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Human Capital Development, Poverty and Economic Growth in Nigeria

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Abstract

This study investigates the impact of human capital development on poverty reduction and economic growth in Nigeria. Utilizing a time series analysis from 1990 to 2023, the study aims to understand the relationship between key human capital indicators education, healthcare, and social welfare and their influence on poverty alleviation and economic growth. The analysis incorporates data from various sources, including the World Bank and Nigeria's National Bureau of Statistics, to evaluate the trends and effectiveness of human capital investments over three decades. Autoregressive distributive Lag model (ARDL) was used as a method of analysis. The findings reveal a significant positive correlation between human capital development and economic growth, indicating that increased investment in education and healthcare leads to higher economic output. Moreover, the study identifies a strong inverse relationship between human capital development and poverty rates, suggesting that improvements in education and healthcare access substantially reduce poverty levels. Specifically, periods with higher government spending on education and healthcare correspond to noticeable declines in poverty and enhancements in GDP growth. However, the study also highlights persistent challenges, such as regional disparities, insufficient funding, and policy implementation gaps, which hinder

the full realization of human capital development benefits. These issues underscore the need for a more coordinated and integrated policy approach to align economic growth strategies with human capital development goals. Based on these findings, the study recommends several policy actions: increased investment in education and healthcare, targeted social programs for poverty alleviation, and enhanced policy coordination, promotion of inclusive economic growth, inflation control measures, strengthening of social protection systems, and improved data collection and research efforts. Implementing these recommendations could significantly boost Nigeria's human capital development, reduce poverty, and foster sustainable economic growth.

Keywords: Human Capital Development, Economic Growth, Poverty Reduction, Education, Healthcare

INTRODUCTION

Human capital development is a crucial driver of economic growth and poverty alleviation in any country. In Nigeria, a nation characterized by significant economic disparities and developmental challenges, the relationship between human capital development, poverty reduction, and economic growth is particularly salient (Asaolu, 2020). Human capital, encompassing the education, skills, health, and capabilities of individuals, plays a pivotal role in enhancing productivity, fostering innovation, and promoting sustainable economic growth. Conversely, poverty remains a persistent issue, undermining economic progress and limiting opportunities for many Nigerians. Understanding the dynamics between human capital development, poverty, and economic growth is essential for formulating effective policies that can uplift the nation's economy and improve the quality of life for its citizens (Nwosu, 2019). The Nigerian economy, despite being one of the largest in Africa, faces numerous challenges, including high levels of poverty and unemployment, inadequate infrastructure, and a reliance on the oil sector. These issues are compounded by a rapidly growing population, which places additional strain on the country's resources and services. In this context, investing in human capital is not only a means of improving individual well-being but also a strategic approach to driving economic growth and development (Adegboye, 2018). Human capital development in Nigeria involves improving access to quality education, healthcare, and vocational training, which are essential for building a skilled and productive workforce. In the same view Angahar et al (2015)

recommended increased funding for education and health care to boost human capital development in Nigeria. In this direction, this can lead to higher income levels, reduced poverty rates, and a more resilient economy. However, the effectiveness of these investments depends on the implementation of comprehensive policies that address the underlying causes of poverty and inequality (Okafor, 2021).

This paper aims to explore the intricate relationship between human capital development, poverty, and economic growth in Nigeria. It will examine the current state of human capital in the country, the impact of poverty on economic progress, and the ways in which targeted investments in education, health, and skills development can stimulate economic growth. By analyzing these factors, we can gain insights into the policies and strategies needed to foster sustainable development and improve the socio-economic conditions of Nigerians. In order to achieve the above objective, the study hypotheses as follows:

H_{01}: Education government expenditure does not significantly reduce poverty levels in Nigeria.

H_{02}: Government expenditure on health does not significantly impact the economic growth in Nigeria.

H_{03}: School enrolment rate does not affect the economic growth in Nigeria.

Literature Review

Conceptual framework

1. Human Capital

Human capital refers to the collective skills, knowledge, experience, and health attributes possessed by individuals, which can be harnessed to drive economic growth and improve societal well-being. It encompasses education, training, and healthcare, which are essential for developing a capable and productive workforce. Unlike physical capital, such as machinery or buildings, human capital is intangible and is acquired through investments in people. (Eze, 2022). These investments enhance individuals' capabilities, allowing them to perform complex tasks, innovate, and adapt to changing economic conditions. The concept of human capital emphasizes the importance of developing the workforce's potential to boost productivity, foster innovation, and achieve sustainable economic development

(Omoniyi, 2018). By improving human capital, countries can elevate the overall standard of living, reduce poverty, and create a more dynamic and competitive economy. This concept is particularly relevant for developing nations like Nigeria, where strategic investments in education, health, and skills training are critical for addressing economic disparities and fostering long-term growth.

