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Empirical Evaluation of the Impact of Development Expenditure on Poverty Alleviation in Nigeria

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Abstract

This study investigates the contribution of development financing to poverty alleviation in Nigeria between 1990 and 2023, with a focus on the impact of education and health funding. Time series data were obtained from the Central Bank of Nigeria Statistical Bulletin. The Augmented Dickey–Fuller unit root test indicated that education and health expenditures were stationary at first difference (I(1)), while poverty reduction was stationary at second difference (I(2)). Johansen cointegration results confirmed a long-run relationship among the variables. An Error Correction Model (ECM) was applied to assess the effects of development funding, revealing that government expenditure on education significantly reduces poverty in the long run ($p = 0.0225 < 0.05$), whereas health expenditure showed no significant short-run impact ($p = 0.3210 > 0.05$). The results suggest that a 1% increase in education expenditure leads to a 0.0731% reduction in poverty in the short run. The study concludes that development funding can substantially alleviate poverty when resources are efficiently managed and productively invested. It recommends effective implementation strategies and structural reforms in public spending to achieve sustainable poverty reduction in Nigeria.

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Keywords: Development Financing; Education Expenditure; Health Expenditure; Poverty Alleviation; Nigeria

INTRODUCTION

Poverty is a rooted and long-term issue in Nigeria, despite the huge government investment activities throughout the decades. Poverty in Nigeria is defined as limited access to basic necessities like nutrition, education, and health and is worst in rural areas where economic disparities are most obvious. Malnutrition, poor education, and poor housing are prevalent in these areas, which contribute to low life expectancy and overall poor health status (Falodun, 2019). These underlying issues of corruption, macroeconomic instability, and inconsistency in government financing policy exacerbate this multidimensional poverty, emphasizing the challenge in sufficiently addressing these challenges (Adams, 2024, Mathew & Idi, 2024).

Nigeria has a long history of government-funded poverty reduction interventions. Some of the early interventions included the National Accelerated Food Production Programme (1972) and the Nigerian Agricultural and Co-operative Bank, which were both created to raise agricultural production and boost rural incomes. They were succeeded by interventions such as Operation Feed the Nation (1976) and the Green Revolution Programme (1979), all of which targeted food security and rural development. In the 1980s and 1990s, government funding facilitated the establishment of the Directorate of Food, Roads and Rural Infrastructure (DFRRI) to enhance rural infrastructure, and the Family Support Programme and Family Economic Advancement Programme were crafted to directly benefit vulnerable segments. Subsequent schemes, including the National Poverty Eradication Programme (NAPEP) in 2001 and the N-Power Programme in 2016, focused on jobs and skills development (Umar, 2020). Economic plans such as the National Economic Empowerment and Development Strategy (NEEDS) (Ayodele. 2019), Economic Recovery and Growth Plan (ERGP) (2017), and Poverty Reduction and Growth Strategy (PRGS) (2021) have emphasized economic diversification, infrastructure development, and comprehensive poverty reduction strategies.

Despite these numerous government funding interventions, the effect of this type of spending on poverty alleviation has been patchy. While government expenditure has

increased significantly leaping from 7.7 billion naira in recurrent expenditure in 1986 to 9,145.2 billion naira in 2021, and from 8.5 billion naira to 2,522.5 billion naira in capital expenditure over the same period (Central Bank of Nigeria, 2021) poverty has also persisted in rising. This paradox highlights the challenge of translating increased government spending into poverty reduction outcomes, this study aims to assess the impact of government expenditure on poverty reduction.

Literature Review

Poverty

Poverty is challenging to define as it has numerous aspects, leading to varied interpretations in existing studies. Olagunju et al (2019) argues that poverty is conceptually elusive, particularly when statistically studied within nations and across time. Nyasulu (2020) defines poverty as a condition in which aggregate incomes of a family are not adequate to access the basics, with a focus on income shortage as the cause of poverty. However, this has been relative to each given that what is lacking in one household is available in another. Ayogu, Abasi, and Ecoma (2012) give a more encompassing definition, covering poor access to energy, healthcare, education, financial stability, and overall infrastructure. Halidu, Lawal, and Jamilu (2017) subscribe to the same line of thinking that poverty is a deficiency of necessary commodities for a befitting standard of living.

Government Financing

Government funding are the devices and instruments through which the government raises and directs funds in support of its governance and the economy as a whole. Funding is pivotal to the extent of government intervention within the economy, all programs aimed at triggering economic development, offering public services, and reacting to social demand (Jibir & Aluthge, 2019). Financing public sectors such as health, education, and infrastructure is viewed as a general strategy to reduce poverty by raising poor households' productivity and income earnings (Paternostro et al., 2007).

Education Financing

Financing education is imperative to ensuring access to quality education and economic development. Government financing largely contributes, particularly in primary and secondary education, as governments spend significant portions of their budgets there.

