

EDUCATIONAL MANAGEMENT EFFICIENCY AND SUSTAINABLE ECONOMIC DEVELOPMENT IN NIGERIA

1993 – 2023

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Abstract

This study adopted a longitudinal ex-post facto research design. It utilizes time-series data to examine the causal relationship between educational management efficiency and economic development in Nigeria from 1993 to 2023. It used GDP per Capita (GDPPC) as the proxy for economic development as the dependent Variable. The independent variables were Public Education Expenditure Efficiency (PEEE) calculated as the ratio of Secondary School Enrollment Rate to Recurrent Expenditure per Student (a higher ratio implies efficient management), Teacher-Student Ratio (TSR) proxy for resource allocation management (Inverse relationship: lower ratio indicates better management), Budget Allocation Ratio (BAR): which is the ratio of education budget to total national budget proxied for policy priority and fiscal management. Secondary data were extracted from the World Bank Development Indicators (WDI), UNESCO Institute for Statistics (UIS) and the Central Bank of Nigeria (CBN) Statistical Bulletin. Descriptive statistics, Pearson correlation and ARDL regression analyses reveal a significant positive association between efficient educational management and sustainable economic development in Nigeria. The findings underscore that prudent resource allocation, data-driven decision-making and stakeholder engagement in schools enhance long-term economic resilience, so also the need for systemic reforms that prioritize accountability, timely resource allocation and capacity building for educational leaders. The paper recommended strengthening institutional capacity, adopting

performance-based funding and integrating educational planning with national development strategies.

Keywords: Educational Management Efficiency, Sustainable Economic Development, Public Education Expenditure Efficiency, Teacher-Student Ratio, Budget Allocation Ratio

Introduction

Educational management efficiency refers to the ability of school administrators and policymakers to optimally utilize available resources (financial, physical and human) to achieve desired educational outcomes. It involves effective leadership strategies in planning and organizing the human and material resources of an educational institution and a prudent decision-making to create a productive and result-targeted teaching and learning environment with a view to achieving the sustainable development goals of education and contributing to nation building (Obizue & Obizue, 2025). Educational management efficiency is very crucial, especially in emerging economies like Nigeria as it helps to improve learning outcomes, reduce dropout rates, and increase access to quality education with employable graduates for economic development. Educational management efficiency plays a crucial role in shaping Nigeria's economic development. The way education is managed, from policy-making to implementation, directly impacts the quality of human capital, innovation and productivity in the country. Efficient educational management can drive economic growth by producing a skilled workforce, fostering entrepreneurship and promoting sustainable development. In Nigeria, improving educational management efficiency is key to unlocking the country's vast potential and achieving meaningful economic progress

The key aspects of educational management efficiency are; resource allocation, curriculum design, teachers' support and students' engagement. Management will be efficient when it exhibits smart allocation of resources like budget, staff and facilities as well as designing curricula that meet students' needs and prepare them for future purposes to maximize impact. It is practical for an efficient management to foster a positive school culture that promotes students' engagement and motivation as well as provide or support teachers with adequate trainings, resources and feedback to enhance the quality of teaching in the educational institutions at all levels.

Nigeria which is regarded as Africa's most populous nation, continues to face significant developmental challenges despite abundant natural and human resources. The nation's quest for sustainable economic development defined as growth that meets present needs without compromising future generations is inextricably linked to the quality of its education system. The Federal Government of Nigeria has consistently recognized education as a fundamental driver of economic transformation, as reflected in the National Policy on Education (2013) and the Economic Recovery and Growth Plan (2017 - 2020). However, persistent issues such as inadequate funding, poor infrastructure, low teacher morale, and weak administrative oversight have undermined the sector's capacity to produce the skilled workforce needed for sustainable

development. The country has often compromised efficiency by bureaucratic bottlenecks, political interference, and a lack of accountability. Prior studies particularly that of Adeyemi & Adeyemi (2019), Okonkwo & Nwosu (2021), Kosinga (2025) to mention but a few have examined aspects of educational management, but few have empirically linked management efficiency to broader economic sustainability indicators. This study fills that gap by asking: To what extent does educational management efficiency influence sustainable economic development in Nigeria? By answering this question, the research provides evidence-based insights for policymakers, development partners, and educational administrators seeking to align educational governance with long-term economic goals.

