International Journal of
Advanced Research in Accounting, Economics and Business Perspectives
p-ISSN: 2636-6894 | e-ISSN: 2636-6886

IJARAEBP
Vol. 9, No. 1
October 2025

Impact of Government Intervention Funds on Literacy Development in Nigeria

[1]Nangong Dashan James, [2]Ezie Obumneke, & [3]Ologunla E. Sunday
[1,2&3]Department of Economics,
Faculty of Social Sciences, Bingham University Karu

Article DOI: 10.48028/iiprds/ijaraebp.v9.i1.12

Abstract

This study examined the impact of government intervention funds on literacy development in Nigeria, with a specific focus on three major public funding instruments: The Tertiary Education Trust Fund (TETFund), the Universal Basic Education Commission (UBEC) fund, and the Petroleum Technology Development Fund (PTDF), between 1999 and 2024. A non-experimental research design was adopted, relying on time series secondary data. The ARDL bounds testing approach was employed. The findings revealed a strong long-run relationship between government education funding and literacy development. TETFund had a positive and statistically significant long-run effect on literacy, suggesting that investments in tertiary institutions improved educational infrastructure and teacher training, thereby indirectly supporting national literacy outcomes. PTDF also showed a significant positive long-run impact, highlighting the role of vocational and technical training in enhancing functional literacy, particularly in specialized and underserved sectors. In contrast, UBEC funding had a positive but statistically insignificant impact, indicating challenges in translating basic education investments into measurable literacy gains, largely due to implementation inefficiencies, irregular disbursements, and regional disparities in fund utilization. Based on these findings, the study recommended that TETFund expand its funding to include literacy outreach programs through tertiary institutions, while PTDF should integrate basic literacy skills into its vocational training initiatives. UBEC was advised to strengthen its monitoring and implementation systems, ensuring timely disbursement and effective use of funds by state-level agencies. The National Council on Education and the Federal Ministry of Education were urged to align literacy performance indicators with national education planning and budget allocation frameworks.

Keywords: *Government intervention funds, Literacy development, Tertiary Education Trust Fund, Universal basic education commission, Petroleum technology development fund*

Corresponding Author: **Nangong Dashan James**

Background to the Study

Government intervention funds have become a vital policy tool for catalysing development in numerous sectors globally, especially in education. Across the world, public sector investments in education are often made through targeted funding mechanisms, aimed at improving access, equity, and quality of education at all levels. In many developed economies, such as those in Scandinavia and parts of Asia, governments allocate substantial portions of their national budgets to education, recognizing its indispensable role in fostering socioeconomic development and long-term national prosperity (García & Martínez, 2023). These intervention funds are structured to address disparities, upgrade infrastructure, train personnel, and expand access to quality education. In sub-Saharan Africa, where structural challenges continue to hinder education delivery, government intervention funds are increasingly being used as strategic instruments to reverse the tide of illiteracy, inequality, and underdevelopment.

In the context of sub-Saharan Africa, government intervention in education financing has gradually become more institutionalized, although outcomes vary across countries. Donor agencies such as the World Bank and international NGOs have historically played significant roles in financing educational projects across the region. However, in recent decades, many African governments, including Ghana, Kenya, and Nigeria, have established their own mechanisms to ensure sustainable and autonomous educational funding. These interventions often include sector-specific trust funds and national education commissions with the mandate to support basic and tertiary education sectors (UNESCO, 2022). Despite these efforts, literacy rates across sub-Saharan Africa remain among the lowest globally, with adult literacy rates hovering around 65% as of 2022, according to the UNESCO Institute for Statistics (2024). This highlights the persistent need for effective government intervention, guided by robust policy frameworks and adequate funding.

Nigeria's experience with government intervention funds in education represents one of Africa's most comprehensive approaches, institutionalized through three primary mechanisms: The Tertiary Education Trust Fund (TETFund), the Petroleum Technology Development Fund (PTDF), and the Universal Basic Education Commission (UBEC) fund. The Tertiary Education Trust Fund, established in 2011 following the Tertiary Education Trust Fund Act 2011, generates revenue through a 2% education tax levied on companies with annual turnover exceeding ₦100 million, specifically targeting infrastructure development, academic staff training, and research activities in tertiary institutions. Available statistics from TETFund (2024) reveals a sudden increase in fund allocations from ₦5.7 billion in 1999 to ₦845.76 billion in 2024, representing a growth path that reflects both Nigeria's expanding tax base and increased commitment to tertiary education development. The Petroleum Technology Development Fund, established in 1973 and restructured in 2000, derives funding from contributions by oil and gas companies operating in Nigeria, with allocations growing from ₦9.2 billion in 1999 to ₦198.45 billion in 2024 according to PTDF (2024) data. This fund specifically focuses on developing local capacity in petroleum technology through scholarships, training programs, and research initiatives that indirectly contribute to technical literacy and human capital development (Olowu & Okafor, 2023).

The Universal Basic Education Commission fund, operationalized following the Universal Basic Education Act 2004, represents Nigeria's most direct intervention in basic literacy development, funded through federal budget allocations, international donor contributions, and state government counterpart funding. UBEC (2024) and NBS (2024) statistics indicate that annual allocations began at ₦30 billion in 2004 and reached ₦184.65 billion by 2024, demonstrating sustained government commitment to basic education infrastructure, teacher training, and instructional materials provision. The fund operates through a matching grant system where federal allocations are released to states based on their ability to provide counterpart funding, creating incentives for state-level investment in basic education. These three intervention mechanisms collectively represent Nigeria's multi-tiered approach to educational development, addressing basic literacy through UBEC, technical capacity through PTDF, and higher education infrastructure through TETFund. Literacy development is universally recognized as a cornerstone for human capital formation, socio-economic advancement, and national competitiveness. Ideally, a literate population contributes significantly to sustainable development, as individuals are better equipped to engage in lifelong learning, participate in democratic processes, secure gainful employment, and drive innovation (Egbewole & Adeyeye, 2023).

However, the current literacy scope in Nigeria falls significantly short of this ideal. Despite being one of Africa's largest economies and most populous nation, Nigeria continues to grapple with persistently low literacy rates. According to data from UNESCO Institute for Statistics (2024), Nigeria's adult literacy rate stood at only 64.85% in 2024, meaning approximately 35% of the adult population remains unable to read and write effectively. This places Nigeria below the Sub-Saharan African average of 66% and significantly behind comparable economies like Ghana (79%) and Kenya (82%) (World Bank, 2024). The situation is even more concerning in rural areas and northern regions, where literacy rates in some states fall below 40%, and among women, who have historically had lower access to education (National Bureau of Statistics, 2023). Furthermore, the quality of literacy skills among those classified as "literate" often remains basic and inadequate for functioning effectively in an increasingly knowledge-based global economy.

Given that strategic government intervention funds are critical enablers of educational access, equity, and quality, particularly in developing countries, it is imperative to examine how these funds, represented by the Tertiary Education Trust Fund (TETFund), the Universal Basic Education Commission (UBEC) fund, and the Petroleum Technology Development Fund (PTDF), have influenced literacy development in Nigeria. These funding mechanisms serve as essential vehicles for mobilizing resources, strengthening institutional capacity, and fostering human capital development across various levels of the education sector. Therefore, it is in the interest of this study to conduct a comprehensive analysis of how these components of government educational funding have impacted adult literacy rates in Nigeria over the period 1999 to 2024.

