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DISAGGREGATED PUBLIC EXPENDITURE AND ECONOMIC GROWTH IN NIGERIA

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Abstract

The study examined the effect of disaggregated public expenditure specifically government expenditure on education and infrastructure on economic growth in Nigeria between 1981 and 2020. Despite successive fiscal reforms, Nigeria continues to grapple with slow economic growth, infrastructural gaps, and underfunded education, raising concerns over the effectiveness of public spending in driving long-term development. The study employed time series data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and the National Bureau of Statistics (NBS). Descriptive statistics, Augmented Dickey-Fuller (ADF) unit root tests, and econometric estimations were used to examine the relationship between education expenditure, infrastructure expenditure, and economic growth (proxied by real GDP). The results revealed that expenditure on education has a positive but statistically weak effect on economic growth, reflecting underinvestment, poor fund utilization, and systemic inefficiencies in Nigeria's education sector. In contrast, infrastructure expenditure was found to exert a significant positive influence on economic growth, underscoring its critical role in enhancing productivity, promoting trade, and attracting investment. These findings suggest that while both components of public expenditure are growth-enhancing, infrastructure spending has a more immediate and robust effect on economic performance than education expenditure. The study concludes that the government should strengthen fiscal policies that prioritize infrastructural development while ensuring effective and transparent allocation to the education sector. Recommendations include increased budgetary allocation to education, coupled with reforms to curb leakages, and sustained infrastructural investment to stimulate inclusive and sustainable economic growth.

Keywords: public expenditure, education expenditure, infrastructure expenditure, economic growth

1. Introduction

The relationship between public expenditure and economic growth has remained a central issue in macroeconomic policy debates, particularly in developing economies such as Nigeria. Public expenditure, whether in aggregate or disaggregated components, represents the fiscal tool through which government influences resource allocation, income distribution, and long-term development.

Specifically, expenditure on critical sectors such as education and infrastructure has been regarded as growth-inducing because of their multiplier effects on human capital development, productivity, and competitiveness (Olomola, 2024; Jolaiya, 2024).

Nigeria, Africa's largest economy, has consistently expanded its budgetary allocation over the last decade. According to the Budget Office of the Federation

(2024), Nigeria's total public expenditure rose from ₦9.12 trillion in 2020 to ₦28.7 trillion in 2024, representing an increase of over 200% within four years. However, the pattern of this expenditure shows structural imbalances, as recurrent expenditure continues to dominate, consuming about 73% of the 2024 budget, while capital expenditure accounted for only 27%. This disproportionate allocation raises concerns about the sustainability of growth and the country's ability to invest in long-term productive assets such as education and infrastructure (World Bank, 2025).

Expenditure on education is critical in shaping the quality of human capital, which is indispensable for innovation, productivity, and overall economic development. In Nigeria, education has received increasing but still inadequate allocations. For instance, the Federal Government allocated ₦1.54 trillion to education in 2024, representing 7.9% of the total budget, which falls short of the UNESCO (2023) benchmark of 15–20%. This underfunding has contributed to persistent challenges in Nigeria's education sector, such as inadequate facilities, frequent industrial actions, and poor learning outcomes, which undermine the sector's potential contribution to growth (Ndubuaku et al., 2024).

Similarly, infrastructure spending plays a vital role in stimulating economic activities by reducing transaction costs, improving access to markets, and attracting investment. The National Infrastructure Master Plan (2023) estimates that Nigeria requires over $3 trillion in infrastructure investment by 2050 to close the gap and meet its development needs. However, capital allocation to infrastructure remains insufficient, averaging less than 5% of GDP in the past decade, compared to over 25% in emerging economies like China and India (World Bank, 2025; Ukwu, 2020). For example, in the 2024 budget, transportation and works received ₦1.32 trillion and ₦1.05 trillion respectively, which analysts argue is grossly inadequate relative to Nigeria's infrastructure deficit (Punch, 2024).

