

Time Series Analytical Model Educational Funding and Achievement of Sustainable Development Goal-4 in Nigeria (2015-2025): Implication on Educational Management

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ABSTRACT: Education funding remains a critical determinant of educational development and the attainment of global education targets. This study examined the trend of educational funding in Nigeria and its implications for the achievement of Sustainable Development Goal-4 between 2015 and 2025. The study adopted a descriptive trend analysis using secondary data obtained from national budget records and official government statistics. Two research questions and two null hypotheses guided the study, focusing on the pattern of government expenditure and the proportion of the national budget allocated to education during the period under review. Index-number analysis and descriptive trend interpretation were employed to examine changes in funding over time. Findings revealed that although the absolute amount allocated to education increased steadily from 2015 to 2025, the percentage share of the national budget devoted to education remained relatively low, averaging approximately 6.96%, which is far below the UNESCO recommended benchmark of 15–20%. The results further indicated fluctuations and occasional declines in the proportion of funding, suggesting inconsistent government commitment to education financing in Nigeria during the period. This persistent underfunding poses significant challenges for educational infrastructure development, teacher capacity building, research productivity, and equitable access to quality education, thereby threatening Nigeria's prospects of achieving SDG-4 by 2030. The study concludes

that without substantial improvement in education financing, the attainment of inclusive and equitable quality education in Nigeria may remain difficult. It therefore recommends increased budgetary allocation, diversification of funding sources through private-sector participation, improved financial accountability, and strategic investment aligned with national educational priorities.

Keywords: *Time-Series, Analytical, Funding and achievement, Sustainable development goal-4*

INTRODUCTION

Education is widely recognized as the cornerstone of national development and social transformation. It serves as a major instrument for the development of human capital, technological advancement, and economic growth in modern societies. Countries that have achieved rapid industrialization and sustainable development have done so largely through sustained investments in education and the systematic development of their human resources. Consequently, education occupies a central position in national development strategies across the world.

In Nigeria, however, the education sector has continued to face numerous challenges that undermine its effectiveness in fulfilling this developmental role. Among the most critical challenges confronting the sector is inadequate funding. Despite the strategic importance of education in fostering economic productivity, social cohesion, and technological innovation, investment in the sector has remained relatively low compared to global standards. The consequences of this underfunding are evident in deteriorating infrastructure, inadequate learning facilities, insufficient instructional materials, declining staff morale, and limited research productivity within Nigerian educational institutions.

Scholars and policy analysts have consistently linked many of the structural problems in Nigeria's education sector to inadequate financial investment. According to Okebukola (2016), although financial resources alone may not solve all the challenges confronting education, meaningful reform and improvement in the sector cannot occur without adequate funding. Investment in education is widely regarded as one of the most productive forms of national expenditure because it yields long-term benefits for individuals, societies, and economies.

The challenge of educational financing in Nigeria has become even more pronounced in the context of growing school enrolment, increasing population, inflationary pressures, and expanding demand for quality education at all levels. Adamu (2018) reported that Nigeria had approximately 10.5 million out-of-school children in 2018, making it the country with the highest number of out-of-school children globally. This alarming statistic highlights the magnitude of educational access challenges in the country and underscores the need for stronger financial commitment to education.

Budgetary allocation patterns further reveal the depth of the funding crisis in Nigeria's education sector. Since the return to democratic governance in 1999, education expenditure has generally ranged between 4% and 10% of the national budget, which is significantly below international recommendations (Adamu, 2018). International organizations such as UNESCO have recommended that governments allocate between 15% and 20% of their annual national budgets to education in order to ensure sustainable educational development. The persistent gap between Nigeria's allocations and this global benchmark raises concerns regarding the country's ability to meet national and international education targets.

Comparatively, many countries with similar economic characteristics allocate significantly higher proportions of their national budgets to education. Adamu (2018) observed that among the E9 countries—which include Bangladesh, Brazil, China, Egypt, India, Indonesia, Mexico, Nigeria, and Pakistan—Nigeria remains one of the few countries allocating less than 20 percent of its national budget to education. Even among several sub-Saharan African countries, Nigeria's investment in education is considered relatively low, despite its large population and the strategic importance of education for national development.