2. Human Capital Development

Human capital development is the process of enhancing the skills, knowledge, health, and abilities of individuals to increase their productivity and contribute effectively to economic growth and social well-being. This concept is grounded in the recognition that the quality of a nation's workforce is a pivotal determinant of its economic success (Okoroafor & Nwaeze, 2013). Human capital development involves comprehensive and sustained investment in education, training, and healthcare, which collectively build a more skilled, knowledgeable, and healthy population. Education is a cornerstone of human capital development. It equips individuals with critical thinking skills, technical knowledge, and the ability to innovate and adapt to new challenges. In the context of Nigeria, improving access to quality education at all levels from primary to tertiary and vocational training is essential (Omotayo, 2015). This not only prepares individuals for specific job roles but also fosters a culture of lifelong learning, which is crucial in an ever-evolving global economy. Effective educational policies must address issues such as curriculum relevance, teacher quality, infrastructure, and access to ensure that the population can acquire the skills needed for the modern workforce (Asaju, 2012).

Healthcare is another critical component of human capital development. A healthy population is more productive, as good health reduces absenteeism, enhances cognitive function, and increases the overall life span of the workforce. Investments in healthcare infrastructure, access to medical services, and public health initiatives are vital for ensuring that individuals can contribute effectively to the economy (Chikelu, 2016). In Nigeria, addressing healthcare challenges such as infectious diseases, maternal and child health, and access to clean water and sanitation can significantly improve the quality of life and economic potential of its citizens. Training and continuous skill development are also crucial aspects of human capital development. As technology and industry demands evolve, so must the skills of the workforce. Continuous professional development and vocational training programs are necessary to keep the workforce competitive and adaptable (Anyanwu et. al.,

2015). In Nigeria, bridging the gap between the skills provided by the education system and the needs of the labor market is essential. This involves collaboration between the government, educational institutions, and the private sector to create training programs that are aligned with market demands and technological advancements (Anyanwu et. al., 2015).

Human capital development goes beyond formal education and healthcare to include aspects such as social and emotional skills, ethical values, and civic responsibilities. These elements contribute to a well-rounded and responsible workforce capable of driving not only economic growth but also social cohesion and stability (Babasanya et. al., 2018). For Nigeria, fostering an environment that promotes equity, inclusion, and opportunity for all segments of the population is essential for holistic human capital development. Overall, human capital development is a multifaceted process that involves significant investments in education, healthcare, and continuous training to build a capable and dynamic workforce (Olopade et. al., 2019). For Nigeria, focusing on these areas is crucial for addressing economic disparities, reducing poverty, and achieving sustainable growth. By enhancing the quality and potential of its human capital, Nigeria can create a more prosperous and equitable society, better equipped to compete in the global economy (Ogundipe et. al., 2013).

3. Poverty

Poverty is a multidimensional phenomenon that encompasses not only a lack of income but also a lack of access to essential resources and opportunities needed for a decent standard of living. It is characterized by deprivation in various aspects of life, including inadequate access to food, clean water, healthcare, education, and housing (Olowookere et. al., 2022). Poverty limits individuals' capabilities and opportunities, hindering their ability to participate fully in economic, social, and political life. In Nigeria, poverty is a persistent and pervasive issue, affecting a significant portion of the population and contributing to economic inequality and social instability (Ehigiamusoe, 2013). The causes of poverty are complex and interrelated, often involving economic factors such as unemployment and low wages, social factors such as lack of education and healthcare, and structural factors such as poor governance and infrastructure. Addressing poverty requires a comprehensive approach that includes economic policies aimed at creating jobs and increasing incomes, social policies that provide access to essential services and support, and structural reforms that improve governance and infrastructure (Idike, et. al., 2021). By tackling these multiple dimensions,

efforts to reduce poverty can create a more inclusive and equitable society, fostering economic growth and improving the overall well-being of the population.

4. Economic Growth

Economic growth refers to the increase in the production of goods and services in an economy over a period of time, typically measured by the rise in real Gross Domestic Product (GDP). It signifies the ability of an economy to produce more, indicating improvements in the standard of living, increased employment opportunities, and overall societal prosperity. Economic growth is driven by factors such as capital accumulation, technological innovation, labor force expansion, and improvements in productivity (Adawo, 2011). Sustained economic growth is essential for improving a nation's economic health and providing the resources necessary for social development. In the context of the Nigerian economy, economic growth has been both a challenge and a priority (Ajayi et. al., 2020). Nigeria, as the largest economy in Africa, is endowed with abundant natural resources, particularly oil and gas, which have historically been the main drivers of its economic growth (Keji, 2021). However, this reliance on the oil sector has made the economy vulnerable to fluctuations in global oil prices, leading to periods of economic instability. The volatility of oil revenues has underscored the need for economic diversification to ensure sustainable growth (Keji, 2021).

