Public Social Expenditure and Economic Growth in Nigeria: The Moderating Role of Institutional Quality

Chukwu Emmanuel David, Gideon Essla Abimiku, Eburuche John Decency Chibuike, Akalado Miracle Chinonso

Federal College of Education (Technical) Umunze, Nigeria

DOI: https://doi.org/10.47772/IJRISS.2025.91200085

Received: 21 December 2025; Accepted: 28 December 2025; Published: 01 January 2026

ABSTRACT

This study examines the growth effects of public social expenditure in Nigeria, emphasizing the moderating role of institutional quality. Using annual data from 2000–2023 from the World Development Indicators, Worldwide Governance Indicators, African Development Index, Humanitarian Data Exchange, and Macrotrends, the study employs the Autoregressive Distributed Lag (ARDL) approach and an Error Correction Model (ECM). Results confirm a stable long-run relationship among economic growth, social expenditure, human capital, institutional quality, infrastructure, and trade openness. In the short run, education expenditure negatively affects growth, reflecting adjustment lags, fiscal pressures, and weak labour-market absorption, while health expenditure boosts immediate productivity. Human capital development and institutional quality also enhance short-run growth. Interaction effects reveal that institutional quality amplifies the efficiency of education spending but dampens the impact of health expenditure, indicating sector-specific coordination challenges. Infrastructure negatively affects short-run growth, whereas trade openness provides a strong positive effect. In the long run, education expenditure and human capital significantly promote growth, supporting the human capital–led growth hypothesis, while health expenditure is insignificant. Institutional quality shows no direct effect, but its interaction with education expenditure is negative, reflecting structural rigidities that constrain the economy's absorptive capacity. Trade openness sustains long-run growth, whereas infrastructure inefficiencies persist. The findings underscore that the growth impact of social spending is time-dependent and conditioned by governance and structural transformation.

Keywords: Public social expenditure; economic growth; institutional quality; ARDL; structural transformation; Nigeria.

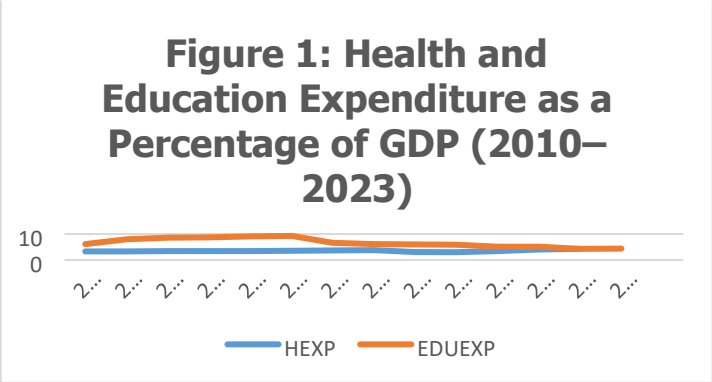
INTRODUCTION

In emerging economies, sustainable economic growth increasingly depends on the efficiency with which public resources are mobilized, allocated, and managed. In Nigeria, public social expenditure, particularly on education and health occupies a central role in this discourse due to its critical contribution to human capital formation, labour productivity, and overall social welfare. Beyond its redistributive function, government spending in these sectors represents a strategic long-term investment in the economy's productive capacity, essential for building a workforce capable of sustaining growth over time (Christopher et al., 2024; Kousar et al., 2023).

Education and health are unique in development planning because they simultaneously influence individual welfare and macroeconomic outcomes. Education is widely recognized as a driver of social mobility, enabling individuals to overcome socioeconomic disadvantages through access to opportunities, skill acquisition, empowerment, and the enhancement of social and cultural capital (Mian, 2023). From a human capital perspective, education functions similarly to physical capital, representing an investment in the knowledge, competencies, and health attributes of individuals that facilitate productive economic activity (Weisbrod, 1966). By enhancing skills, adaptability, and employability, such investment strengthens aggregate economic performance, highlighting why public expenditure on education and health constitutes a foundational, rather than discretionary, component of development policy (Schultz, 1961; Becker, 1964; Lucas, 1988).

Endogenous growth theory further emphasizes the role of human capital in long-run growth, identifying knowledge accumulation, skill formation, and health improvements as critical drivers of economic expansion. Investments in education and health enhance productivity, expand innovative capacity, and increase labour efficiency, thereby reinforcing long-term growth trajectories (Becker, 2009; Sunde & Vischer, 2015). Empirical evidence from Nigeria supports this perspective, demonstrating that human capital investment not only expands output but also fosters employment creation and poverty reduction, underscoring its broader developmental significance (Olopade, 2020; Abasilim & Onyekwuo-Oparah, 2025).

Despite these theoretical and empirical justifications, Nigeria's spending patterns reveal persistent gaps between policy aspirations and fiscal practice. Between 2010 and 2023, as depicted in Figure 1, health expenditure remained narrowly constrained at 3.1–3.7% of GDP, with only temporary increases to approximately 4.1–4.3% in 2021–2022. Education expenditure followed a similar pattern: peaking near 9% of GDP between 2013 and 2015, it declined steadily to below 6% from 2017 onward, reaching roughly 4.3% in 2022 and 4.4% in 2023— substantially below the 26% benchmark recommended by UNESCO. These trends indicate a structural inability or reluctance to allocate resources consistent with Nigeria's demographic pressures and human capital needs.



Source: Author's computation from Macrotrends Global Metrics and World Development Indicators (2025)

The consequences of underinvestment are evident in weak human development outcomes. Nigeria ranked 167th out of 174 countries on the World Bank Human Capital Index in 2022, reflecting deficiencies in education quality, healthcare access, and labour productivity. Public expenditure remains low at around 12% of GDP, with less than one-quarter allocated to education and health combined. The resulting effects include widening skills gaps, continued emigration of skilled labour, and limited institutional capacity to support productivity growth (Popogbe & Adeosun, 2020; Akunede, Nzeribe & Ezenekwe, 2022; Awogbemi, 2023).

