SCHOOL_FE	0.759655	0.912109	0.919661	0.900968	0.978882	0.907143	1.000000		
GOVT	0.905679	0.881901	0.887526	0.872937	0.883776	0.856028	0.873178	1.000000	
INV	0.691999	0.467069	0.454856	0.479735	0.249832	0.282748	0.214924	0.502994	1.000000

4.3 Tests for Stationarity

The study conducted a unit root test to investigate the stationary properties of the variables of interest. The unit root tests adopted include Augmented Dickey-Fuller (ADF) and Philip-Peron

(PP). Table 4.3 is the results of the unit root test obtained both at levels and at first difference. The result of the unit root shows that the variables are of order zero (0) and one (1). The results revealed that the null hypothesis of the existence of a unit root cannot be rejected for most of the data series at 1% level of significance.

Table 4.3: Unit Test Results

	Augmented Dickey-Fuller			**Phillips-Peron**		**Order of Integration**
	I(0)	**I(1)**	**Remarks**	**I(0)**	**I(1)**	**I(0)/I(1)**
GDPPC	-1.177	-7.038***	I(1)	-1.007	-6.641***	I(1)
SCHOOL	-1.584	-6.710***	I(1)	-1.601	-6.712***	I(1)
SCHOOL_MA	-1.864	-6.641***	I(1)	-1.853	-6.646***	I(1)
SCHOOL_FE	-1.397	-7.266***	I(1)	-1.365	-7.271***	I(1)
LIFE	-3.055**		I(0)	1.773		
LIFE_MA	-2.888*		I(0)	1.692		
LIFE_FE	-3.224**		I(0)	1.806		
GOVT	-0.057	-3.688***	I(1)	-0.399	-3.686***	I(1)
INV	-0.174	-4.128***	I(1)	-2.082	-2.742*	I(1)

Note: *, ** and *** are 10%, 5% and 1% significant level.

4.4Lag Length Selection

Using Autoregressive Distributive Lag (ARDL) estimation technique, the impact of human capital development on economic growth in Nigeria was examined. Before estimating the ARDL models, it is appropriate to determine the optimal lag length to be used. The Optimal lag length used is shown in Table 4.4, the optimal lag length is reported as suggested by the sequential modified Likelihood Ratio test statistic (LR), final prediction error (FPE), Akaike Information Criterion (AIC), Schwarz information criterion (SIC) and Hannan-Quinn information criterion (HQ) (each test at 5% level). Hence, the study adopts 2 lags, as suggested by SC selection criterion.

Table 4.4: Lag Length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2295.845	NA	2.69e+46	121.0971	121.3126	121.1738
1	-2081.937	360.2672	1.31e+42	111.1546	112.4474	111.6145
2	-1975.269	151.5800	1.91e+40	106.8563	109.2265*	107.6996
3	-1935.363	46.20683*	1.06e+40*	106.0718*	109.5193	107.2984*

*indicates lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level) FPE: Final prediction error. AIC: Akaike information criterion, SC: Schwarz information criterion.

4.5Trends Analysis

Fig 4.1: Trends in gender disaggregated health human capital in Nigeria (1980 – 2020)