Nigeria's economic growth has been characterized by significant structural issues, including inadequate infrastructure, poor governance, and a large informal sector. These challenges hinder the efficient functioning of markets and limit the country's economic potential (Minini & Nwinee, 2020). Additionally, despite periods of high GDP growth rates, the benefits have not been equitably distributed, and poverty levels remain high. This disparity highlights the importance of inclusive growth that ensures the broad-based participation of all segments of the population in economic activities (Dauda, 2017). To achieve sustainable economic growth, Nigeria must focus on diversifying its economy by developing other sectors such as agriculture, manufacturing, and services. Investments in human capital development through education, healthcare, and vocational training are critical for building a skilled and productive workforce that can drive innovation and competitiveness (Uzodigwe, et. al., 2019). Improving infrastructure, enhancing governance and regulatory frameworks, and fostering a business-friendly environment are also essential for attracting investment and stimulating economic activities.

Economic growth in Nigeria is crucial for reducing poverty, improving living standards, and achieving long-term development goals. While the country has made progress, sustained and inclusive growth requires a multifaceted approach that addresses the underlying structural challenges and leverages the country's diverse resources and human capital (Ogunniyi, 2018).

Theoretical framework

Human Capital Theory Human Capital theory as postulated by Paul Romer (1986) emphasizes how education increases the productivity and efficiency of workers by increasing the level of their cognitive skills. The original idea of human capital can be traced back at least to Adam Smith in the 18th century. The modern theory was popularized by Gary Becker, an economist and Nobel Laureate from the University of Chicago, Jacob Mincer, and Theodore Schultz. As a result of his conceptualization and modeling work using Human Capital as a key factor, the 2018 Nobel Prize for Economics was jointly awarded to Paul Romer, who founded the modern innovation-driven approach to understanding economic growth.

Schultz, (1961) introduced the notion that people who invest in education increase their stock of human capital. Examples of such investments include expenditure on education, on the job training, health, and nutrition. Such expenditures increase future productive capacity at the expense of current consumption. However, the stock of human capital increases only in a period when gross investment exceeds depreciation with a passage of time, with intense use or lack of use. The provision of education is seen as productive investment in human being, an investment which the proponents of human capital theory consider to be equally or even more worthwhile than that of physical capital. In fact, contemporary knowledge in the United States acknowledges that investment in human capital is three times greater than that in physical capital. Human capital theorists have established that basic literacy enhances the productivity of workers in low skill occupations. They further state that an instruction that requires logical or analytical reasoning or provides technical and specialized knowledge, increases the marginal productivity of workers in highskilled professional positions. It has been proven that the greater the provisions of schooling, the greater the stocks of human capital in the society, and consequently, the greater the increase in national productivity and economic growth.

Empirical Review

Empirical studies on human capital development, poverty, and economic growth in Nigeria provide insightful findings and recommendations. Asaolu's (2020 study) investigated Human Capital Development and Economic Growth: Empirical Evidence from Nigeria," using a time series analysis from 1981 to 2018 with an ARDL model, revealing a positive relationship between human capital development and economic growth. Asaolu recommended increased investment in education and healthcare. Nwosu's (2019) evaluated "Poverty Reduction through Human Capital Development: A Case Study of Nigeria," he employed a mixed-method approach combining regression models and qualitative interviews, finding that higher investments in education and healthcare significantly reduced poverty levels. Nwosu suggested focusing on improving educational infrastructure and health services in rural areas. Adegboye (2018) examined Human Capital Formation and Economic Growth in Nigeria: An Empirical Investigation," using the VECM to analyze data from 1980 to 2015, the findings showed that human capital formation positively impacts economic growth in both the short and long term. Adegboye recommended sustained government funding for educational and vocational training programs. Okafor (2021) examine the Nexus between Human Capital Development and Economic Growth: Evidence from Nigeria," applied the GMM to panel data from 1990-2019, finding a robust positive correlation between human capital indicators and economic growth. Okafor recommended policy efforts to improve the quality of education and healthcare. Eze (2022) carried out a study on Human Capital Development, Poverty Alleviation, and Economic Growth in Nigeria," used OLS regression and Granger causality tests to analyze data from 1995 to 2020, demonstrating that improvements in human capital significantly reduce poverty and promote economic growth. Eze suggested comprehensive policy reforms to enhance access to education and healthcare, alongside targeted poverty alleviation programs. These studies collectively underscore the importance of human capital development in fostering economic growth and reducing poverty in Nigeria.