Literature Review

Conceptual Clarifications

Government Intervention Funds

Government intervention funds in the education sector are generally conceptualized as targeted financial allocations by the state to improve access, quality, equity, and outcomes in the educational system. Scholars have broadly defined these funds as state-managed resources aimed at correcting market failures in human capital development, ensuring inclusive education, and strengthening institutional frameworks for sustainable learning (Adeyemi & Ojo, 2022). In Nigeria, government intervention funds are structured around specialized agencies that oversee the financing and support of education at various levels. The most prominent of these include the Tertiary Education Trust Fund (TETFund), the Petroleum Technology Development Fund (PTDF), and the Universal Basic Education Commission (UBEC) fund. These institutions are established by statutory mandates to allocate and manage funds specifically for educational development, addressing the chronic underfunding of schools and human resource deficits across the country.

The Tertiary Education Trust Fund (TETFund) is a dedicated public fund established by the Federal Government of Nigeria to provide supplementary support to public tertiary institutions. It is primarily financed through a 2 percent education tax levied on assessable profits of companies operating in Nigeria. According to Okonkwo and Adebayo (2023), TETFund is conceptualized as a strategic mechanism for revitalizing Nigeria's higher education system by financing infrastructure development, academic staff training, research grants, and instructional materials. Its role is not merely financial but also transformative, as it seeks to enhance the capacity of universities, polytechnics, and colleges of education to deliver quality education and conduct research that is relevant to national development.

The Petroleum Technology Development Fund (PTDF) is another key component of government intervention in the education sector, particularly in the area of science, technology, engineering, and mathematics (STEM) education. The PTDF was established to build capacity for the oil and gas sector by providing scholarships, training, and infrastructural support for technical and vocational education. As conceptualized by Ibrahim and Yusuf (2022), PTDF represents a sector-specific intervention fund aimed at developing human capital through local and international scholarship programs, research funding, and partnerships with industry and academic institutions. Although its primary mandate is related to the energy sector, PTDF's investments in education contribute significantly to broader national education goals, especially in enhancing specialized technical skills.

The Universal Basic Education Commission (UBEC) fund is designed to support basic education in Nigeria, covering primary and junior secondary education. UBEC operates through a funding model where federal grants are matched with counterpart funding from state governments to implement the Universal Basic Education (UBE) program. UBEC is conceptualized by scholars as a pivotal instrument for achieving mass literacy, reducing out-of-school rates, and improving foundational learning outcomes (Oluwadare & Eze, 2022). It focuses on infrastructure development, teacher training, provision of learning materials, and

school feeding programs, particularly in underserved and rural areas. The essence of UBEC funding, as argued by Lawal and Musa (2023), lies in its redistributive capacity to equalize educational opportunities and close regional disparities in basic education access and quality.

Literacy Development

Literacy development is widely recognized in academic and policy literature as a fundamental component of human capital formation and a critical determinant of individual and national socio-economic advancement. Conceptually, literacy development refers to the process through which individuals acquire the ability to read, write, comprehend, and effectively communicate in one or more languages. Literacy is not limited to basic reading and writing but increasingly encompasses a range of competencies such as digital literacy, financial literacy, and critical thinking, which are essential for full participation in modern societies (Osiobe, 2020). Literacy rates, often measured as the percentage of people aged 15 and above who can read and write with understanding, are the most widely used proxy for assessing literacy development in population-level studies.

According to Adetunji and Salawu (2023), literacy development involves sustained cognitive and linguistic engagement that enables individuals to navigate social, economic, and political life effectively. They argue that literacy goes beyond formal schooling and includes informal and lifelong learning processes, thus making it a continuous developmental phenomenon. Similarly, Okorie and Musa (2022) define literacy development as the cumulative result of access to quality education, exposure to language-rich environments, and the availability of instructional resources and trained educators. This definition emphasises the systemic nature of literacy and its dependence on a functioning and inclusive educational ecosystem.

In the Nigerian context, literacy development is particularly important due to historical and structural challenges in the education sector, such as regional disparities, underfunding, teacher shortages, and insecurity. Scholars such as Ibrahim and Danjuma (2023) have described literacy development in Nigeria as a contested and uneven process, where progress is often influenced by socio-economic status, gender, and geographical location. They conceptualize adult literacy rates as a critical barometer of educational access and quality, especially in rural and marginalized communities. Literacy rates in Nigeria have improved over time, but the pace of development has been slow and inconsistent, often reflecting the inadequacies in basic education funding, policy implementation, and curriculum relevance (Lawal & Obasi, 2022). As such, literacy development is not only an educational issue but also a socio-political one, deeply intertwined with governance, policy priorities, and public investment in education.

International organizations also provide conceptual clarity on literacy development. UNESCO (2022) emphasizes that literacy is both a right and a foundation for lifelong learning, defining it as the ability to identify, understand, interpret, create, communicate, and compute using printed and written materials associated with varying contexts. This broader understanding has influenced contemporary assessments of literacy development, shifting focus from mere reading and writing skills to more integrated and applied forms of

knowledge. The World Bank (2023) further links literacy development to economic growth, arguing that higher literacy rates are associated with increased productivity, better health outcomes, and reduced poverty. In line with this, the Sustainable Development Goals (particularly SDG 4) place literacy at the core of efforts to ensure inclusive and equitable quality education for all.

Literacy development is also conceptualized as a developmental threshold that determines a society's capacity to innovate, govern effectively, and achieve equitable growth. According to Olowu and Okafor (2023), nations with sustained investments in literacy development tend to experience more stable democracies and improved economic competitiveness. They emphasize that literacy must be understood not only as an individual attribute but also as a collective societal asset that shapes public discourse, civic participation, and national identity. Thus, efforts to improve literacy must address both educational inputs and broader socio-economic conditions that affect learning outcomes.

Theoretical Underpinning

The theoretical foundation of this study is anchored in the Theory of Public Goods, a concept extensively developed by economist Paul A. Samuelson in 1954. Samuelson introduced the theory in his seminal work "The Pure Theory of Public Expenditure," where he categorized goods based on their consumption characteristics. Public goods, as defined by Samuelson, are both non-excludable and non-rivalrous. This means that once such goods are provided, no individual can be excluded from their use, and one person's use does not reduce the availability for others. Education, particularly in its foundational and equitable form, fits this definition and is thus justifiably supported through public funding. Samuelson's theory emphasized that the private market is often inefficient in producing public goods, which necessitates government intervention to ensure optimal allocation and accessibility (Samuelson, 1954).

The core of the Theory of Public Goods lies in addressing market failures, especially in sectors where private providers have little or no incentive to supply services at socially desirable levels. Education is one such sector was left to market forces alone, a large portion of the population, especially marginalized and low-income groups—would be denied access due to affordability constraints. As such, the theory provides a compelling rationale for the state's involvement in financing and delivering education through intervention funds. In Nigeria, these include the Tertiary Education Trust Fund (TETFund), the Universal Basic Education Commission (UBEC) fund, and the Petroleum Technology Development Fund (PTDF). Each of these agencies operationalizes the public goods function of the state by channeling resources to critical segments of the educational system, thereby enhancing access, equity, and quality.

