

Investments in Education and Health and Poverty Alleviation in Nigeria

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Abstract: *This study examined the relationship between investments in education and health and poverty alleviation in Nigeria from 1990 to 2024 (35 years). The 2025 publications of the Central Bank of Nigeria Statistical Bulletin and World Bank were sources of the secondary data employed in this study. The Auto-regressive Distributed Lag (ARDL) diagnostics was utilized in the data estimation, having established the existence of no long-run relationship in the model. Investment in education, investment in health and literacy rate were regressed on poverty alleviation (proxied by poverty headcount) in Nigeria. The findings of the study revealed that investment in education posited positive but statistically insignificant effect on poverty alleviation. Alternatively, investment in health and literacy rate showed negative but statistically insignificant relationships with poverty alleviation in Nigeria. The study therefore recommends that to effectively reduce poverty, Nigeria should enhance the quality and targeting of education and health investments, reform literacy programs to include income-generating skills, and adopt a multi-sectoral development strategy that addresses broader structural and institutional factors influencing poverty alleviation.*

Keywords: *Investments in Education, Investments in Health, Poverty Alleviation, Human Capital Theory, Literacy Rate*

I. INTRODUCTION

1.1 Background to the Study

Nigeria, despite being one of Africa's largest economies and most populous nation, presents a paradoxical case of "poverty amidst plenty" (Oleribe, Momoh, Uzochukwu, Mbofana, Adebisi & Taylor-Robinson, 2022). With approximately 40% of its population living in poverty, the country faces significant challenges in translating its economic potential into improved human development outcomes. Since Nigeria's return to democratic governance in 1999, following decades of military rule that began disrupting development trajectories in the

1980s, the relationship between government investments in social sectors and poverty reduction outcomes has remained a critical area requiring systematic investigation.

Poverty remains one of the most pressing challenges confronting Nigeria, despite the country's abundant natural and human resources. With over 63% of the population living in multidimensional poverty as of 2022, the need for sustainable poverty alleviation strategies has become increasingly urgent (National Bureau of Statistics [NBS], 2022). Among the various approaches to poverty reduction, investments in human capital - particularly in education and health - have been widely recognized as effective and transformative.

Education equips individuals with the knowledge and skills required for productive employment, enhances their earning capacity, and empowers them to make informed decisions, thereby breaking the cycle of intergenerational poverty (World Bank, 2025). Similarly, investments in health improve labor productivity, reduce vulnerability to income shocks, and contribute to longer life expectancy and better well-being, which are critical for economic and social development (United Nations Development Programme [UNDP], 2024).

In Nigeria, however, the state of education and healthcare remains suboptimal. Public expenditure on education has consistently fallen below the recommended UNESCO benchmark of 15–20% of total public spending, while access to quality healthcare is hindered by underfunding, infrastructure deficits, and human resource shortages (UNESCO, 2023; World Health Organization [WHO], 2024). These challenges have undermined the effectiveness

of human capital investments in achieving poverty alleviation.

According to Oluwatobi & Ogunrinola (2022); Adamu & Shehu (2023), countries that prioritize spending on education and health experience more inclusive growth and faster poverty reduction. In Nigeria, however, the impact of such investments has been inconsistent due to issues of misallocation, corruption, and policy instability. Thus, assessing the effectiveness of government and private investments in education and health on poverty alleviation is both timely and necessary for evidence-based policy formulation.

1.2 Statement of the Problem

Nigeria's persistent high poverty rates and poor human development indicators, despite being a resource-rich nation, raise fundamental questions about the effectiveness of government investments in education, healthcare, and poverty alleviation programs over the past three decades. Despite various poverty reduction programs and economic reforms, Nigeria remains one of the countries with the highest poverty rates globally, with over 130 million people living in multidimensional poverty as of 2022 (NBS, 2022). While education and health are globally recognized as crucial sectors for human capital development and poverty alleviation, Nigeria's investment in these areas has remained inadequate and inefficient. Current data indicates that Nigeria's government expenditure on education as a percentage of GDP remains critically low at 0.35% in 2022, far below the global average of 4.15% and significantly short of the UNESCO-recommended 20% of national budgets or 6% of GDP (TheGlobalEconomy.com, 2024).

