TAX ADMINISTRATION AND CAPITAL EXPENDITURE OF PUBLIC SECTORS IN SOUTHWESTERN STATES OF NIGERIA

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ABSTRACT

The study analyzed the effect of tax administration such as audit, enforcement and penalty fees on the capital expenditure of Southwestern States of Nigeria. The study adopted the ex post facto method of research. Secondary data were collected from each of the 6 Southwestern States from 1999-2023. Descriptive statistics, correlation analysis, multiple regression with other diagnostic tests such as unit root test and heteroskedasticity were conducted. Findings showed that tax audit fees (t = 17.260; P< 0.05) had a positive and significant effect on capital expenditure while enforcement and penalty fees have negative and non-significant effect on capital expenditure. The study concluded that there is a significant and positive relationship between tax administration (tax audit) and capital expenditure in the Southwestern States. It is recommended that policymakers should focus on improving tax collection mechanisms by improving taxpayer registration processes and providing relevant information to new taxpayers.

Keywords: Audit fees, Enforcement fees, Penalty fees, Capital expenditure, Tax administration, Taxpayer

INTRODUCTION

Effective tax management plays a vital role in augmenting the revenue streams employed by Nigerian governments, especially in the Southwestern States, to bolster infrastructure and social services (Adebayo and Olatunji, 2023). Corruption and insufficient taxpayer knowledge impede effective tax collection, thus affecting capital expenditure (Ogunleye, 2024). The cited studies underscore substantial tax implications on capital investment. Nonetheless, a notable vacuum persists concerning the precise impacts of critical tax administration operations, including audit expenses, enforcement costs, and penalty fees, on capital investment **(**Sallau, 2025). Addressing this deficiency is essential for formulating targeted strategies to enhance tax collection systems and optimise capital investment in the region. A recent study reveals that tax administration generally affects income; however, comprehensive information on its components, especially the impacts of audits, enforcement, and penalty costs, is unavailable (Dabla-Norris *et al*, 2017).

This study aims to evaluate the influence of various elements of tax administration on capital expenditure in the Southwestern States of Nigeria, providing insights for policymakers and practitioners. The explicit aims are to:

i. evaluate the impact of audit fees on capital expenditure in the public sector of the Southwestern States of Nigeria;
ii. examine the effect of enforcement fees on capital expenditure in the public sector of the Southwestern States; and
iii. assess the influence of penalty fees on capital expenditure in the public sector of the Southwestern States.

Furthermore, the following hypothesis were developed:

$H0_1$: Audit fees have no significant impact on the capital expenditure of the Public Sector in the Southwestern States of Nigeria.

$H0_2$: Enforcement fees have no significant impact on the capital expenditure of the Public Sector in the Southwestern States of Nigeria.

$H0_3$: Penalty fees have no significant impact on the capital expenditure of the public sector in the Southwestern States of Nigeria.

LITERATURE REVIEW

Conceptual literature review

Tax administration

Boateng *et al* (2022) characterise tax administration as a complex system encompassing compliance, enforcement, taxpayer education, and the application of technology to improve revenue collection. Effective tax administration is posited to directly influence tax revenue, subsequently affecting economic growth (Boateng *et al*, 2022). Bello *et al* (2025) emphasise the importance of social behaviour and taxpayer perceptions, arguing that a positive taxpayer attitude enhances compliance, thereby improving tax administration outcomes. Tax Administration ensure adherence to regulations and allocate resources for public services and infrastructure. The integration of technology, particularly blockchain, is regarded as revolutionary. Lee *et al* (2024) demonstrated that blockchain enhances transparency and reduces corruption, hence positively affecting taxpayer confidence and compliance (Lee *et al*, 2024).

Tax administration is a complex variable shaped by factors such as enforcement, compliance, technology, and social behaviour. Innovations such as blockchain present significant opportunities; however, the efficacy of government and the perspectives of taxpayers are critical factors to consider. Critiques highlight the need for comprehensive and culturally informed solutions that go beyond simple enforcement, incorporating capacity-building and behavioural adjustments (Boateng *et al*, 2022).

Audit fees

Audit fees refer to the compensation allocated to external auditors responsible for evaluating an organization's financial statements. These factors significantly influence financial reporting by providing auditors with a financial incentive to conduct thorough and unbiased audits **(**Yayangida, 2023). Audit fees are vital for promoting accountability; yet, it is imperative to strike a balance between cost and quality. Elevated fees may suggest inefficiencies or excessive auditing, while reduced rates could jeopardise audit quality, erode public trust, and negatively impact tax compliance **(**Olumoh, 2024).**).** Effective management of audit fee structures in Nigeria's public sector finance is crucial for improving tax administration and revenue generation, hence impacting capital expenditure.