Institutional quality is a key determinant of the effectiveness of social expenditure in promoting growth. Strong institutions—characterized by transparency, accountability, and effective governance ensure that investments in education and health translate into improved human capital, enhanced productivity, and inclusive outcomes (Le et al., 2016; Adebayo & Olanrewaju, 2024). Conversely, weak institutions, as historically observed in Nigeria, reduce the effectiveness of social spending. Corruption, poor regulatory enforcement, and mismanagement diminish returns on public expenditure, limiting the economy's ability to benefit fully from investments in education and health (Olanrewaju et al., 2020; Utile et al., 2021). This underscores the moderating role of institutional quality in the expenditure–growth relationship.

Empirical studies generally indicate that social spending positively influences economic growth (Sakthivel & Yadav, 2007; Adamu, 2003; Rubin et al., 2016). However, evidence specific to Nigeria remains inconclusive, often due to differences in estimation techniques, model specifications, time horizons, and data quality (Nwodo & Ukaegbu, 2017). Many studies aggregate expenditure without isolating education and health components, while others focus only on short-run effects, neglecting long-run dynamics. These limitations highlight the need for a focused analysis of how social expenditure impacts economic growth in the Nigerian context.

Against this backdrop, the present study investigates the impact of government expenditure on education and health on economic growth in Nigeria, while explicitly examining the moderating role of institutional quality.

By analyzing both short-run and long-run effects, the study provides evidence to inform policy decisions aimed at optimizing public investment for sustainable growth.

To guide the empirical analysis, the following null hypotheses are tested:

- **H_{01}:** Government expenditure on education has no significant impact on economic growth in Nigeria.
- **H_{02}:** Government expenditure on health has no significant impact on economic growth in Nigeria.

- **H_{03}a:** Institutional quality does not significantly moderate the impact of government expenditure on education on economic growth in Nigeria.
- **H_{03}b:** Institutional quality does not significantly moderate the impact of government expenditure on health on economic growth in Nigeria.

LITERATURE REVIEW

Conceptual Review

Economic Growth

Economic growth reflects a sustained expansion in an economy's productive capacity and its ability to generate goods and services over time. It is commonly assessed through persistent increases in real gross domestic product per capita, which capture improvements in average income and economic efficiency (Todaro & Smith, 2015). Growth outcomes are shaped by a complex interaction of demographic trends, capital accumulation, technological advancement, institutional arrangements, and the effectiveness with which available resources are mobilized (Barro & Sala-i-Martin, 2004). Over extended periods, even marginal differences in growth rates can compound into substantial disparities in income levels and welfare outcomes across countries (Haller, 2012).

Although closely related, economic growth and economic development are not synonymous. Growth primarily denotes quantitative expansion in output, whereas development encompasses qualitative improvements in living standards, structural transformation, and social well-being (Jhingan, 2011). For developing economies such as Nigeria, sustained economic growth remains indispensable, as it provides the fiscal capacity required for redistribution, infrastructure provision, and human capital investment. Consequently, public policy choices, particularly those relating to government expenditure priorities and institutional effectiveness, play a central role in shaping long-term growth trajectories.

Government Expenditure on Education

Government expenditure on education consists of public financial allocations directed toward the provision, expansion, and enhancement of educational services. Such spending seeks to improve access, raise quality, and strengthen the institutional foundations of the education system (UNESCO, 2020). In practice, education expenditure is typically divided into capital and recurrent components. Capital spending covers investments in physical infrastructure, equipment, and educational technology, while recurrent expenditure finances the ongoing operational costs of the sector, including staff remuneration, instructional materials, and administrative services (Okoro, 2013).

These two components are complementary rather than substitutive. Capital investment without adequate recurrent funding often results in underutilized facilities, while recurrent expenditure in the absence of capital expansion constrains system growth. Through improved educational attainment and skill acquisition, public education spending enhances labour productivity and supports sustained economic growth. As such, education expenditure constitutes a strategic investment in human capital rather than a purely social or redistributive intervention (OECD, 2019).

Government Expenditure on Health

Government expenditure on health refers to public spending aimed at financing preventive and curative healthcare services, public health programmes, health infrastructure, and system administration (World Health

Organization, 2019). These resources support hospitals, primary healthcare centres, medical supplies, workforce training, and regulatory oversight. In many developing economies, where access to private healthcare remains limited, public health expenditure plays a critical role in ensuring basic health outcomes and reducing vulnerability.

Health investment contributes to economic performance by lowering disease burden, extending working life expectancy, and reducing productivity losses associated with illness and absenteeism (Bloom & Canning, 2000). Beyond its direct effects, improved population health reinforces human capital accumulation by enabling individuals to participate more effectively in education, training, and productive employment. In this way, health expenditure complements education spending in shaping the overall quality and efficiency of the labour force.

Public Expenditure, Human Capital, and Economic Growth

Public expenditure on education and health represents one of the principal channels through which governments influence human capital development and long-term economic growth. Education enhances cognitive capacity, adaptability, and technical competence, enabling workers to respond more effectively to technological change and labour market demands (Becker, 1993). Similarly, improved health outcomes raise productive capacity by reducing morbidity and strengthening both physical and cognitive functioning (Grossman, 1972).

In many developing economies, private investment in human capital is constrained by income inequality, credit market imperfections, and information asymmetries. Under such conditions, public expenditure plays a compensatory role by broadening access to essential services (Barro, 1991). Comparative evidence suggests that educational attainment and health status are closely linked to growth performance, even after controlling for other structural determinants. However, the contribution of social expenditure to growth is not automatic. Inefficiencies in service delivery, inequitable access, and weak governance structures can substantially dilute expected outcomes, limiting the impact of public spending on human capital accumulation and economic performance (Kruk et al., 2018).

Institutional Quality and Economic Growth

Institutional quality refers to the effectiveness of the legal, political, and administrative frameworks that shape economic and social interactions. It encompasses dimensions such as government effectiveness, regulatory quality, rule of law, accountability, and control of corruption (Kaufmann et al., 2010). By shaping incentives and reducing uncertainty, institutions influence investment decisions, productivity outcomes, and the allocation of resources across sectors.