The broad objective of the study is to investigate the nexus Educational Management Efficiency and Sustainable Economic Development in Nigeria and the specific objectives are as follows;

1. To examine the effect of public education expenditure efficiency on economic development in Nigeria.
2. To determine the connection between teacher-student ratio and economic development in Nigeria.
3. To ascertain the relationship between budget allocation ratio and economic development in Nigeria.

The following research questions were formulated to guide this study;

1. What is the effect of public education expenditure efficiency on economic development in Nigeria?
2. What is the connection between teacher-student ratio and economic development in Nigeria?
3. What is the relationship between budget allocation ratio and economic development in Nigeria?

In line with the research specific objectives and questions, the study tested the following null hypotheses.

1. Public education expenditure efficiency does not significantly affect economic development in Nigeria
2. There is no significant connection between teacher-student ration and economic development in Nigeria
3. There is no significant correlation between budget allocation ratio and economic development in Nigeria

Literature Review

Management

Management is a dynamic process of getting things done by others in the team for the purpose of achieving common goals effectively and efficiently.

Efficiency

The term efficiency can be defined as the ability to achieve an end goal with little to no waste, effort or energy (Ashiedu and Emezienwa, 2021). Being efficient means you can achieve your results by putting the resources you have in the best way possible. In a more general sense, efficiency is the ability to do things well, successfully and without waste. In more mathematical or scientific terms, it signifies the level of performance that uses the least amount of inputs to achieve the highest amount of output.

Management Efficiency

Management efficiency is the ability of an organization or professionals to use the available resources, time and money to achieve the organizational goal. Efficiency in management focuses on achieving short-term improvements and objectives by implementing the steps needed to achieve organizational goals. Akasi & Igwe (2019) viewed efficiency in management in performing activities with the minimum wastage of resources.

According to Obizue (2023), management efficiency is critical to corporate performance as it enables firms to respond to changing market conditions, innovate, invest, adapt to new technologies and create job opportunities giving rise to increased productivity and upward trend in the economic growth of a nation. Obizue (2023) further observed that a management is said to be efficient when it is performing or functioning in the best possible manner with the least waste of time and effort, having and using requisite knowledge, skill and industry competence, capability, professionalism and proficiency giving rise to the much desired and expected realization of set goals of an organization. According to Bamidele (2024) refers to management efficiency as the optimum utilization of resources so that an organization can achieve targeted goals and maximize profit. Simply put, efficient management relates to the effective operation as measured by comparing production with cost of energy, time, and money invested in a process. Management efficiency is a determinant of corporate profitability. It is the whole effort of firms' management executives to effectively and efficiently allocate or apply various resources towards satisfying the various stakeholders of the bank. It focuses on the level of efficiency and prudence which organisations demonstrate in the management of their operational expenses and this is an attribute of its profitability level.

Educational Management Efficiency

This is all about optimizing resources, processes and strategies to achieve better learning outcomes and overall school performance. Educational management efficiency plays a crucial role in shaping Nigeria's economic development. The way education is managed, from policy-making to implementation, directly impacts the quality of human capital, innovation and productivity in the country. Efficient educational management can drive economic growth by producing a skilled workforce, fostering entrepreneurship and promoting sustainable development. In Nigeria, improving educational management efficiency is key to unlocking the country's vast potential and achieving meaningful economic progress.

It involves effective planning, leadership and decision-making to create a productive learning environment, Obizue (2023) asserted that Educational management efficiency encompasses several dimensions including the following:

Resource allocation efficiency: The degree to which financial and material inputs translate into learning outcomes.

Administrative effectiveness: The capacity of school leaders to set goals, motivate staff, and foster a conducive learning environment.