The strengths of the Theory of Public Goods are evident in its applicability to real-world public policy, particularly in explaining why governments need to intervene in the provision of essential services. It provides a normative framework for understanding the role of the state in correcting inefficiencies in the education market. This is especially relevant for countries

like Nigeria, where disparities in educational access are stark and require deliberate financial policies to bridge gaps and promote inclusive literacy development. Adefulu and Ojo (2022) affirm that the theory underpins much of the justification for government education spending in developing economies, where private provision is either insufficient or inaccessible to the majority.

Empirical Reviews

Understanding the link between government intervention funds and literacy development has attracted significant scholarly attention, particularly in contexts where public education systems are challenged by underfunding, inequality, and structural inefficiencies. Numerous empirical studies have explored this relationship using different proxies for government intervention and literacy outcomes across various geographic regions and timeframes. A study by Bello and Ajayi (2024) took a micro-level approach by assessing the effects of TETFund and UBEC allocations on educational outcomes in three Nigerian states, Kano, Rivers, and Anambra, between 2010 and 2022. Utilizing mixed methods, including surveys, interviews, and quantitative secondary data analysis, the researchers found that TETFund's capital project financing significantly improved learning environments, but its effect on literacy rates was more indirect. UBEC, in contrast, was found to have a direct correlation with rising literacy levels due to its support for primary education programs, instructional materials, and teacher recruitment. One of the study's strengths was its triangulated research design, which allowed for contextual interpretations. Nonetheless, it failed to incorporate the role of PTDF, especially considering the growing influence of vocational and technical training on functional literacy. The time frame, while recent, was relatively short for capturing long-term literacy outcomes.

A more targeted approach was taken by Igbokwe and Ojo (2024), who focused on the relationship between PTDF disbursements and adult functional literacy in Nigeria's oil-producing states from 2005 to 2022. The researchers employed panel data regression techniques to isolate the effects of PTDF investments in scholarships, technical training centers, and STEM programs on regional literacy rates. Their results revealed a strong positive correlation between PTDF interventions and functional literacy, particularly among young adults enrolled in vocational programs. The study contributed significantly to the literature by providing a rare empirical evaluation of PTDF's role in literacy development. Nevertheless, it did not incorporate UBEC or TETFund, which limited its capacity to draw broader conclusions about the entire spectrum of government educational interventions.

In a national-level analysis conducted by Olamide and Yusuf (2023), the authors investigated the impact of government education funding on literacy outcomes in Nigeria, focusing on the period from 2005 to 2021. The study utilized multiple regression analysis to evaluate how disbursements from UBEC and TETFund influenced adult literacy rates across Nigeria's six geopolitical zones. Their findings showed that increased UBEC funding had a statistically significant and positive effect on literacy rates, especially in rural areas, while TETFund had a more moderate impact, largely influencing literacy indirectly through improved tertiary-level teaching infrastructure. The study provided valuable insights into how targeted public

education spending could bridge literacy gaps. However, it was constrained by its exclusion of PTDF, a relevant intervention fund that also influences educational outcomes through scholarships and vocational training. Additionally, the study focused solely on federal-level data and did not capture state-specific dynamics, limiting its ability to generalize findings across diverse local contexts.

A study by Chikwendu and Alade (2023) examined the role of government education funds in driving literacy development in Nigeria between 2000 and 2020. Using multiple linear regression on time series data sourced from the National Bureau of Statistics and UBEC annual reports, the study assessed the impact of UBEC and TETFund allocations on national literacy rates. The findings indicated that UBEC funding had a more direct and statistically significant impact on adult literacy, especially in states with historically low education access. TETFund showed a delayed but positive influence, particularly through improved tertiary-level training for educators. However, the study did not account for PTDF funding, despite its increasing role in providing scholarships and vocational literacy. Furthermore, the study relied heavily on national-level data, overlooking subnational variations that could influence literacy outcomes in different regions.

García and Martínez (2023) examined the influence of public education funds on rural literacy development in Peru between 2003 and 2021. Employing spatial econometric techniques, the study assessed the distribution and impact of education infrastructure funds on literacy rates in rural provinces. The authors found that targeted public investment in rural education, akin to Nigeria's UBEC initiatives, significantly improved literacy outcomes where funds were consistently disbursed and monitored. The use of spatial analysis was a unique contribution, enabling the study to identify geographic disparities in fund effectiveness. However, the study relied largely on government-reported literacy statistics, which may underreport or overestimate actual literacy levels due to data limitations in remote areas.

Ahmed and Musa (2023) explored the influence of public funding on primary education performance in Sierra Leone with a specific focus on literacy. Covering the period from 2005 to 2021, they adopted a panel data regression method using data from the Ministry of Basic and Senior Secondary Education and international donor agencies. Their findings showed that increased government and donor funding significantly improved literacy outcomes in early primary grades, especially in rural districts. They emphasized that community-driven school funding models and improved teacher incentives were key contributors to the success. Nonetheless, the study leaned heavily on donor-linked interventions and did not sufficiently differentiate the impacts of government-only funding from blended financing schemes. Additionally, while the authors presented convincing evidence of success in literacy performance, they paid limited attention to the sustainability of these improvements in the absence of continued external support, which raises questions about long-term policy effectiveness.

In their critical assessment, Bello and Asaju (2022) evaluated how educational financing has affected learning outcomes in Nigerian tertiary institutions. The study spanned from 2002 to 2020 and used a combination of qualitative institutional reviews and quantitative trend analysis of TETFund disbursements against indicators of academic output and literacy. They found that increased TETFund allocations significantly enhanced infrastructure, research capacity, and postgraduate enrolment, which in turn contributed indirectly to national literacy improvement by producing better-trained educators. However, their analysis also identified issues of poor fund utilization, politicization of allocations, and a lack of impact assessment mechanisms within institutions. A key limitation of the study was its generalization of literacy improvement without directly linking institutional outputs to literacy measures in the wider population. Moreover, its reliance on secondary institutional data without corroborating field-level insights from beneficiaries limits the depth of its findings.

Onwudiwe (2023) focused on evaluating the role of the Petroleum Technology Development Fund (PTDF) in Nigeria's education sector, with a specific emphasis on its contribution to human capital development from 2005 to 2022. Employing a mixed-methods approach combining time-series analysis with stakeholder interviews, the study revealed that while PTDF's scholarship programs and technical capacity-building initiatives had improved access to specialized education, their direct influence on national literacy rates was limited. The research highlighted that PTDF interventions were often narrowly targeted at elite students in science and engineering fields, with limited trickle-down effects on broader literacy indicators. One shortcoming of the study is its limited engagement with how PTDF's institutional investments (such as in training centers) could indirectly influence functional and adult literacy beyond formal measures.

Osei and Boateng (2023) analyzed government funding of tertiary education and its implications for lifelong learning and adult literacy in South Africa, covering the period between 2000 and 2021. Using a structural equation modeling (SEM) framework, the authors explored linkages between public funding, adult education program participation, and literacy proficiency. They found a significant positive relationship, noting that funding directed toward community colleges and distance learning programs had a measurable effect on adult literacy levels, especially among previously marginalized populations. While the findings offered valuable policy insights, the study underemphasized the role of non-governmental organizations and donor-funded initiatives, which have historically played a strong role in supporting adult literacy in South Africa. This omission may have attributed a larger share of the success to government funding than warranted.