Similarly, healthcare investment patterns reveal concerning trends, with household out-of-pocket expenditure burden rising from 60.2% in 2000 to 70.5% in 2019, while public health expenditures account for only 15-20% of total health expenditures (Okoronkwo, Onwujekwe, Ezenwaka, Mbachu & Uzochukwu, 2023). These investment patterns occur within a context where education and health outcomes rank among the weakest worldwide, with significant deterioration observed in some regions (International Monetary Fund, 2019).

The above anomalies have resulted in poor learning outcomes, limited access to quality healthcare, high infant and maternal mortality rates, and low labor productivity (World Bank, 2025; WHO, 2025).

This study, therefore, seeks to examine the relationship between investments in education and health and poverty alleviation in Nigeria from 1990 to 2024. It aims to provide insights into how increased and more efficient allocation of resources to these sectors can enhance human capital development and reduce poverty in the country.

1.3 Objectives of the Study

The broad objective of this study is to examine the impact of investments in education and health on poverty alleviation in Nigeria. However, the specific objectives of the study are:

1. To evaluate the effect of education investment on poverty reduction in Nigeria.
2. To determine the impact of health sector investment on poverty alleviation in Nigeria.
3. To ascertain the influence of literacy rate on poverty alleviation in Nigeria.

1.4 Research Questions

1. How does investment in education affect poverty alleviation in Nigeria?
2. What is the impact of health sector investment on poverty alleviation in Nigeria?
3. What influence does literacy rate have on poverty alleviation in Nigeria?

1.5 Research Hypotheses

The research hypotheses are formulated in the null (H₀) forms:

1. H₀₁: There is no significant relationship between investment in education and poverty alleviation in Nigeria.
2. H₀₂: Investment in the health sector has no significant impact on poverty alleviation in Nigeria.
3. H₀₃: Literacy rate does not influence poverty alleviation in Nigeria.

1.6 Significance of the Study

Studying investments in education and healthcare in Nigeria is crucial because they enhance human capital development, which drives long-term economic

growth and productivity. These investments also reduce poverty by improving employability, increasing income opportunities, and breaking the cycle of intergenerational deprivation. Effective poverty alleviation strategies in Nigeria depend on equitable access to quality education and healthcare, ensuring marginalized populations can participate in economic activities. Ultimately, such investments foster social stability, reduce inequality, and contribute to sustainable national development.

1.7 Scope of the Study

This study seeks to examine the impact of investments in education and health on poverty alleviation in Nigeria from 1990 to 2024. The variables of interest in the study include public investments in education and health, as well as the intervening effect of literacy rate on poverty reduction in Nigeria. The publications of the Central Bank of Nigeria Statistical Bulletin and World Bank are the sources of data for this study.

II. LITERATURE REVIEW

2.1 Conceptual Framework

2.1.1 Concept of Poverty and Poverty Alleviation
Poverty is a multidimensional phenomenon characterized by the lack of access to essential services, income, education, healthcare, and opportunities for a decent standard of living. It can be broadly categorized as absolute poverty (inability to meet basic needs) and relative poverty (inequality compared to others in a society). In Nigeria, poverty is often measured by indicators such as the poverty headcount ratio, multidimensional poverty index (MPI), and household consumption expenditure (NBS, 2022).

Poverty alleviation refers to deliberate actions and policies aimed at reducing the incidence and severity of poverty. It encompasses economic empowerment, social welfare programs, education, and access to healthcare. The effectiveness of poverty alleviation depends not only on economic growth but also on inclusive investments in human development (UNDP, 2024).