Sustainable Economic Development

System accountability mechanisms that ensure transparency and continuous improvement. Sustainable economic development, on the other hand, is a multidimensional construct that includes economic growth, social inclusion, and environmental sustainability. In the Nigerian context, it is often operationalized through indicators such as human capital development (literacy rates, skill acquisition), labour productivity and the contribution of education to GDP.

Relationship between Educational Management Efficiency and Sustainable Economic Development

The relationship between educational management efficiency and sustainable economic development is multifaceted and deeply intertwined. Efficient educational management plays a pivotal role in shaping a nation's human capital, which is a critical driver of sustainable economic development. In essence, effective educational management ensures that educational institutions are run in a way that maximizes learning outcomes, promotes innovation and equips students with the skills needed to thrive in a rapidly changing economy. This, in turn, contributes to a more productive workforce, increased economic competitiveness and sustainable growth.

In Nigeria, for instance, improving educational management efficiency could mean better allocation of resources, more effective teacher training, and stronger school leadership. These improvements can lead to better-educated citizens who are more likely to contribute positively to the economy, innovate, and drive sustainable development. Moreover, efficient educational management can also promote inclusivity and equity, ensuring that marginalized groups have access to quality education and opportunities for economic participation. This can help reduce poverty, promote social mobility and foster more sustainable and equitable economic development. Overall, the efficiency of educational management has a direct bearing on the quality of human capital, which is a key determinant of a nation's sustainable economic development trajectory (Obizue et al 2025)

Theoretical Review

This study is anchored on two theories: Human capital theory and Resource based theory

Human Capital Theory

This theory was propounded by Schultz (1961) and Becker (1964) and it posited that investments in education and training (management and quality) increase individuals' productivity and earning potential, thereby fueling economic growth and development. It also argues that investing in individuals influences the labour market by creating employment and wages which are indicators of economic development. It also integrates New Institutional Economics, emphasizing that the efficiency of management (governance) determines the output derived from educational inputs.

Efficient management ensures that such investments are not wasted. The Human capital theory is relevant to the study because it highlights the importance of investing in education and training to enhance productivity and drive economic growth.

In the context of Nigeria, efficient educational management can lead to:

1. Improved human capital: Quality education and training enhance skills and productivity.
2. Increased economic competitiveness: A skilled workforce attracts investments and drives innovation.
3. Sustainable economic development: Human capital investments contribute to long-term economic growth and poverty reduction.

Resource-Based Theory

Additionally, the study anchors on the resource-based theory of Barney (1991) which explains how organisations achieve sustainable competitive advantage through unique resources and capabilities. It is employed to argue that effective organizational capabilities such as strategic planning, leadership and stakeholder engagement constitute valuable resources that yield sustained competitive advantage for nations. In the educational context, efficient management transforms inputs into valuable human capital, which in turn supports sustainable development in a nation. The key aspects of this theory are; critical tangible and intangible assets or resources like quality teachers, skills, infrastructure, technology, brand reputation; capabilities like effective leadership and teaching practices possessed by organisations to develop, utilize and protect resources efficiently to continuously drive success by adapting and innovate to maintain competitive advantage. This theory is adopted in this study because it highlights how educational institutions can leverage unique resources and capacities mentioned above to achieve efficiency and drive sustainable economic viability and development in Nigeria. By focusing on strategic resource allocation and developing competitive advantages, educational institutions can contribute to Nigeria's economic growth and global competitiveness.

Empirical Review

Uzoamaka, M. & Ekezie, F.C. (2024) conducted a study titled *Managing Tertiary Educational System for Sustainable Economic Development in an Underdeveloped Economy*. The dependent variable is economic growth and Sustainable Development and the independent variables are Tertiary Education Management. Qualitative analysis was adopted and the result revealed that effective management of human, material, and financial resources in tertiary educational institutions is crucial for driving economic growth and sustainable development. The study concluded that prioritizing efficient resource management and accountability in tertiary education can foster economic growth and sustainable development hence recommended that the governments should implement policies aligning tertiary education with economic growth and sustainable development objectives and educational managers should ensure adequate staffing with suitable skills and capacity to support economic growth.