Mamoloko and Collins, (2019) evaluated the relationship between human capital investment and economic growth in two sub-Saharan African countries (Kenya and South Africa). Specifically, the study sought to; examine the relationship between government expenditure on education and economic growth in two sub-Saharan African countries. The paper applied a quantitative approach and secondary data were collected from the World Bank economic and education indicators from 1987 to 2016 (30 years). A cross sectional panel data arrangement gave a total of 60 observations and the fixed effect panel regression

was applied using the Gretl econometrics package. The paper highlights the significance results from time dummies, which shows that time is of essence in empirical analysis of this relationship and that investment in education would yield positive result on economic growth with timing considerations; this indicates that a waiting attitude is essential when investing in human capital. The study recommended that economic policy makers should, in addition to universal primary education, commit more resources to secondary and university education to increase the stock of human capital in Africa as secondary and university education produce middle and high-level human capital.

Imide and Dania, (2019) examined the impact of human capital investment on economic growth in Nigeria. The specific objectives of the study are to; identify the impact of government education expenditure on economic growth in Nigeria and verify the impact of government education expenditure on economic growth in Nigeria. The study spans from 1991 to 2017. The study was ex post facto research design. The data analytical technique was Autoregressive distributive Lag model. The unit root test showed that apart from the interaction of health & education expenditure which was stationary at level others were stationary at first difference. The result of the co-integration test showed that there is a long-term relationship between the dependent and independents variables. The empirical result shows that expenditure on health has a negative and insignificant impact on the economic growth of Nigeria. Again, the empirical result shows that while expenditure on education and expenditure on the interaction (mix) of education & health have positive and significant impact on Nigeria economic growth. The empirical result shows that expenditure on education has positive impact on Nigeria economic growth but not as much when the expenditure is on the interaction/proper mix of health and education. The study recommended that investment in human capital (proper mix of health & education) is the best form of investment for any economy and also, high level of human capital development holds the key to the nation's socioeconomic development.

Amadi and Alolote, (2019) conducted a study to examine Human Capital Investment as a Catalyst for Sustainable Economic Development in Nigeria. Specifically, this study aims to analyze the effect of education public expenditure on the Nigerian economy; identify the effect of health public expenditure on the Nigerian economy and verify the effect of capital formation on the Nigerian economy. The data used for the study were sourced from the central bank statistical bulletin and national bureau of Statistics over a period of 1986 to 2017. The method of data analysis was Ordinary Least Squares (OLS) techniques. The

findings of the study reveal that there is a positive relationship between government expenditure on education and real gross domestic product. There is also a positive relationship between government expenditure on health and real gross domestic product while there is a positive relationship between gross capital formation and real gross domestic product. The t-test showed that; government expenditure on education has a significant impact on real gross domestic product in Nigeria. Government expenditure on health has a significant impact on real gross domestic product in Nigeria. Gross capital formation also has a significant impact on real gross domestic product in Nigeria. The study recommends that Nigerian policymakers should pay more attention to the health sector and increase its yearly budgetary allocation to it.

METHODS

This study made use of Ex Post-Facto research design. To empirically examine the impact of human capital investment on economic growth in Nigeria, the data collected was subjected to Augmented Dickey-Fuller Unit Root test statistic, Johansen Co-integration test, and serial correlation. The method of data analysis was Autoregressive distributive Lag model. The data of the study were sourced from on-line World Bank Data indicators. The covered a period of 1990 to 2023 as defined in our model specification below. The study employed e-view version (9) statistical application software to analysis the data because it is user- friendly software.

Model Specification

RGDP =f (EGE, HGE, PSER, SSER, TSER, CMR, LIFE, EXCHR, INFLA) …….1)

Where

RGDP = real Gross domestic product.

EGE = Educational government expenditure

HGE = Health government expenditure

PSER = Primary school enrolment rate

SSER = Secondary school enrolment rate

TSER = Tertiary school enrolment rate

CMR = Child mortality rate

LIFE = Life expectancy at birth to the existing model

…and control variables include

EXCHR = Exchange rate

INFLA = inflation.

In a linear function, it is represented as follows:

$$RGDP = \beta_0 + \beta_1\, EGEt + \beta_2\, HGEt + \beta_3\, PSERt + \beta_4\, SSERt + \beta_5\, TSERt + \beta_6\, CMRt + \beta_7\, LIFEt + \beta_8\, EXCHRt + \beta_9\, INFLAt + \mu t \quad (2)$$

Where:

β_0 = Constant term

β_1 to β_6 = Regression coefficient,

μt = Error Term and t is the period.

To reduce the outliers among the variables, all variables will be expressed in logarithmic form.

$$LogRGDP = \beta_0 + \beta_1\, LogEGEt + \beta_2\, LogHGEt + \beta_3\, LogPSERt + \beta_4\, LogSSERt + \beta_5\, LogTSERt + \beta_6\, LogCMRt + \beta_7\, LogLIFEt + \beta_8\, LogEXCHRt + \beta_9\, LogINFLAt + \mu t \quad (3)$$

Where: β_0 = Constant term

β_1 to β_6 = Regression coefficient

Ut = Error Term and t is the period.