Audit fees are crucial for financial oversight and public sector accountability, impacting openness, responsibility, and the integrity of financial reporting, which in turn affects the efficiency of tax administration and revenue collection. An expanded audit scope typically results in increased audit costs, which may enhance assurance levels and influence stakeholders' confidence in financial information (Ellawule *et al*, 2024).

Enforcement fees

Enforcement fees in tax administration and public finance are charges imposed to ensure adherence to tax laws. These fees often function as penalties or costs associated with legal enforcement activities, including audits, inspections, or legal proceedings. Enforcement fees play a crucial role in enhancing compliance by raising the costs associated with evasion and non-compliance (Pham *et al*, 2023). The design of enforcement fees should strike a balance between deterrence and fairness. Enforcement fees are specifically linked to compliance mechanisms, distinguishing them from other revenue-related charges that do not have this direct connection. Enforcement fees, while related to tax administration effectiveness, can either enhance revenue by promoting compliance or detrimentally affect voluntary compliance if deemed unjust or excessively aggressive (Oladipo *et al*, 2025).

Enforcement fees differ from standard auditor management fees by fulfilling a punitive or corrective role. The effectiveness and equity of enforcement fees require assessment. Inconsistent or excessively strict measures can undermine trust in tax authorities, potentially diminishing long-term compliance **(**Olumoh, 2024). In contrast, well-structured enforcement fees that are transparent and proportionate can enhance compliance and revenue collection while avoiding the alienation of taxpayers (Pham *et al*, 2023). The implementation of effective enforcement fees in the Nigerian public sector may improve tax compliance; however, addressing potential negative perceptions is essential.

Penalty fees

Penalty fees serve as essential elements of tax enforcement strategies designed to deter non-compliance and promote timely tax payments. Penalty fees represent financial sanctions levied on taxpayers who breach tax regulations or neglect to fulfil their tax obligations by specified deadlines (Muhwa and Omboi, 2023). The fees fulfil punitive and corrective roles by deterring tax evasion and promoting compliance behaviour. Penalty fees, in contrast to other enforcement methods like audits or legal sanctions, impose immediate financial consequences that directly affect taxpayer liquidity, frequently acting as an initial corrective measure (Muhwa and Omboi, 2023). In contrast to interest charges on late payments, penalty fees are typically either fixed or calculated as a percentage of unpaid taxes, resulting in a straightforward calculation (Olumoh, 2024). Interest charges accumulate over time and may encourage timely payment, whereas penalty fees are generally one-time sanctions imposed following a violation, potentially resulting in perceptions of unfairness or disproportion in specific contexts.

Excessively high penalty fees may create significant hardship for taxpayers, potentially resulting in increased tax evasion instead of compliance (Muhwa and Omboi, 2023). If penalty fees are excessively lenient, they may not function as an effective deterrent. Inconsistent application and a lack of transparency in penalty imposition can erode trust in tax authorities, thereby diminishing voluntary compliance **(**Kontagora and Dozie, 2025)**.** The effectiveness of penalty fees depends on their proportionality, transparency, and the credibility of enforcement. As highlighted by Awotomilusi and Adebayo (2022), penalty fees play a crucial role in enforcement strategies that affect tax compliance, internal revenue generation, and, consequently, public sector development. The study examines the interconnections among variables such as tax administration efficiency, internally generated revenue (IGR), and capital expenditure, highlighting that stringent and equitable penalty fee policies can enhance compliance and revenue collection, thereby facilitating public investments.

Capital expenditure

Capital expenditure (CAPEX) denotes governmental financial outlays directed towards the acquisition, construction, or improvement of long-term assets, including educational institutions, healthcare facilities, transportation networks, and various public infrastructure projects. The aim is to foster economic growth, enhance quality of life, and support the public through investments initiatives that will generate future returns (Ajiteru *et al*, 2018). Capital expenditure investments often promote economic growth and provide environmental advantages. Recurrent expenditures denote the financial resources required for a company's continuous operations, while capital expenditures relate to investments in long-term infrastructure improvements and economic stability (Iriabije *et al*, 2023). Expenditure is essential for addressing infrastructure issues and enhancing resource allocation. Development expenditure includes both capital and ongoing costs aimed at enhancing economic and social conditions, whereas capital expenditure specifically pertains to funds designated for long-term infrastructure projects (Odetola *et al*, 2025). Development expenditure encompasses a broader array of expenses, including social services, while capital investment pertains exclusively to material assets.