Global concern over issues of poverty, inequality, and underdevelopment prompted the international community to adopt comprehensive development frameworks aimed at improving social and economic conditions worldwide. One of such initiatives was the Millennium Development Goals (MDGs), which guided global development efforts between 2000 and 2015. Although the MDGs recorded some progress in improving educational access in several developing countries, many nations—including Nigeria—were unable to fully achieve the education-related goals. Poor funding and weak

institutional capacity were identified as major factors responsible for the limited success of the MDGs in many developing countries (David, 2019).

In response to these challenges, the global community introduced the Sustainable Development Goals (SDGs) in 2015 as a more comprehensive development framework aimed at addressing major global challenges such as poverty, hunger, inequality, environmental sustainability, and access to quality education. The SDGs consist of 17 interconnected goals intended to guide global development efforts until the year 2030.

Of particular importance to the education sector is Sustainable Development Goal 4 (SDG-4), which seeks to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. The achievement of this goal requires substantial financial investment in educational infrastructure, teacher training, curriculum development, learning resources, and institutional capacity building. Without adequate funding, many developing countries may find it difficult to achieve the targets associated with SDG-4.

Nigeria's progress toward achieving quality education under SDG-4 has remained a major concern among education stakeholders. According to the United Nations Development Programme (2015), Nigeria's literacy rate stands at approximately 59.6 percent, indicating that a significant proportion of the population lacks basic literacy skills. Furthermore, reports indicate that the primary school dropout rate in Nigeria is about 20.7 percent, suggesting that a substantial number of pupils who enroll in school do not complete their basic education (United Nations, 2016). These indicators reflect significant gaps in educational access, retention, and quality.

While some progress has been made in expanding access to education, particularly at the primary school level, access alone does not guarantee educational quality. Adeyera (2011) argued that meaningful educational development requires not only increased enrolment but also adequate funding to ensure quality teaching, effective learning environments, and sustainable institutional development.

Globally, the challenge of educational access and quality remains significant. Ubogu (2018) observed that approximately 103 million youths worldwide still lack basic literacy skills, with women accounting for more than 60 percent of this population. These statistics

highlight the persistent global inequalities in educational access and underscore the importance of sustained financial investment in education.

Given the critical role of education in national development and the growing global emphasis on achieving the Sustainable Development Goals, it becomes imperative to examine the adequacy of financial commitment to the education sector. Understanding the trend of educational funding provides valuable insights into government priorities and the capacity of the education system to achieve national and international development targets.

It is against this background that this study investigates the trend of government expenditure on education in Nigeria between 2015 and 2025 and examines its implications for the achievement of Sustainable Development Goal-4 (SDG-4). The study provides empirical insight into the level of financial commitment to education during the early years of SDG implementation and highlights the implications of funding patterns for educational management and sustainable development in Nigeria.

STATEMENT OF THE PROBLEM

The issue of poor funding of education has remained a problem of concern at all levels of education in Nigeria. This is because of the yearly decline in the budgetary allocation to education sector which has left the sector with surmountable challenges. Obviously, education has remained one of the most challenging of the seventeen sustainable development Goals of the United Nations, 2015.

Despite the efforts put in place by the Federal government of Nigerian in its attempt to ensure effective implementation of the Millennium Development Goals and achievement of quality education for citizens, education still stands as a sector in comatose. Yet education is the key that can allow many other sustainable development goals to be achieved. Nnokam (2017) in response to the myriad of crises in the education sector decried the poor funding of education in Nigeria by Federal, State and Local governments and stated that in 2015 and 2025 expenditure on education was below 10% of overall expenditure. He added that various states expenditure cannot be determined in relation to the UNESCO recommendation of the 26% of national education budget. It is upon the backdrop of the poor funding of education under the MDGs that this study attempts to examine the funding readiness of education in the wake of the SDG Goal 4.