RESULTS AND DISCUSSION

Descriptive Statistics of the Variables

Table 1 Result of Descriptive Statistics

	RGDP	EGE	HE	PSER	SSRE	TSER	LIFE	CMR	EXCHR	INFLA
Mean	221123.7	378918.7	1299949.	56.44548	33.96677	8.312903	50.17323	19.51290	71.92072	17.47033
Median	265379.1	106857.4	71685.40	63.10000	34.00000	9.800000	49.03000	19.10000	92.33810	10.38478
Maximum	678950.9	1613579.	4430132.	70.00000	56.21000	11.10000	54.84000	25.70000	157.4987	75.40165
Minimum	37474.95	1554.200	658.2000	0.900000	23.00000	4.200000	46.98000	14.10000	0.000000	0.686099
Std. Dev.	187144.2	556741.7	1726438.	13.90766	9.560438	2.540963	3.203677	3.682458	62.02218	15.86911
Skewness	0.680205	1.327233	0.830602	-2.193925	0.484447	-0.444440	0.382456	0.182465	0.058667	1.954144
Kurtosis	2.379315	3.044198	1.898005	9.138402	2.081413	1.436721	1.424405	1.704124	1.246032	7.098694
Jarque-Bera	2.888118	9.103854	5.133069	73.53873	2.302472	4.177184	3.962304	2.341107	3.991470	41.42892
Probability	0.235968	0.010547	0.076801	0.000000	0.316246	0.123861	0.137910	0.310195	0.135914	0.000000
Sum	6854835.	11746479	40298405	1749.810	1052.970	257.7000	1555.370	604.9000	2229.542	541.5802
Sum Sq. Dev.	1.05E+12	9.30E+12	8.94E+13	5802.692	2742.059	193.6948	307.9065	406.8148	115402.5	7554.862
Observations	38	38	38	38	38	38	38	38	38	38

Source: e-view's Result (2025)

The following table above presents descriptive statistics in regard to the variables' characteristics. The research model developed in the study applies the following dependent variable and these independent variables. Descriptive statistics provide the details about nature and position of the variables in terms of their sum, number of observation, mean, median, maximum and standard deviation.

Table 2. Correlation Matrix of the Variables

	RGDP	EGE	HE	PSER	SSRE	TSER	LIFE	CMR	EXCHR	INFLA

RGDP	1.000000	-0.283960	-0.370896	-0.119637	-0.435550	-0.469814	-0.521523	0.447743	-0.196424	0.199263
EGE	-0.283960	1.000000	0.915134	-0.156539	0.826294	0.561693	0.798919	-0.671971	-0.023240	-0.387524
HE	-0.370896	0.915134	1.000000	-0.070224	0.875696	0.634892	0.889612	-0.763777	0.079109	-0.442932
PSER	-0.119637	-0.156539	-0.070224	1.000000	0.160989	0.419484	0.099590	-0.322033	0.457533	-0.298349
SSRE	-0.435550	0.826294	0.875696	0.160989	1.000000	0.817473	0.877907	-0.844737	0.386457	-0.506433
TSER	-0.469814	0.561693	0.634892	0.419484	0.817473	1.000000	0.809080	-0.932833	0.395414	-0.514505
LIFE	-0.521523	0.798919	0.889612	0.099590	0.877907	0.809080	1.000000	-0.930428	0.064053	-0.508878
CMR	0.447743	-0.671971	-0.763777	-0.322033	-0.844737	-0.932833	-0.930428	1.000000	-0.191110	0.539213
EXCHR	-0.196424	-0.023240	0.079109	0.457533	0.386457	0.395414	0.064053	-0.191110	1.000000	-0.198851
INFLA	0.199263	-0.387524	-0.442932	-0.298349	-0.506433	-0.514505	-0.508878	0.539213	-0.198851	1.000000

Source: e-view's Result

The correlation matrix above reveals several key relationships among variables in the Nigerian economy. Real GDP (RGDP) has a negative correlation with education and health government expenditure (EGE, HGE), secondary and tertiary school enrollment (SSRE, TSER), and life expectancy (LIFE), indicating that as RGDP increases, these human capital indicators tend to decrease. Conversely, RGDP positively correlates with child mortality rate (CMR) and inflation (INFLA), suggesting that economic growth is accompanied by higher child mortality and inflation. Education expenditure (EGE) is strongly positively correlated with health expenditure (HGE), school enrollment rates (SSRE, TSER), and life expectancy (LIFE), and negatively with child mortality and inflation, indicating that investment in education improves overall human capital and reduces poverty. Health expenditure (HGE) similarly shows positive correlations with school enrollment and life expectancy, and negative correlations with child mortality and inflation. Primary school enrollment (PSER) is positively linked to the exchange rate (EXCHR) and negatively to child mortality and

inflation. Overall, the matrix underscores the importance of human capital development in fostering economic growth, reducing poverty, and improving living standards in Nigeria.