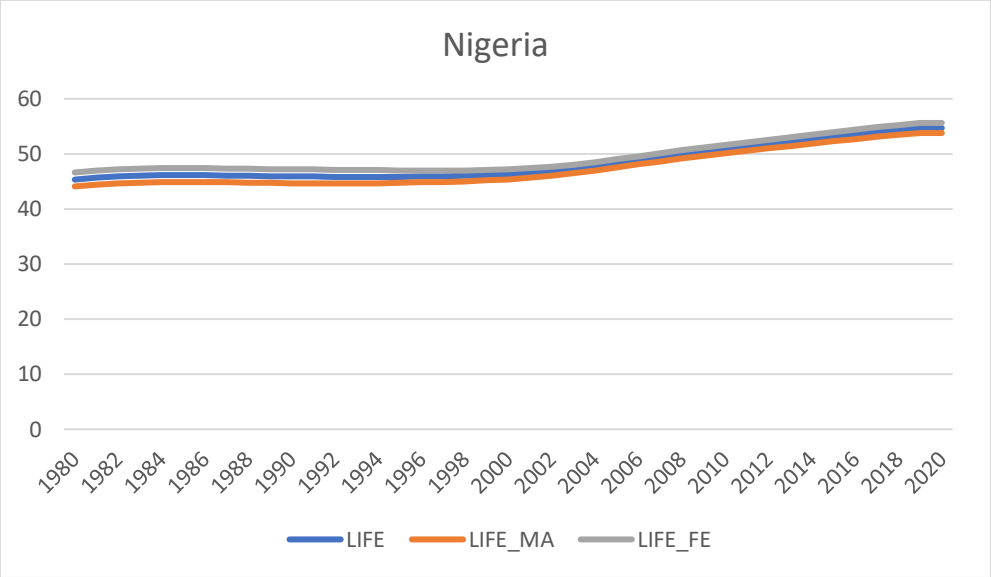
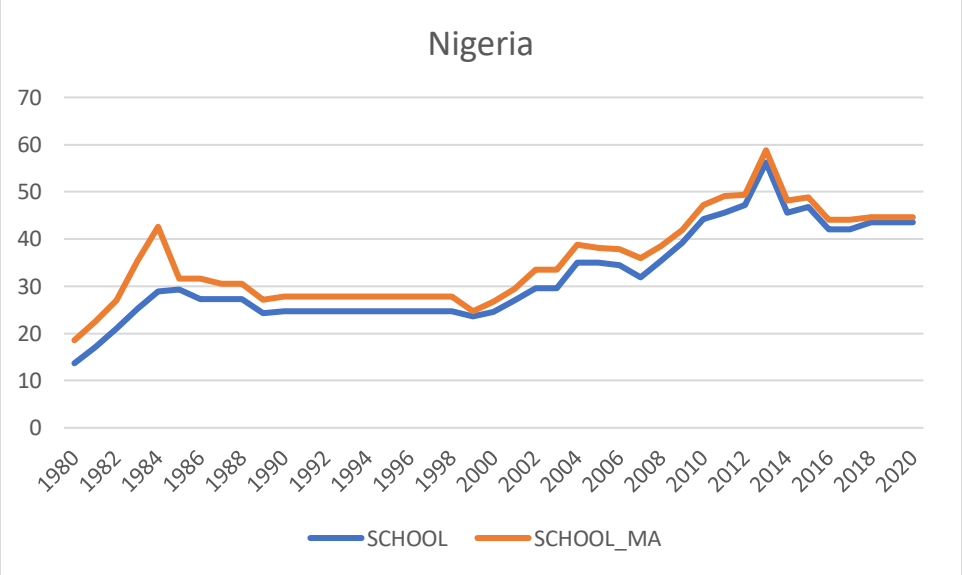


Fig 4.2: Trends in gender disaggregated education human capital in Nigeria (1980 – 2020)



This analysis provides a gender-disaggregated and sector-based perspective on human capital development in Nigeria, focusing on health and education human capital. Figures4.1 and 4.2 shows the trends in life expectancy and secondary school enrolment rate, reflecting the evolution of human capital development over the years (1980-2020). The government's emphasis on health outcomes for human capital development is evident, while school enrolment experienced

fluctuations, possibly influenced by economic factors and changes in political regimes. However, recent years have seen a decline in secondary school enrolment, raising concerns for Nigeria's overall human capital development. To address these challenges and improve human capital, policymakers must prioritize both the health and education sectors, as they are essential pillars for Nigeria's development.