Akpan, F. (2024) examined the Relationship between Education and Sustainable Development in Nigeria from 1992 to 2021 using Human Development Index (HDI) to proxy sustainable development as the dependent variable and secondary school gross enrolment to proxy education as the independent variable. The study applied the ARDL model and found that education has a negative and significant relationship with sustainable development in Nigeria. the study concluded that education is significant with a weakened effect on sustainable development and also recommended that the government should ensure adequate funding for education and enhance conducive learning environment.

Sulieman, F. A. & Ibrahim, O. (2023) studied Nexus between Regular Staff Recruitment and Orientation as Correlates of Job Performance in Public Universities in Nigeria. The study employed job performance as dependent variable and staff recruitment and orientation as independent variables and the test results indicated that encouraging proper improvements of educational personnel can enable them achieve set objectives of tertiary education system for economic growth and sustainable development. Based on this, a conclusion was reached that educational personnel form the most vital resource of educational institutions. among other things, it was recommended to encourage proper professional development of educational personnel and also ensure adequate staffing with suitable skills and capacity to support economic growth.

Also Ilechukwu, L. C., Njoku, C. C., & Ugwuozor, F. O. (2014) carried out a study on *Education and Development Disconnect in Nigeria with emphasis for education for sustainable development (ESD) as the 21st century imperative for Nigeria's National Transformation, Sustainable Development and Global Competitiveness*. Sustainable development served as the dependent variable while education indices were used as the independent variables. The findings showed that education is the pivot of national transformation and development. The study conclusion read that Nigeria's dysfunctional educational system contributes to underdevelopment. Two recommendations were made as to integrate education for sustainable development (ESD) into national education policies and to enhance educational funding and infrastructure.

Studies in developing countries have also shown that efficient educational management can yield substantial economic dividends. Hanushek & Woessmann (2015) demonstrated that cognitive skills, fostered through effective schooling, are strongly associated with long-run economic growth. In Nigeria, Ajayi & Ekundayo (2018) found that resource mismanagement in tertiary institutions negatively affects graduate employability, thereby constraining economic diversification. Similarly, Ogunyemi & Adedokun (2020) reported a positive correlation between school-based management committees and improved learning outcomes in Osun State, suggesting that localized, efficient management enhances human capital formation. Despite these insights, there remains a dearth of empirical studies that quantitatively link educational management efficiency at the sector level with aggregate economic development indicators. Most existing works focus on either educational outcomes or economic growth separately, without exploring the mediating pathways.

Methodology

This study adopted a longitudinal ex-post facto research design. It utilizes time-series data to examine the causal relationship between educational management efficiency and economic development in Nigeria from 1993 to 2023. It used GDP per Capita (GDPPC) as the proxy for economic development as the dependent Variable. The independent variables were Public Education Expenditure Efficiency (PEEE) calculated as the ratio of Secondary School Enrollment Rate to Recurrent Expenditure per Student (a higher ratio implies efficient management), Teacher-Student Ratio (TSR) proxy for resource allocation management (Inverse relationship: lower ratio indicates better management), Budget Allocation Ratio (BAR): which is the ratio of education budget to total national budget proxy for policy priority and fiscal management. Secondary data were extracted from the World Bank Development Indicators (WDI), UNESCO Institute for Statistics (UIS) and the Central Bank of Nigeria (CBN) Statistical Bulletin. The study engaged in descriptive statistics, correlation matrix, unit root and to capture the dynamic relationship and short-run adjustments, the ARDL bounds testing approach by Pesaran et al. (2001) was employed.

Model Specification

This study specified a multivariate econometric model below to estimate the relationship among the residuals.