2.1.2 Investment in Education (Including Literacy Rate in Nigeria)

Investment in education refers to the allocation of resources—both public and private—towards educational infrastructure, teacher training, student support, and curriculum development. According to human capital theory, education enhances individual productivity, employability, and earning potential, which are crucial for lifting people out of poverty (Becker, 1993; Psacharopoulos & Patrinos, 2018).

One of the key indicators of educational outcomes is the literacy rate, which reflects the proportion of people aged 15 and above who can read and write. In Nigeria, the adult literacy rate was estimated at 62% in 2022, with significant disparities between urban and rural areas and between men and women (UNESCO, 2023; NBS, 2022). These disparities are rooted in regional inequality, poor funding, insecurity, and socio-cultural barriers—particularly in northern Nigeria where female literacy remains low.

Low literacy undermines employment prospects, civic participation, and the ability to access health and financial services, reinforcing cycles of poverty. Conversely, increased investment in basic education has been shown to improve literacy and numeracy, which in turn contributes to poverty reduction by expanding opportunities for income generation and social mobility (Oluwatobi & Ogunrinola, 2022).

2.1.3 Investment in Health

Health investment involves expenditure on healthcare facilities, medical personnel, pharmaceuticals, sanitation, and preventive health services. A healthy population is more productive, less vulnerable to income shocks, and better equipped to escape poverty (World Bank, 2023). According to the health-led growth hypothesis, improved health outcomes stimulate economic development and enhance individual capacity to participate in the labor market. Nigeria's health sector, however, is plagued by underfunding, poor service delivery, and limited access, particularly in rural areas. Despite these challenges, research shows that increased investment in health contributes to poverty alleviation by reducing disease burden and increasing labor productivity (WHO, 2025; Adamu & Shehu, 2023).

2.1.4 Human Capital Development

Human capital refers to the stock of knowledge, skills, competencies, and health possessed by a population. Investments in education and health are foundational for human capital development. According to endogenous growth theory (Lucas, 1988), sustained investment in human capital is key to long-term economic growth and poverty reduction. In the Nigerian context, low levels of human capital accumulation—evidenced by low literacy rates, high disease burden, and high youth unemployment—have constrained poverty alleviation efforts and perpetuated social inequality.

2.1.5 Linkages Between Education, Health, and Poverty Alleviation

Investments in education and health are not mutually exclusive but are interdependent in driving poverty alleviation. For example, a well-educated population is more likely to seek healthcare services, and healthy children are more likely to succeed in school. Studies have shown that countries that invest simultaneously in education and health achieve better development outcomes than those focusing on either sector in isolation (UNESCO, 2023; UNDP, 2024).

2.2 Theoretical Review

2.2.1 The Human Capital Theory

Human Capital theory emphasizes how education increases the productivity and efficiency of workers by increasing the level of their cognitive skills. Schultz (1961), introduced the notion that people who invest in education increase their stock of human capital. According to him, 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 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. Human capital has got broader acceptance with the contribution of scholars like Schultz (1961), Mincer (1993), and Becker (1974), who shifted the thinking philosophy of policymakers by emphasizing its centrality in the

development process in the 1960s. In addition, Mincer further emphasized the importance of human capital for the growth and development of society. With the contributions of these pioneers, human capital has been receiving more and more attention all over the world at both the individual and organizational levels. Following Becker (1974), the human capital literature often distinguishes between "specific" and "general" human capital. Specific human capital refers to skills or knowledge that is useful only to a single employer or industry, whereas general human capital (such as literacy) is useful to all employers. Economists view firm-specific human capital as risky, since firm closure or industry decline leads to skills that cannot be transferred (the evidence on the quantitative importance of firm specific capital is unresolved). This theory has been widely applied in development economics to examine the impact of educational attainment and healthcare access on labor productivity and GDP growth (Barro, 1991; Psacharopoulos & Patrinos, 2004). In the context of Nigeria, several studies (e.g., Adebayo, 2019; Ejemeyovwi & Osabuohien, 2020) have employed this theory to analyze the effects of government spending on education and health on industrial and economic performance. However, despite its wide applicability, the theory has faced criticisms. Critics argue that it overemphasizes the economic returns of human capital while underestimating social and institutional factors such as inequality, labor market discrimination, and poor governance structures (Marginson, 1997; Fine, 2001). Furthermore, the theory assumes a linear relationship between investment in human capital and productivity, which may not hold in contexts where systemic inefficiencies undermine service delivery. Therefore, while the Human Capital Theory provides a useful lens for analyzing productivity-related outcomes, its assumptions must be carefully evaluated, particularly in developing economies.