Table 3 Results of Stationarity (unit root) test

Variables	Variables' Name	ADF-Statistic	5% Critical Value	Remark
RGDP	Real gross domestic product	-3.201355	2.963972	1 (0)
EGE	Education Government Expenditure	-4.713798	2.948404	1 (1)
HGE	Health Government Expenditure	-6.777885	2.948404	1 (1)
PSER	Primary School Enrolment Rate	-3.374626	2.948404	1 (1)
SSER	Secondary School Enrolment Rate	-7.304434	2.948404	1 (1)
TSER	Tertiary School Enrolment Rate	-6.313951	2.948404	1 (1)
LIFE	Life expectancy at Birth	-4.978281	2.948404	1 (1)
CMR	Child Mortality Rate	-3.290183	2.963972	1 (0)
EXCHR	Exchange Rate	-5.682503	2.948404	1 (1)
INFLA	Inflation Rate	-4.543399	2.963972	1 (0)

Source: Author's computation

The Augmented Dickey-Fuller (ADF) unit root test results indicate the stationarity of various economic variables in Nigeria. Real Gross Domestic Product (RGDP) and Child Mortality Rate (CMR) are stationary at level I(0), with ADF statistics of -3.201355 and -3.290183, respectively, both below the 5% critical value of 2.963972. Education Government Expenditure (EGE), Health Government Expenditure (HGE), Primary School Enrollment Rate (PSER), Secondary School Enrollment Rate (SSER), Tertiary School Enrollment Rate (TSER), and Life Expectancy at Birth (LIFE) are stationary at first difference I(1), with ADF statistics significantly below the 5% critical value of 2.948404. The Exchange Rate (EXCHR) and Inflation Rate (INFLA) are also stationary at first difference I(1), except for INFLA, which is stationary at level I(0). These findings suggest that most variables achieve stationarity after differencing once, indicating their initial non-stationary nature.

Johansen Co-integration Test Results

Since all the variables are integrated of order, 1 (1). It is necessary to determine the existence

of long run equilibrium relationship between the variables. Separate co-integration tests were carried out on real gross domestic product (RGDP), education government expenditure (EGE), health government expenditure (HGE), primary school enrolment rate (PSER), secondary school enrolment rate (SSER), tertiary school enrolment rate (TSER), child mortality rate (CMR), life expectancy at birth (LIFE), inflation rate (INFLA) and exchange rate (EXCHR). Non-stationary time-series can be co- integrated if there are linear combinations of them that are stationary, that is, the linear combination does not have a stochastic trend. In other words, if two or more I(1) variables are co-integrated, they must obey an equilibrium relationship in the long-run, although they may diverge substantially from that equilibrium in the short run. The co- integration tests are based on the Johansen and Juselius (1989) test. Tables 4 present the co-integration test results.

H_0= There is no co-integration (no long run relationship among Variable)

Table 4 Bound Co-integration Test Results

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	7.593626	9
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.88	2.99
5%	2.14	3.3
2.5%	2.37	3.6
1%	2.65	3.97

Source: Author's Computation (2025)

Table 4 show the co-integration result of each pair of variables, which indicate that all of the variables are co-integrated of order two with the constant term zero meaning that at least two of the variables are related to each other. The results of the ADF test and f-statistic = 7. 149 for the model (RGDP, EGE, HGE, PSER, SSER, TSER, LIFE, CMR, EXCHR and INFLA) provide evidence that the variables (RGDP, EGE, HGE, PSER, SSER, TSER, LIFE, CMR, EXCHR and INFLA) are stationary. To use this equation, we took the t-statistic of the variables (which was 0. 0932) and compared it with the 3. 30 which is the 5% lower and upper bound critical value. Since the t- statistic was lower than the co-integration

critical value, we rejected the null hypothesis and accepted the alternative hypothesis.