Wu and Jiang (2023) conducted a study on the impact of public funding for technical education on literacy and productivity in rural China, covering the years 2001 to 2021. Using a panel fixed-effects regression model, they found that government investment in vocational schools and technical training centers significantly improved both functional literacy and workforce productivity in remote provinces. The study argued that literacy gains were particularly strong among young adults who previously lacked access to formal education.

However, the analysis focused primarily on functional and employment-linked literacy outcomes, with limited attention to broader literacy competencies such as reading comprehension and writing. This narrowed the scope of the literacy outcomes considered, leaving questions about the full spectrum of literacy improvements attributable to public funding.

In East Africa, Njoroge and Muriuki (2022) conducted an empirical study on public education funding and literacy improvement in Kenya between 1998 and 2020. Using co-integration and error correction modelling, they analysed the impact of education-related government expenditure on literacy rates, disaggregating the funds into basic education, teacher training, and infrastructure development. Their findings showed that investments in basic education yielded immediate improvements in literacy outcomes, while tertiary education funding had longer-term effects. Although the study was methodologically sound, it did not consider literacy as a multidimensional variable, instead relying solely on adult literacy rate as the outcome, without addressing gender, age, or regional disparities that could affect interpretation.

Adediran and Ogundipe (2022) conducted an empirical analysis to assess the relationship between basic education funding and literacy outcomes in Nigeria. The study covered a time frame from 2000 to 2020 and employed a descriptive and regression-based approach using data from the Universal Basic Education Commission (UBEC), National Bureau of Statistics (NBS), and the World Bank. Their findings revealed a positive but inconsistent relationship between UBEC funding and improvements in literacy rates, particularly in primary school enrolment and early-grade reading. However, they noted that disbursement delays, poor monitoring mechanisms, and uneven state-level implementation limited the overall impact of funding on literacy outcomes. Although the study provided detailed sectoral insights, it lacked robustness in terms of regional disaggregation and did not account for other complementary factors influencing literacy, such as teacher quality, curriculum adequacy, and socio-economic disparities, which could have provided a more diverse understanding of the challenges facing basic education in Nigeria.

Olatunji and Yakubu (2022) investigated the influence of Universal Basic Education (UBE) funding on literacy growth in Northern Nigeria between 2004 and 2020. The study employed a panel regression analysis across several northern states using data from UBEC and state ministries of education. The results demonstrated that increased UBEC allocations were significantly associated with improvements in literacy rates, especially in states that successfully met counterpart funding requirements. The researchers emphasized the role of early-grade reading programs and community-based education as key mechanisms through which UBE funding translated into improved outcomes. However, the study did not adequately consider socio-political factors such as insecurity and cultural resistance to formal education, which are known to affect school attendance and literacy in the region, thus potentially overestimating the funding impact.

Kwabena and Nyarko (2022) investigated the relationship between government expenditure on tertiary education and literacy development in Ghana from 1998 to 2020. Using an error correction model (ECM) and time series data from the Ghana Education Service and Ministry of Finance, the study found a strong long-run association between increased government spending and improvements in adult literacy rates. They attributed this link to investments in teacher education, expanded tertiary access, and stronger adult education programs. Their model showed that tertiary education funding had both direct and indirect effects on literacy, particularly through teacher training institutions and non-formal education outreach. While the study was methodologically sound and provided strong evidence of causality, it did not account for the influence of private tertiary institutions or non-governmental literacy programs, which have become significant players in Ghana's educational system. This omission may have led to an overestimation of the government's sole impact on national literacy progress.

Mensah and Obeng (2022) examined the relationship between public investment in vocational training and human capital outcomes in Ghana, focusing on the period from 2000 to 2020. Utilizing a vector error correction model (VECM), the study assessed the impact of vocational education funding on employment levels and literacy among youth populations. Their findings indicated a strong positive correlation between increased government spending on vocational training and improvements in functional literacy, particularly in rural and underserved regions. The study concluded that vocational education serves as a crucial pathway for enhancing literacy through practical skills acquisition. While the analysis was comprehensive, it did not sufficiently account for private sector contributions or the role of informal apprenticeship systems, which are prevalent in Ghana and could potentially influence the observed outcomes.

Methodology

This paper adopted a non-experimental research design to examine the impact of government intervention funds on literacy development in Nigeria. The non-experimental design was appropriate because it enabled the researcher to analyse existing data over a defined period without manipulating any variables. This design supported the descriptive and inferential analysis of historical data, offering insights into how funding interventions correlated with changes in literacy outcomes. It also allowed for the use of statistical tools to explore relationships in a real-world context without direct experimental control.

The paper utilized quantitative secondary data, which were time-series in nature, covering the period from 1999 to 2024. The data captured government intervention funds disbursed through TETFund, UBEC, and PTDF, alongside literacy rates as the proxy for literacy development. These data were sourced from official and credible institutions, including the Universal Basic Education Commission (UBEC, 2024), TETFund (2024), Petroleum Technology Development Fund (PTDF, 2024), National Bureau of Statistics (NBS, 2024), World Development Indicators (WDI, 2024), and the UNESCO Institute for Statistics (2024). The structured and validated nature of these sources ensured the reliability and relevance of the data for empirical analysis.

This paper adopted a modified version of the model originally developed by Njoroge and Muriuki (2022), who empirically examined the relationship between public education financing and literacy enhancement in Kenya. Their model served as a foundational structure for analysing how targeted government funding influences literacy outcomes, and was adjusted in this study to reflect the Nigerian context and the specific proxies of government intervention funds under investigation, and thus for this paper it is represented as:

$$LTR_t = \alpha_0 +_1 TETF_t + \beta_2 PTDF_t + \beta_3 UBEC_t + u_t \quad (1)$$

Where:
LTR = Literacy rates
TETF = Tertiary Education Trust Fund
PTDF = Petroleum Technology Development Fund
UBEC = Universal Basic Education Commission
α_0 = Autonomous parameter estimates
$\alpha_1 - \alpha_3$ = Coefficients of Tertiary Education Trust Fund (TETF), Petroleum Technology Development Fund (PTDF) and Universal Basic Education Commission (UBEC) fund
μ_t = error term.

The analysis commenced with the application of unit root tests as an initial diagnostic procedure to evaluate the stationarity characteristics of the dataset. This step, grounded in the methodology proposed by Augmented Dickey and Fuller (ADF), was essential for determining whether the time series variables possessed stochastic trends, which would necessitate differencing to attain stationarity. Overlooking this step could compromise the validity of regression results, potentially leading to spurious conclusions and flawed statistical interpretations.

The mathematical specification for the ADF test is as follows:

$$\Delta y_t = \vartheta + \lambda t + \varphi y_{t-1} + \sum_{i=1}^{p} \psi_i \Delta y_{t-i} + v_t \quad (2)$$

Where:
y_t represents the variable being tested; Δy_t is the first difference of the variable; ϑ is a constant (drift term); λt represents the trend component; φy_{t-1} captures the lagged level of the variable, where the coefficient φ determines whether a unit root is present; $\psi_i \Delta y_{t-i}$ accounts for lagged differences to correct for serial correlation; v_t is the error term.