RESEARCH QUESTIONS

The following research questions were formulated to guide the study

- i) What is the trend of government expenditure on education from 2015-2025
- ii) What is the trend in budgetary allocation to education from 2015-2025

RESULTS AND DISCUSSIONS

The research questions stated for this study were answered with index numbers (simple average of price relative indices) as presented in table 1 and 2:

1. Research question one: what is the trend of government expenditure on education from 2015-2025.

To answer this research question, index number was employed to determine the index from 2015-2025 using 2015 as the base year.

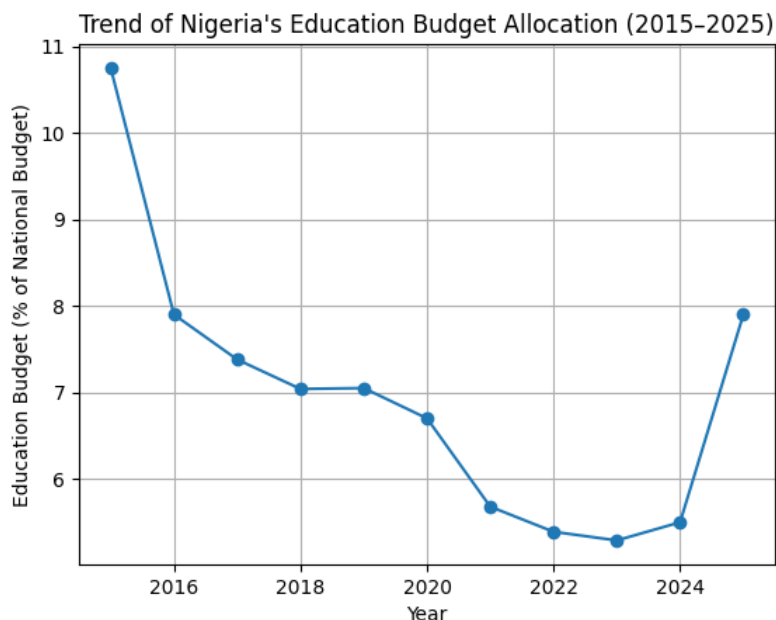
Table 1: Results of trend analysis of government expenditure on education from 2015-2025
Education Budget Trend in Nigeria (2015–2025)

Year	Allocation to Education	% of National Budget	Trend Observation
2015	₦492 billion	10.75%	One of the highest shares in the decade
2016	₦369.6 billion	7.9%	Decline due to economic recession
2017	₦550 billion	7.4%	Slight increase in allocation
2018	₦605.8 billion	7.0%	Continued marginal increase
2019	₦602 billion	7.05%	Allocation stagnated
2020	₦671 billion	6.7%	Slight decline in proportion
2021	₦742.5 billion	5.7%	Reduced share of national budget
2022	₦923.8 billion	5.4%	Allocation increased in amount
2023	₦1.05 trillion	5.3%	Continued growth in nominal funding
2024	₦1.59 trillion	5.5%	Major increase in monetary value
2025	₦2.59–₦3.52 trillion	about 5.4–7%	Highest nominal allocation recorded

From Table 1: Sources consistently show that education source spending rose from about ₦602 billion representation 60200 in 2019 to over ₦1.59 trillion in 2024 and more than ₦2.5 trillion in 2025.

Trend Analysis of Nigeria's Education Budget Allocation (2015–2025)

The chart in figure 1 below illustrates the percentage of Nigeria's national budget allocated to the education sector between 2015 and 2025.



Interpretation of the Trend

In 2015, education received approximately 10.75% of the national budget, representing the highest allocation within the period under review. This suggests relatively stronger government commitment to education funding at the beginning of the decade.

From 2016 to 2023, the allocation shows a gradual downward trend, declining from about 7.9% in 2016 to approximately 5.29% in 2023. This decline indicates that although the absolute amount allocated to education may have increased over time, the relative share of education within the national budget decreased.