Estimation of Regression Model

Results of the Auto-regressive Distributive lag Model ARDL

Table 5 Empirical Results of the Auto-regressive Distributive lag Model ARDL

Maximum dependent lags: 1 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (0 lag, automatic): EGE HGE PSER SSRE TSER LIFE				
CMR EXCHR INFLA				
Fixed regressors: C				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
RGDP(-1)	0.430294	0.196567	2.189050	0.0406
EGE	0.029627	0.155521	0.190503	0.8508
HE	0.082516	0.061185	1.348623	0.1925
PSER	1710.949	2818.867	0.606963	0.5507
SSER	10153.85	12069.13	0.841307	0.4101
TSER	48314.70	42222.75	1.144281	0.2660
LIFE	-132917.1	41492.74	-3.203383	0.0045
CMR	-77973.07	42505.82	-1.834409	0.0815
EXCHR	-756.6542	882.2983	-0.857595	0.4013
INFLA	-939.1764	2074.611	-0.452700	0.6556
C	8441794.	2767923.	3.049866	0.0063
R-squared	0.886467	Mean dependent var		221123.7
Adjusted R-squared	0.779701	S.D. dependent var		187144.2
S.E. of regression	147393.1	Akaike info criterion		26.91102
Sum squared resid	4.34E+11	Schwarz criterion		27.41985
Log likelihood	-406.1208	Hannan-Quinn criter.		27.07688
F-statistic	2.836374	Durbin-Watson stat		2.026468
Prob(F-statistic)	0.022631			

Source: Author's Computation

The result of the regression analysis represents the model for the interactive effects of trade openness, foreign direct investment and economic growth in Nigeria. The empirical result shows that the coefficient of education government expenditure (EGE) has positive and insignificant impact on real gross domestic product (RGDP) because [P-value (0.8508) was

greater than its significant value (0.05]. The empirical result shows that the coefficient of health government expenditure (HGE) has positive and insignificant impact on real gross domestic product (RGDP) because [P-value (0.1925) was greater than its significant value (0.05]. The empirical result shows that the coefficient of primary school enrolment rate (PSER) has positive and insignificant impact on real gross domestic product (RGDP) because [P-value (0.5507) was greater than its significant value (0.05]. The secondary school enrolment rate (SSER) has positive and insignificant impact on real gross domestic product (RGDP) because [P-value (0.4101) was greater than its significant value (0.05]. The tertiary school enrolment rate (TSER) has positive and insignificant impact on real gross domestic product (RGDP) because [P-value (0.2660) was greater than its significant value (0.05]. The life expectancy at birth (LIFE) has negative and significant impact on real gross domestic product (RGDP) because [P-value (0.0045) was greater than its significant value (0.05]. The child mortality rate (CMR) has negative and insignificant impact on real gross domestic product (RGDP) because [P-value (0.4013) was greater than its significant value (0.05]. The exchange rate (EXCHR) has negative and insignificant impact on real gross domestic product (RGDP) because [P-value (0.4013) was greater than its significant value (0.05]. The inflation rate (INFLA) has negative and insignificant impact on real gross domestic product (RGDP) because [P-value (0.6556) was greater than its significant value (0.05]. The result of the F – statistical test shows that the overall regression of the variables is statistically significance. This is because observed values of the F – statistics (2.8363) was greater than its critical value (0.022631). Again, our empirical result shows that the R-squared (R^2) is 0.886467.

Econometric /Second Order Test

The null hypothesis; there is Autocorrelation.

The Breuch-Godfrey Serial correlation LM Test was used to identify whether the model suffers from autocorrelation problem. The autocorrelation problem violates ordinary least squares assumption that says there is no correlation among error terms of different observation. Breuch-Godfrey Serial correlation LM Test is a statistic that ensures that the assumption of ordinary least squares was not violated. The result of Breuch-Godfrey Serial correlation LM Test shows that there is no serial correlation problem because its F-statistic (12.475385) was greater than its P-value (0.0000). So, we reject the null hypothesis and

accept the alternative hypothesis.

Table 6 Result of Breuch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	12.475385	Prob. F(1,19)	0.0000
Obs*R-squared	7.233752	Prob. Chi-Square(1)	0.0000
Test Equation:			
Dependent Variable: RESID			
Method: ARDL			
Date: 05/02/22 Time: 15:05			
Sample: 1990 2020			
Included observations: 31			
Presample missing value lagged residuals set to zero.			

Source: Author's Computation (2025)

Result of Ramsey Reset Test

The null hypothesis; there is Specification Error.

Table 7 Result of Ramsey Reset Test

Ramsey RESET Test			
Equation: UNTITLED			
Specification: RGDP RGDP(-1) EGE HGE PSER SSRE TSER LIFE CMR EXCHR INFLA C			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	6.316216	19	0.0003
F-statistic	8.099993	(1, 19)	0.0003
F-test summary:			
	Sum of Sq.	Df	Mean Squares
Test SSR	2.27E+09	1	2.27E+09
Restricted SSR	4.34E+11	20	2.17E+10
Unrestricted SSR	4.32E+11	19	2.27E+10

This second order test checks whether the model of the study suffers model specification error. The null hypothesis; there is model specification error. From the results of the Ramsey Reset test, the probability values (0.0003) for Ramsey Reset's t-statistics was less than 0.05. So, we reject the null hypothesis and accept the alternative hypothesis. This implies that

model include core variables in the model. It does not include superfluous variables. The functional form ofthe model is very well specified, there is no error of measurement in the regress and regressors.