4.5 Co-Integration Test: Bound Testing Approach

It has been identified that the series of the variables are integrated of order zero and one. This study proceeds to conduct the formal test of long run co-integration by performing the Autoregressive Distributed Lag (ARDL) Co-integration test between GDPPC, LIFE_MA, LIFE_FE, SCHOOL_MA, SCHOOL_FE, INV, and GOV. The optimal length was determined employing the SIC, HQ AND LR. Using this, a maximum lag order of 2 was chosen for the conditional ARDL.The F-statistic tested for the joint null hypothesis that coefficients of the lagged variables are zero (i.e., no long run relationship exists between them). Two asymptotic critical values bound provide a test for co-integration when the independent variables are I(d) [where $0 \leq d \leq 1$]: a lower value assuming the regressors are purely I(0), and an upper value assuming purely I(1) regressors. If the F-Statistic was above the critical value, the null hypothesis of no long run relationship can be rejected irrespective of the order of integration for the time series. Conversely, if the test statistic falls below the lower critical value, the null hypothesis cannot be rejected. Finally, if the statistic falls between the lower and upper critical values, the result is inconclusive. The result of the bound test is presented in Table 4.5.

Table 4.5: Bound Test Results

Level of Significance	Lower Bound	Upper Bound	F-Statistic
10%	2.45	3.52	4.32
5%	2.86	4.01	
2.5%	3.25	4.49	
1%	3.74	5.06	

The results of the bound test are presented in Table 4.5. Based on the results, the null hypothesis of no co-integration or no long run relationship can be rejected as the compound F-statistic (4.32) is greater than the upper critical and lower critical values at 5% levels of significance. Hence, we conclude that there is long run relationship between GDPPC, LIFE_MA, LIFE_FE, SCHOOL_MA, SCHOOL_FE, INV, and GOV. Thus, we proceed to long-run ARDL estimation.

Table 4.6 presents the results of our analysis on the short-run dynamics of the differential effects of human capital development on economic growth in Nigeria. Notably, the coefficient of the error correction term is both negative and statistically significant at a 5% level of significance, indicating the existence of a long-run relationship among the differential effects of human capital development.Furthermore, the coefficient of the lagged error term is -0.89, suggesting that the adjustment process may occur slowly. The high percentage of the adjustment coefficient, which stands at 89%, implies that 89% of the disequilibrium from the previous year's shock returns to long-run equilibrium in the current year.

Table 4.6ARDL Model for Differential Effects of Human Capital Development on Economic Growth

Dependent Variable: GDPPC				
Variables	**Coefficient**	**Standard Error**	**t-Statistic**	**Prob. Value**
Short Run Equation				
ECT	-0.89***	0.07	-9.88	0.00
Long Run Equation				
LIFE_MA	16.9**	8.48	1.99	0.05
LIFE_FE	-6.75	6.99	-0.96	0.34
SCHOOL_MA	14.2**	6.05	2.35	0.03
SCHOOL_FE	1.53E-08**	5.99E-09	2.55	0.02
GOV	1.80E-08**	7.41E-09	2.43	0.02
INV	8.85E-09**	1.28E-09	6.89	0.00
C	857.6	1055.3	0.81	0.42

Note: ***, ** and *indicates significance level of 1%, 5% and 10%, respectively.

Delving into the long-run coefficients, we find that male life expectancy has a negative and significant impact on economic growth, signifying that an increase in female life expectancy will decrease economic growth by 6%. On the other hand, male life expectancy has a positive and significant effect, implying that a 1-unit change in male human capital will lead to a remarkable

17% increase in economic growth in the long run. In addition, secondary school enrolment for males has a positive and significant influence on economic growth, with a 1-unit change resulting in a substantial 14% increase in overall wellbeing.

Turning our attention to female secondary school enrolment, we observe a negative and significant effect on economic growth at a 5% significance level. This indicates that a 1-unit change in female enrolment will actually boost inclusive growth by just 0.000015%.Furthermore, domestic investment is found to have a positive and significant effect on economic growth. A 1-unit change in domestic investment leads to a 0.000018% increase in economic growth in the long run.Finally, government expenditure is positively associated with inclusive growth in Nigeria, further supporting the importance of investment in human capital development.