2.3 Empirical Review

Didiugwu (2024), examined the impact of human capital development on poverty reduction in Nigeria covering the period 1981-2022. Data for the research were annual times series data on total education expenditures, total health expenditures, and inflation and poverty rate. The methodology adopted in the study is linear regression with the application of the

Ordinary Least Squares (OLS) technique. The major findings of the study were that total education expenditures (TOEDXP) have a positive and insignificant contribution to poverty reduction in Nigeria, total health expenditures (TOHEXP) have a positive and insignificant contribution to poverty reduction in Nigeria.

Ejemezu & Ajala (2023), investigated the effects of government expenditure in various economic sectors on poverty in Nigeria from 1986 to 2022. Using government expenditure on education, health, security, building and construction, and roads as proxies, and the head count index as a proxy for poverty, this study analyzed secondary data from the CBN Statistical Bulletin and National Bureau of Statistics. The findings indicate that all selected government expenditures had positive short-term effects on poverty, but negative long-term effects, except for government expenditures on roads.

Obele & Adebisi (2022), assessed the effect of government expenditure on poverty incidence in Nigeria over the period of 1986 — 2020. The Johansen normalization cointegration result presented gave a proof by indicating that in the long-run government expenditure on building and construction, and government expenditure on health (GH) has positive impacts on poverty incidence while, government expenditure on security has a negative impact on poverty incidence in Nigeria.

Amakom (2020), examined the role of government expenditure in poverty reduction in Nigeria. By applying a Benefit Incidence Analysis (BIA), the research showed that primary education and healthcare acted significantly more as pro-poor in absolute terms than tertiary education and healthcare. Arsani, Ario & Ramadhan (2020), employed a 2-stage least squares (2-SLS) analysis to explore the relationship between human capital investment and poverty in Indonesia. Their study found that education to a large extent impacts household income and health. They noted specifically that tertiary education has higher returns on income than secondary and primary education levels in Indonesia.

Chikelu (2019) examined the impact of human capital development on poverty reduction in Nigerian

economy for the period 1986 to 2015. The Ordinary Least Squares (OLS) was used to estimate the model of one dependent variable (poverty rate) and four explanatory variables (primary school enrolment, secondary school enrolment, tertiary school enrolment and per capita income). The study reveals that there exists a relationship between human capital development and poverty reduction in Nigeria.

2.4 Research Gap

While existing studies have examined individual sectors or shorter time periods - for example, Ejemezu & Ajala (2023), Chikelu, (2019), - there remains a significant gap in comprehensive longitudinal analysis that examines the interconnected effects of education, healthcare, literacy rate and poverty alleviation investments over the full 34-year period from 1990 to 2024.

III. RESEARCH METHODOLOGY

3.1 Research Design

Research design is essentially the plan, structure and strategy of investigation conceived so as to obtain answers to research questions. Using time-series secondary data, this study's ex-post facto research approach allows for the measurement of the link or effect between the dependent (poverty alleviation) and explanatory factors (investments in education and health and literacy rate). To find out how changes in the explanatory factors affect the dependent variable, the causal study design is also used (Stock & Watson, 2020; Gujarati & Porter, 2009). The foundation of this kind of research is the scientific and analytical analysis of both independent and dependent variables.