Upon establishing the stationarity properties of the variables, the study advanced to assess the presence of long-run equilibrium relationships among them. To achieve this, the cointegration testing approach was adopted, aligning with the methodological guidance provided by Pesaran et al. (1999). This approach was particularly valuable in detecting stable, long-term relationships among non-stationary series, without the loss of crucial information through excessive differencing.

Mathematically, the Bounds ARDL model can be specified as follows:

$$\Delta y_t = \pi + \sum_{i=1}^{p} \gamma_i \Delta y_{t-i} + \sum_{i=0}^{q} \eta_i \Delta x_{t-i} + \alpha_1 y_{t-1} + \alpha_2 x_{t-1} + \mu_t \quad (3)$$

In equation (3), Δ represents the first difference operator, y_t is the dependent variable, x_t is the independent variable(s), π is a constant, γ_i and η_i are the short-run dynamic coefficients of the model, α_1 and α_2 capture the long-run relationship between y_t and x_t; and μ_t is the error term.

The Bounds test involves estimating this ARDL model and then testing the null hypothesis of no cointegration ($\alpha_1 = \alpha_2 = 0$) against the alternative hypothesis of cointegration ($\alpha_1 \neq 0$ and/or $\alpha_2 \neq 0$). The decision whether to reject the null hypothesis is based on the computed F-statistic, which is compared to two sets of critical values: one assuming that the variables are $I(0)$ and the other assuming they are $I(1)$.

To estimate both the long-run and short-run interactions between government education intervention funds, measured through TETFund, UBEC, and PTDF allocations, and literacy development, the study employed the Bounds testing procedure for cointegration within the Auto-Regressive Distributed Lag (ARDL) modeling framework, as formulated by Pesaran et al. (2001). The ARDL technique was especially suitable for this analysis as it accommodates variables integrated at different orders. This approach allowed for a comprehensive examination of the immediate and sustained impacts of government intervention funding on literacy rates in Nigeria, thereby offering a cohesive empirical framework for understanding the education–literacy financing nexus.

The unrestricted ARDL model for this paper is specified as follows:

$$\Delta LTR_t = \alpha_0 + \sum_{i=0}^{a-1} \alpha_1 \Delta LTR_{t-i} + \sum_{i=0}^{b-1} \alpha_2 \Delta TETF_{t-i} + \sum_{i=0}^{c-1} \alpha_3 \Delta PTDF_{t-i} + \sum_{i=0}^{d-1} \alpha_4 \Delta UBEC_{t-i} + \alpha_5 LTR_{t-1} + \alpha_6 TETF_{t-1} + \alpha_7 PTDF_{t-1} + \alpha_8 UBEC_{t-1} + u_t \quad (4)$$

The ARDL-ECM (restricted) model is specified as:

$$\Delta LTR_t = \alpha_0 + \sum_{i=0}^{a-1} \alpha_1 \Delta LTR_{t-i} + \sum_{i=0}^{b-1} \alpha_2 \Delta TETF_{t-i} + \sum_{i=0}^{c-1} \alpha_3 \Delta PTDF_{t-i} + \sum_{i=0}^{d-1} \alpha_4 \Delta UBEC_{t-i} + \varphi u_{t-1} + \varepsilon_t \quad (5)$$

Where; φ is the speed of adjustment parameter; μ_{t-1} (which is the lagged Error Correction Term) is the residual obtained from the long run estimation.

Results and Discussion

Descriptive Statistics Results

Descriptive statistics provide a preliminary understanding of the behaviour, central tendency, dispersion, and distribution characteristics of the variables under investigation. They offer insights into the patterns and structure of the data, setting the foundation for deeper econometric analysis.

Table 1: Descriptive Statistics Results

	LTR	TETF	PTDF	UBEC
Mean	58.3739	173.5269	64.0089	83.1357
Maximum	71.6000	845.7600	198.4500	184.6500
Minimum	51.0800	5.7000	9.2000	30.0000
Std. Dev.	5.5673	203.7800	56.5619	46.7197
Skewness	0.7592	2.1026	0.9902	0.7081
Kurtosis	2.7337	7.2214	2.6377	2.3966
Jarque-Bera	2.5743	38.4623	4.3911	2.0735
Probability	0.2761	0.0000	0.1113	0.3546
Observations	26	26	26	21

Source: Researcher's Computation Using EViews-12 (2025)

From Table 1, the literacy rate (*LTR*), which serves as the proxy for literacy development, had a mean value of 58.37 percent, indicating that on average, adult literacy in Nigeria hovered just below 60 percent over the study period. The maximum recorded literacy rate was 71.60 percent, while the minimum stood at 51.08 percent. These values suggest gradual but fluctuating progress in literacy over time. The standard deviation of 5.57 indicates a moderate level of variability in literacy rates, showing some consistency in trends with only slight deviations year-on-year. The positive skewness value of 0.76 suggests a rightward tail, implying that higher literacy rates occurred more frequently than extremely low ones. The kurtosis value of 2.73 is close to the normal distribution benchmark of 3, suggesting a relatively normal distribution of literacy rate data. The Jarque-Bera test result (2.57) with a p-value of 0.2761 indicates that the literacy rate variable does not deviate significantly from normality, making it suitable for further parametric analyses.

For the *TETFund* variable, the mean value was ₦173.53 billion, highlighting substantial government investment in tertiary education over the years. The maximum value of ₦845.76 billion in 2024 shows a marked increase from the minimum of ₦5.70 billion in 1999, reflecting growing prioritization of tertiary education funding. However, the high standard deviation of ₦203.78 billion indicates significant variability in yearly disbursements. The skewness of 2.10 suggests a strong rightward skew, indicating that a few years experienced extremely high funding, possibly due to policy shifts or increased budget allocations. The kurtosis of 7.22 points to a leptokurtic distribution, with heavy tails and sharper peaks compared to a normal distribution. The Jarque-Bera statistic of 38.46 with a p-value of 0.0000 confirms a significant departure from normality. This non-normal distribution likely reflects the uneven and politically influenced nature of fund allocations to tertiary education institutions in Nigeria.

The *PTDF* variable, which captures government funding targeted at capacity building in the petroleum sector through scholarships and technical training, had a mean value of ₦64.01 billion. This indicates a moderate average annual investment in technical education and vocational training. The maximum disbursement reached ₦198.45 billion, while the minimum was ₦9.20 billion, showing a widening range of funding over the years. The

standard deviation of ₦56.56 billion further reflects moderate variability in annual allocations. A skewness of 0.99 also suggests a rightward distribution, indicating that higher values were more frequent in recent years as PTDF expanded its interventions. The kurtosis of 2.64 implies a near-normal distribution, while the Jarque-Bera statistic of 4.39 and a p-value of 0.1113 show that the PTDF data are not significantly different from normal distribution at conventional levels, making the variable statistically manageable for regression analysis.

The *UBEC* variable, which represents funding for basic education, had an average annual value of ₦83.14 billion, highlighting its critical role in foundational literacy development. The minimum and maximum values were ₦30.00 billion and ₦184.65 billion, respectively. This funding range reveals consistent but gradually increasing investment in the basic education sector. The standard deviation of ₦46.72 billion indicates moderate variability. The skewness value of 0.71 suggests a slight rightward skew, which is typical when funding generally increases over time. With a kurtosis of 2.39, the distribution is relatively platykurtic, showing a flatter distribution than normal. The Jarque-Bera test statistic of 2.07 with a p-value of 0.3546 indicates no significant departure from normality, supporting the use of UBEC funding data in further statistical modeling.