Corruption, inadequate project management, and insufficient transparency are critical considerations in capital expenditure planning, as these elements can result in inefficiency or misallocation **(**Efeosa-Temple *et al*, 2025). Excessive dependence on capital projects lacking sufficient planning may obstruct debt repayment and negatively impact the economy (Njoku *et al*, 2025). Effective management of capital investments can enhance infrastructure and drive substantial economic development, as suggested by certain scholars. The sustainable development goals (SDGs) exhibit a significant correlation with capital expenditure growth, especially concerning infrastructure (Goal 9) and decent work (Goal 8). This strategy, when implemented effectively, has the potential to reduce unemployment, enhance public services, and promote economic diversification, particularly in nations reliant on resource revenues (Adebayo and Olatunji, 2023).

Recent research indicates that capital expenditure projects require improved resource allocation and the formulation of clear regulations. Iriabije *et al* (2023) indicate that capital projects in Nigeria frequently experience delays or insufficient funding due to bureaucratic red tape and financial constraints. Njoku *et al* (2025) examine the impact of accountability measures and strategic planning on project outcomes. An analysis of these perspectives reveals consensus on the necessity of robust governance frameworks; however, disagreements remain concerning their effectiveness.

Efeosa-Temple *et al* (2025) identify a lack of funding as the principal factor contributing to governmental institutions' inadequate preparedness for effectively managing complex capital projects. The authors suggest that enhancing skills and integrating new technology may result in improved outcomes. Understanding the issues and opportunities associated with the increase in capital expenditures in emerging countries requires awareness of several critical factors. Capital expenditures are essential for infrastructure development and the sustained stability of the economy. Recent research highlights its significance; however, considerable challenges persist in resource allocation, project management, and governance. Optimising capital expenditures necessitates a comprehensive approach encompassing capacity development, transparency, and strategic planning.

Empirical literature review

Aluthge *et al* (2021) examined how Nigerian government spending (broken down into capital and recurrent) affected economic development from 1970 to 2019 using time series data. The study uses the Autoregressive Distributed Lag (ARDL) model. The research takes into consideration structural breakdowns in the unit root test and the co-integration analysis to make sure the conclusions are strong. The main results of the research show that capital spending has a big and positive effect on economic growth in both the short and long term, but recurrent spending does not have a big effect on economic growth in either the short or long term.

Boateng *et al* (2022) conducted an analysis of the relationship between tax administration, revenue, and economic growth in Nigeria. The data obtained from the questionnaire, along with secondary data, underwent a thorough analysis utilising appropriate regression technique. The results indicate a notable correlation between Personal Income Tax Revenue (PITR) and per capita income, Company Income Tax Revenue and Gross Domestic Product (GDP) of Nigeria, VAT revenue and per capita income of Nigeria, Petroleum Profit Tax revenue and GDP of Nigeria, as well as tax administration and GDP of Nigeria. Therefore, the findings indicate that tax administration and revenue have a significant impact on the economic growth of Nigeria during the analysed period.

Fasua and Osagie (2024) examined how tax changes and Nigeria's economy grew by utilising descriptive statistics and econometric analysis. Their research showed that tax changes are strongly and positively linked to economic development. The research also found that tax changes make the government's revenue-generating machinery work better so that it can spend money on things that are good for society, which will lead to genuine economic development in terms of production and per capita. According to the study, strict tax regulations lead to lower tax collection, hence the system has to be changed all the time.

Ellawule (2024) used survey research to investigate the problems with taxes in Kwara State. A questionnaire administered to tax officials in the Kwara State Board of Internal Revenue was used to obtain primary data. Descriptive and inferential statistics were used to look at the data. The analysis indicated that corruption, ignorance of tax obligations, and tax evasion are the primary factors hindering the efficacy of the tax system. The research identified inadequate utilization of collected taxes, deficient record-keeping, lack of enforcement of tax rules, and insufficient resources for monitoring tax payments as primary administrative challenges hindering effective and efficient taxation in Kwara State.