The Human Capital Theory (HCT) provides the theoretical baseline in this study. The theory posits that investments in human capabilities, especially through education and health, enhance productivity and earnings, leading to improved living standards and a reduction in poverty. Human Capital Theory was pioneered by economists such as Theodore W. Schultz (1961) and Gary Becker (1964). Schultz emphasized the significance of investment in education and health as a means of developing human resources to drive economic growth. Becker expanded the theory to include on-the-job training, experience, and skills acquisition.

3.2 Sources of Data

The publications of the Central Bank of Nigeria Statistical Bulletin and World Bank provide the sources of data for this study.

3.3 Model Specification

The model for this study is built to establish the functional and causal relationship between investments in education and health and poverty alleviation in Nigeria from 1990 to 2023. In line with the objectives of this study, the model takes the multiple regression structural form below:

$$POV_t = f(EDUINV_t, HEALTHINV_t, LITR_t) \quad (1)$$

The functional model of equation (1) is modified into econometric form such that:

$$\beta_1 - \beta_3 \quad (2)$$

Further, the natural logarithm of investment in education and investment in health are taken to curtail the effects of a spurious regression. Thus:

$$POV_t = \beta_0 + \beta_1 LNEDUINV_t + \beta_2 LNHEALTHINV_t + \beta_3 LITR_t + \varepsilon_t \quad (3)$$

POV = Poverty alleviation (proxied by poverty headcount)

EDUINV = Investment in education

HEALTHINV = Investment in health

LITR = Literacy rate

ε_t = Error term

β_0 = Intercept of the model

$\beta_1 - \beta_3$ = Structural parameters of the model to be estimated

LN = Natural logarithm

3.6 Data estimation method

This work set out to present an Autoregressive Distributed Lag (ARDL) model. The ARDL model is stated as:

$$POV_t = \beta_0 + \sum_{i=0}^k \beta_1 LNEDUINV_{t-1} + \sum_{i=0}^k \beta_2 LNHEALTHINV_{t-1} + \sum_{i=0}^k \beta_3 LITR_{t-1} + \varepsilon_{it} \dots \dots (6)$$

3.4 A-priori Expectation

The a-priori expectation of the model is such that $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$; that is to say that investment in education, investment in health and literacy rate are all expected to have positive effects on poverty alleviation in Nigeria.

3.5 Pre-Estimation Test

3.5.1 Unit Root Test

To fully explore the data generating process, we first examined the time series properties of model variables using the Augmented Dickey- Fuller and Phillips-Perron tests.

The Augmented Dickey-Fuller (ADF) test regression equation with constant is:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \sum_{j=1}^k a_j \Delta Y_{t-1} + \varepsilon_t \dots \dots \dots (4)$$

where Δ is the first difference operator, ε_t is random error term, k = no of lagged differences Y = the dependent variable. The unit root test is then carried out under the null hypothesis $\alpha = 0$ against the alternative hypothesis of $\alpha < 0$. Once a value for the test statistics

$$ADF_t = \frac{\hat{\alpha}}{SE(\alpha)} \dots \dots \dots (5) \quad \text{is}$$

computed, we shall compare it with the relevant critical values for the Dickey-Fuller Test. If the test statistics is greater (in absolute values) than the critical value at 5% or 1% level of significance, then the null hypothesis of $\alpha = 0$ is rejected and no unit root is present. If the variables are non-stationary at level form and integrated of the same order, this implies evidence of co-integration in the model.