But whether this expenditure is effective or otherwise is based on how it is financed and whether respective areas have differing needs or not (Osundina, Ebere, & Osundina, 2014). For example, inefficient allocation of resources is one of the causes of unevenness in the quality of education, particularly between rural and urban regions. There has also been growth in private investment in education, particularly in higher education. This is driven by the growing demand for advanced skills and the assumption that private schools offer quality education over public schools (Gupta, Verhoeven, & Tiongson, 2002). However, the application of private investment could raise inequality since wealthier people have an easier time accessing quality education infrastructure, further leaving the poor behind (Amakom, 2020).

Health Financing

Health financing is a critical component of public health systems, as it determines the quality and accessibility of health care. Government expenditure on health is supplemented by private health spending and social health insurance, with a goal of achieving universal health coverage (Omodero, 2019). However, the efficiency of financing mechanisms for health varies considerably across countries, with some nations not having adequate healthcare due to limited resources and misallocation. Out-of-pocket spending remains a heavy burden for most households in developing countries, exerting financial burdens and limiting access to essential health services (Ejemezu & Ajala, 2023). The observation indicates the importance of improving more efficient health financing mechanisms that are more accessible and equitable. Policies such as expanding health insurance coverage and streamlining public health expenditures can reduce cost barriers to health care (Oriavwote & Ukawe, 2018).

Empirical Review

Omodero (2019) examined poverty reduction by government sectoral spending in Nigeria, 2000-2017. The ordinary least squares (OLS) regression study confirmed that government spending in agriculture, building and construction, education, and health made no input towards the reduction of poverty. The study concluded that minimal financing in these sectors negated the efficient poverty reduction and recommended increasing budgetary expenditures in these sectors to complement their impact on poverty reduction. Amakom (2020) applied Benefit Incidence Analysis (BIA) to evaluate the efficacy of public spending in reducing inequality and poverty in Nigeria. The study found primary schooling

and health to be pro-poor compared to tertiary schooling and health. Secondary schooling and healthcare results were inconclusive. The study revealed public expenditure benefits biases by state, region, and gender. It suggested that income redistribution could be accomplished through subsidized public services rather than direct income transfers.

Adegboyo (2020) analyzed the impact of various types of government spending on poverty in Nigeria during 1981-2017 using the Auto-Regressive Distributed Lag (ARDL) model. The study established that economic service recurring spending, social and community recurring spending, and transfer recurring spending reduced poverty, while transfer capital spending and administrative recurring spending increased poverty. Recommendations were to provide subsidies for food and farm inputs, timely payment of pensions, reducing the government's cost by limiting political appointees, and increasing anti-poverty programs. Alamanda (2020) thus investigated the effect of different types of government expenditure on income inequality and poverty in Indonesia according to panel data for 33 provinces over the period 2005-2017. Fix effects, random effects, and seemingly unrelated regression equations were applied in this research. The findings indicated that subsidies, grants, and social aid did not have a significant effect in reducing income inequality and poverty. However, infrastructure spending was negatively correlated with poverty and income inequality and had a greater impact in rural than urban regions.

Olaleye et al. (2020) examined the impact of social capital on poverty alleviation in Ogun State, Nigeria. From a sample of 284 households and using various poverty indices and multivariate regression, the study identified higher poverty incidence among larger household sizes, older adults, and those with lower social capital indicators. Tobit regression estimates indicated that large household size, age, and nativity increased the likelihood of poverty, while higher income, per capita expenditure, and community engagement had a negative impact on poverty. The study focused on social capital and community participation in alleviating poverty. Tubotamuno et al. (2021) estimated the impact of government expenditures on education on poverty in Nigeria from 1990 to 2020. The study utilized year-to-year data from Central Bank of Nigeria (CBN) and World Development Index (WDI) and employed the ARDL model. Unit root test indicated that the poverty index was stationary at level while government capital and education recurrent expenditure were stationary at first difference. ARDL results showed government capital expenditure on education negatively and significantly correlated with poverty while recurrent expenditure positively but insignificantly correlated with poverty. The study

proved that capital expenditure in education functioned more efficiently to eradicate poverty and recommended prioritizing capital expenditure in education to facilitate socio-economic development.

Ejemezu and Ajala (2023) studied the effect of government expenditure on poverty in Nigeria from 1986 to 2022 based on secondary data obtained from the CBN Statistical Bulletin and the National Bureau of Statistics. Johansen cointegration and vector error correction processes were employed by the research. Findings revealed that government expenditures in the areas of education, health, security, building and construction, and roads had positive short-term effects but negative long-term effects, with the exception of expenditures on roads, which had a positive effect across the board. The study revealed that government expenditures are significant in eliminating long-term poverty and recommended that it is necessary to prioritize developing infrastructure to enhance mobility and eliminate poverty.