A slight improvement is observed in 2024 and 2025 where allocations increase again toward about 7–8%. This suggests renewed attention to education financing, although the allocation remains below international benchmarks.

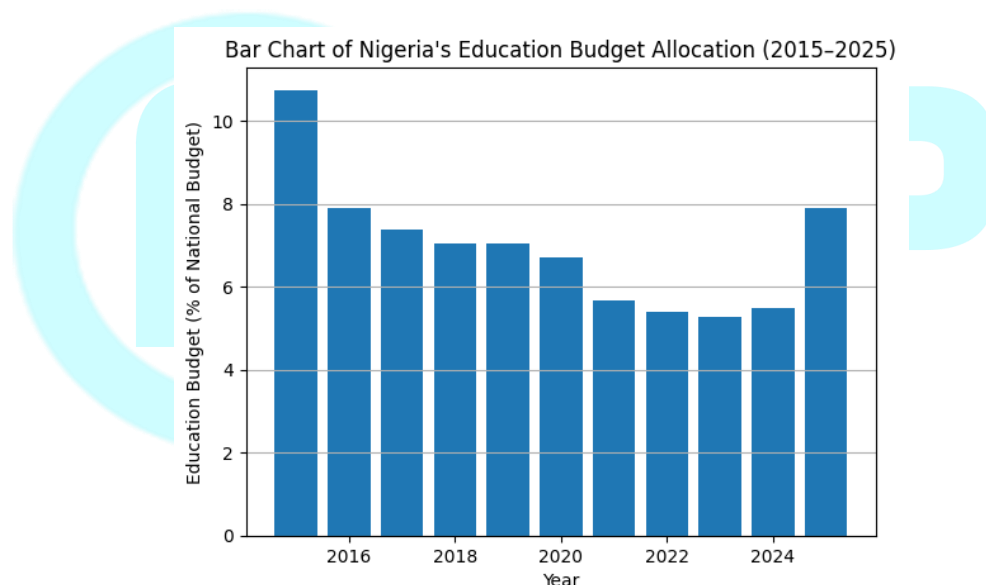
Overall Implication

Overall, the trend indicates that education funding in Nigeria between 2015 and 2025 has been inconsistent and generally below the UNESCO recommended benchmark of 15–20%

of national budgets allocated to education. The persistent underfunding of the education sector has implications for infrastructure development, research productivity, staff welfare, and technological integration in Nigerian educational institutions.

Interpretation and Summary

The cumulative analysis of Nigeria's education budget allocation between 2015 and 2025 shows a total of approximately 76.58%, with an annual average of about 6.96% of the national budget devoted to education. This average remains significantly below the UNESCO recommended benchmark of 15–20%, indicating persistent underfunding of the education sector over the period. Such inadequate funding has implications for infrastructural development, staff capacity building, research productivity, and technological advancement in Nigerian educational institutions.



Interpretation of the Bar Chart: Education Budget Allocation in Nigeria (2015–2025)

The bar chart illustrates the percentage of Nigeria's national budget allocated to the education sector from 2015 to 2025. The chart reveals a fluctuating but generally declining trend in the proportion of government expenditure devoted to education over the period.

First, the chart shows that 2015 recorded the highest allocation, with approximately 10.75% of the national budget devoted to education. This suggests that at the beginning of the period under review, the government demonstrated a relatively stronger commitment to funding the education sector compared to subsequent years.

However, a sharp decline occurred in 2016, when the allocation dropped to about 7.9%. This reduction marked the beginning of a downward trend in education funding. Between 2017 and 2019, the allocations remained relatively stable but lower than the 2015 level, fluctuating between 7.04% and 7.38%. This indicates that although education continued to receive funding, its priority within the national budget had decreased.

Furthermore, the chart indicates a more pronounced decline between 2020 and 2023. During this period, allocations dropped from 6.7% in 2020 to about 5.29% in 2023, representing the lowest funding level within the decade. This suggests that the education sector experienced a period of significant underfunding relative to other sectors of the economy.

