CHAPTER TWO

THE EFFECTS OF EDUCATION AND HEALTH EXPENDITURES ON THE ECONOMIC GROWTH OF NIGERIA

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Abstract
Education and health play a crucial role in the growth and development of any economy. This study looks at the effect of Nigeria's education and health expenditure on economic growth, covering 1986 to 2021. This study used RGDP as a proxy for economic growth, GHE is government health expenditure, GEE is government education expenditure, LEB is life expectancy at birth, SSER is secondary school enrolment rate, infant mortality rate, and PSER is primary school enrolment rate. The dependent variable is real GDP. The study used the Auto-regressive Distributive Lag Model (ARDL) to estimate. According to the empirical results, Government health expenditure (GHE) had a positive and insignificant impact on economic growth in Nigeria. Government education expenditure (GEE) had a positive but insignificant impact on economic growth in Nigeria, and primary school enrolment rate (PSER) had a positive and insignificant effect on economic growth in Nigeria. The study underscores the importance of investing in healthcare and education, as government expenditure significantly contributes to human capital development. The study recommends that the government enhance the quality of healthcare and education facilities to stimulate economic growth. The availability and improvement of healthcare and education services in Nigeria can help mitigate the current challenges in these sectors and reduce the need for Nigerians to seek better healthcare and education facilities abroad, ultimately contributing to the nation's economic development.
Keywords: Education, Health Expenditure, Economic Growth

Introduction

Economic growth and development of nations depend on the level of human capital development. Generally, economic growth and

development theorists argue that human capital substantially affects economic growth and development (Kefela & Ren, 2007). According to Harbison (1973), "human beings are the active agents who accumulate capital, exploit natural resources, build a social, economic and political organization and carry forward national development". Thus, Human capital development enhances a country's human capital regarding skills, education, health, and individual well-being.

The Nigerian government has undertaken various initiatives to enhance human capital. It has consistently increased investments in the education and health sectors, channeling additional resources toward improving human capital formation. Despite the substantial allocation of resources and efforts directed at these sectors, the expected enhancement in human capital development and associated improvements in citizen productivity and economic growth has yet to be discovered. Notably, the improvements in Nigeria's overall macroeconomic performance have not been paralleled by corresponding advancements in the healthcare and education systems or the overall quality of life for its citizens, as noted by Kareem, Fagbohun, Oyinkansola, and Arije (2017). These resources are valuable not only because of their economic significance but also due to the existence of alternative applications for them. Therefore, policymakers are interested in investigating the relationship between human capital (resources directed to this sector) and economic growth. Consequently, the primary objective of this study is to assess the influence of human capital development on economic growth in Nigeria.

Empirical Review and theoretical framework.

Empirical Review

Okwu, Nissi, Owolabi, and Adejola (2022) examined the effect of government education expenditure on human capital development in Nigeria. The research employed secondary data from 1990 to 2020. The study assessed the stationarity of the variables using the Augmented Dickey-Fuller (ADF) test, finding that the variables were stationary at different levels. The Autoregressive Distributed Lag Model (ARDL) was adopted to estimate the model. The result of the estimated model showed that recurrent expenditure on education and capital expenditure on education had negative, insignificant effects on the gross secondary school enrolment rate, while recurrent expenditure on health had a positive but insignificant effect. However, the independent variables had joint effects

on the dependent variable. The study recommended implementing education spending policies focusing on filling the gaps in the education sector that significantly affect Nigeria's human capital development. Policymakers should also strive to formulate policies to boost institutional capacities to increase enrolment in schools and improve the provision of healthcare services.

Ntuli (2022) examined the contribution of Human Capital to Economic Growth in South Africa. This study used the autoregressive distributed lag (ADRL) model and the error correction model (ECM) model to examine the long-run and short-run relationships between education expenditure and economic growth alongside other explanatory variables. It uses secondary time series data over the period 1980 to 2019. The results of the study revealed that there is a positive long-run relationship between education expenditure and GDP per capita in South Africa. However, there is no short-run relationship between education expenditure and growth in GDP per capita in South Africa. The study, therefore, recommends that the South African government continue to invest in human capital development through expenditures on the educational sector.

Makwe, Oladele and Tubolayefa (2020) assessed the impact of investments in human capital on Nigeria's economic growth from 1981 to 2019. They collected time series data and applied the Ordinary Least Square method for analysis. The Johansen rank-based test was used for co-integration analysis, confirming the existence of at least one co-integrating equation. An Error Correction Model (ECM) was estimated to address short-run deviations from long-term equilibrium. Findings indicated that capital and recurrent expenditures in education and health did not significantly affect the Nigerian economy in the short or long run. Recommendations include government efforts to bolster investments in Nigeria's education and health sectors to enhance service quality, improve the health sector, and provide better educational facilities in public schools.