METHODS

This research adopts a quantitative ex-post facto research design which is appropriate in examining the causal relationship between government funding, economic development, and poverty reduction using previous data. The reason for the choice of this design is its aptness in establishing causal relationships without manipulating the independent variables, secondary data was gotten from the Central Bank of Nigeria Statistical Bulletin, from 1990 to 2023.

Model Specification

To evaluate the impact of government spending on poverty reduction, this research model is specified as:

$$PR_t = \beta_0 + \beta_1 HF_t + \beta_2 EF_t + \varepsilon_t \quad (1)$$

PR_t = Poverty Reduction at time t, proxied by Consumer Price Index (CPI); HF_t = Government expenditure on health; EF_t = Government expenditure on education; β_0 = Intercept term; β_2, β_1 = Coefficients representing the effects of health and education financing respectively; ε_t = Error term

Unit Root Test

To analyze the data, descriptive statistics were first computed to summarize the characteristics of the data series, followed by the use of the Augmented Dickey-Fuller (ADF) unit root test to examine the stationarity of the time series. The ADF regression equation is given as:

$$\Delta Y_t = \alpha + \beta_t + \gamma Y_{t-1} + \sum_{i=1}^{p} \delta_i \Delta Y_{t-i} + \varepsilon_t \quad (2)$$

where: ΔY_t = is the first-differenced series, t is a time trend; Y_{t-1} = is the lagged level of the series

α = is the intercept; ε_t = is the white noise error term; $H_0 : \gamma = 0 \Rightarrow$ a unit root (non-stationarity); $H_1 : \gamma < 0 \Rightarrow$ Indicates stationarity.

Autoregressive distributed lag (ARDL) model

Following the unit root test, the autoregressive distributed lag (ARDL) model was applied due to its robustness in handling time series with variables integrated at different levels, I(0) and I(1). The ARDL model for the current research is formulated as:

$$\Delta PR_t = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta PR_{t-i} + \sum_{j=0}^{q} \alpha_2 \Delta HF_{t-j} + \sum_{k=0}^{r} \alpha_3 \Delta EF_{t-k} + \lambda_1 PR_{t-1} + \lambda_2 HF_{t-1} + \lambda_3 EF_{t-1} + \varepsilon_t \quad (3)$$

This model allows for both short-run relationship and long-run equilibrium estimation.

Error Correction Model (ECM)

After estimating the ARDL model, the Error Correction Model (ECM) was also specified to assess the speed of adjustment back to equilibrium. The ECM is given by:

$$\Delta PR_t = \theta_0 + \sum \theta_1 \Delta X_t + \phi ECM_{t-1} + \mu_t \quad (4)$$

Johansen Cointegration Test

Upon identification of integration orders, the Johansen Cointegration Test was employed to determine the presence of a long-run equilibrium relationship among the variables. The Johansen test is based on a Vector Error Correction Model (VECM), specified as:

$$\Delta Z_t = \prod Z_{t-1} + \sum_{i=1}^{k-1} \Gamma_i \Delta Z_{t-i} + \mu + \varepsilon_t \quad (5)$$

where: Z_t = is a vector of endogenous variables; $\prod$ = contains information on the long-run relationships, Γ_i = are short-run adjustment coefficients.

The rank of matrix, $\prod$ determines the number of cointegrating vectors. The test statistics used are the Trace Statistic and Maximum Eigenvalue Statistic, defined as:

Trace Statistic: $\lambda_{trace} = -T \sum_{i=r+1}^{n} \ln\left(1 - \hat{\lambda}_i\right)$ (6)

Max-Eigen Statistic: $\lambda_{\max} = -T \ln\left(1 - \hat{\lambda}_{r+1}\right)$ (7)

where T is the sample size and $\hat{\lambda}_i$ are the estimated eigenvalues. The null hypothesis of no cointegration is rejected if the test statistic exceeds the critical value.

Diagnostic Checks

To validate the robustness of the estimated model, several diagnostic tests were conducted. The Breusch-Godfrey Lagrange Multiplier (BG-LM) test was employed to check for serial correlation in the residuals. The test statistic is given by:

$$LM = nR^2 \quad (8)$$

Where n is the number of observations and R^2 is the coefficient of determination from the auxiliary regression of the residuals on their lagged values and the original regressors. Under the null hypothesis of no serial correlation, the test statistic follows a chi-square distribution with degrees of freedom equal to the number of lagged residual terms.

For heteroskedasticity, the White test was used. The test involves regressing the squared residuals $\hat{\varepsilon}^2$ on all independent variables, their squares, and their cross-products. The test statistic is similarly computed as:

$$nR^2 \square \chi_k^2 \quad (9)$$

Where k is the number of regressors in the auxiliary regression, and n is the number of observations. The null hypothesis is that the variance of the residuals is constant (homoskedasticity).

These tests were complemented by Histogram checks for normality ensuring that the regression results are unbiased and efficient.