A slight improvement is observed in 2024 and 2025, where the allocation increased again to approximately 5.5% and 7.9% respectively. This increase may indicate renewed policy attention toward education funding. Nevertheless, the level of funding remains below international benchmarks, particularly the UNESCO recommendation that governments allocate 15–20% of their national budgets to education.

Overall, the bar chart demonstrates that although Nigeria has continued to allocate resources to the education sector annually, the share of the national budget devoted to education has generally declined over the years. This persistent underfunding has implications for educational infrastructure, research development, staff welfare, and technological advancement in educational institutions, which may hinder the ability of educational institutions to achieve their institutional goals.

Conclusion

The United Nations adoption of the resolution for the adoption of the agenda for sustainable development is no doubt a laudable programme. The programme is targeted towards addressing major problems of hunger, poverty, insecurity among other problems confronting the people across the globe. The SDG is a step to overhaul the deficiency of the MDG since the MDG failed in many countries to effectively address its target goals for development especially in the area of education and in Nigeria particularly. One of the major reasons for the failure of MDGS is poor funding of education. Yet, with the current introduction of SDGS, the problem of adequately funding education from national budget

has not been addressed. This means that SDGS may not make any difference from MDGS and leaving the management and development of education especially in Nigeria under difficulties. Also, the accompanying societal vices such as hunger, poverty, insecurity and health which education is naturally meant to address will continue to linger in the society.

Recommendations

This study made use of the underlisted recommendations:

1. **Increase Budgetary Allocation to Education to Meet International Benchmarks:** The Federal Government of Nigeria should significantly increase the proportion of the national budget allocated to education to move closer to the internationally recommended benchmark of 15–20 percent. Increasing education funding will improve infrastructure development, enhance teacher quality, expand access to learning resources, and strengthen institutional capacity. Adequate funding is essential for achieving Sustainable Development Goal 4 (SDG-4), which emphasizes inclusive and equitable quality education for all.
2. **Adopt a Stable and Predictable Education Funding Framework:** Government should establish a long-term education financing framework that guarantees stable and predictable funding for the education sector. This could include legislative backing that ensures a minimum percentage of national revenue is dedicated to education annually. Such stability will enable educational planners and administrators to undertake long-term development projects and improve institutional planning.
3. **Strengthen Monitoring, Accountability, and Transparency in Education Funding:** Improved accountability mechanisms should be implemented to ensure that allocated funds are properly utilized for educational development. Government agencies such as the Ministry of Education, Universal Basic Education Commission (UBEC), and other regulatory bodies should strengthen financial monitoring systems to prevent mismanagement, diversion of funds, and corruption. Transparent budgeting and expenditure reporting will enhance public trust and ensure effective use of educational resources.
4. **Encourage Public–Private Partnerships (PPP) in Education Financing:** The government should encourage private sector participation in education financing

through public–private partnership initiatives. Corporate organizations, philanthropic institutions, and international development agencies can contribute to educational infrastructure, research development, scholarships, and technological advancement. Diversifying funding sources will reduce overdependence on government budget allocations and improve the sustainability of educational development.

5. **Invest Strategically in Educational Infrastructure and Learning Resources:** Increased education funding should be strategically directed toward modern learning infrastructure, digital technologies, libraries, laboratories, and research facilities. Adequate infrastructure enhances the teaching–learning process and supports the development of innovative knowledge systems necessary for national development and global competitiveness.
6. **Prioritize Teacher Development and Capacity Building:** Government should allocate adequate funding for continuous professional development, training, and motivation of teachers at all levels of the education system. Teachers remain the most critical drivers of educational quality; therefore, investments in teacher recruitment, training, remuneration, and welfare will significantly improve educational outcomes and support the attainment of SDG-4 targets.
7. **Promote Community and Stakeholder Participation in Education Financing:** Community participation in education development should be strengthened through school-community partnerships, alumni associations, non-governmental organizations, and local development groups. Active stakeholder involvement can enhance resource mobilization, promote transparency, and ensure that educational funds are used effectively for the intended purposes.

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