A growing body of theoretical and empirical literature recognizes institutions as fundamental determinants of sustained economic performance. North (1990) characterizes institutions as the rules of the game that structure economic behaviour and transaction costs. Empirical studies further demonstrate that economies with stronger institutional frameworks tend to experience higher rates of capital accumulation, faster technological diffusion, and more inclusive growth patterns (Acemoglu et al., 2005). From a governance perspective, Rodrik (2000) emphasizes that policy effectiveness depends not only on policy content but also on institutional capacity for coordination, enforcement, and credibility.

Institutional Quality, Public Social Expenditure, and Economic Growth

Institutional quality plays a critical moderating role in determining whether public social expenditure translates into improved human capital and economic growth. Government spending on education and health is more likely to be effective within institutional environments characterized by transparency, accountability, and administrative capacity (Gupta et al., 2001). Strong institutions enhance the efficiency of public resource use by reducing leakages, curbing corruption, and strengthening planning, monitoring, and service delivery systems, thereby improving educational and health outcomes and labour productivity (World Bank, 2017).

In contrast, weak institutions can substantially diminish the returns to public spending. Poor governance, rent seeking behaviour, and weak regulatory enforcement often undermine the effectiveness of education and health

expenditure (Mauro, 1998). Empirical evidence shows that corruption and institutional inefficiency lower the marginal productivity of social spending, leading to divergent growth outcomes even at similar expenditure levels (Rajkumar & Swaroop, 2008).

Conceptually, the growth effects of public social expenditure are neither automatic nor linear but depend critically on institutional quality. This perspective is consistent with endogenous growth theory, which emphasizes the interaction between policy choices, institutions, and human capital in shaping long-run economic growth (Aghion & Howitt, 2009).

THEORETICAL FRAMEWORK

This study is grounded in Endogenous Growth Theory, which departs from the neoclassical assumption of diminishing returns by emphasizing the role of human capital, innovation, and knowledge accumulation as internal drivers of long-term growth (Romer, 1990; Lucas, 1988). In its general form, output is expressed as:

$$Y_{it} = F(K_{it}, L_{it}, A_t) \quad (2.1)$$

where K represents physical capital, L labour, and A_t the stock of knowledge or technology. Unlike exogenous growth models, A_t evolves endogenously through investment in education, health, and research.

Romer's framework highlights the role of investment and innovation in expanding technological capacity, while Lucas emphasizes human capital accumulation, particularly through education as the key mechanism sustaining growth. This relationship can be summarized as:

$$\lambda = a+b(\Delta k/y) \quad (2.2)$$

where λ denotes the growth rate, a captures exogenous influences, and b reflects the responsiveness of growth to investment, proxied by the capital–output ratio ($\Delta k/y$). The implication is that higher and sustained investment rates can generate persistent growth effects.

Within this theoretical context, public expenditure on education and health enhances the stock of human capital, raises productivity, and supports innovation. These expenditures therefore function as endogenous inputs into the growth process, justifying their inclusion as key explanatory variables in empirical growth analysis.

Empirical Literature Review

Empirical studies examining the relationship between public social expenditure, institutional quality, and economic growth provide substantial but mixed evidence, reflecting differences in country contexts, expenditure composition, econometric techniques, and governance structures. Rather than presenting these studies sequentially, the literature is more coherently understood when organized around key thematic concerns that dominate both theoretical and empirical debates.

Education Expenditure and Economic Growth

Within the Nigerian literature, several studies provide evidence in support of the human capital–led growth hypothesis, particularly with respect to education expenditure. Okerekeoti (2022), employing annual data from 1999 to 2020, found that government expenditure on education has a positive and statistically significant effect on real GDP, indicating that sustained investment in education enhances productivity, income growth, and overall welfare. This result is consistent with endogenous growth theory, which assigns a central role to education in improving labor efficiency and innovation capacity.

However, more recent evidence indicates that the growth effects of education spending depend on both its composition and the time horizon considered. Christopher et al. (2025) showed that capital education expenditure exerts a negative influence in the short run but becomes growth-enhancing in the long run, reflecting the gestation lags associated with educational infrastructure investment. By contrast, recurrent education expenditure was found to stimulate economic growth in both the short and long run, underscoring

the importance of operational spending on teachers, instructional materials, and academic services in sustaining human capital accumulation.

Health Expenditure and Economic Growth

Empirical findings on the health expenditure–growth nexus in Nigeria are comparatively more nuanced. Olayiwola et al. (2021), re-examining Wagner's hypothesis using time-series techniques, established a long-run equilibrium relationship between public health expenditure and economic growth. However, Granger causality tests revealed no direct causal link from health spending to GDP. Notably, health expenditure as a share of total government spending exhibited a unidirectional causal relationship with economic growth, suggesting that fiscal prioritization, rather than absolute spending levels, plays a critical role in determining growth outcomes.

Similarly, Ideh (2022), applying OLS, cointegration, and ARDL techniques to data spanning 1980–2019, found that capital health expenditure exerts a positive and statistically significant long-run effect on economic development, while recurrent health expenditure has a negative but insignificant impact. Ozor et al. (2025) extended this analysis using ARDL and Toda–Yamamoto causality tests over the period 1981–2024 and reported that healthcare capital expenditure positively influences economic growth in both the short and long run, whereas recurrent health expenditure exerts a contractionary effect. These outcomes were attributed to inefficiencies, leakages, and weak accountability in recurrent health spending, leading the authors to advocate increased investment in health infrastructure alongside improved governance and public–private partnerships.

Capital versus Recurrent Social Expenditure

Beyond sectoral distinctions, an important empirical theme concerns the differential growth effects of capital and recurrent components of social expenditure. Christopher et al. (2025) provided robust evidence that while capital health expenditure consistently promotes economic growth, recurrent health expenditure tends to impede it, possibly due to inefficiencies and crowding-out effects. Udo et al. (2023), using ARDL and Granger causality techniques for Nigeria over the period 1980–2020, similarly found a bidirectional causal relationship between government expenditure and economic development, alongside evidence of long-run equilibrium. Their findings reinforce the argument that not only the volume but also the composition and efficiency of public spending are critical for achieving sustainable development outcomes.