Empirical studies reinforce the importance of disaggregated analysis of government expenditure. Adamu et al. (2023), using ARDL methodology, showed that capital expenditure on infrastructure has a positive and significant impact on Nigeria's GDP growth, while recurrent expenditure exerts a weak or negative effect.

Similarly, Awusa (2023) demonstrated that expenditure on public administration and social spending enhances growth only when supported by appropriate monetary policies. Igwe and Inyiama (2024) also found that recurrent expenditure, particularly on wages and overheads, has not translated into economic prosperity, whereas education and infrastructure spending demonstrate higher growth elasticity.

Despite substantial increases in government spending, Nigeria's economic growth has been inconsistent. The National Bureau of Statistics (NBS, 2025) reports that GDP growth slowed to 2.9% in 2023 after a recovery from the pandemic-induced recession, far below the African average of 4.2% (IMF, 2024). This growth trajectory underscores the inefficiencies in Nigeria's expenditure framework, particularly the misallocation of resources away from productive sectors.

Against this backdrop, this study therefore empirically examined the effect of expenditure on education and infrastructure on Nigeria's economic growth. Also, the study formulated the following hypotheses:

H_{01}: There is no significant relationship between government expenditure on education and economic growth in Nigeria.

H_{02}: Government expenditure on infrastructure has no significant impact on economic growth in Nigeria.

2. Literature Review

Concept of Economic Growth

The term economic growth is an increase in the production of goods and services over a specific period. Economic growth creates more profit for businesses. As a result, stock prices rise (Agbonkhese & Asekhome, 2014). Economic growth is best defined as a long-term expansion of productive potential of the economy, the trend of growth could be expanded by raising capital investment spending as a share of national income as well as the size of capital inputs and labour supply, labour force and the technological advancement (Ogboru et al., 2018).

Economic growth is the increase of per capita Gross Domestic Product (GDP) or other measure of aggregate income. The International Monetary Fund (IMF) defines Economic growth as the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product, or real GDP, usually in per capita terms (Carreon, 2013).

Concept of Public Expenditure

Public expenditure also known as government spending, public spending or public expenditure is the aggregate expenditure by a constituted authority (local, state or federal), all agencies and institutions or such other organizations that has been empowered by the constitution to carry out services that enhance the welfare of the citizenry (Sayari & Rabeh, 2022).

Put differently, it can be defined as spending by government at any level. Madugba et al. (2021) asserts that Government expenditures consist of spending on real goods/services purchased from outside suppliers; spending on employment in state services such as administration, defense and education; spending on transfer payments to pensioners, the unemployed and disabled; spending on subsidies and grants to industry; and payment of debt interest.

Concept of Government Expenditure on Education

Government expenditure on education refers to the component of education expenditure that comes from national, regional, and local government units to finance and/or produce educational services (De Guzman, 2020). It comprises of recurrent and capital expenditure on education.

Recurrent expenditure on education is the expenses borne to fulfil day to day services like salary to teachers and staff. Similarly capital expenditure on education is the expenditure incurred to do development work and it comprises of returns after the year of investment too. For the purpose of this study, education expenditure is defined as both the recurrent and capital expenditures incurred by the Federal Government of Nigeria in providing educational services to Nigerians measured in Naira.

According to the World Bank (2019), expenditure on education includes all expenditures made, on the national territory, by all economic agents, central and local government, companies and households, for educational activities. These activities include academic and extra-curricular teaching at all levels, organisation of educational system (general administration, educational guidance and education research), activities intended to encourage attendance at school (catering and boarding facilities, school medical services, school transport) and expenses requested by schools (supplies, books, clothing).

UNESCO (2020) defines expenditure on education as expenditure on core educational goods and services, such as teaching staff, school buildings, or school books and teaching materials, and peripheral educational goods and services such as

ancillary services, general administration and other activities. Expenditure on education can come from public source (i.e. all government ministries and agencies financing or supporting education programmes in the country), international source, and private source (e.g. households).