In order to obtain the co-integrating equation, equation (6) is transformed into (7) as follows:

$$\Delta POV_t = \beta_0 + \sum_{i=0}^k \beta_1 \Delta LNEDUINV_{t-1} + \sum_{i=0}^k \beta_2 \Delta LNHEALTHINV_{t-1} + \sum_{i=0}^k \beta_3 \Delta LITR_{t-1} + \lambda ECT + \varepsilon_{it} \dots (7)$$

Where: $ECT_{t-1} = \Delta Y_t - \alpha_0 + \sum \beta_i \Delta Y_{t-i} + \sum \gamma_j \Delta X_{t-j} + \lambda ECT_{t-1} + \varepsilon_t \dots (8)$ The ECT represents the deviation from the long-run equilibrium in the previous period. It measures how quickly the dependent variable returns to equilibrium after a change in independent variables. In the ARDL model, the adjustment mechanism incorporates both short-run dynamics and the long-run relationship between variables. The ECT is part of this mechanism. The coefficient of the ECT indicates the speed of adjustment. It should be negative and statistically significant for the model to be valid. The value ranges from -1 to 0, where -1 indicates immediate adjustment (100% correction in one period) and 0 indicates no adjustment. The Bound test procedure used equations (7) and (8) into (9) as:

$$\Delta Y_t = - \sum_{i=1}^{p-1} \gamma_1 Y * \Delta Y_{t-i} + \sum_{i=0}^p \beta_i \Delta X_{t-i} - \rho Y_{t-1} - \alpha - \sum_{i=0}^p \delta X_{t-i} + \varepsilon_{it} \dots (9)$$

Then we test the existence of level relationship as $\rho = 0$ and $\delta_1 = \delta_2 = \dots = \delta_k = 0$ where Δ = difference operator, α = the short term coefficient, β = the long run coefficients = white noise error term.

3.7 Justification of the Model

The use of ARDL test approach is predicated on its several advantages over other cointegration tests such as Engle-Granger and Johansen's cointegration method. Firstly, the ARDL efficiently determines the cointegrating relation in small sample cases (Ghatak & Siddiki, 2001; Tang, 2003), whereas Johansen's method requires large sample for validity. Secondly, other methods requires that the variables must be integrated of the same order before the cointegration test is carried out, while the ARDL approach can be applied irrespective of whether the regressors are I(1) and I(0) or mutually cointegrated, in which the dependent variable must be I(1).

3.8 Test of Significance

The significance was tested at 5% level of significance using the coefficients of the independent variables and following the Rule: Reject the Null hypothesis if the t-prob is less than 0.05, otherwise accept the Null

hypothesis when t-prob is greater than 0.05, i.e. Reject if t-prob < 0.05, Accept if t-prob > 0.05.

IV. DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Data Presentation

4.1.1 Unit Root Test Result

The Augmented Dickey Fuller (ADF) unit root test is summarized in the Table 4.1 below. This test was carried out on each of the variables at 5% critical value.

Table 4.1: Summary of ADF test results at 5% critical value

Variable		ADF Test statistics		Decision	Order of Integration
		At Level	1 st Difference		
POV		-0.931190	-5.799371	Stationary at 1 st difference	I(1)
LNEDUINV		-6.120765	-	Stationary at level	I(0)
LNHEALTHINV		-3.722813	-	Stationary at level	I(0)
LITR		-1.610769	-5.514670	Stationary at 1 st difference	I(1)
Critical Values	1%	-3.646342	-3.653730		
	5%	-2.964021	-2.957110		
	10%	-2.615817	-2.617434		

Source: Researcher's Computation using E-Views 13 (2026)

The unit root test in table 4.1 above reveals that investments in education and health are stationary at level and are said to be integrated of order zero, I(0). Conversely, poverty headcount and literacy rate are stationary at first difference and are said to be integrated of order one I(1). Thus, the auto-regressive distributed lag (ARDL) technique becomes appropriate in estimating the relationship among the variables. However, we first confirm the existence of a long-run relationship or co-integrating relationship amongst the variables using the ARDL Bounds test.

4.1.2 ARDL Bounds Co-Integration Test

A necessary condition for testing for ARDL bounds co-integrating test is that each of the variables be integrated of either of order one or zero or both (Pesaran, Shin and Smith, 2001). Since all the variables are integrated of order one and zero (mixed order), we proceed to estimate the ARDL bounds test. The decision rule is to reject the null hypothesis if the F-statistics is greater than the upper bound critical values at chosen level of significance.