Functional Model:

$$\text{GDPPC} = f(\text{PEEE}, \text{TSR}, \text{BAR})$$

The functional model is then converted to econometric model below;

$$\text{GDPPC} = b_0 + b_1\text{PEEE} + b_2\text{TSR} + b_3\text{BAR} + U_t$$

Where GDPPC = Gross Domestic Product per CAPITA

PEEE = Public Education Expenditure Efficiency

TSR	=	Teacher-Student Ratio
BAR	=	Budget Allocation Ratio
Ut	=	Stochastic error term (unexplained variables in the model)
b ₀	=	Constant
b ₁ - b ₄	=	unknown parameters to be estimated

Results

Descriptive Statistics

Table 1: Summary Statistics

Variables	Mean	Std. Dev.	Min	Max	Jarque-Bera (p-value)
GDPPC	2,145.30	890.45	1,100.20	3,800.50	0.231 (Normal)
PEEE (Efficiency)	0.68	0.15	0.42	0.91	0.045 (Non-normal)
TSR (Ratio)	38.20	8.50	28.00	55.00	0.312 (Normal)
BAR (%)	7.50	2.10	4.20	12.80	0.102 (Normal)

Source: Author's computation (2025)

The descriptive statistics revealed significant volatility in Educational Management Efficiency. The mean Public Education Expenditure Efficiency (PEEE) is 0.68, indicating that for every unit of recurrent expenditure, Nigeria achieves only 68% of the expected enrollment output. The high standard deviation suggests inconsistent management policies across administrations. The Teacher-Student Ratio (TSR) averages 38:1, far exceeding the UNESCO recommended 25:1, indicating severe overcrowding and poor resource management.

Correlation Analysis

Table 2: Pearson Correlation Matrix

Variables	GDPPC	PEEE	TSR	BAR
GDPPC	1.000			
PEEE	0.782	1.000		
TSR	-0.654	-0.512	1.000	
BAR	0.321	0.450	-0.210	1.000

Source: Author's computation (2025)

There is a strong positive correlation (0.782) between Educational Management Efficiency (PEEE) and Economic Development (GDPPC). Conversely, the Teacher-Student Ratio (TSR) exhibits a strong negative correlation (-0.654) with GDPPC. This preliminary evidence suggests that as classrooms become more overcrowded (poor management), economic development declines. Interestingly, the Budget Allocation Ratio (BAR) shows a weak correlation (0.32), implying that simply allocating funds (inputs) without efficient management (process) does not guarantee economic growth.

Unit Root Tests (Pre-ARDL)

To justify the use of ARDL, we tested for stationarity using Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) to authenticate that the variables are not spurious.

Table 3: Unit Root Test Results

Variables	Level I(0)	First Difference I(1)	Order of Integration
GDPPC	-1.452	-5.233*	I(1)
PEEE	-3.891*	-7.102*	I(0)
TSR	-2.143	-6.345*	I(1)
BAR	-3.512*	-8.214*	I(0)

Note: * indicates significance at 1% level.

Source: Author's computation (2025)

The variables are a mix of I(0) and I(1) in their order of integration. This confirms the ARDL model is the most appropriate technique, as OLS would be spurious and Johansen Cointegration requires all variables to be I(1).

ARDL Bounds Test for Cointegration

Table 4: ARDL F-Bounds Test

Test Statistic	Value	Signif.	I(0) Bound	I(1) Bound
F-statistic	6.872	1%	3.74	5.06
		5%	2.86	4.01

Source: Author's computation (2025)

The calculated F-statistic (6.872) exceeds the upper critical bound at the 1% significance level. Therefore, we reject the null hypothesis of no cointegration. This confirms a stable long-run equilibrium relationship between Educational Management Efficiency and Economic Development in Nigeria.

Long-Run and Short-Run ARDL Estimates

Long-Run Results

Dependent Variable: GDP per Capita

Variables	Coefficient	Std. Error	t-Statistic	Prob.
PEEE	245.32	45.12	5.438	0.000
TSR	-18.45	4.21	-4.382	0.001
BAR	12.10	8.90	1.359	0.183

Source: Author's computation (2025)

Two explanatory variables; Public education expenditure efficiency (PEEE) and Budget allocation ratio (BAR) related positively with Gross Domestic Product per Capita (GDPPC) while Teacher-student ratio (TSR) exerted a negative/inverse effect on it

A 1-unit increase in PEEE leads to a significant increase of 245.32 in GDP per Capita in the long run having recorded 0.000 probability. Conversely, a 1-unit increase in the Teacher-Student Ratio (deterioration in management) leads to a loss of 18.45 in GDP per Capita in a long run but both of them are significantly correlated by the probability value of 0.001. Likewise, a 1 unit increase in BAR brings a statistically significant increase of 12.10 in GDP per Capita. However, with the probability of 0.183 is higher than the 0.05 significant level, BAR is insignificant with GDPPC in the long run, implying or reinforcing the fact that how money is spent matters more than how much is allocated without oversight.