Concept of Government Expenditure Infrastructure

Government spending on infrastructure is critical. However, some academic research has established that government spending is harmful to economic growth because large public sectors reduce the level of economic activity and, as such, the level of economic growth (Mitchell, 2005), while other studies find that government spending improves production and economic growth (Aregbeyeni & Kolawole, 2015; Babalola, 2015). The inconsistencies in research findings call for concern, especially in matters of this nature which affect citizens' welfare. Hence, this study attempts to probe into the relationship between government spending and economic growth.

Aremu, (2016) posits that public infrastructure such as highways and roads, airports, communication facilities, water supply systems, electricity, waste treatment facilities and the like is believed to provide services that form a part of residents' consumption bundles and augments capital and labour as an input in the production process.

Ayogu, (2007) is of the view that access to infrastructure provision promotes human development, and betters' quality of life through improved productivity and sustainable economic growth. Specifically, public infrastructure provisioning may enhance trade and commerce (Mbaku, 2013; Straub, 2012) and play an important role in alleviating poverty and inequality (Ndulu, 2006; World Bank, 2006). However, some components of core infrastructure are part of social infrastructure (which counts as a final good).

Empirical Review

Ayaga et al. (2024) investigated the impact of educational expenditure on economic growth in Nigeria using time series data and the Autoregressive Distributed Lag (ARDL) methodology. The findings indicate that government expenditure on education has a negative and statistically insignificant impact on economic growth in both the short and long run. In contrast, labor productivity exhibits a significant positive impact on economic growth in the short run but not in the long run. Additionally, gross fixed capital formation and household consumption expenditure show positive effects on economic growth, though these are not statistically significant. The study highlights the inefficiency of current educational spending in promoting economic growth and suggests a revaluation of government expenditure on education. Recommendations include focusing on programs that enhance skills and productivity, investing in infrastructure, implementing policies to boost household consumption, and improving data collection and analysis. These measures aim to foster a more robust economic environment and leverage education as a driver of sustainable economic growth in Nigeria.

Okerekeoti (2022) examined the effect of Government Expenditure on Education on economic growth of Nigeria. Data for the analysis were extracted from annual series of the selected relevant macroeconomic variables from 1999 to 2020. Data for government expenditure on education were used as public expenditure variable while real gross domestic product was used as economic growth variable. Regression analysis was used to test the hypothesis; the findings of this study upholds that there is a positive and significant effect between government expenditure on education and RGDP at 5% level of significance. Based on finding of the study, the researchers

recommended that there should be an increase in the reallocation of public spending towards education in order to raise income in the long run which would cause an improvement in the wellbeing of the citizenry.

Chidi and Abdulkarim (2023) investigated the impact of education spending on the economic growth of Nigeria. We applied annual time-series data from 1980 to 2019 and an Autor Regressive Distributed Lag (ARDL) methodology to examine the effect of education spending on economic growth in Nigeria. The empirical findings established that health, capital expenditure on education, recurrent expenditure on education, positively affected GDP growth rate in the long-run and short-run whereas, inflation rate, gross capital formation, and exchange rate retarded economic growth rate in long-run. Contrariwise, inflation rate, gross capital formation and exchange rate retard the economic growth in the short run. The findings proposed that improved capital and recurrent expenditure on education, stabilized inflation and exchange rate, gross national investment would enhance economic growth, improve living standard, and increase government revenue in the long-term.

Akpan and Ihendinihu (2023) examined the effect of government education expenditure on total students' enrolments in Nigerian public schools. The specific objectives were to ascertain the effect of Government Capital Expenditure to the Education Sector (GCEE) on Total School Enrolment (TSE) in Nigeria, and to examine the influence of Government Recurrent Expenditure to the Education Sector (GREE) on Total School Enrolment in Nigeria. Poverty rate (POVR) was introduced as a control variable. The study adopted ex-post facto research design, with data on the variables sourced from the Central Bank of Nigeria Statistical Bulletin covering a period of 40 years from 1981 to 2020. Based on the results of pre-estimation diagnostic tests carried out, ARDL technique was used in estimating the model parameters. The study's findings showed that the overall number of pupils enrolled in Nigeria's public school system is not significantly impacted by government capital or ongoing spending on the education sector.