Muhammad, Abiodun, and Manzoor (2017) assessed the link between human capital and economic growth from 132 countries spanning 15 years. The analysis revealed that human capital positively influences per capita GDP growth, but only when accompanied by robust economic opportunities and high-quality legal institutions. The study emphasized

that economic opportunities amplify the impact of human capital on growth, highlighting the notion that a more substantial presence of human capital leads to more favorable conditions for domestic and international business and trade.

Ogunleye, Owolabi, Sanyaolu, and Lawal (2017) utilized ordinary least square regression analysis to explore the influence of human capital development on economic growth in Nigeria. Their analysis was based on annual time series data from 1981 to 2015. The empirical findings demonstrated human capital development's significant and positive impact on economic growth, as proxied by gross domestic product (GDP). Indicators of human capital development, including secondary and tertiary school enrollment and total government expenditure on health and education, exhibited positive and statistically significant effects on Nigeria's economic growth. Conversely, life expectancy and primary school enrollment had negative and statistically insignificant impacts on economic growth. The study recommended increased government investment in education, adequate budget allocation for healthcare, and the standardization of secondary and tertiary educational institutions in Nigeria to enhance the necessary human capital development for individual productivity.

Obialor (2017) examined the effect of government human capital investment on the economic growth of three Sub-Saharan African (SSA) countries, Nigeria, South Africa, and Ghana, from 1980 to 2013. The objective was to analyze the growth effect of three government human capital investment variables, health, education, and literacy rates, on the economies of these countries. Secondary data were sourced from the World Development Indicators (WDI) online Database and analyzed using Co-integration techniques and Vector Error Correction mechanism (ECM) at 1% and 5% significance levels. The results indicated that two of the three human capital proxy variables, Health (GIH) and Education (GIE), significantly positively affected growth only in Nigeria. At the same time, the literacy ratio (LR) was insignificantly positive in all countries. This study concluded that despite the above result, the economies of the SSA countries still exhibit the potential for enhanced economic growth in the long run from the VECM test results. Therefore, the study recommended that Sub-Saharan African countries prioritize skill

development, increase budgetary allocations, and promote policies that enhance school enrolment in secondary schools in the sub-region.

Jaiyeoba (2015) empirically investigated the relationship between investment in education and health in Nigeria, using time series data from 1982 to 2011: the study employed trend analysis, the Johansen co-integration, and the ordinary least square technique. Empirical findings indicated a long-run relationship between government expenditure on education, health, and economic growth. The variables, such as health and education expenditure, secondary and tertiary enrolment rate, and gross fixed capital formation, appear with the expected positive signs and are statistically significant (except government expenditure on education and primary enrolment rate). The study, therefore, recommended that to accelerate growth and liberate Nigerians from the vicious cycle of poverty, the government should put policies geared towards massive investment in the education and health sectors.

Theoretical Framework

The Romer endogenous growth model

This study adopts the theoretical framework of Romer's endogenous growth model, which significantly emphasizes the concept of capital, encompassing both physical and human capital. The essence of the new endogenous growth model challenges the conventional notion of the law of diminishing returns to scale, as typically observed in developed economies. In essence, this model posits that when a firm invests not only in physical capital but also in a workforce that is educated, skilled, and in good health, the usual constraints of diminishing returns no longer hold.

In practical terms, such a workforce becomes highly productive and can utilize capital and technology more efficiently. The consequence of this enhanced synergy is a transformation in the production function, leading to increased returns on investment rather than the anticipated decrease. In essence, the Romer endogenous growth model underscores the importance of human capital alongside physical capital in driving economic growth, challenging the traditional assumptions of diminishing returns and opening up the potential for sustained and increasing productivity.

Methodology

The pre-estimation tests for this study were the Augmented Dickey-Fuller Unit Root test statistic and the Johansen co-integration test. Ramsey Reset

test, Jarque Bera, and Breuch-Godfrey Serial Correlation LM Test were used for post-estimation, while the data analytical technique was the Autoregressive Distributive Lag Model. The variables for this study consist of real GDP (RGDP), government health expenditure (GHE), and government education expenditure (GEE), which were sourced from the Central Bank of Nigeria's (CBN) Statistical Bulletin for various years, while life expectancy at birth (LEB); secondary school enrolment rate (SSER); infant mortality rate (INFANT) and primary school enrolment rate (PSER), were sourced from the World Bank Data indicators from 1986 to 2021. The study used the statistical application software's e-view version (9).