These findings emphasize the critical role of human capital development, especially in health and education, for fostering sustainable economic growth in Nigeria. Policymakers should prioritize targeted investments in both male and female human capital to enhance the nation's overall economic wellbeing.

4.7 ARDL Diagnostic Tests

In order to established unbiased estimate of the results, various diagnostic test was carried out as shown in Table 4.8; Breusch-Godfrey Serial Correlation LM test proved that there is no autocorrelation in the residuals of the ECM estimate. The model also passes other diagnostic tests such as Heteroscedasticity Test: Breusch-Pagan-Godfrey of equal variance (homoscedastic) and normality test. This conclusion is informed by their probability values which are greater than 5% level of significance.

Table 4.7: ARDL Diagnostic Tests Results

	F-statistic	**Prob. Value**
Breusch-Godfrey Serial Correlation LM Test	1.17	0.33
Heteroscedasticity Test: Breusch-Pagan-Godfrey	1.19	0.35
Jarque-Bera Normality Test	1.64	0.44

4.7.1 Stability Test for differential effects of human capital development on economic growth

Stability test is presented in Figures4.3 and 4.4 and it revealed the stability of the long run coefficients along with the short run dynamics of the estimated model which were assessed with CUSUM and CUSUMsq tests. The result suggests that the parameters generated for the model of GDPPC is stable as the cumulative residual fall within the critical bounds of 5% significance level.

Figure 4.3: Stability Test for Differential effects of human capital development on economic growth

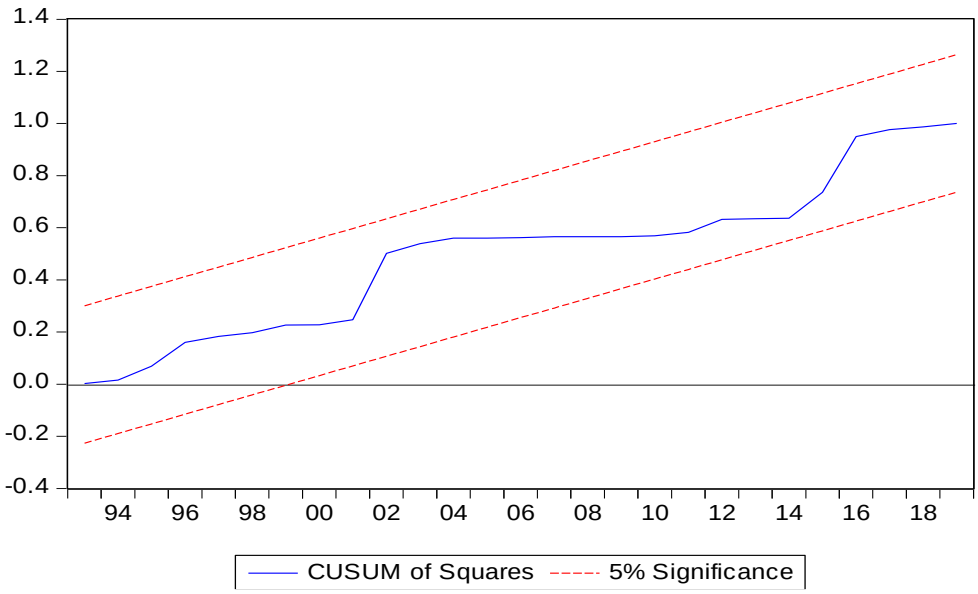
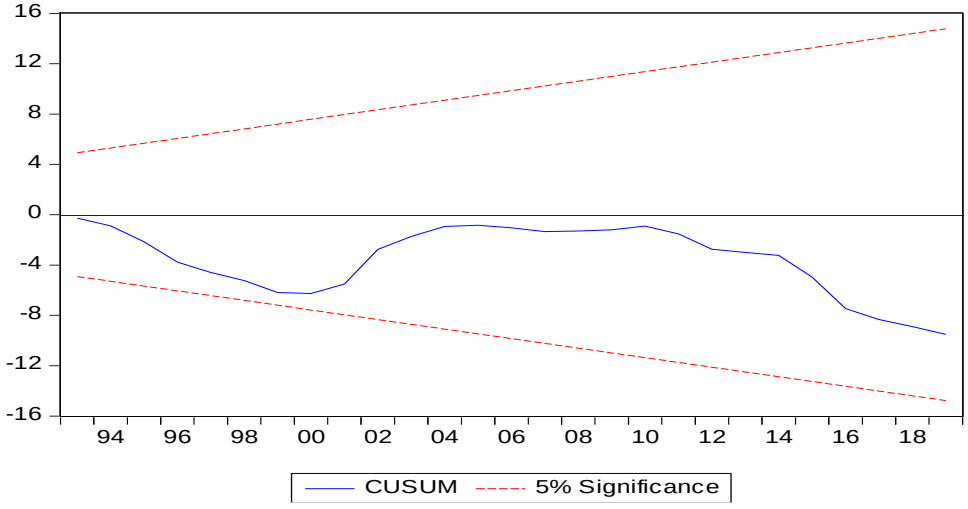