At the sub-national level, Verazulianti et al. (2021), employing the Generalized Method of Moments on Indonesian provincial data, found that improvements in health and education outcomes are significant drivers of economic growth. However, foreign direct investment, domestic investment, and public infrastructure expenditure did not significantly support growth at the provincial level. The authors argued that for public spending to translate into growth, it must prioritize the quality and equitable distribution of health and educational services rather than merely expanding expenditure levels.

Institutional Quality and the Effectiveness of Social Spending

A growing strand of the literature emphasizes that the growth impact of public social expenditure is critically conditioned by institutional quality. Rajkumar and Swaroop (2008) provided seminal cross-country evidence demonstrating that public spending on education and health significantly improves human development outcomes only in countries with strong governance structures, low corruption, and effective bureaucracies. In weakly governed economies, increased public spending yielded little or no improvement in social outcomes. In the Nigerian context, this divergence may plausibly reflect persistent structural inefficiencies in public financial management, weak monitoring mechanisms, and governance constraints that dilute the productivity of social expenditure.

Supporting this institutional perspective, Sarwar and Tingqiu (2019), using panel data from 161 countries within a Solow growth framework, found that education and health variables exerted statistically insignificant effects on economic growth, while capital investment significantly stimulated economic activity, albeit with adverse environmental consequences. Their results further showed that higher educational attainment and capital accumulation help mitigate health challenges, whereas rising carbon emissions exacerbate them. These findings suggest that without strong institutions and complementary policies, the growth-enhancing effects of social spending may remain muted.

Taken together, the empirical literature suggests that public expenditure on education and health can promote economic growth, particularly when spending is capital-oriented, efficiently managed, and supported by strong institutional frameworks. Nevertheless, the evidence remains mixed regarding the short-run versus long-run effects of social expenditure and the effectiveness of recurrent spending. Moreover, many Nigeria-specific studies examine education and health expenditure in isolation, without explicitly modeling institutional quality as a moderating factor within a unified empirical framework. This gap motivates the present study, which jointly examines public social expenditure and institutional quality in explaining Nigeria's economic growth dynamics.

METHODOLOGY

Model Specification

The empirical strategy is anchored on estimating the links between government social- sector spending, human capital formation, and output performance in Nigeria. Real GDP growth (RGDP) is employed as the measure of economic growth, while human capital development index (HCDI), government expenditure on education (EDUEXP), and government expenditure on health (HEXP) serve as the core explanatory variables. A baseline linear specification is expressed as:

$$RGDPG = \beta_0 + \beta_1 EDUEXP + \beta_2 HEXP + \beta_3 INSTQI + \beta_4 HCDI + \beta_5 AIDI + \beta_6 TOP + \beta_7 (INSTQI * EDUEXP) + \beta_8 (INSTQI * HEXP) + \mu \quad \text{---------- 3.1}$$

Where:

- RGDPG represents real GDP growth rate
- EDUEXP is government expenditure on education
- HEXP represents government expenditure on health
- INSTQI denotes institutional quality index
- HCDI represents human capital development index
- AIDI denotes Aggregate infrastructural development index
- TOP is trade openness
- INSTQ*EDUEXP, INSTQI*HEXP are the interaction terms
- μ_t is stochastic disturbance term

Given that the variables exhibit mixed orders of integration and may be jointly determined, a single-equation time-series approach capable of accommodating both I(0) and I(1) processes is required. The Autoregressive Distributed Lag (ARDL) framework proposed by Pesaran, Shin and Smith (1996, 2001) is suitable for three reasons commonly emphasized in high-impact empirical literature. Earlier studies on fiscal expenditure and growth—e.g., Owusu (2012) and Orji (2014) have applied ARDL in comparable macro-financial settings, further supporting its relevance.

The unrestricted error-correction representation of Equation (3.1) is formulated as:

$$RGDPG_t = \alpha_0 + \sum_{i=1}^{p} \Psi_1 \Delta RGDP_{t-i} + \sum_{i=1}^{p} \Psi_2 \Delta EDUEXP_{t-i} + \sum_{i=1}^{p} \Psi_3 \Delta HEXP_{t-i} + \sum_{i=1}^{p} \Psi_4 \Delta INSTQI_{t-i}$$

$$+ \sum_{i=1}^{p} \Psi_5 \Delta HCDI_{t-i} + \sum_{i=1}^{p} \Psi_6 \Delta AIDI_{t-i} + \sum_{i=1}^{p} \Psi_7 \Delta TOP_{t-i} + \sum_{i=1}^{p} \Psi_8 \Delta (INSTQI * EDUEXP)_{t-i}$$

$$+ \sum_{i=1} \Psi_9 \Delta(INSTQI * HEXP)_{t-i} + \lambda_1 RGDP_{t-1} + \lambda_2 EDUEXP + \lambda_3 HEXP_{t-1} + \lambda_4 INSTQI_{t-1}$$
$$+ \lambda_5 HCDI_{t-1} + \lambda_6 AIDI_{t-1} + \lambda_7 TOP_{t-1} + \lambda_8 (INSTQI * EDUEXP)_{t-1} +$$
$$\lambda_8 (INSTQI * HEXP)_{t-1} + \mu_t ----- 3.2$$

Where:

- Δ denotes first differences
- Coefficients attached to the differenced regressors capture short-run effects
- The λ parameters represent long-run elasticities
- α_0 is the drift term

The sign and significance of the error-correction component derived from the estimated model will indicate the speed at which deviations from long-run equilibrium are corrected.