Unit Root Results

Unit root testing is a crucial preliminary step in time series analysis, aimed at determining the stationarity properties of variables. A stationary series is one whose statistical properties such as mean and variance remain constant over time, which is a necessary condition for many econometric models to produce valid inferences. The Augmented Dickey-Fuller (ADF) test is widely used for this purpose, and in this study, it was applied to examine the time series behaviour of all the variables involved.

Table 2: Summary of Unit Root Test Results

Variables	ADF				Decision
	Levels (Intercept & trend)		1st difference (Intercept & trend)		
	ADF	Critical values	ADF	Critical values	Order of Integration
LTR	-3.582248	-3.238054***	Nil	Nil	I(0)
PTDF	0.905165	-3.603202	-3.532427	-3.243079***	I(1)
TETF	0.180528	-3.603202	-3.862217	-3.612199**	I(1)
UBEC	-1.599709	-3.658446	-6.677122	-4.532598*	I(1)

Note: The tests include intercept with trend; **, **, and *** significant at 1%, 5% and 10%*

Source: Researcher's Computation Using EViews-12 (2025)

From Table 2, the results revealed that the *literacy rate (LTR)* was stationary at level, as indicated by an ADF test statistic of -3.582248, which exceeded the 10 percent critical value threshold of -3.238054. This means the LTR series did not require differencing to achieve stationarity and is therefore integrated of order zero, I(0).

The *Petroleum Technology Development Fund (PTDF)* variable became stationary only after first differencing. Although its level ADF statistic (0.905165) was far above the critical values, the first difference ADF statistic of -3.532427 was greater in absolute terms than the 10 percent critical value of -3.243079, confirming stationarity at the first difference, or integration of order one, I(1).

Similarly, *TETFund* was non-stationary at level, with an ADF statistic of 0.180528, but became stationary after first differencing, achieving an ADF statistic of -3.862217, which was significant at the 5 percent level against the critical value of -3.612199. This confirms that the series is integrated of order one, I(1). The *UBEC* variable also achieved stationarity after first differencing, with an ADF statistic of -6.677122, well below the 1 percent critical value of -4.532598, indicating strong evidence against the null hypothesis of a unit root. The level ADF statistic of -1.599709 had earlier failed to surpass the required threshold, confirming the variable was non-stationary at level but stationary at first difference, or I(1).

Cointegration Test Result

This helps determine whether a long-run equilibrium relationship exists among the variables, despite short-term fluctuations. In this paper, the ARDL Bounds Testing approach developed by Pesaran, et al. (2001) was employed, and the result is captured in Table 3.

Table 3: Bound Test-Co-integration Results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	5.3982	10%	2.37	3.20
k	3	5%	2.79	3.67
		1%	3.65	4.66

Source: Researcher's Computation Using EViews-12 (2025)

From Table 3, at the 5 percent level of significance, the critical value bounds are 2.79 for the lower bound (I(0)) and 3.67 for the upper bound (I(1)). The calculated F-statistic from the bounds test is 5.3982, which exceeds the upper bound critical value. This result leads to the rejection of the null hypothesis of no long-run relationship among the variables. In other words, there is strong statistical evidence to support the existence of a stable, long-term equilibrium connection between government intervention funds and literacy development in Nigeria over the period under review.

Model Estimation and Interpretations

Having established the existence of a cointegrating relationship between government intervention funds and literacy development in Nigeria, the paper proceeded to estimate both the long-run coefficients and the associated error correction model (ECM). The ARDL-ECM framework was employed to capture the adjustments made by the system toward restoring long-run equilibrium following short-run disturbances as shown in Table 4.

Table 4: ARDL-ECM and Long Run Estimates
Dependent Variable: D(LTR)

Error Correction Estimates				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LTR(-1))	2.5261	0.3358	7.5234	0.0049
D(LTR(-2))	1.4515	0.2660	5.4576	0.0121
D(LTR(-3))	0.5949	0.1466	4.0586	0.0270
D(TETF)	-0.0469	0.0092	-5.1026	0.0146
D(TETF(-1))	0.3032	0.0398	7.6169	0.0047
D(TETF(-2))	0.2170	0.0292	7.4335	0.0050
D(PTDF)	2.0072	0.2675	7.5031	0.0049
D(PTDF(-1))	-0.0598	0.1587	-0.3770	0.7313
D(PTDF(-2))	-1.5295	0.2431	-6.2918	0.0081
D(UBEC)	-0.7849	0.1250	-6.2780	0.0082
D(UBEC(-1))	-0.4415	0.1003	-4.4006	0.0218
CointEq(-1)*	-0.9121	0.1149	-7.9360	0.0042
Long-Run Estimates				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TETF	0.0931	0.0202	4.6051	0.0193
PTDF	0.1528	0.0538	2.8423	0.0455
UBEC	0.0452	0.0976	0.4632	0.6748
C	59.0042	1.5905	37.0983	0.0000
Reliability Estimates				
R-squared	0.925336			
Adjusted R-squared	0.808006			
Durbin-Watson stat	1.766206			

Source: Researcher's Computation Using EViews-12 (2025)

From Table 4, the error correction term, denoted as CointEq(-1), plays a crucial role in the ARDL model by indicating the speed at which short-run deviations from the long-run equilibrium are corrected in the subsequent period. In this study, the coefficient of the error correction term is -0.9121, which is both negative and statistically significant at the 1 percent level, as shown by its t-statistic of -7.936 and a p-value of 0.0042.

The negative sign and statistical significance of the error correction term confirm the presence of a valid long-run relationship among the variables, consistent with the earlier cointegration test result. More importantly, the magnitude of -0.9121 suggests that approximately 91.21 percent of any short-run disequilibrium in literacy development caused by changes in TETFund, PTDF, and UBEC allocations is corrected within one period (presumably one year). This implies a rapid adjustment process, where deviations from the long-term path are swiftly brought back to equilibrium. The result shows that *TETFund* has a positive and statistically significant long-run impact on literacy development. With a coefficient of 0.0931 and a t-statistic of 4.6051, alongside a probability value of 0.0193, this variable meets the 5

percent significance threshold. This indicates that, holding other factors constant, a one-billion naira increase in TETFund allocations leads to approximately a 0.0931 billion naira rise in literacy rate in the long run.

Similarly, from Table 4, *PTDF* also demonstrates a statistically significant and positive long-run relationship with literacy. The coefficient of 0.1528, t-statistic of 2.8423, and probability value of 0.0455 all support the conclusion that PTDF funding has contributed meaningfully to long-term literacy improvements. On the other hand, *UBEC* does not exhibit a statistically significant long-run impact on literacy development. Although the coefficient is positive at 0.0452, the t-statistic is only 0.4632 and the probability value is 0.6748, which is far above the conventional significance threshold. This suggests that, in the long run, the impact of UBEC funding on literacy may be weak or not sustained.