Ibrahim et al. (2023) examined the impact of government expenditure on infrastructure development in Nigeria for the period 1986-2022. The research was guided by three research questions and objectives. The Ordinary Least Squares (OLS) estimation technique was employed for testing the hypotheses of the study. The result of the OLS analysis showed that government expenditure has a positive impact on health, education, and transport infrastructure development in Nigeria. To improve on the gains of infrastructure development in the Nigerian economy, the study recommends that government should encourage the health sector by increasing its funding to equip the infrastructure pertaining to health matters, government should intensify efforts to strengthen its source of revenue for spending on education, and there must be a greater private sector participation, particularly in the air transport and seaport development, as well as effective coordination among the national, state and local levels, on capital investment of transport projects.

Onwuemeka et al. (2022) examined the relationship between government spending on economic infrastructure and economic growth in Nigeria from 1989 to 2018. Real gross domestic product was used to proxy economic growth and was specified as a function of government spending on transport and communication, government spending on power and employment rate (as a proxy for the classical theory of labour force). The Autoregressive Distributed Lag Bounds method to co integration was chosen to ascertain the impact and the long-run relationship between the dependent and independent variables. The short-run and long-run results showed that government

spending on power exerted a positive but insignificant effect on Nigeria's RGDP. However, government spending on transport and communication had a positive relationship in the short-run but negative relationship in the long-run.

Furthermore, the Causality results showed a uni-directional causality running from RGDP to GEXP and EMP to GEXTC but there was no evidence to support the existence of causality between the remaining pairs of variables. It is recommended that in order for Nigeria to achieve infrastructure development success, it is important that the government redirect excessive revenue in the maintenance of government official to these pivotal sectors of the economy with a view to monitoring the implementation after disbursing funds to the affected ones to subsequently trigger economic growth.

Theoretical Framework

The study is underpinned by Musgrave-Rostow Theory of Public Expenditure and Growth. The theory provided a solid conceptual base for understanding the dynamics between disaggregated public expenditure components and economic growth. The Musgrave-Rostow Theory of Public Expenditure forms a significant part of the theoretical framework in public finance literature and is often invoked in studies examining the relationship between disaggregated public expenditure and economic growth.

This theory was jointly developed through the contributions of Richard Musgrave and Walt Whitman Rostow, with Musgrave articulating his views in 1959 through "The Theory of Public Finance", and Rostow proposing his developmental stages in "The Stages of Economic Growth: A Non-Communist Manifesto" published in 1960. The theory essentially posits that public expenditure plays different roles at different stages of a country's economic development.

Musgrave argued that the government has three principal roles: allocation, distribution, and stabilization. These functions necessitate different forms of public spending, which in turn should align with the country's stage of development. On the other hand, Rostow's theory outlines five stages of economic growth traditional society, preconditions for take-off, take-off, drive to maturity, and age of high mass consumption. In his framework, public expenditure particularly on infrastructure, education, and health is crucial for transitioning from one stage to the next, especially during the take-off stage where massive investments are required to boost productivity and economic transformation.

Together, Musgrave and Rostow's ideas imply that public expenditure must be dynamic and tailored to the development needs of a nation. Disaggregated expenditure such as on education, health, infrastructure, and security is viewed not just as a cost, but as a strategic investment to accelerate economic growth and structural transformation.

In relation to this study, the Musgrave-Rostow Theory offers a robust explanation for examining how different components of public expenditure affect economic growth in Nigeria. For instance, Nigeria, an emerging economy with aspirations to diversify its economic base, is still navigating the "take-off" and "drive to maturity" stages. Therefore, strategic public investment in infrastructure, education, and health is essential for achieving sustainable economic growth.

Empirical findings from recent literature support this view. For example, Onwioduokit and Adeniran (2021) emphasize that capital expenditure on infrastructure and human capital development positively correlates with Nigeria's GDP growth, especially when aligned with national development priorities.