EMPIRICAL RESULTS AND DISCUSSION

Descriptive Statistics

Table 4.1 presents the descriptive statistics of the study variables. The average real GDP growth rate (RGDPG) is 3.02 per cent, indicating moderate economic growth in Nigeria, though the wide range between the minimum (−1.79%) and maximum (8.01%) values, along with a high standard deviation (2.74), reflects significant macroeconomic volatility due to oil price shocks, fiscal instability, and external sector fluctuations. Education expenditure (EDUEXP) has a mean of 7.13 with a low standard deviation (1.44), suggesting gradual and predictable changes, while health expenditure (HEXP) averages 3.42 with very low variability (0.23), indicating stable public health spending, possibly reflecting both fiscal discipline and limited responsiveness to rising needs. The Human Capital Development Index (HCDI) averages 1.82, showing modest human capital improvements, but its wide range (0.89–2.30) reflects uneven progress, likely due to regional disparities and policy inconsistencies. Institutional quality (INSTQI) averages 1.10 with moderate variability, reflecting fluctuating governance and institutional performance. The Aggregate Infrastructural Development Index (AIDI) records a relatively high mean of 19.64 but substantial variation (SD = 3.34), indicating uneven infrastructure development. Trade openness (TOP) has a low mean of 0.32 and modest dispersion, highlighting limited integration into global trade despite periods of liberalization. Jarque–Bera statistics show that most variables are approximately normally distributed, except HCDI, which slightly departs from normality. Overall, the variables' distributional properties support their suitability for econometric analysis.

Table 4.1: Descriptive Statistics

Variable	Mean	Median	Max	Min	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.	Obs
RGDPG	3.020	2.287	8.006	-1.794	2.743	0.018	1.785	2.771	0.250	45
EDUEXP	7.130	6.650	9.260	5.130	1.442	0.091	1.438	4.638	0.098	45
HEXP	3.421	3.385	4.076	2.985	0.234	0.372	3.257	1.162	0.559	45
HCDI	1.822	1.980	2.301	0.890	0.397	-0.885	2.529	6.293	0.043	45
INSTQI	1.099	1.108	1.840	0.423	0.449	-0.068	1.773	2.859	0.239	45
AIDI	19.640	20.527	23.731	11.960	3.342	-0.702	2.345	4.499	0.105	45
TOP	0.319	0.310	0.466	0.211	0.070	0.503	2.259	2.930	0.231	45

Source: Authors' computation (2025)

Unit Root Test Results

The Augmented Dickey–Fuller (ADF) unit root test results presented in Table 4.2 indicate mixed orders of integration among the variables. Real GDP growth (RGDPG), education expenditure (EDUEXP), aggregate infrastructure (AIDI), and trade openness (TOP) are non-stationary at level but become stationary after first differencing, implying that they are integrated of order one, I(1). In contrast, health expenditure (HEXP), institutional quality (INSTQI), and human capital development index (HCDI) are stationary at level, indicating that they are integrated of order zero, I(0).

The coexistence of I(0) and I(1) variables confirms that none of the series is integrated of order two, thereby satisfying the necessary condition for the application of the Autoregressive Distributed Lag (ARDL) modelling framework. This mixed integration order justifies the use of the ARDL bounds testing approach to examine both short-run dynamics and long-run equilibrium relationships among the variables.

Table 4.2: Augmented Dickey–Fuller (ADF) Unit Root Test Results

Variable	ADF t-stat (Level)	p-value	ADF t-stat (1st Diff.)	p-value	Order
RGDPG	-2.1588	0.2228	-4.0381	0.0020	I(1)
EDUEXP	-1.2528	0.6444	-2.7265	0.0766	I(1)
HEXP	-3.2251	0.0220	–	–	I(0)
INSTQI	-3.2895	0.0185	–	–	I(0)
HCDI	-3.0446	0.0349	–	–	I(0)
AIDI	-0.5622	0.8721	-2.6928	0.0798	I(1)
TOP	-1.6960	0.4297	-3.2280	0.0216	I(1)

Source: Authors' computation (2025)

ARDL Bounds Test for Cointegration

The ARDL bounds test results reported in Table 4.3 show an F-statistic of 26.38, which far exceeds the upper critical bound values at the 1 per cent, 5 per cent, and 10 per cent significance levels. This provides strong empirical evidence of a long-run cointegrating relationship among real GDP growth, public social expenditure (education and health), human capital development, infrastructural development, institutional quality, and trade openness. The existence of cointegration implies that despite short-run fluctuations, the variables move together in the long run, validating the theoretical expectation that sustained economic growth is jointly influenced by social investment, institutional effectiveness, and structural factors.

Table 4.3: Model's Co-integration (ARDL Bounds Test) Result

F-Statistic	Significance Level	I(0) Lower Bound	I(1) Upper Bound
26.38	10%	1.95	3.06
	5%	2.22	3.39
K = 8	2.5%	2.48	3.70
	1%	2.79	4.10

Source: Authors' computation (2025)

Short-Run Dynamics

The short-run ARDL estimates in Table 4.4 indicate that the growth effects of public social expenditure and institutional quality in Nigeria are uneven and highly time-dependent. Education expenditure exhibits a negative and statistically significant short-run effect on economic growth, suggesting that increases in education spending do not translate into immediate output gains. This outcome is consistent with the long gestation period of education investments and reflects short-term fiscal pressures, administrative rigidities, and weak labour-market absorption of newly acquired skills. In an economy characterized by limited industrial diversification, the short run growth response to education spending is therefore likely to be muted or even negative, as documented for Nigeria by Christopher et al. (2025), who show that capital education expenditure dampens short-run growth due to delayed returns and limited absorptive capacity.

By contrast, health expenditure shows a strong positive short-run effect on growth, indicating that improvements in health spending yield more immediate productivity benefits. Unlike education, health investments directly affect labour efficiency by reducing morbidity and work-time losses, which can translate quickly into higher output. This channel is well established in the development literature, where health capital is shown to function as a short-run productivity input rather than a purely long-term investment (Ozor et al., 2025; Ideh, 2022).

Human capital development outcomes also exert a positive short-run effect, reinforcing the view that realised improvements in skills and health status matter more for immediate growth performance than expenditure levels alone. Institutional quality is positive and statistically significant in the short run, suggesting that even incremental improvements in governance can reduce transaction costs and enhance economic performance over shorter horizons, particularly in environments characterized by weak institutional capacity.