Table 4.2: ARDL Bounds Cointegration Test Result (@ 5% critical value)

Model	F-Statistics	K	Significance level	Critical Bound Value	
				10 (Lower Bound Bound)	11 (Upper Bound)
	1.362439	3	5%	3.272	4.306

Source: Researcher's Computation with E-views 13 (2026)

Table 4.2 above summarizes the Bounds Test F-statistics for co-integration. The F-statistic coefficient (1.362439) is less than the critical values I(0) and I(1) bounds at 5%. This entails that we accept the null hypothesis and conclude that there is no long run relationship between investment in education (LNEDUINV), investment in health (LNHEALTHINV), literacy rate (LITR) and poverty alleviation in Nigeria. Since there is no long run

relationship, we therefore estimate the short run and the ECM.

4.1.3 Test for Short Run Relationship

Having ascertained that there is no co-integrating relationship between investment in education (LNEDUINV), investment in health (LNHEALTHINV), literacy rate (LITR) and poverty alleviation in Nigeria, the short run relationship needs to be ascertained.

Table 4.3: ARDL SHORT-RUN ESTIMATES

$$CE = \text{POV}(-1) - (3.354374 * \text{LNEDUINV} - 8.549155 * \text{LNHEALTHINV} - 0.551703 * \text{LITR} + 112.574053)$$

Variable *	Coefficient	Std. Error	t-Statistic	Prob.
LNEDUINV	3.354374	4.767776	0.703551	0.4873
LNHEALTHINV	-8.549155	5.912746	-1.445886	0.1589
LITR	-0.551703	0.586632	-0.940458	0.3548
C	112.5741	32.79445	3.432716	0.0018

Source: Eviews 13 Output

The regression analysis in table 4.3 above investigates the impact of education investment, health investment, and literacy rate on poverty alleviation in Nigeria.

The results show that investment in education (LNEDUINV) has a positive but statistically insignificant effect on poverty alleviation, with a coefficient of 3.35 and a p-value of 0.4873. This suggests that while increased education investment is associated with a reduction in poverty, the effect is not strong enough to be considered statistically meaningful within the period and data examined.

In contrast, investment in health (LNHEALTHINV) is negatively related to poverty alleviation, with a coefficient of -8.55 and a p-value of 0.1589. Although this negative relationship is not statistically significant.

Literacy rate (LITR) also exhibits a negative but statistically insignificant relationship with poverty alleviation, with a coefficient of -0.55 and a p-value of 0.3548.

The constant term (C), with a coefficient of 112.57 and a highly significant p-value of 0.0018, suggests a high baseline level of poverty alleviation when all explanatory variables are held constant.

4.2 Post-Estimation Tests

The post-estimation results show other tests that are necessary in order to ascertain the statistical robustness and predictive ability of the model. They comprise the Breusch-Godfrey serial correlation LM test, Breusch-Pagan-Godfrey Heteroskedasticity test, Fisher's test, Durbin Watson test for autocorrelation, CUSUM test, and the Coefficient of determination (R-squared and Adjusted R-squared), These tests are summarized as follows:

Table 4.4: Post-Estimation Diagnostic Results

S/N	Test	Probability	Decision
		Model 1	
1.	Breusch-Godfrey serial correlation LM test	F-stat = 0.854184 p-value = 0.4372	No serial correlation.
2.	Durbin Watson Statistic	2.098184	No Autocorrelation
3.	Fisher's Test	F-stat = 87.67168 p-value = 0.000000	The explanatory variables are jointly significant on the dependent variable
4.	Breusch-Pagan-Godfrey Heteroskedasticity Test	F-stat = 1.931751 p-value = 0.1328	No Heteroskedasticity in the model

5.	CUSUM Test	Within the bounds of 5% significance level	Model is stable
6.	R-squared and Adjusted R-squared	0.926060 0.915497	High explanatory coefficient

Source: Researcher's Computation with E-views 13 (2026)