Similarly, Aregbeyen and Akpan (2023) argue that the composition of public expenditure significantly influences economic performance, aligning with the Musgrave-Rostow postulation that functional and targeted spending is necessary for economic transformation. By applying the Musgrave-Rostow Theory, the study was able to theoretically justify the exploration of how disaggregated public expenditures classified into recurrent, capital, social, and economic expenditures contribute to economic growth in Nigeria.

3. Methodology

The study employed an expo-facto research design to examine the effect of disaggregated public expenditure on macroeconomic performance in Nigeria. The study used secondary data sourced from CBN statistical bulletin, and National Bureau of Statistics Economic reports. The data was collected from the sources is a time series data for the period of forty years (1984 to 2023). The study employed techniques such as unit root test, cointegration analysis and causality test.

Model specification

The Vector Erro Correction model specification was adapted to test the relationship between the independent variables and the dependent variable.

Economic Growth and Government Expenditure on Education

$\Delta \ln EGW_t = \alpha_0 + \alpha_1 \Delta \ln EGW_{t-1} + \alpha_2 \ln GEE_{t-1} + Ect_{t-1} + \epsilon_{t1}$

$\Delta \ln GEE_t = \beta_0 + \beta_1 \Delta \ln GEE_{t-1} + \beta_2 \ln EGW_{t-1} + Ect_{t-1} + \epsilon_{t2}$

Economic Growth and Government Expenditure on Infrastructure

$\Delta \ln EGW_t = \alpha_0 + \alpha_1 \Delta \ln EGW_{t-1} + \alpha_2 \ln GEIF_{t-1} + Ect_{t-1} + \epsilon_{t1}$

$\Delta \ln GEIF_t = \beta_0 + \beta_1 \Delta \ln GEIF_{t-1} + \beta_2 \ln EGW_{t-1} + Ect_{t-1} + \epsilon_{t2}$

Where: EGW = Economic Growth; GEE = Government Expenditure on Education; GEIF = Government Expenditure on Infrastructure; Δ (Delta) denotes the first difference, capturing short-run dynamics; ECT_{t-1} = lagged error correction term from the long-run cointegration equation; β_1 and α_1 = Coefficient; β_0 and α_0 = Constant; ϵ = Error Term; t = Time t.

Table 1

Measurement of Variables

Variables	Measurement	Sources
Government Expenditure on Education	Natural log of Government Expenditure on Education incurred throughout the period of the study	Dore (2022); and Bounsaythip and Inthakason (2022)
Government Expenditure on Infrastructure	Natural log of Government Expenditure on Infrastructure throughout the period of the study	Ufoeze et al. (2018); Bounsaythip and Inthakason (2022)
Economic Growth	Measured by Real Gross Domestic Product (RGDP)	Dore (2022); Samuel and Lawrence (2021)

Source: Researcher Compilation 2025

4. Results and Discussion

Table 2

Descriptive Statistics

	Mean	Max	Min	Std.Dev	Skew	Kurt	J-Bera	Prob	Obs
EGW	48767.29	229912.9	164.2100	62694.02	1.310292	3.733344	12.34209	0.002089	40
GEE	188.2948	752.9764	0.198904	229.0611	1.100258	2.951976	8.074301	0.017648	40
GEIF	80.38782	284.6061	0.155201	91.01378	0.814086	2.301656	5.231044	0.073130	40

Source: E-Views, 2025

Table 2 presents the descriptive statistics for the variables employed in the study: economic growth (EGW), government expenditure on education (GEE), and government expenditure on infrastructure (GEIF) for a period of 40 observations. The mean value of economic growth (EGW) is ₦48,767.29 billion, with a maximum of ₦229,912.9 billion and a minimum of ₦164.21 billion. The relatively high standard deviation of ₦62,694.02 suggests substantial fluctuations in Nigeria's growth trajectory within the study period. The positive skewness (1.31) and kurtosis (3.73) indicate a long-tailed distribution, pointing to occasional extreme increases in growth, likely linked to periods of high oil revenues or external inflows.