The interaction effects provide further insight into the conditioning role of institutions. The positive interaction between institutional quality and education expenditure indicates that governance improvements enhance the short-run efficiency of education spending through better budget execution, monitoring, and service delivery, consistent with the public expenditure efficiency argument advanced by Rajkumar and Swaroop (2008). However, the negative interaction between institutional quality and health expenditure points to persistent coordination and accountability challenges within the health sector. This suggests that improvements in aggregate governance may be insufficient to overcome sector-specific inefficiencies and resource leakages that constrain the growth impact of health spending, a concern widely noted in the Nigerian health financing literature (Olayiwola et al., 2021; Ideh, 2022).

Infrastructure development exerts a negative short-run effect on growth, reflecting transitional inefficiencies associated with project implementation, financing constraints, and maintenance challenges. These factors can delay the realization of productive benefits from infrastructure investments. In contrast, trade openness contributes positively and significantly to short-run growth, highlighting the role of external demand and access to imported inputs in supporting output expansion.

The lagged dependent variable is positive and highly significant, indicating strong persistence in economic growth. This suggests that short-run shocks have sustained effects on output dynamics. Overall, the high explanatory power of the model and satisfactory diagnostic statistics indicate that the estimated short-run relationships are stable and economically meaningful.

Table 4.4: Short-Run Dynamics from ARDL Test

Dependent Variable: ΔRGDPG

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ΔEDUEXP	-2.827359	0.754368	-3.747985	0.0010
ΔHEXP	18.44595	2.929197	6.297271	0.0000
ΔHCDI	5.030484	1.685464	2.984629	0.0064

ΔINSTQI	15.54146	6.624296	2.346130	0.0276
ΔAIDI	-0.583930	0.211158	-2.765368	0.0108
Δ(INSTQI × EDUEXP)	2.583281	0.640371	4.034038	0.0005
Δ(INSTQI × HEXP)	-10.15047	1.810683	-5.605876	0.0000
ΔTOP	38.96680	5.720982	6.811208	0.0000
RGDPG(−1)	0.832649	0.049256	16.90451	0.0000
Constant	-3.721564	5.154685	-0.721977	0.4773
Model Diagnostic Statistics				
R-squared		0.9977		
Adjusted R-squared		0.9960		
Durbin–Watson Statistic		2.41		

Source: Authors' computation (2025)

Long-Run ARDL/ECM Results

The long-run ARDL estimates reported in Table 4.5 show that education expenditure exerts a positive and statistically significant effect on economic growth, indicating that sustained investment in education promotes human capital accumulation and long-term productivity. This finding is consistent with Okerekeoti (2022) and supports the human capital–led growth hypothesis within the endogenous growth framework, complementing the short-run results by confirming that the growth-enhancing effects of education spending materialize primarily over longer horizons.

Human capital development (HCDI) also exhibits a strong positive and significant long-run effect, reinforcing evidence from Verazulianti et al. (2021) that improvements in educational attainment and health outcomes—rather than expenditure levels alone are critical for sustained economic growth. In contrast, health expenditure is negative and statistically insignificant in the long run, suggesting that its growth effects are largely transitory or conditional on efficiency and sectoral governance, consistent with Olayiwola et al. (2021) and Ideh (2022).

Institutional quality remains statistically insignificant in the long run when considered independently, implying that governance affects growth mainly through interactions with key policy variables rather than via a direct channel. Notably, the interaction between institutional quality and education expenditure is negative and statistically significant. From a structuralist development perspective, this counterintuitive result reflects persistent structural rigidities in Nigeria's economy, where improvements in institutional efficiency enhance the delivery of education spending without a commensurate expansion of productive, labour-absorbing sectors.

Under such conditions, improved governance may increase the efficiency of human capital formation, yet weak industrial diversification and limited technological upgrading constrain the economy's capacity to productively absorb skilled labour, resulting in skills mismatch and educated unemployment. Consistent with classical and neo-structuralist arguments, human capital accumulation in the absence of complementary structural transformation yields limited growth dividends (Lewis, 1954; Hirschman, 1958; Rodrik, 2013). Thus, the negative interaction effect does not contradict the positive long-run role of education expenditure per se, but rather underscores that the growth effectiveness of education spending is conditional on the productive structure, industrial depth, and absorptive capacity of the economy.

Aggregate infrastructural development (AIDI) exerts a negative and statistically significant long-run effect, reflecting inefficiencies, inadequate maintenance, and possible misallocation of capital investments, in line with Verazulianti et al. (2021). Trade openness remains positive and statistically significant, confirming that

sustained global integration supports growth through technology transfer, market access, and productivity gains. Finally, the error-correction term is negative and statistically significant, indicating that approximately 16.7 per cent of short-run deviations from long-run equilibrium are corrected annually, thereby confirming the stability of the long-run relationship.

Table 4.5: Long-Run ARDL/ECM Coefficients

Variable	Coefficient	t-Statistic	Prob
CointEq(-1)	-0.167	0.049	-3.398
EDUEXP	7.365	2.635	0.015
HEXP	-8.445	-0.891	0.382
HCDI	30.060	2.566	0.017
INSTQI	1.877	0.088	0.930
AIDI	-3.489	-2.517	0.019
INSTQI_EDUEXP	-7.505	-2.752	0.011
INSTQI_HEXP	13.771	1.588	0.125
TOP	51.952	2.461	0.021
C	-22.238	-0.731	0.472

Source: Authors' computation (2025)

Robustness and Sensitivity Checks

To reinforce confidence in the estimated results, a series of robustness and sensitivity checks were performed. Diagnostic tests confirm that the ARDL model is well-specified: residuals are normally distributed, and the Breusch–Pagan–Godfrey and Breusch–Godfrey LM tests indicate no evidence of heteroskedasticity or serial correlation, suggesting that the coefficients are reliable and efficiently estimated.

The stability of the long-run relationship is further supported by the statistically significant and correctly signed error-correction term, indicating convergence toward equilibrium after short-run shocks. Additionally, the bounds test F-statistic exceeds the upper critical values at conventional significance levels, affirming that the long-run cointegration is robust to alternative lag structures and critical value assumptions.

Overall, these checks indicate that the key findings, particularly the differential short-run and long-run effects of education and health expenditure and the moderating role of institutional quality are robust across diagnostic and specification conditions.