Dabla-Norris *et al* (2017) investigated the impact of tax administration quality on corporate performance using a substantial sample of enterprises from emerging markets and developing nations. This study develops a new, internationally applicable, multidimensional index of tax administration quality (TAQI) utilizing data from the Tax Administration Diagnostic Assessment Tool. The study demonstrates that improved tax administration reduces the productivity disparity between small, youthful enterprises and their bigger, older equivalents. This conclusion is consistent across several aspects of tax policy, economic governance, alternate categorizations of small and nascent enterprises, and varying evaluations of tax administration efficacy. Data were presented indicating that countries may achieve economic and productivity benefits by enhancing tax administration, thus reducing compliance costs for enterprises. Improvements in tax administration that decrease compliance expenses for enterprises.

Okiakpe *et al* (2024) analyzed the impact of public sector capital investment on tax revenue collection, namely petroleum profit tax (PPT), in Nigeria. The Ordinary Least Squares (OLS) approach was employed to conduct a multiple regression analysis on the data, and the results were utilized to assess the hypotheses. The results indicated a robust and statistically significant correlation between Nigeria's capital expenditure on road building and PPT. The data revealed a significant positive association between capital investment in electricity and lighting and PPT in Nigeria. The study revealed a significant positive association between capital investment in security and PPT in Nigeria. Thus, the research established that capital spending in the public sector substantially augmented tax revenue collection in Nigeria.

Akinro *et al* (2024) examined the impact of the Federal Government's capital spending profile on Nigeria's economy from 1981 to 2023. The multiple regression analysis approach was employed to identify parameters including administration, social and community services, economic services, and transfers. This study found that government spending on administration, social and community services, and transfers had a positive and statistically significant effect on Nigeria's economic growth. On the other hand, spending on economic services had a negative and statistically insignificant effect on economic growth.

Ajagun *et al* (2025) studied how Nigeria's spending on significant projects and tax revenue were related. The research used an ex-post facto method to look at data that had previously been collected. The study looked at reports of data from the Central Bank of Nigeria, the Federal Inland Revenue Service, and the National Bureau of Statistics. This study identifies oil tax revenue and non-oil tax revenue as the independent variables, while capital expenditure is designated as the dependent variable. The data was analysed using descriptive statistics alongside a multiple regression method referred to as the totally modified ordinary least squares technique. The descriptive analysis, on the other hand, showed that the values of the performance measure fluctuated a lot. The regression analysis found that both direct Oil Tax Revenue (OTR) and Non-Oil Tax Revenue (NTR) were good for Capital Expenditure (CE) in Nigeria. There is a strong and positive relationship between the independent and dependent variables at the 1% level of significance. These findings should be very important to politicians who want to make a tax policy that helps the economy flourish.

Contemporary studies, such as Ajike *et al* (2020), Aguguom *et al* (2023) and Akintola *et al* (2024), have mostly concentrated on the overall impacts of IGR, failing to sufficiently address the ways in which various facets of tax administration, including audit fees, enforcement fees and penalty fees influence capital expenditure. Studies on the key indicators of tax administration (audit fees, enforcement fees and penalty fees) have not been fully addressed. Addressing this gap is crucial for the development of policies aimed at improving revenue collection administration and optimising capital expenditure in the Southwestern region of Nigeria. Therefore, this study examines the effect of tax administration on the capital expenditure in the Southwestern States of Nigeria. The necessity of this study arises from the government's inefficiency in utilizing the necessary tax administration in order to improve capital expenditure in South Western States.

THEORETICAL FRAMEWORK

This study draws upon the foundational principles of public finance articulated by Musgrave (1959), emphasizing the role of government in the realms of income distribution, resource allocation, and economic stabilization. This theory enables a thorough analysis of the impact of government financing, especially intergovernmental revenue, on the distribution of resources for public goods and infrastructure. Theory of public finance asserts that efficient tax administration ensures the proper allocation of resources for public goods (Musgrave, 1959). This aligns with the objective of the study to improve capital investment. This highlights the critical necessity for the government to engage in effective tax management to secure adequate funding for public initiatives, offers legislators a systematic approach for formulating tax and expenditure strategies designed to promote economic advancement and enhance individual well-being (Musgrave and Musgrave, 1989).

Critics argue that this idea suggests the government operates flawlessly, disregarding issues like corruption, incompetence and political interference **(**Kryeziu, 2021). This notion relies on the logical conduct of governing entities and taxpayers, a prerequisite that may not consistently exist, particularly in economically disadvantaged regions where the efficacy of governance poses significant challenges (Anderson and Dagwom 2024). However, this research utilizes this theoretical framework to demonstrate the significance of government funding, particularly Internally Generated Revenue (IGR), in enhancing capital expenditure. This theory particularly elucidates the relationship between tax administration and collection, and the allocation of resources for infrastructure, particularly emphasizing roads and educational institutions.