The Jarque-Bera statistic (12.34, p-value = 0.002) rejects normality, implying that economic growth in Nigeria during the period is subject to structural breaks and shocks. This result aligns with Adamu et al. (2023), who found that Nigeria's growth pattern is unstable and heavily influenced by fiscal policy shifts and external shocks.

For government expenditure on education (GEE), the mean stands at ₦188.29 billion, with a wide gap between the maximum (₦752.97 billion) and minimum (₦0.19 billion). The standard deviation (₦229.06 billion) further highlights the volatility of educational funding. The skewness of 1.10 and kurtosis of 2.95 indicate that distribution is moderately skewed to the right, suggesting instances of unusually high allocations in certain years.

The Jarque-Bera test (8.07, p-value = 0.017) confirms non-normality. This volatility supports Jolaiya (2024), who reported that inconsistent government allocations to education hinder its long-term contribution to economic growth in Nigeria.

Government expenditure on infrastructure (GEIF) recorded a mean of ₦80.39 billion, with maximum and minimum values of ₦284.61 billion and ₦0.16 billion respectively. The standard deviation of ₦91.01 billion implies a high level of dispersion, reflecting inconsistent investment patterns in infrastructure. Its skewness (0.81) and kurtosis (2.30) suggest a slightly right-skewed but flatter distribution compared to normal.

Interestingly, the Jarque-Bera test (5.23, p-value = 0.073) indicates that infrastructure expenditure is closer to a normal distribution than education expenditure, though still not perfectly normal. This supports Igwe and Inyiama (2024), who noted that while recurrent expenditure dominates the budget, infrastructure investments remain erratic and insufficient to drive sustainable growth.

Unit Root Test

Table 3

Summary of unit root test (Augmented Dickey-Fuller Test)

Variables	Test Statistics at Level	5% Critical Value at Level	Order of Integration
LNEGW	-3.488633	-2.941145	I(1)
LNBEE	-3.040807	-2.951125	I(0)
LNGEIF	-8.747818	-2.941145	I(1)

Source: E-view Output 2025

Table 3 presents the results of the test at level and first difference. The result indicates that economic growth (LNEGW) is non-stationary at level but becomes stationary at first difference with a test statistic of -3.488633, which is greater in absolute value than the 5% critical value of -2.941145. Thus, LNEGW is integrated of order one, I(1).

For government expenditure on education (LNBEE), the ADF statistic (-3.040807) is less than the critical value (-2.951125) at level, implying that the variable is stationary at level, integrated of order zero, I(0). On the other hand, government expenditure on infrastructure (LNGEIF) shows stationarity after first differencing, with a test statistic of -8.747818 compared to the critical value of -2.941145, indicating integration of order one, I(1).

Table 4
Vector Error Correction Estimates

Cointegrating Eq:	**CointEq1**		
LNEGW(-1)	1.000000		
LNGEE(-1)	-1.618086		
	(0.21841)		
	[-7.40851]		
LNGEIF(-1)	0.712020		
	(0.23408)		
	[3.04178]		
Error Correction:	**D(LNEGW)**	**D(LNGEE)**	**D(LNGEIF)**
CointEq1	0.056584	0.662039	0.027488
	(0.03082)	(0.14917)	(0.18483)
	[1.83588]	[4.43821]	[0.14872]
D(LNEGW(-1))	0.393634	2.239780	0.426264
	(0.17202)	(0.83256)	(1.03159)
	[2.28827]	[2.69025]	[0.41321]
D(LNEGW(-2))	0.107391	-0.787900	-0.021329
	(0.18583)	(0.89940)	(1.11441)
	[0.57789]	[-0.87603]	[-0.01914]
D(LNGEE(-1))	0.046291	0.175726	-0.411590
	(0.03980)	(0.19264)	(0.23869)
	[1.16302]	[0.91222]	[-1.72438]
D(LNGEE(-2))	0.072028	0.285874	-0.029187
	(0.02959)	(0.14319)	(0.17742)
	[2.43452]	[1.99646]	[-0.16451]
D(LNGEIF(-1))	0.002013	0.226293	-0.233910
	(0.03738)	(0.18089)	(0.22414)
	[0.05385]	[1.25098]	[-1.04360]
D(LNGEIF(-2))	-0.012228	-0.014984	0.208807
	(0.03448)	(0.16687)	(0.20676)
	[-0.35466]	[-0.08980]	[1.00990]
R-squared	0.402114	0.688667	0.321017
Adj. R-squared	0.257797	0.613517	0.157125
F-statistic	2.786322	9.163959	1.958706