RESULTS

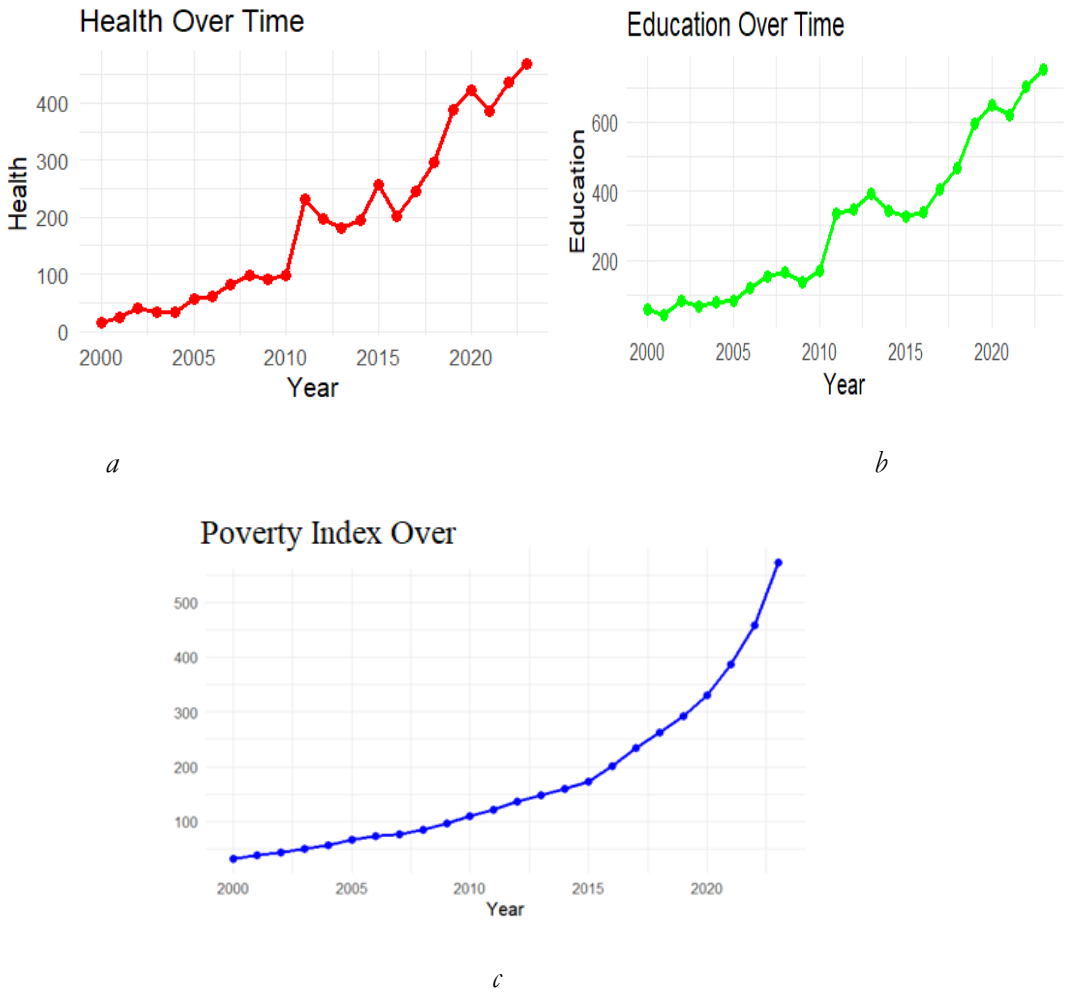
Descriptive Statistics

Table 1 presents the descriptive statistics of three study variables namely: poverty reduction index, Education, and Health. From the obtained results, poverty reduction has a mean of 174.7204, median of 128.1083, and standard deviation of 143.5468. The right-skewed nature is evidenced by skewness of 1.272904, and kurtosis of 3.862456 shows the presence of outliers. The Jarque-Bera test indicates that data does not come from a normal distribution (p-value = 0.026985).

Education has a mean of 308.8622, a median of 330.4950, and a standard deviation of 225.7641. Its skewness value of 0.535420 indicates right-skewedness, and the kurtosis value of 2.049581 indicates relatively normal distribution. The Jarque-Bera test cannot reject the null hypothesis of normality (p-value = 0.358798). Health has a mean of 189.3766, a median of 187.9884, and a standard deviation of 146.5476. The skewness of 0.542054 indicates slightly right-skewed and the kurtosis of 2.003784 indicates relatively normal distribution. The Jarque-Bera test does not reject the normality null hypothesis (p-value = 0.338284).