The R-squared value of 0.9253 indicates that approximately 92.53 percent of the variation in literacy rate over the study period is explained by the combined influence of TETFund, PTDF, and UBEC allocations. This suggests a very strong explanatory power, confirming that government education funding plays a substantial role in shaping literacy outcomes in Nigeria. It reflects that the model captures the majority of the systemic changes in literacy driven by these intervention funds. The adjusted R-squared of 0.8080 further supports the model's robustness. Unlike the R-squared, the adjusted value accounts for the number of explanatory variables in the model and adjusts for potential overfitting. Even after making this adjustment, over 80 percent of the variation in literacy is still explained by the model, reinforcing the appropriateness of the selected variables and the underlying model structure. The Durbin-Watson statistic of 1.7662 assesses the presence of autocorrelation in the model's residuals. A value close to 2 typically indicates no autocorrelation, while values below or above suggest positive or negative serial correlation, respectively. With a value of 1.77, the statistic falls within an acceptable range, implying that there is likely no serious problem of autocorrelation in the residuals.

Discussion of Findings

Findings from the study showed that TETFund allocations had a positive and significant impact on literacy development in Nigeria. This finding implies that sustained and targeted funding to tertiary institutions contributed meaningfully to national literacy outcomes, particularly through improved infrastructure, teacher capacity, and academic resources. By strengthening the quality of higher education, TETFund indirectly enhanced the overall learning environment and produced better-qualified educators who fed back into the educational system at various levels. This finding aligns with the work of Kwabena and Nyarko (2022), who found that targeted tertiary education funding in Ghana significantly improved national literacy and cognitive skill development, particularly when funds were invested in faculty development and learning resources. Similarly, Osei and Boateng (2023) demonstrated that tertiary education funding played a critical role in expanding access to adult education and informal literacy programs in South Africa. However, the present study's finding differs from that of Bello and Asaju (2022), who found that in Nigeria, tertiary education funding did not translate significantly into broader literacy improvements due to misallocation of resources and poor institutional accountability in fund utilization.

In contrast, PTDF allocations also had a positive and significant impact on literacy development. This suggests that investments in vocational, technical, and science-based education under PTDF have contributed substantially to functional literacy among Nigerian adults. PTDF's scholarship schemes, technical training initiatives, and infrastructure development in STEM education appears to have strengthened the country's human capital base. This finding is consistent with that of Mensah and Obeng (2022), who found that public investments in vocational education significantly raised literacy and employment outcomes in Ghana's oil-producing regions. In a similar vein, Wu and Jiang (2023) reported that public investment in technical training in China increased both functional literacy and productivity, especially in rural provinces where formal education access was limited. However, the outcome from this study contradicts the findings of Onwudiwe (2023), who argued that PTDF funding in Nigeria has largely favored elite scholarship programs with minimal direct influence on national literacy indicators, owing to its narrow targeting and lack of integration with national basic education strategies.

However, UBEC funding had a positive but statistically insignificant impact on literacy development. This suggests that while basic education funding has increased over the years, its effects on literacy outcomes may have been constrained by factors such as poor implementation, weak accountability structures, and disparities in fund disbursement across states. The insignificant impact implies that foundational education, which should have the most direct influence on literacy, is still grappling with systemic issues that prevent resources from translating into measurable learning outcomes. This is consistent with the findings of Adediran and Ogundipe (2022), who noted that UBEC's impact on foundational literacy in Nigeria was undermined by irregular counterpart funding, teacher shortages, and inadequate monitoring at the subnational level. Likewise, Ahmed and Musa (2023) found similar patterns in Sierra Leone, where despite increased basic education funding, literacy rates stagnated due to inefficiencies in school-level resource utilization. On the other hand, this finding contradicts the study by Olatunji and Yakubu (2022), who reported a significant positive relationship between UBEC funding and literacy rates, especially in Northern Nigeria, where UBEC-supported interventions had improved school attendance and early-grade reading outcomes.

Conclusion and Recommendations

Based on the findings and discussions presented, this study concludes that government intervention funds play a significant role in shaping literacy development in Nigeria. The analysis confirmed the presence of a significant relationship between government educational funding, captured through TETFund, PTDF, and UBEC, and literacy rates. Specifically, TETFund and PTDF were found to have positive and statistically significant impacts on literacy development in the long run, suggesting that sustained investments in tertiary and technical education have contributed meaningfully to building a literate and skilled population. These funds have supported the expansion of infrastructure, teacher training, and access to higher and vocational education, indirectly enhancing literacy across broader segments of the population.

However, the insignificant long-run impact of UBEC funding on literacy suggests that despite increased allocations to basic education, the effectiveness of this intervention remains constrained by implementation inefficiencies, irregular counterpart funding, and systemic challenges at the subnational level.

In light of the findings of this study, several specific recommendations are put forward to enhance the impact of government intervention funds on literacy development in Nigeria.

i. First, since TETFund allocations were found to have a significant and positive long-run effect on literacy, it is recommended that the Tertiary Education Trust Fund (TETFund) expand its support beyond infrastructure and research grants to include direct investment in adult literacy and community education outreach programs, particularly through the colleges of education and university faculties of education. The Federal Ministry of Education should collaborate with TETFund to develop structured literacy extension programs that allow tertiary institutions to provide literacy support in underserved communities.
ii. Given the strong impact of PTDF funding, the Petroleum Technology Development Fund (PTDF) is encouraged to formalize partnerships with vocational and technical institutions to expand its reach beyond petroleum-related disciplines. The PTDF should develop inclusive literacy-enhancement components within its technical training programs to support functional literacy, especially in rural areas where its training centers operate. The National Board for Technical Education (NBTE) should play a supporting role by ensuring that literacy and basic communication skills are embedded in vocational training curricula.
iii. The findings related to UBEC funding, which showed a statistically insignificant impact on literacy development, call for urgent reforms in the operations of the Universal Basic Education Commission (UBEC). It is recommended that UBEC strengthen its monitoring and evaluation framework to ensure that funds disbursed to state governments are not only released in a timely manner but are also used for literacy-enabling programs such as teacher recruitment, early-grade reading materials, and continuous assessment. The State Universal Basic Education Boards (SUBEBs) must be held accountable for counterpart funding obligations, and the Office of the Auditor-General for the Federation should be tasked with conducting annual audits to ensure compliance and effectiveness in fund utilization.

References

Adediran, T. A., & Ogundipe, O. R. (2022). Basic education funding and literacy outcomes in Nigeria: A sectoral performance review. *African Journal of Educational Development, 14*(2), 112–130.

Adefulu, A. A., & Ojo, M. A. (2022). Public goods and the financing of education in Nigeria: Theoretical perspectives and policy implications, *Journal of Public Sector Economics and Development, 8*(2), 101–115.

Adetunji, A. O., & Salawu, M. A. (2023). Rethinking literacy in the 21st century: A conceptual analysis of literacy development in Nigeria. *Journal of Educational and Social Development, 11*(1), 89–101.

Adeyemi, K. A., & Ojo, R. A. (2022). Government intervention and educational financing in Nigeria: Evaluating the role of public education funds. *African Journal of Public Sector Management, 4*(1), 55–68.

Ahmed, B. K., & Musa, A. Y. (2023). Public funding and primary education performance in Sierra Leone: A literacy perspective. *International Journal of Education in Africa, 8*(1), 25–41.

Bello, R. A., & Asaju, K. O. (2022). Educational financing and learning outcomes in Nigerian tertiary institutions: A critical assessment, *Journal of Education Policy and Development, 10*(3), 88–104.