Source: E-view Output 2025

The Vector Error Correction Model (VECM) provides insights into both the long-run equilibrium relationships and the short-run adjustments among economic growth (LNEGW), government expenditure on education (LNGEE), and government expenditure on infrastructure (LNGEIF).

In the long-run cointegrating equation, LNEGW is normalized to one, while the coefficients on LNGEE and LNGEIF capture their influence on economic growth. The coefficient on education expenditure (LNGEE) is –1.618086 with a t-statistic of –7.41,

indicating a strong and statistically significant negative long-run relationship. This suggests that higher education spending, in its current form, may be inefficient or misallocated, possibly due to corruption, poor infrastructure in schools, or leakages in budget implementation. This finding resonates with Jolaiya (2024), who observed that in Nigeria, education expenditure often fails to translate into tangible growth benefits due to weak institutional frameworks and underutilization of funds.

Conversely, infrastructure expenditure (LNGEIF) shows a positive and significant coefficient of 0.712020 (t = 3.04), implying that infrastructural investments strongly support long-term economic growth. This outcome is consistent with global evidence (World Bank, 2025; IMF, 2024) and Nigerian-specific studies (Adamu et al., 2023; Ogundipe et al., 2024), which emphasize that investments in transport, energy, and digital infrastructure have multiplier effects on productivity, private sector growth, and long-term output expansion.

Turning to the error correction terms (ECTs), which reflect the speed of adjustment to equilibrium following short-run shocks, the coefficient for economic growth (0.056584, t = 1.84) is positive and weakly significant. This indicates that only about 5.6% of disequilibrium in economic growth is corrected each period, suggesting a slow convergence process.

For education expenditure, the ECT (0.662039, t = 4.44) is highly significant and positive, meaning that adjustments in education spending play a critical role in restoring long-run equilibrium, even if the direct long-run impact appears negative. Infrastructure expenditure, however, has an insignificant ECT (0.027488, t = 0.15), indicating weaker short-run responsiveness.

In terms of short-run dynamics, lagged economic growth (D(LNEGW(–1))) exerts significant positive effects on both education and infrastructure expenditures (coefficients = 2.239780 and 0.426264, respectively), highlighting a countercyclical fiscal pattern in which higher growth leads to more public spending. Interestingly, lagged education expenditure at the second lag (D(LNGEE(–2))) significantly boosts economic growth (0.072028, t = 2.43), suggesting that the growth effects of education spending may manifest with a lag, consistent with the human capital accumulation theory (Romer, 1994).

The explanatory power of the equations, as reflected in the R-squared values, varies across the models. For D(LNGEE), the R-squared is relatively high at 0.689, suggesting that the dynamics of education spending are well captured by the model. For economic growth, the R-squared of 0.402 indicates a moderate explanatory capacity, which is typical in macroeconomic studies due to the influence of multiple exogenous shocks.

5. Conclusion and Recommendations

The study examined the relationship between disaggregated public expenditure specifically expenditure on education and infrastructure and economic growth in Nigeria. The empirical analysis revealed expenditure on education exhibited a positive but relatively weak effect on economic growth. Conversely, expenditure on infrastructure demonstrated a stronger and more significant positive impact on economic growth.

Based on these findings, the study recommended that, the Nigerian government should increase and sustain funding for the education sector in line with the UNESCO benchmark of at least 15–20% of total public expenditure to improve access, quality, and relevance. Greater attention should be directed toward infrastructure financing,

with priority on energy, transportation, and ICT networks, as these have multiplier effects on economic activities.

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