Table 1: Data Description

	Poverty reduction	Education	Health
Mean	174.7204	308.8622	189.3766
Median	128.1083	330.4950	187.9884
Maximum	571.7659	752.9764	468.6388
Minimum	32.24211	39.88260	15.21808
Std. Dev.	143.5468	225.7641	146.5476
Skewness	1.272904	0.535420	0.542054
Kurtosis	3.862456	2.049581	2.003784
Jarque-Bera	7.224973	2.049993	2.167738
Probability	0.026985	0.358798	0.338284
Observations	24	24	24



a *b*

c

Figure 1: Plots of Study Variables

Figure 1 a-c shows the trend graphs of health and education expenditure and the decrease in poverty. The health variable shows a trend of a rising line over the years. It starts at 15.22 in the year 2000, and the value of health spending increases to 468.64 in 2023. The growth rate is consistent but small from the year 2000 to 2005. From 2006-2010, the increase is steeper with higher value increases every year. In 2011-2015, the value of health spending still increases but appears to slow down its growth rate. Between 2016 and 2023, the health expenditure value experiences a sharp rise, with especially big leaps from 2019 to 2023, which indicate an increase in health expenditures.

Expenditure on education also shows a rising trend, albeit with more volatility than for CPI. Starting from 57.96 in the year 2000, education expenditure increases to 752.98 in 2023. The growth pattern is uneven to some extent, with highs and lows in the initial couple of years between 2000 to 2005. In the period 2006 to 2010, there is a huge spike,

and the figure almost doubles. During 2011-2015, the value of expenditure on education continues to rise, but at a lower rate of growth. During 2016-2023, the value of expenditure on education shows an even and steady growth, but particularly huge leaps from 2019 to 2023, indicating a significant increase in education spending. The index of poverty reduction rises steadily and conclusively over the 24-year period.

Starting at 32.24 in 2000, the poverty reduction value increases consistently to 571.77 in 2023. The growth rate is moderate from 2000 to 2005, with the value of poverty reduction increasing gradually. From 2006 to 2010, the increase gets faster, reflecting a higher rate of growth. From 2011 to 2015, the poverty index continues to increase, but the growth rate appears to slow down gradually. However, from 2016 to 2023, there is a dramatic increase in poverty reduction, with particularly high jumps in the latest years, which reflects significantly higher cost of living.

Pre-estimation analysis

Variable Stationarity Analysis

Table 2: ADF Stationarity test

Variable	Level		$Diff_1$		$Diff_2$	
	ADF	pvalue	ADF	pvalue	ADF	pvalue
Poverty Index	-0.09399784	0.99	-1.38562	0.806	-4.569849	0.01
Education	-2.25761228	0.474	-4.639246	0.01	-4.638463	0.01
Health	-1.10401703	0.905	-4.341409	0.011	-5.853753	0.01

Table 2 presents Augmented Dickey-Fuller (ADF) stationarity test outcome of three variables i.e. Poverty reduction, Education spending, and Health spending. ADF test is used to test whether a time series is stationary or not, which is one of the important assumptions of econometric models. The results showed that in case of Poverty reduction at level form, ADF statistic is -0.09399784 with p-value of 0.99. A p-value greater than 0.05 indicates that the variable of poverty reduction is not stationary at the level. The ADF statistic is -1.38562 and the p-value is 0.806 for first differencing, indicating that the poverty reduction is not stationary after first difference. At second difference, the ADF statistic is -4.569849 with a p-value of 0.01 indicating that the variable becomes stationary at second difference.

For Education expenditure, results indicated that at level form, the ADF statistic is -2.25761228 and p-value is 0.474, which shows that education expenditure variable is not

stationary in level. After first difference, ADF statistic is -4.639246 and p-value is 0.01, which shows Education expenditure variable is stationary after first difference. The ADF statistic at level form of the health spending variable is -1.10401703 with a p-value of 0.905, which indicates non-stationarity. After the first differencing, the ADF statistic is -4.341409 with a p-value of 0.011. Therefore, the Health spending variable becomes stationary after the first difference.

Cointegration tests

Johansen-Procedure Results

Table 3 eigenvalues provide some indication of the strength of cointegration among the variables. The biggest is the first eigenvalue (0.5832), which indicates that there is at least one strong cointegrating relationship among education expenditure, health expenditure, and poverty reduction. The second eigenvalue (0.3221) is not significant, and the third eigenvalue (0.1392) is relatively small. The. declining eigenvalues suggest that, while a robust relationship of long-run type is well described by the first cointegrating equation, the second and third relationships are weaker. This suggests that poverty alleviation, education expenditure, and health expenditure share a common stochastic trend but with poor explanatory power beyond the first cointegrating vector.

Table 3: Eigenvalues (λ)

Rank	Eigenvalue (λ)
1	0.5832396
2	0.3220777
3	0.139201

The Johansen cointegration test determines from Table 4 that there is at least one cointegrating equation. The rank 0 test statistic (31.1) exceeds the 5% critical value (31.52) and hence the null hypothesis of no cointegration is rejected at the 5% level of significance. However, when rank ≤1 (11.85) and rank ≤2 (3.3), test statistics fall short of their respective 5% critical values (17.95 and 8.18), which implies that there is only one significant cointegrating equation. The implication is that there exists a long-run equilibrium relationship among poverty reduction, education, and health expenditure but up to the first cointegrating vector only.