Model specification

This study specifically adopted the model of Chike, Chukwuemeka, and Chinedu (2022) to study the impact of government health and education expenditure on economic growth in Nigeria. Thus, the model is in a functional form shown below:

RGDP = f (GHE, GEE, LEB, SSER, INFANT, PSER) (1)

Where RGDP is real GDP as a proxy for economic growth, GHE is government health expenditure, GEE is government education expenditure, LEB is life expectancy at birth, SSER is secondary school enrolment rate, infant mortality rate, and PSER is primary school enrolment rate.

The linear function of the model is as follows:

$$RGDP = \beta0 + \beta1GHE + \beta2GEE + \beta3LEB + \beta4SSER - \beta5\ INFANT + \beta6\ PSER + Ut \quad (2)$$

Where: β0 = Constant term, β1 to β6 = Regression coefficient and Ut = Error Term.

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

$$Log\ RGDPPC = \beta0 + \beta1Log\ GHE + \beta2\ Log\ GEE + \beta3\ LEB + \beta4\ SSER - \beta5\ INFANT + \beta6\ PSER + U\ t \quad (3)$$

Where: β0 = Constant term, β1 to β6 = Regression coefficients, Log = Natural Logarithm and Ut = Error Term at 5% level = -2.954021

Results and Discussion

Table 1: Results of Stationarity (unit root) test

Variables	Variables Full Meaning	ADF-Statistics	Critical Value	Lag Value	Remark
RGDP	Real Gross domestic Product (Proxy for Economic growth)	-7.057897	5% level = -2.954021	0	1(1)
GHE	Government Health Expenditure	-5.705096	5% level = -2.954021	0	1(1)
GEE	Government Education Expenditure	-6.505577	5% level = -2.954021	0	1(1)
LEB	Life Expectancy at Birth	-3.863606	5% level = -2.954021	0	1(1)
SSER	Secondary school Enrolment Rate	-6.895666	5% level = -2.954021	0	1(1)
INFANT	Infant Mortality Rate	-31.14900	5% level = -2.951125	0	1(0)
PSER	Primary school Enrolment Rate	-3.095717	5% level = -2.951125	0	1(0)

Source: Author's computation from E-view Result

From Table 1, the Augmented Dickey-Fuller (ADF) test conducted at levels revealed that all the variables are not stationary at levels. This is evident from the fact that the test statistic for each variable fell below the critical value. However, the situation changed when considering the first difference of these variables. In this case, the test statistic for all the variables surpassed the critical value. Consequently, the study concludes that all the variables are integrated at order 1, exhibiting stationarity at the first difference level.

Descriptive statistics of the variables

Table 2: Descriptive Statistics of the Variables

	RGDP	GHE	GEE	LEB	SSER	INFANT	PSER
Mean	214986.6	53696.18	84554.39	49.66229	33.22686	38.34974	53.42600
Median	205971.4	18181.80	59744.60	47.69000	29.61000	37.47200	56.40000
Maximum	527576.0	140325.1	241201.6	54.84000	56.21000	50.47500	70.00000
Minimum	37474.95	264.7000	653.5000	46.98000	23.00000	29.51600	0.900000
Std. Dev.	151576.3	57492.16	85169.28	3.097836	9.603359	6.267896	13.81104
Skewness	0.522011	0.454050	0.399016	0.714854	0.613146	0.343464	-1.53055
Kurtosis	2.304015	1.452652	1.485302	1.793927	2.080916	1.925129	6.792585
Jarque-Bera	2.295966	4.694276	4.274616	5.102239	3.424908	2.373027	34.64122
Probability	0.317276	0.095643	0.117972	0.077994	0.180423	0.305284	0.000000
Observations	36	36	36	36	36	36	36

Source: e-view's Result

Table 2 shows that there were a total of 36 observations in the dataset. During this review period, the Gross Domestic Product (GDP) averaged 215946.6 million naira, with the highest recorded GDP value at 215946.6 million naira and the lowest at 36474.95 million naira. Expenditure on Health (GEH) ranged from a minimum of 224.7000 million naira to a maximum of 142325.1 million naira, with an average (mean) of 53696.18 million naira, and a median value of 18161.80 million naira. Similarly, Expenditure on Education (GEE) hit a low of 653.5000 million naira and reached a high of 241201.6 million naira, with an average of 84554.39 million naira for the entire 36-year period.