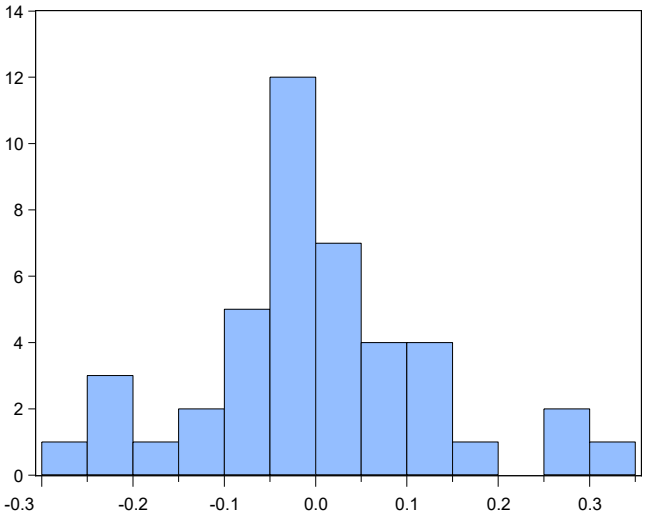
Table 4.6: Selected Diagnostic Tests

Test	Statistic	Prob
Heteroskedasticity (F-test)	1.353	0.241
Serial Correlation (LM test)	1.120	0.301

Source: Authors' computation (2025)

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue XII December 2025

Figure 2: Normality Test



Series: Residuals	
Sample	2000Q1 2023Q3
Observations	45
Mean	-1.18e-14
Median	-0.018657
Maximum	0.335929
Minimum	-0.260653
Std. Dev.	0.125067
Skewness	0.343405
Kurtosis	3.609639
Jarque-Bera	1.511035
Probability	0.469767

CONCLUSION, IMPLICATIONS AND POLICY RECOMMENDATIONS

Conclusion

This study examined the relationship between public social expenditure and economic growth in Nigeria, with particular emphasis on education and health spending, human capital development, and the moderating role of institutional quality. Using an ARDL–ECM framework and annual data spanning 2000–2023, the findings confirm the existence of a stable long-run relationship among the variables.

The results reveal important asymmetries between short-run and long-run effects. Education expenditure exerts a negative but significant effect on economic growth in the short run, reflecting adjustment costs and gestation lags, but becomes growth-enhancing in the long run. This underscores the role of sustained investment in education in promoting human capital accumulation and long-term productivity. Health expenditure, by contrast, contributes positively to economic growth in the short run but shows no statistically significant long-run effect, suggesting that its growth impact is contingent on spending efficiency and institutional effectiveness.

Importantly, institutional quality does not directly drive growth but significantly moderates the effectiveness of social expenditure. Weak institutional capacity diminishes the growth returns of education and health spending, while trade openness supports growth in both the short and long run. Overall, the findings suggest that public social expenditure promotes economic growth in Nigeria primarily when supported by strong institutions and efficient resource utilization.

Implications and Policy Recommendations

The findings carry important policy implications for Nigeria's development strategy. First, the long-run growth enhancing role of education expenditure implies that government investment in education should be sustained and strategically targeted toward improving access, quality, and outcomes rather than merely expanding budgetary allocations. Policies should prioritize teacher training, curriculum relevance, educational infrastructure, and research and innovation to ensure that education spending translates into productive human capital.

Second, the short-run effectiveness but long-run insignificance of health expenditure highlights the need to improve efficiency, accountability, and governance within the health sector. Strengthening health infrastructure, reducing leakages in recurrent spending, and expanding public–private partnerships can enhance the long-term growth impact of health investments.

Third, the moderating role of institutional quality underscores the urgency of governance reforms. Enhancing transparency, strengthening public financial management systems, and improving regulatory effectiveness are critical to maximizing the productivity of social expenditure. Without such reforms, increases in education and health spending may yield diminishing or unsustainable growth returns.

Finally, the negative long-run effect of infrastructure investment suggests the need for improved project selection, monitoring, and maintenance frameworks to prevent misallocation of resources. Complementary policies that promote trade openness and institutional reform will further enhance the growth benefits of social spending.

In sum, achieving sustainable and inclusive economic growth in Nigeria requires not only increased investment in education and health but also strong institutions, efficient expenditure management, and outcome-oriented policy design.