Table 4: Test Statistics and Critical Values

Rank (r)	Test Statistic	10% Critical Value	5% Critical Value	1% Critical Value
≤ 2	3.3	6.5	8.18	11.65
≤ 1	11.85	15.66	17.95	23.52
0	31.1	28.71	31.52	37.22

The cointegrating vector in Table 5 reports information about the long-run equilibrium relationship among the variables. Normalizing to poverty index, the finding indicates that an increase in Education (2.4051) by one unit is associated with an increase in the poverty reduction index, showing increased spending on education as causing inflationary pressure through increased demand or rising costs in the education sector. Conversely, Health's coefficient of -3.0080 suggests that higher spending on health has a deflationary effect due to enhanced productivity and efficiency within the economy. These coefficients reflect changes in education and health expenditure and how they influence poverty alleviation in the long run.

Table 5: Eigenvectors (Cointegration Relations)

Variable	Poverty Index.l2	Education.l2	Health.l2
Poverty Index.l2	1	1	1
Education.l2	2.405076	-1.19989	11.004694
Health.l2	-3.008029	0.322771	-6.307815

Loading matrix in Table 6 indicates the short-run adjustment of each variable to equilibrium deviations. The poverty reduction adjustment coefficient (0.00535) is very low, which implies poverty reduction adjusts slowly to correct deviations from equilibrium. In contrast, Health spending's adjustment coefficient (0.4439) is more robust, suggesting that health expenditure responds rapidly to restore equilibrium to deviations. The moderate speed of adjustment of Education expenditure (0.4734) indicates that short-run fluctuations in education expenditure are slow to adjust. The findings of the cointegration test presented in Tables 6 confirm the presence of a long-run relationship between poverty reduction, education, and health expenditure, with one significant cointegrating equation.

Table 6: Weights (Loading Matrix)

Variable	Poverty Index.l2	Education.l2	Health.l2
Poverty Index.d	0.005352043	0.067782	0.002589817
Education.d	-0.031620619	0.473385	-0.014676769
Health.d	0.443885823	0.485092	-0.014893522

The eigenvalues suggest that the first cointegrating relationship is strongest. The cointegration relationships indicate that spending on education affects poverty reduction, while spending on health is deflationary. The loading matrix indicates that spending on

health adjusts more rapidly to deviations from equilibrium, while poverty reduction takes longer in balancing imbalances.

Estimation

Error correction Model

Table 7 presents the Long-run Coefficients of the Error Correction Model (ECM) which captures the short-run effects of development financing on poverty reduction in Nigeria. The intercept (0.14073) is significant (p-value = 0.0000), which implies that even at short run, there are base effects on poverty reduction. The coefficient for education spending (-0.0731) indicates that a rise of 1% in education spending leads to a fall of 0.0731% in poverty in the short run. The impact is statistically significant (p-value = 0.0225), implying that increased spending on education have direct impacts on poverty reduction, which might prove beneficial for anti-poverty programs. Whereas on the other hand, the spending on Health (-0.0297) coefficient is negative, showing that an increase in health expenditure also has an effect on decreasing poverty in the short term.

However, the effect is not significant (p-value = 0.3210), showing that in the short term, the impact of expenditure on health on decreasing poverty is not significant enough to be certain. The Multiple R-squared of 0.5185 and the Adjusted R-squared of 0.4425 show that the model explains between 44% to 52% of the variation in poverty reduction, which is lower than in the long-run model. The F-statistic (6.82) and the p-value of the model (2.62E-03) confirm that the ECM as an aggregate is statistically significant, which signifies that education and health financing short-term variations have a bearing on poverty reduction. Table 8 displays the Variance Inflation Factor (VIF) values, which measure the intensity of multicollinearity in the regression model. VIF measures for Education, Health financing and L(ECT,1) are 1.42738, 1.54536, and 1.384068, respectively. As all values are far less than the threshold of 10, it reflects that multicollinearity poses no problem in the short-run model. This reveals that the independent variables are not highly correlated with each other, leading to valid coefficient estimates.

Table 7: Coefficients

Variable	Estimate	Std. Error	t value	p-value
(Intercept)	0.14073	0.007602	18.5120	0.0000
d(Education)	-0.0731	0.029446	-2.4830	0.0225
d(Health)	-0.0297	0.02918	-1.0190	0.3210
Residual standard error	0.02848			
Multiple R-squared	0.5185			
Adjusted R-squared	0.4425			
F-statistic	6.82			
p-value	2.62E-03			

Post estimation analysis

Table 8 presents the Variance Inflation Factor (VIF) values, which assess the severity of multicollinearity in the regression model. The VIF values for Education, Health financing and L(ECT,1) are 1.42738, 1.54536, and 1.384068, respectively. Since all values are well below the threshold of 10, it indicates that multicollinearity is not a concern in the short-run model. This suggests that the independent variables are not highly correlated, ensuring reliable coefficient estimates.