The post-estimation results in Table 4.5 above show that the joint relationship coefficient of the model is significant given the p-value of 0.000000 which is less than 0.05 critical value. The Durbin-Watson coefficient of 2.098184 is within the bounds of 2 than to 0. The serial correlation and heteroscedasticity tests show that the model is free from serial correlation and heteroscedasticity. The CUSUM test indicates that the model is stable and converges within the bounds of 5% significance level. The adjusted R-squared which is most suitable for gauging the overall fitness of the model has a value of 0.915497 indicating that 91.55% variations on poverty alleviation in Nigeria are accounted for by investments in education and health for the period 1990-2024.

4.3 Discussion of Findings

The study examined the relationship between investments in education and health and poverty alleviation in Nigeria from 1990 to 2024. The following results are evident in the course of this study: Investment in education has a negative insignificant relationship with poverty alleviation in Nigeria. This conforms with the findings by Didiugwu (2024), whose study found a positive insignificant relationship between expenditure on education and poverty reduction in reduction in Nigeria. Investment in health indicates a negative insignificant relationship with poverty alleviation in Nigeria. Although this negative relationship is not statistically significant, it may point to inefficiencies or misalignments in health spending, possibly due to corruption, poor targeting, or the long-term nature of health outcomes which do not immediately reflect in poverty reduction. Literacy rate also shows a negative but statistically insignificant relationship with poverty alleviation. This unexpected direction may indicate that improvements in literacy, while essential, are not translating directly into income-generating opportunities or access to services that reduce poverty at least not within the scope and timeframe of this study.

IV. SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The study examined the relationship between investments in education and health and poverty alleviation in Nigeria. The Auto-regressive Distributed Lag (ARDL) diagnostics was utilized in the estimation of data. The following summarizes the findings of the research work:

- Investment in education has positive and statistically insignificant effect on poverty alleviation in Nigeria.
- Investment in health indicates negative and statistically insignificant impact on poverty alleviation in Nigeria.
- Literacy rate shows negative and statistically insignificant influence on poverty alleviation in Nigeria.

5.2 Conclusion

The study examined the relationship between investments in education and health and poverty alleviation in Nigeria from 1990 to 2024 (35 years). The 2025 publications of the Central Bank of Nigeria Statistical Bulletin and World Bank were sources of the secondary data utilized in this study. The Auto-regressive Distributed Lag (ARDL) diagnostics was utilized in the data estimation. Investment in education, investment in health and literacy rate were regressed on poverty alleviation (proxied by poverty headcount) in Nigeria. The findings of the study revealed that investment in education posited positive but statistically insignificant effect on poverty alleviation. Alternatively, investment in health and literacy rate showed negative but statistically insignificant relationships with poverty alleviation in Nigeria.

5.3 Recommendations

The following recommendations are put forward in line with the findings of this study:

- Although investment in education is positive and show no statistically significant effect on poverty alleviation in the model, its importance should not be dismissed. The government should focus on improving the efficiency, transparency, and targeting of these investments to ensure they reach the most vulnerable populations and address systemic issues such as infrastructure deficits, and teacher quality
- The negative coefficient of investment in health may reflect poor health outcomes despite increased spending. Government should focus on improving healthcare delivery systems, minimizing leakages, and ensuring that health investments reach poor and rural populations. Policymakers should also prioritize preventive and community-based healthcare programs that reduce disease burdens and allow the poor to stay productive.
- The negative and statistically insignificant relationship between literacy rate and poverty alleviation suggests that basic literacy alone may not be reducing poverty. Programs should integrate literacy with income-generating skills, especially in adult education. Functional literacy programs that combine basic education with vocational skills, entrepreneurship, and financial literacy can make literacy more impactful in reducing poverty.
- Finally, given the long gestation periods of education and health outcomes, policymakers should adopt a long-term human capital development plan. This should align investments in education and health with national development priorities, labor market demands, and poverty reduction goals.

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