Figure 4.4: Stability Test for differential effects of human capital development on economic growth



4.8 The impacts of education and health human capital development on economic growth in Nigeria

In order to achieve this objective, the study implements ARDL estimation technique using model as explained in the methodology. Table 4.9 shows the impacts of education and health human capital development on economic growth in Nigeria. The results established that the model is good fit for explaining the impacts of education and health human capital development on economic growth in Nigeria. This is evidence owing to the R-squared and the significant of F-statistics of the model that are in the right magnitude. Results shows that R^2 is 98% which implies that the explanatory variables in the model explain a high variation in economic growth and less than 2% of its variation is explained by the variables that are not clearly captured in the model. The F-statistics which explain the overall significance of the model suggested that all estimated regression model is statistically significant with F-statistics (195) and p-value (0.000). Finally, the selected model indicated that there is influence of the past period effect on the economic growth though could not persist.

Having determined the goodness of fit for the model, the study then established whether a long run relationship exists. Long run relationship is said to exist among variables if they are co-integrated and this is obtainable when F-statistic greater than the upper bound value of the critical value at various levels of significance (Peseran et al., 2001). If otherwise, the test is inconclusive or has no long run relationship. The bound test results as presented in Table 4.9 shows that the F-statistic (15.90) is above the upper critical bound at 5% level of significance, thus, indicating the existence of long run relationship among variables, rejecting the null hypothesis of no co-integration was rejected at 5% level of significance. Hence, it is concluded that there is long run relationship among the variables i.e the variables are co-integrated.

The existence of long run relationship among the variables allows us to examine the long run and short run relationship among the variables using the ARDL technique. Table 4.11 shows the result of the long run model of the impacts of education and health human capital development on economic growth in Nigeria.

The coefficient of the long run estimate shows that human capital development through health has a negative and significant effect (at 1%) on economic growth. This implies that a unit change in the level of life expectancy will decrease economic growth by 96%. This could be as result of

capital flight that characterized human capital for health in Nigeria economy as such caused a ripple reduction on economic growth. On the other hand, investment human capital through education has a positive and significant effect (at 5%) on economic growth. This implies that a unit change in the rate of school enrolment will increase the economic growth by 30%. This is not unexpected in an environment characterized by weak educational structure. Hence, investment in health and education will have positive impact on the wellbeing of the people. These results supported the previous studies by Ogujiuba et al., (2011).