Table 8: Variance Inflation Factor (VIF) for Multicollinearity

Variable	VIF
d(Education)	1.42738
d(Health)	1.54536
L(ECT, 1)	1.384068

Table 9 shows the table of the summary of the key diagnostic test results to check for the stability of the Error Correction Model (ECM). The Breusch-Godfrey serial correlation test statistic is 1.8992 and its p-value is 0.1682, which means that the residuals do not have any significant autocorrelation, confirming the model in its representation of the underlying structure of the data. The Breusch-Pagan test for heteroskedasticity gives a test statistic of 1.4384 and p-value 0.6965, indicating that the variance of the residuals is homoscedastic and heteroskedasticity is not an issue. The Jarque-Bera test for normality gives a test statistic of 0.74657 and p-value 0.6885, which confirms the residuals arise from a normally distributed data set, satisfying a critical assumption in inference under regression models. Post-estimation analysis confirms the stability of the ECM.

Table 9: Model Diagnostic Test Results

Tests	Statistic	df	p-value
Breusch-Godfrey Test for Serial Correlation	1.8992	1	0.1682
Breusch-Pagan Test for Heteroskedasticity	1.4384	3	0.6965
Jarque-Bera Test for Normality of Residuals	0.74657	2	0.6885

Source: Authors Computation (2025)

The absence of multicollinearity (Table 9) ensures robust coefficient estimates. Diagnostic tests reveal the absence of serial correlation, heteroskedasticity, and non-normality of residuals issues, which justify the validity of the estimated equation. These findings indicate that the ECM provides statistically reliable conclusions about the short-run effects of development financing on poverty reduction in Nigeria.

Hypothesis Testing

$H0_1$: Financing of education does not have a significant contribution towards poverty alleviation in Nigeria

The estimate of d(Education) in Table 7 is -0.0731, with p-value 0.0225. Since the p-value is less than 0.05, we reject null hypothesis ($H0_1$) at 5% level of significance. It implies that financing of education has statistically significant contribution to the reduction of poverty in the short run, though the contribution is negative.

$H0_2$: Health financing has no statistically significant influence on poverty reduction in Nigeria

From Table 7, d(Health) is estimated to be -0.0297 with a p-value of 0.3210. Since the p-value is greater than 0.05, we fail to reject the null hypothesis ($H0_2$), indicating that health financing is not statistically significant in influencing poverty reduction in the short run.

DISCUSSION

The findings of this study reveal critical information regarding the relationship between public expenditure on education, healthcare, and poverty eradication in Nigeria. The Johansen Cointegration Test reveals a long-run equilibrium relationship among the variables, showing that public expenditure significantly contributes to poverty reduction in the long run. This is in line with the work of Osundina et al. (2014), which found a long-

run relationship between infrastructural spending by the government and poverty reduction, adding that sustained investments in the public sector are important for the achievement of real economic gains.

ECM estimation, however, suggests that government health and education expenditures do not directly influence improved economic well-being in the short term. The negative expenditure on education coefficient (-0.0731, $p = 0.0225$) indicates that short-term increases in spending on education may not yield short-term effect in the alleviation of poverty. This also concurs with Omodero (2019), who established that government spending in education is inefficient and tends to have unintended consequences. Concurrently, Oriavwote and Ukawe (2018) noticed that the gap exists between statistical results and actual experience of poverty reduction among citizens, highlighting the effective use of government expenditure to achieve significant poverty reduction.

Health expenditure likewise has a negative but statistically insignificant effect (-0.0297, $p = 0.3210$), which reveals that short-term real increases in health sector expenditures do not contribute significantly to poverty reduction. This contradicts Ejemezu and Ajala (2023), who found that government health spending had a good short-run effect on poverty reduction. The results, however, concur with Tubotamuno et al. (2021), whose ARDL model indicated that education capital expenditure had a negative and significant effect on poverty reduction, while recurrent expenditure was statistically insignificant. This means that while the government expenditure on social services is essential, the quality of expenditure either towards capital or current spending plays a critical role in determining its efficiency

The large and positive error correction term (0.1619, $p < 0.001$) indicates that in the long run, deviations from long-run equilibrium will increase rather than being corrected. This contradictory finding suggests that government expenditure in health and education is not efficiently translating to poverty reduction, possibly due to structural inefficiencies in budget deployment. Such a finding is corroborated by Asimiyu and Saidi (2015), who had argued that over-reliance on oil revenues and high corrupt tendencies is causing inefficiency in effective poverty reduction. Adegboyo (2020) further noted that even though there are certain government expenditures which assist in the fight against

poverty, the net result typically tends to be moderated by budget allocative and implementation inefficiencies.