REFERENCES

1. Abasilim, U. D., & Onyekwuo-Oparah, A. C. (2025). Human Capital Development and Poverty Reduction in Nigeria: Investigating the Nexus. Jurnal Ilmiah Administrasi Publik dan Pemerintahan (JIAPP), 4(2), 153-163.
2. Acemoglu, D., Johnson, S., & Robinson, J. A. (2005). Institutions as the fundamental cause of long-run growth. In P. Aghion & S. Durlauf (Eds.), Handbook of Economic Growth (Vol. 1A, pp. 385–472). Elsevier. https://doi.org/10.1016/S1574-0684(05)01006-3
3. Adebayo, T. S., & Olanrewaju, V. O. (2024). How effective are trade policy and monetary policy in achieving a pathway to sustainable development? Evidence from a wavelet quantile-on-quantile Granger causality analysis. Sustainable Development.
4. Aghion, P., & Howitt, P. (2009). The economics of growth. MIT Press Cambridge.
5. Barro, R. J. (1991). Economic growth in a cross section of countries. The Quarterly Journal of Economics, 106(2), 407–443. https://doi.org/10.2307/2937943
6. Barro, R. J., & Sala-i-Martin, X. (2004). Economic growth (2nd ed.). MIT Press, Cambridge.
7. Becker, G. S. (1993). Human capital: A theoretical and empirical analysis, with special reference to education (3rd ed.). University of Chicago Press. http://dx.doi.org/10.7208/chicago/9780226041223.001.0001
8. Bloom, D. E., & Canning, D. (2000). The health and wealth of nations. Science, 287(5456), 1207–1209. https://doi.org/10.1126/science.287.5456.1207
9. Christopher, N., Michael S. Akpan, & Sunday Emmanuel Ologunla. (2025). Impact of government spending in education and health sectors on Nigeria's economic growth: a time series analysis of capital and recurrent expenditures. Journal of Social Sciences and Management Studies, 4(1), 24–39. https://doi.org/10.56556/jssms.v4i1.1119
10. Grossman, M. (1972). On the concept of health capital and the demand for health. Journal of Political Economy, 80(2), 223–255. https://doi.org/10.1086/259880
11. Gupta, S., Davoodi, H., & Tiongson, E. (2001). Corruption and the provision of health care and education services. In The political economy of corruption (pp. 123-153). Routledge.
12. Haller, A. P. (2012). Concepts of Economic Growth and Development. Challenges of Crisis and of Knowledge. Economy Transdisciplinarity Cognition, 15(1).
13. Hirschman, A. O. (1958). The Strategy of Economic Development. Yale University Press.
14. Ideh, A. N., Nenbee, S. G., & Vite, B. N. (2022). Public Healthcare expenditure, population growth and economic development in Nigeria. International Journal of Public Health, Pharmacy and Pharmacology, 7(3), 1-13.
15. Jhingan, M. L. (2011). The economics of development and planning. Mayur Vihar, Delhi: Vrinda Publications (P) Ltd.
16. Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The worldwide governance indicators: Methodology and analytical issues. World Bank Policy Research Working Paper No. 5430. World Bank. https://doi.org/10.1596/1813-9450-5430
17. Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., Adeyi, O., Barker, P., Daelmans, B., Doubova, S. V., English, M., El-Jardali, F., Pate, M., & others. (2018). High-quality health systems in the Sustainable Development Goals era: Time for a revolution. The Lancet Global Health, 6(11), e1196–e1252. https://doi.org/10.1016/S2214-109X(18)30386-3
18. Le, T. H., Kim, J., & Lee, M. (2016). Institutional quality, trade openness, and financial sector development in Asia: An empirical investigation. Emerging Markets Finance and Trade, 52(5), 104uti7-1059.

19. Lewis, W.A. (1954) Economic Development with Unlimited Supplies of Labour. The Manchester School of Economic and Social, 22, 139-191.
20. Mauro, P. (1998). Corruption and the composition of government expenditure. Journal of Public Economics, 69(2), 263–279. https://doi.org/10.1016/S0047-2727(98)00025-5
21. Mian, L. (2023). The role of education in promoting social mobility. Sociology and Criminology, 11(2), 1-2.
22. North, D. C. (1990). Institutions, institutional change and economic performance. Cambridge University Press.
23. OECD. (2019). Education at a glance 2019: OECD indicators. OECD Publishing. https://doi.org/10.1787/f8d7880d-en
24. Okerekeoti, C. U. (2022). Government expenditure on education and economic growth in Nigeria. International Journal of Recent Research in Commerce Economics and Management (IJRRCEM), 9(2), 126-134.
25. Okoro, A. S. (2013). Government spending and economic growth in Nigeria (1980-2011). Global Journal of Management and Business Research Economics and Commerce, 13(5), 21-29.
26. Olanrewaju, G. O., Tella, S. A., & Adesoye, B. A. (2019). Institutional quality, financial inclusion and inclusive growth: Causality evidence from Nigeria. Economic and Financial Review, 57(3), 3.
27. Olayiwola, S. O., Bakare-Aremu, T. A., & Abiodun, S. O. (2021). Public health expenditure and economic growth in Nigeria: Testing of Wagner's Hypothesis. African Journal of Economic Review, 9(2), 130-150.
28. Olopade, B. C. (2020). Government expenditure, human capital and poverty reduction: A comparative study of Nigeria and Saudi Arabia (Doctoral dissertation, PhD Thesis, Covenant University).
29. Ozor, R. I., Ahamba, K. O., Ogwuru, H. O. R., Okeke, A. C., Onwuka, C. O., Nwedu, O. N., & Nwiboko, I. U. (2025, July). Healthcare expenditure and economic growth nexus in Nigeria: Impact and causality analyses. Journal of Economics, Finance and Management Studies, *8*(7), 4601–4616. https://doi.org/10.47191/jefms/v8-i7-49
30. Rajkumar, A. S., & Swaroop, V. (2008). Public spending and outcomes: Does governance matter? Journal of Development Economics, 86(1), 96–111. https://doi.org/10.1016/j.jdeveco.2007.08.003
31. Rodrik, D. (2000). Institutions for high-quality growth: What they are and how to acquire them. Studies in Comparative International Development, 35(3), 3–31. https://doi.org/10.1007/BF02699764
32. Rodrik, D. (2013). Unconditional convergence in manufacturing. The quarterly journal of economics, 128(1), 165-204.
33. Sarwar, S., Alsaggaf, M. I., & Tingqiu, C. (2019). Nexus among economic growth, education, health, and environment: dynamic analysis of world-level data. Frontiers in public health, 7, 307.
34. Sunde, U., & Vischer, T. (2015). Human capital and growth: Specification matters. Economica, 82(326), 368-390.
35. Todaro, M. P., & Smith, S. C. (2015). Economic development (12th ed.). Pearson Education.
36. Udo, A. B., Akpan, B. L., & Nsor, O. N. (2023). The developmental implications of Nigeria's public spendings: an ARDL analysis [Preprint]. Research Square. https://doi.org/10.21203/rs.3.rs-2611714/v1
37. UNESCO. (2020). Global education monitoring report 2020: Inclusion and education – All means all. UNESCO Publishing. https://unesdoc.unesco.org/ark:/48223/pf0000373724
38. Verazulianti, V., Dawood, T. C., & Zulham, T. How Important Are Health and Education in Boosting Subnational Economic Growth?. Journal of Socioeconomics and Development, 4(1), 33-45.
39. Weisbrod, B. A. (1966). Investing in human capital. The Journal of Human Resources, 1(1), 5-21.
40. World Bank. (2017). World development report 2017: Governance and the law. World Bank. https://doi.org/10.1596/978-1-4648-0950-7
41. World Health Organization. (2019). Global spending on health: A world in transition. World Health Organization. https://apps.who.int/iris/handle/10665/330357