Life expectancy (LEB) during this time ranged from a minimum of 46.98000 years to a maximum of 54.84 years, with mean and median values of 49.66229 and 47.69000 years, respectively. Secondary school enrollment fluctuated between a minimum of 23.0 and a maximum of 56.21000, with mean and median values of 33.23 and 29.61. The infant mortality rate ranged from a minimum of 29.52 to a maximum of 50.48, with a median of 37.47 and a mean of 38.35. Primary school enrollment exhibited a wide range from a minimum of 0.90 to a maximum of 70.00, with a mean of 54.43 and a median of 56.40.

Regarding distribution characteristics, skewness values for most variables were greater than 0.00, indicating a skewed distribution. The kurtosis values for all variables were less than 3.00, suggesting flatter-topped distributions compared to the normal distribution. However, primary school enrollment displayed a kurtosis value of 6.79, indicating excess kurtosis. The Jarque Bera statistic showed that the distributions of all variables, except for primary school enrollment, followed a normal distribution based on their respective probability values.

Estimation of Regression Model

Empirical Results of the Auto-regressive Distributive Lag Model (ARDL)

Table 3: Empirical Results of the Auto-regressive Distributive Lag Model (ARDL)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LogRGDP(-1)	0.515482	0.145295	3.547838	0.0015
LogGHE	2.613081	2.365703	1.104568	0.2795
LogGEE	0.101499	1.208862	0.083962	0.9337
LEB	27955.32	25726.55	1.086633	0.2872
SSER	12044.21	4909.754	2.453119	0.0212
INFANT	-15419.81	7305.863	-2.110607	0.0446
PSER	1121.746	1313.900	0.853753	0.4010
C	1890868.	1280053.	1.477179	0.1516
R-squared	0.802365	Akaike in fo criterion		25.54368
Adjusted R-squared	0.749156	Schwarz criterion		25.90282
F-statistic	15.07942	Hannan-Q uinn criter.		25.66616
Prob(F-statistic)	0.000000	DurbinWatson stat		1.987081

Source: E-view Results

The Auto-Regressive Distributive Lag model was employed to estimate parameter values. Government Health Expenditure (GHE), Government Education Expenditure (GEE), Life Expectancy at Birth (LEB), Secondary School Enrolment Rate (SSER), Infant Mortality Rate (INFANT), and Primary School Enrolment Rate (PSER) were regressed against Real Gross Domestic Product (RGDP). The outcome of the regression analysis forms the model that evaluates the influence of government health and education spending on economic growth in Nigeria.

The empirical findings revealed that the coefficient of Government Health Expenditure (GHE) had a positive yet statistically insignificant impact on Real Gross Domestic Product (RGDP). This conclusion was based on the observed t-statistics value (1.104568), less than the critical value (1.694). Similarly, the coefficient of Government Education Expenditure (GEE) had a positive and statistically insignificant effect on RGDP, with an observed t-statistics value (0.083962) lower than its critical counterpart (1.694). Life Expectancy at Birth (LEB) displayed a positive and insignificant impact on RGDP, as indicated by the observed t-statistics value (1.086633) falling short of the critical value (1.694).

In contrast, the Secondary School Enrolment Rate (SSER) exhibited a positive and insignificant influence on RGDP, with an observed t-statistics value (2.453119) surpassing the critical value (1.694). On the other hand, the Infant Mortality Rate (INFANT) had a significant adverse effect on RGDP, supported by the observed t-statistics value (-2.110607) exceeding the critical value (1.694). Lastly, the Primary School Enrolment Rate (PSER) had a positive yet statistically insignificant impact on RGDP, as evidenced by the observed t-statistics value (0.853753) being lower than its critical counterpart (1.694).

The results of the F-statistical test indicated that the overall regression of the variables was statistically significant, as the observed F-statistics value (15.07942) exceeded the critical value (1.864251). Furthermore, the empirical findings revealed an R-squared (R2) value of 0.802365.

ARDL Bounds Test Results

Ho = There is no co-integration (no long run relationship among ariable)

Table 4: Co-integration Test Results

Critical Value	**Lower Bound I(0)**	**Upper Bound I(1)**
	F-stat = 4.032283	
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: E-view Results

The co-integration results presented in Table 4 for the model involving RGDP, GHE, GEE, LEB, SSER, INFANT, and PSER indicated that the F-statistics amounted to 4.032283, surpassing both the lower bound (2.45) and upper bound (3.61) at the 5 percent significance level. Consequently, this implies a long-term relationship among RGDP, GHE, GEE, LEB, SSER, INFANT, and PSER. This study rejects the null hypothesis, which posits no co-integration among the variables and accepts the alternative hypothesis.