Furthermore, the results show that government spending and economic growth has positive relationship. This reason could be that government intervention through spending translates to economic growth, as major responsibility of governments, hinges on the well-being of the populace. In addition, domestic investments have positive effects on the economic growth in Nigeria. This suggest that the infrastructural facilities portend greater influence on economic growth. A parsimonious regression was estimated for the short run relationship between human capital development and economic growth in Nigeria. In the short run, estimates show that past year value of economic growth have positive and significant effects on itself. For any 1 unit change in the one lag period of economic growth will lead to 14% positive increase in the economic growth. This supports the persistent rise though step like in the economic growth of Nigerian economy. Also, the current value of investment has positive and significant effects on the economic growth.

The short run result of the current year value of life expectancy has positive and significant relationship with economic growth. Human health consideration in economy activities are potential fuel for the wellbeing of the people in creating an enabling and sustainable environment. Also, investment education has to be address to achieve the desire result for economic growth. Results show that there is exist positive relationship between school enrolment at the current period and economic growth. A unit increase in school enrolment will improves the growth rate of Nigeria economy by 6%. In addition, the current value of government spending has a positive relationship with economic growth. This result implies that government instrument particularly the spending approach will accentuate and ameliorates Nigeria economy.

Furthermore, the coefficient of the error correction model is the speed of the adjustment of economic growth to shocks in exogenous variables in the model. The negative coefficient value of

ECM (-1) indicates that the long run relationship is stable and any disequilibrium formed in the short run will be temporary and get corrected over a period of time. This result is found to be negative and significant at 5% level; confirming the existence of a long run relationship between human capital development and economic growth in Nigeria. The value of the ECM (-0.854) shows that 85% of disequilibrium errors are corrected.

Table 4.8 Impacts of education and health human capital development on economic growth in Nigeria

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPPC(-1)	0.146084	0.084232	1.734310	0.0928
LIFE	647.6499	140.8080	4.599524	0.0001
LIFE(-1)	-730.0228	138.6657	-5.264626	0.0000
SCHOOL	6.148362	9.191635	0.668908	0.5085
SCHOOL(-1)	19.97551	8.698979	2.296305	0.0286
GOVT	6.06E-09	6.19E-09	0.978469	0.3354
GOVT(-1)	2.17E-08	7.77E-09	2.792255	0.0089
INV	1.11E-08	1.34E-09	8.322277	0.0000
C	3255.706	899.4427	3.619693	0.0010

R-squared	0.980583	Mean dependent var	1329.246
Adjusted R-squared	0.975573	S.D. dependent var	876.1759
S.E. of regression	136.9397	Akaike info criterion	12.87207
Sum squared resid	581326.7	Schwarz criterion	13.25206
Log likelihood	-248.4413	Hannan-Quinn criter.	13.00946
F-statistic	195.6966	Durbin-Watson stat	1.636304
Prob(F-statistic)	0.000000		

Table 4.9: Bound Test Results

F-statistic	**K**	**Significance**	**I(0) Bound**	**I(1) Bound**
15.9035	4	10%	2.45	3.52
		5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

Table 4.10: Long Run impact of Human Development on Economic Growth

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LIFE)	647.649932	140.808031	4.599524	0.0001
D(SCHOOL)	6.148362	9.191635	0.668908	0.5085
D(GOVT)	0.000000	0.000000	0.978469	0.3354
D(INV)	0.000000	0.000000	8.322277	0.0000
CointEq(-1)	-0.853916	0.084232	-10.137669	0.0000

Cointeq = GDPPC - (-96.4649*LIFE + 30.5930*SCHOOL + 0.0000*GOVT + 0.0000*INV + 3812.6790)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LIFE	-96.464863	28.209656	-3.419569	0.0018
SCHOOL	30.593036	10.887946	2.809808	0.0085
GOVT	0.000000	0.000000	5.579505	0.0000
INV	0.000000	0.000000	10.062764	0.0000
C	3812.679005	1102.197373	3.459162	0.0016

4.8.1 ARDL Diagnostic Tests

In order to establish unbiased estimate of the results, various diagnostic tests were carried out as shown in Table 4.11. Breusch-Godfrey Serial Correlation LM test proved that there is no autocorrelation in the residuals of the ECM estimate. The model also passes other diagnostic tests such as Heteroscedasticity Test, Breusch-Pagan-Godfrey of equal variance (homoscedastic) and normality test. These conclusions are informed by their probability values which are greater than 0.05 level of significance.