Bello, R. T., & Ajayi, M. A. (2024). Government intervention funds and literacy outcomes: A comparative state-level analysis in Nigeria, *Nigerian Journal of Educational Policy and Administration, 10*(1), 45–63.

Buchanan, J. M. (1965). An economic theory of clubs., *Economica, 32*(125), 1–14.

Chikwendu, T. O., & Alade, M. O. (2023). Government education funding and literacy performance in Nigeria: An empirical investigation. *Journal of Public Finance and Education Policy, 15*(1), 52–68.

Egbewole, W. O., & Adeyeye, T. M. (2023). Education as a public good: Rethinking government intervention through TETFund and UBEC. *Journal of Educational Policy and Administration, 9*(2), 102–117.

García, L. A., & Martínez, P. J. (2023). Rural education investment and literacy improvement in Peru: A spatial econometric approach. *Latin American Review of Development Studies, 11*(2), 119–135.

Ibrahim, M. S., & Yusuf, K. A. (2022). Sectoral funding and human capital development: The role of the petroleum technology development Fund in Nigeria. *Nigerian Journal of Development Studies, 12*(1), 80–93.

Ibrahim, Y. M., & Danjuma, U. M. (2023). Regional disparities and the struggle for literacy in Nigeria: Policy and grassroots perspectives. *Nigerian Journal of Educational Policy, 7*(2), 33–47.

Igbokwe, E. S., & Ojo, B. A. (2024). PTDF and literacy development in Nigeria's oil-rich states: Evidence from panel data. *Nigerian Journal of Human Capital Development, 9*(1), 90–107.

Kwabena, A. O., & Nyarko, J. T. (2022). Government expenditure on tertiary education and literacy advancement in Ghana: An empirical insight. *West African Review of Education and Development, 6*(1), 60–75.

Lawal, A. S., & Musa, A. M. (2023). Universal Basic Education funding and the quest for educational equity in Nigeria. *West African Journal of Educational Research, 15*(3), 142–156.

Lawal, R. A., & Obasi, K. L. (2022). Basic education and the quest for universal literacy in Nigeria: Evaluating progress and challenges. *West African Journal of Literacy and Education, 9*(3), 122–135.

Mensah, K. O., & Obeng, J. K. (2022). Public investment and literacy development in sub-Saharan Africa: Evidence from Ghana. *African Development Review, 34*(4), 382–395.

NBS. (2024). *National Education Statistics Report*. National Bureau of Statistics.

Njoroge, M. A., & Muriuki, D. K. (2022). Government spending and literacy development in Kenya: Evidence from co-integration analysis. *East African Journal of Education and Social Sciences, 8*(3), 175–191.

OECD. (2022). *Education at a glance 2022: OECD indicators*. OECD Publishing.

Okonkwo, C. N., & Adebayo, T. O. (2023). Assessing the impact of TETFund on Nigerian tertiary institutions: A conceptual and empirical review, *International Journal of Tertiary Education, 11*(1), 34–48.

Okorie, N. C., & Musa, H. A. (2022). Literacy as a social development tool: A conceptual exploration within the Nigerian context. *African Journal of Developmental Studies, 10*(4), 58–70.

Olamide, A. T., & Yusuf, S. B. (2023). Public education funding and literacy performance in Nigeria: An econometric analysis. *Journal of African Educational Studies, 18*(2), 78–94.

Olatunji, A. B., & Yakubu, M. S. (2022). Universal Basic Education and literacy growth in Northern Nigeria: A funding-based analysis, *Nigerian Journal of Educational Studies, 16*(1), 55–70.

Olowu, D. S., & Okafor, T. C. (2023). Literacy development and national integration: Revisiting the policy frameworks in Nigeria. *Journal of African Educational Research, 6*(1), 76–91.

Oluwadare, T. A., & Eze, M. I. (2022). Funding universal education in Nigeria: The effectiveness of UBEC in addressing foundational literacy. *Journal of Basic Education Research, 5*(2), 66–78.

Onwudiwe, M. C. (2023). Evaluating PTDF's role in Nigeria's education sector: A human capital perspective. *Nigerian Journal of Development Finance, 11*(2), 77–91.

Osei, E. T., & Boateng, L. B. (2023). Funding tertiary education for lifelong learning: Literacy and adult education in South Africa, *Journal of African Educational Policy, 7*(3), 103–118.

Osiobe, E. U. (2020). Human capital and economic growth in Latin America: A cointegration and causality analysis. *The Economics and Finance Letters, 7*(2), 218–235.

PTDF. (2024). *Annual disbursement reports 1999–2024*. Petroleum Technology Development Fund.

Samuelson, P. A. (1954). The pure theory of public expenditure. *The Review of Economics and Statistics, 36*(4), 387–389.

TETFund. (2024). *Annual performance and disbursement report*. Tertiary Education Trust Fund.

UBEC. (2024). *Universal Basic Education Commission annual statistical digest*, Universal Basic Education Commission.

UNESCO Institute for Statistics. (2024). *Literacy rates by country (1999–2024)*. http://uis.unesco.org

UNESCO. (2022). *Global education monitoring report 2022: Non-state actors in education*. UNESCO Publishing.

WDI. (2024). *World Development Indicators: Education statistics*, World Bank. https://databank.worldbank.org/source/world-development-indicators

World Bank. (2023). *Learning poverty and literacy data 2023*. World Bank.

Wu, Y., & Jiang, L. (2023). Public funding for technical education and its impact on literacy and productivity in rural China. *Asia Pacific Journal of Education, 43*(2), 176–190.

Data Presentation

Table 5: Data Presentation

Year	TET Funds (Annual, ₦' Billion)	UBEC Funds (Annual, ₦' Billion)	PTDF Funds (Annual, ₦' Billion)	Literacy Rate, Adult Total (% of people ages 18 and above)
1999	5.7	N/A	9.2	54.5
2000	8.3	N/A	15.15	54.77
2001	16.2	N/A	13.56	54.94
2002	10.1	N/A	15.6	55
2003	9.7	N/A	18.06	55
2004	17.1	30	21.28	55.35
2005	21.8	30.5	23.76	57.86
2006	28.4	35.2	21.76	70
2007	59.6	35.8	23.75	71.6
2008	59.5	39.3	24	51.08
2009	139.54	43.4	31.08	51.69
2010	89.18	47.6	33	51.95
2011	130.74	54.3	35.19	52.66
2012	188.44	68.4	39.25	53.32
2013	279.36	76.3	41.6	54.77
2014	189.61	70.5	44.55	55.87
2015	206.04	68.7	55.16	56.93
2016	130.12	77.1	75	58.22
2017	154.96	95.2	94.55	59.44
2018	203.28	109.06	115.84	62.02
2019	221.06	112.47	119.13	62.31
2020	259.56	111.79	128.86	62.63
2021	189.54	153.51	143.15	63.16
2022	328.67	139.17	149.4	63.62
2023	719.44	162.9	173.9	64.18
2024	845.76	184.65	198.45	64.85

Sources: CBN, 2023; Federal Ministry of Education, Tertiary Education Trust Fund (TETFund, 2024), Universal Basic Education Commission (UBEC,); Petroleum Technology Development Fund (PTDF), National Bureau of Statistics (NBS 2024); UNESCO Institute for Statistics (2024); WDI, 2025