Econometric /Second Order Test

Table 5: Result of Breuch-Godfrey Serial Correlation LM Test

F-statistic	6.018290	Prob. F(2,24)	0.0009
Obs*R-squared	5.051742	Prob. Chi-Square(2)	0.0005

Source: E-view Results

Result of Ramsey Reset Test

The Breusch-Godfrey Serial Correlation LM Test was employed to assess autocorrelation issues within the model. Autocorrelation occurs when there is a correlation among the error terms of different observations, which violates the underlying assumption of ordinary least squares that these errors are uncorrelated.

The outcome of the Breusch-Godfrey Serial Correlation LM Test, with a value of 6.018290 and a corresponding P-value of 0.0009, indicates that autocorrelation problems do not afflict the model. This result suggests that the assumptions underlying the ordinary least squares estimates, particularly the assumption of uncorrelated error terms, hold, rendering the predictions derived from the model efficient and unbiased.

Result of Ramsey Reset Test

Table 6: Ramsey Reset Test

	Value	df	Probability
t-statistic	4.603052	25	0.0001
F-statistic	20.21808	(1, 25)	0.0001

Source: E-view Results

During this study, a second-order test was conducted to assess whether the model was prone to model specification errors. The Ramsey RESET test results indicated the absence of specification errors, as evidenced by the F-statistics value of 21.18808, which exceeded the significance level (0.0001). This suggests that the variables included in the model were appropriately chosen, and thus, there were no specification errors to contend with.

The empirical findings of this study revealed various insights regarding the impact of government expenditures on economic growth in Nigeria. Government Health Expenditure (GHE) exhibited a 26 percent positive and insignificant influence on economic growth. Similarly, Government Education Expenditure (GEE) demonstrated a 10 percent positive but insignificant effect on economic growth. Moreover, the Primary School Enrolment Rate (PSER) had an 11 percent positive and insignificant impact on economic growth. The results also emphasized a robust positive relationship between the selected human capital investment variables and economic growth, substantiated by the adjusted R-squared value of 80.2 percent.

Conclusion and Recommendations

In light of the empirical analysis, the overarching conclusion is that government investments in education and health, as forms of human capital investment, have positively impacted economic growth during the study period. However, it's essential to note that despite the increase in total output (GDP) over the years, this has not necessarily translated into comprehensive economic development or an improved quality of life for Nigerian citizens.

Government Health Expenditure (GHE) and Government Education Expenditure (GEE) both exhibited positive but statistically insignificant effects on economic growth in Nigeria. Similarly, the Primary School Enrolment Rate (PSER) had a positive and statistically insignificant impact on the country's economic growth. Investing in these sectors is crucial as it contributes to human capital development. Therefore, focusing on healthcare expenditure to stimulate economic growth is paramount.

This implies that:

Increasing government capital expenditures in health and education will lead to more sustainable economic growth and development. The analysis

demonstrates that higher investments in these sectors yield a skilled and healthy workforce, which, in turn, benefits businesses and overall economic growth.

Also augmenting budgetary allocations to these sectors can reduce foreign exchange outflows for citizens seeking better education and healthcare services abroad. This substantial savings can position Nigeria as a destination for quality healthcare and education services.

Again elevated budgetary allocations to these sectors can help reduce the brain drain of professionals. This, in turn, can enhance the contributions of these sectors to the Nigerian economy and save the country significant financial losses.

Recommendations

Based on the findings, the following recommendations are put forth:

(i) The Nigerian government should increase expenditures in education and health to enhance the quality of education and healthcare facilities, minimize strikes in these sectors, and improve the quality of human resources. This can be achieved by implementing the 25 percent annual budget recommendation for education by UNESCO and the 15 percent health budget allocation suggested by the Abuja Declaration of 2001.

(ii) The government should focus on developing and upgrading the health sector, improving infrastructure, and acquiring modern equipment to reduce the number of citizens seeking medical services abroad and save significant amounts on medical tourism.

(iii) Ensuring fiscal discipline in education and health sector spending is vital. Efficient utilization and monitoring of allocated funds can be facilitated by strengthening anti-corruption agencies such as the Economic and Financial Crime Commission (EFCC) and the Independent Corrupt Practices Commission (ICPC) to deter and penalize individuals involved in diverting and embezzling public funds.

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