Table 4.11: ARDL Diagnostic Tests Results

	F-statistic	Prob. Value
Breusch-Godfrey Serial Correlation LM Test	0.894	0.420
Heteroscedasticity Test: Breusch-Pagan-Godfrey	2.113	0.065
Jarque-Bera Normality Test	17.60	0.000

The results indicate a long run relationship between human capital development and economic growth. Furthermore, there is a long run relationship between life expectancy at birth for females and economic growth ($t = -0.96$, $p > 0.1$), as well as a long-run, positive relationship between life

expectancy at birth for males and economic growth ($t = 1.99$, $p < 0.05$). From the findings, it was observed that government expenditure has positive impacts on economic growth ($t = 2.43$, $p < 0.1$). In addition, secondary school enrolment for males has positive impacts on economic growth ($t = 2.35$, $p < 0.1$). While secondary school enrolment for females has positive impacts on economic growth ($t = 2.55$, $p < 0.1$). However, it was also observed that aggregates schoolenrolment has positive impact on economic growth.

5. Conclusion and Recommendations

The study analysed the impact of human capital development on economic growth in Nigeria over the study period (1980 to 2020), and also appraised the trends in education and health indicators proxy by secondary school enrolment and life expectancy at birth between males and females. To achieve these objectives, chapter one discussed the background to the study by properly identifying the research problems and provided the justification of the study accordingly. In chapter two, existing literature were reviewed with the aim of identifying the empirical gap, and to properly situate the study in the right theoretical perspective and framework.

The study adopted descriptive and inferential statistics using tables, graphs and econometric models to achieve the results of the study. Economic growth, secondary school enrolment and life expectancy at birth are the major variables used in the study. Secondary data was used and source from the World Bank development indicator. The result of the analysis carried out in chapter four shows that there is impact of human capital development on economic growth. While in the trend of human capital development, there have been consistent rise in human capital development over the years. Furthermore, the result revealed that there is long run relationship between disaggregated variables of human capital development on economic growth in Nigeria.

The main conclusion drawn from this study is that human capital development has significant effects on economic growth going by the result of the analysed data. Additionally, investment in health human capital development could lead to a surge in economic growth by 96%, and investment in education human capital could drive economic growth by 30%. Furthermore, an increase in government expenditure may lead to a rise in increase in economic growth, implying that government expenditure should be tailored towards human capital development especially in education human capital development for increased economic growth.

Theory and empirical analysis have shown that human capital developments have vast impact on GDP of the Nigerian economy. Based on the evaluation and analysis carried out in the study, the following policy measures are recommended:

First, the government should put in placemeasures that will aid favourable human capital development environment. Access to quality education and health facility could result into growth of an economy through various economy agents. Additionally, the process of investing in human capital development should be gender-equitable, as there will be no significant impacts of human capital development on economic growth without gender equality. Further improvements in government expenditure are pertinent to economic growth, especially in the short run. Conscious investment effort should be directed towards increasing the rate of secondary school enrolment in the country due to the deduced spill-over effects it portends on economic development.

Furthermore, policy appraisal should be carried out routinely to ensure the existence and implementation of desired policy outcomes for sustainable economic growth. Internal mechanism to check and monitor the leakages should be put in place to minimize the level of corruption and enhance effectiveness of the system.Also, adequate provision of infrastructural facilities that will ameliorate the quality of live and standard of living of the average citizen of the state must be handled with gravity. Finally, the government should implement strategies that will promote effective management of the nation's resources as they portend opportunities for sustainable economic growth.

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