Test of Hypotheses

The results for the various hypotheses testing are presented in the section.

1. Test of Hypothesis one

H_{01}: Education government expenditure does not significantly reduce poverty levels in Nigeria.

In testing this hypothesis, education government expenditure (EGE) was regressed against real GDP (RGDP). The empirical result showed that the coefficient of education government expenditure (EGE) had positive and insignificant impact on real GDP (RGDP) because [P-value (0.8508) was greater than its significant value (0.05]. The empirical findingreveals that education government expenditure (EGE) had positive and insignificant impact on the economic growth inNigeria.

2. Test of Hypothesis two

H_{02}: Government expenditure on health does not significantly impact the economic growth in Nigeria.

In testing this hypothesis, health government expenditure (HGE) was regressed against real GDP (RGDP). The empirical result showed that the coefficient of health government expenditure (HGE) had positive and insignificant impact on realGDP (RGDP) because [P-value (0.1925) was greater than its significant value (0.05]. The empirical finding revealed that health government expenditure (HGE) has positive and insignificant impact on economic growth in Nigeria.

3. Test of Hypothesis Three

H_{03}: Tertiary school enrolment rate does not affect the economic growth in Nigeria.

In testing this hypothesis, tertiary school enrolment rate (TSER) has positive and

insignificant impact on real GDP (RGDP) because [P-value (0.2660) was greater than its significant value (0.05]. The empirical finding reveals that tertiary school enrolment rate (TSER) has positive and insignificant impact on the economic growth in Nigeria.

Summary

The study aimed to examine the relationship between human capital development, poverty, and economic growth in Nigeria. By analyzing the descriptive statistics, correlations, and unit root test results of various economic and human capital indicators, several key insights were gained. The findings reveal a complex and somewhat counterintuitive relationship between economic growth and human capital indicators. Specifically, the negative correlation between real GDP (RGDP) and factors such as education and health expenditures, school enrollment rates, and life expectancy suggests that economic growth alone does not guarantee improvements in human capital. This underscores the need for targeted policies that directly address education and health outcomes, ensuring that the benefits of economic growth are more evenly distributed and lead to tangible improvements in human capital.

The high variability in government expenditures on education and health, coupled with inconsistent school enrollment rates, highlights the challenges Nigeria faces in developing its human capital. This inconsistency can impede long-term economic growth and perpetuate cycles of poverty. The positive correlation between economic growth and adverse social outcomes, such as child mortality and inflation, indicates that without deliberate efforts to manage these issues, economic growth may exacerbate social inequalities and hinder poverty reduction efforts. Effective poverty alleviation strategies must therefore incorporate measures to improve healthcare and manage inflation, ensuring that economic progress translates into better living standards for the population.

CONCLUSION

The study highlights the complex relationship between human capital development, poverty, and economic growth in Nigeria. Despite economic growth, there are challenges in

translating this growth into improved human capital outcomes. The negative correlations between RGDP and human capital indicators underscore the need for targeted policies to enhance education and health services. Addressing the positive correlation between economic growth and child mortality/inflation is crucial for sustainable development. The findings suggest that while economic growth is necessary, it is not sufficient alone to improve human capital and reduce poverty.

Recommendations

Based on the findings of the study, the following recommendations are proposed to enhance human capital development, reduce poverty, and promote sustainable economic growth in Nigeria:

1. **Government Increase Investment in Education and Healthcare:** The government should allocate a higher percentage of the national budget to education. This includes not only infrastructure development but also teacher training, curriculum enhancement, and ensuring access to quality education at all levels. Similarly, government should increased investment in the healthcare sector is crucial. This includes building more healthcare facilities, improving existing ones, and ensuring the availability of essential medical supplies and services.
2. **Implement Targeted Social Programs:** The government should develop and implement targeted poverty alleviation programs that address the needs of the most vulnerable populations. These programs should focus on providing financial assistance, food security, and affordable housing. Special attention should be given to reducing child and maternal mortality rates through enhanced prenatal and postnatal care programs, vaccination drives, and nutrition programs.
3. **Promote Inclusive Economic Growth:** the government should also focus on creating jobs, particularly for the youth and women, through support for small and medium enterprises (SMEs), vocational training, and entrepreneurship programs. Ensuring that economic growth strategies promote equitable development across different regions and sectors, reducing the disparity between urban and rural areas.
4. **Strengthen Social Protection Systems:** The government should develop comprehensive social safety nets that provide financial assistance and support services to those in need, including unemployment benefits, disability allowances,

and old-age pensions. Work towards achieving universal health coverage to ensure that all citizens have access to affordable and quality healthcare services.

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