The evidence does show that even though government expenditures on education and healthcare have a long-run impact on alleviating poverty, their short-run impacts are either negative or insignificant. This emphasizes the imperative of structural change to improve the effectiveness of public spending, investing in healthcare and education yielding certain economic returns. Such results align with studies pointing to governance problems with fiscal policy (Asimiyu and Saidi, 2015; Adegboyo, 2020) and emphasize the importance of investment in specialist infrastructure and social programs (Ejemezu and Ajala, 2023) towards more efficient poverty reduction.

CONCLUSION

The evidence of this research suggests that development financing, especially by way of government spending on education and health, is vital in poverty alleviation in Nigeria. Although long-term relationships between the spending and economic well-being exist, the short-term dynamics suggest strong difficulties. Ineffective public expenditure and structural inadequacies in budget execution prevent the quick impact of investments by the government on poverty reduction.

Recommendations

Informed by the finding of this study, the following are suggested to enhance the effectiveness of the poverty reduction development financing of Nigeria:

i. Establish robust monitoring and evaluation systems to enable effective use of government expenditure on education. Ensure well-established performance indicators as well as transparency in budgeting to improve the learning outcomes and their role in reducing poverty.
ii. Invest in health facilities and core services, particularly for rural communities. Expanding access to good quality care can improve health outcomes, leading to higher productivity and economic well-being for low-income communities.

REFERENCES

Adams, U. E. (2024). Understanding the complex factors contributing to poverty in Africa. International Journal of Information, Business and Management, 16(3), 42–57.

Adegboyo, A. M. (2020). Government expenditure and poverty reduction in Nigeria: An ARDL approach. Nigerian Journal of Economic and Social Studies, 62(1), 81–97.

Alamanda, T. A. (2020). Public spending, income inequality, and poverty in Indonesia: A panel data approach. Asian Economic Policy Review, 15(2), 210–228.

Amakom, U. (2020). Public spending and inequality in Nigeria: A benefit incidence analysis. African Journal of Economic Policy, 27(2), 33–52.

Ayodele, B. O. (2019). National Economic Empowerment and Development Strategy (NEEDS): Achievements and challenges. Nigerian Economic Review, 18(2), 45–59.

Ayogu, D. I., Abasi, M. C., & Ecoma, E. A. (2012). Dimensions of poverty and income disparity in Nigeria. Journal of Social Policy and Society, 7(3), 115–127.

Central Bank of Nigeria. (2021). Statistical bulletin. https://www.cbn.gov.ng

Ejemezu, C. A., & Ajala, A. A. (2023). Government spending and poverty in Nigeria: A cointegration analysis. Journal of Economic Policy and Development Issues, 12(1), 98–116.

Falodun, B. (2019). Poverty dynamics in Nigeria: Structural causes and intervention failures. Journal of African Development Studies, 11(2), 100–118.

Gupta, S., Verhoeven, M., & Tiongson, E. (2002). The effectiveness of government spending on education and health care in developing and transition economies. European Journal of Political Economy, 18(4), 717–737.

Halidu, M. A., Lawal, S. M., & Jamilu, M. T. (2017). Poverty and welfare analysis in Nigeria. African Journal of Economic Research, 15(2), 89–106.

Jibir, A., & Aluthge, C. D. (2019). Government expenditure and economic growth nexus in Nigeria. Journal of Applied Economics and Finance, 6(1), 1–10.

Nyasulu, G. (2020). Understanding the multidimensional nature of poverty in Africa. Development Research Review, 5(1), 54–70.

Olagunju, K. O., Salimonu, K. K., & Akinleye, S. O. (2019). Rethinking poverty measurement and its impact on policy. African Journal of Policy and Development, 10(3), 133–150.

Olaleye, A. O., Akintoye, V. A., & Ojo, O. A. (2020). Social capital and poverty alleviation in Nigeria. Journal of Community Development Research, 14(1), 65–79.

Omodero, C. O. (2019). Government sectoral spending and poverty reduction in Nigeria. International Journal of Economics and Financial Issues, 9(1), 1–6.

Oriavwote, V. E., & Ukawe, N. I. (2018). The role of public health financing in achieving sustainable development in Nigeria. Nigerian Journal of Economic and Social Studies, 60(2), 23–40.

Osundina, K. C., Ebere, O., & Osundina, R. A. (2014). Public education spending and poverty reduction in Nigeria. Journal of Economic and Financial Research, 2(4), 123–138.

Paternostro, S., Rajaram, A., & Tiongson, E. R. (2007). How does the composition of public spending matter? Policy Research Working Paper No. 3555, World Bank.

Tubotamuno, I. B., Udeh, A. E., & Ibeh, N. (2021). Government education spending and poverty in Nigeria: An ARDL approach. African Journal of Education and Development Studies, 7(2), 55–68.

Umar, M. (2020). Evolution of poverty reduction programs in Nigeria: Policies, implementation, and outcomes. Journal of Public Policy and Administration, 5(2), 19–34.