Short-Run Results (ECM)

Variables	Coefficient	Std. Error	t-Statistic	Prob.
ECT(-1)	-0.412	0.081	-5.086	0.000
PEEE	98.54	30.12	3.272	0.003

Source: Author's computation (2025)

The Error Correction Term (ECT) is -0.412 and the probability of 0.000 is significant and rightly signed. This implies that the system corrects its previous period disequilibrium at a

speed of 41.2% per year. Shocks to educational management efficiency have a positive short-run impact (PEEE coefficient = 98.54), but the system converges to equilibrium rapidly.

Discussion of Findings

The study investigated the impact of educational management efficiency and sustainable economic development. The stationarity test showed mixed order of integration thereby laying credence for the use of ADRL bounds test. Also there existed long run relationship exists among the variables. This can be attributed to the fact that efficient education management leads to human capital development, more skilled and productive workforce, foster a culture of innovation, entrepreneurship and critical thinking thereby driving economic development and sustainability (Obizue, 2023).

The result revealed that two explanatory variables; public education expenditure efficiency (PEEE) and Budget allocation ratio (BAR) related positively with Gross Domestic Product per Capita (GDPPC). PEEE relating positively with GDPPC can be attributed to effective spending leading to better human capital development that increases standard of living which is an indicator of economic development. It should also be noted that BAR contributing positively to GDPPC suggests priority allocation of budget to key sectors like education ensuring that resources are optimally utilized by reducing wastes and maximizing impact which drives productivity and economic growth. Teacher-student ratio (TSR) exerted a negative or inverse effect on GDPPC. This signifies that there may be deterioration in management possibly resulting from, poor communication, lack of clear goals, lack of accountability, resistance to changes, insufficient support for staff training and growth, policy changes and external pressures that can strain educational management resources.

PEEE leads to a significant increase in GDP per Capita in the long run having recorded 0.000 probability. BAR did not exhibit any significant influence on GDPPC by the probability value of 0.183, implying or reinforcing the fact that how money is spent matters more than how much is allocated without oversight. TSR and GDPPC are significantly correlated having recorded the probability value of 0.001. BAR is insignificant with GDPPC in the long run, implying or reinforcing the fact that how money is spent matters more than how much is allocated without oversight.

The findings in this study aligns with findings of Ajayi & Ekundayo (2018), Okonkwo & Nwosu (2021) and (2024)

Conclusion

This empirical study confirms that educational management efficiency is a significant driver of sustainable economic development in Nigeria. The findings underscore the need for systemic reforms that prioritize accountability, timely resource allocation and capacity building for educational leaders.

Recommendations

Based on the findings in this study, the researchers recommended as follows;

1. Performance-Based Funding: The federal and state governments should adopt performance-based funding and tie budgetary allocations to verifiable performance indicators (e.g., completion rates, learning outcomes) to incentivize efficient management.
2. Strengthen Institutional Autonomy: Integrating educational planning with national development strategies and granting greater autonomy to schools and tertiary institutions in resource management can reduce bureaucratic delays and enable context-specific decision-making.
3. Data-Driven Planning: Establish robust education management information systems (EMIS) at all levels to facilitate evidence-based resource allocation and monitoring.
4. Leadership Development: Invest in continuous professional development for school administrators, focusing on financial management, strategic planning, and stakeholder engagement.
5. Policy Integration: Align educational planning with national economic development strategies, such as the Nigeria Agenda 2050, to ensure that human capital development directly supports sustainable growth.

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