METHODOLOGY

This study uses the *ex post facto* research method, relying on pre-existing data. This is because data used for analysis already exist. The population for this study consists of the six States in Southwestern Nigeria for years covering 1999 to 2023. The states were selected based on the six geopolitical zones and availability of relevant data. Secondary data from the Ministries of Finance, Internal Revenue Service Boards and the Offices of the Accountant General of each of the six Southwestern States, Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS). The information covered variables pertaining to the six states' Tax Administration (TAD) and Capital Expenditure (CAPEX) growth from 1999 to 2023. In addition to some relevant diagnostic tests, the study employed both descriptive and inferential statistical methods (multiple regression) to analyze the data.

Table 1: Measurement of variables

Variables	Type of variable	Description, definition and type of measures	Measurement / Justification
Capital Expenditure	Dependent variable	LOG of CAPEX	Public sector capital expenditure (CAPEX) is measured as the total amount spent on acquiring, constructing, or improving these long-term assets within a specific timeframe.
Tax Administration	Independent variables	LOG of TADE	Tax administration (TADE) is measured, proxied by Tax Audit Fees (LAUDF), Tax enforcement fees (LENF) and penalty fees (LPEN)
Tax Administration	Independent variables	Log of Tax Audit Fees (LAUDF)	This can be measured by audit yield (the amount of additional tax revenue generated from audits).
Tax Administration	Independent variables	Log of Tax enforcement fees (LENF)	Costs for enforcement of tax payment which can influence compliance
Tax Administration	Independent variables	Log of Penalty fees (LPEN)	The presence and enforcement of tax penalties which can influence compliance

Model Specification

This study investigated the correlation between Tax Administration (Proxies are Audit Fines, Enforcement Fees (ENF) and Penalties (PEN) and the Capital Expenditure (dependent variables) in Nigeria. The empirical model was adapted from the research conducted by Olaoye and Olugbamiye (2019). The model is specified in both functional and stochastic forms as follows:

LCAPEX =f(LAUDF, LENF, LPEN)

This can be specified in operational form as:

$LCAPEX)_{it} = \beta 0 + \beta_1 lAUDF_{it} + \beta_2 LENF_{it} + \beta_3 LPEN_{it} + \mu_{it}$ ----------(equa. 3.1)

Where:

LCAPEX = Log of Capital Expenditure

β0 = Constant Coefficient

β1 = Slope or regression parameters

LAUDF = Log of Audit Fees

LENF = Log of Enforcement Fees

LPEN = Log of Penalty Fees

μ = Stochastic error term

t = Time series

A priori Expectation

That is $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0$

RESULTS AND DISCUSSION

Descriptive Statistics Analysis

Table 2: Result of descriptive analysis

Variables	Obs	Mean	Median	Max	Min	Std. Dev	Skewness	Kurtosis	Jarque Bera	Prob.
LAUDF	150	8.44	8.34	10.45	7.25	0.71	0.56	2. 85	7.94	0.02
LENF	150	6.44	6.34	8.45	3.97	0.74	0.27	3.26	2.25	0.33
LPEN	150	8.39	8.34	10.57	6.97	0.67	0.41	3.03	4.22	0.12
LCAPEX	150	10.00	9.90	11.99	8.79	0.70	0.53	2.90	7.08	0.03

Source: Analyzed data (2025)

Table 2 showed the descriptive statistics of independent and dependent variables. The mean value of LAUDF was 8.44; that of LENF was 6.44, while that of LPEN was 8.39. The median of LAUDF, LENF, LPEN and LCAPEX were 8.34, 6.34, 8.34 and 9.90 respectively. The standard deviation of LAUDF was 0.71, while that of LENF was 0.74**.** LPEN and LCAPEX had a standard deviation of 0.67 and 3.259 respectively. For the purpose of achieving the objectives of the study, the variables were logged, which also enhances the robustness of the estimated model and consistency of the residual. Result from Table 2 showed that all the variables display moderate level of consistency, as the difference between their mean and median are not really significant. The mean of all the variables is greater than their median. This by implication means that Tax Administration can improve Capital Expenditure in the public sector of Southwestern States of Nigeria.

Table 3: Unit Root Test

Variables	Levin, Lin & Chu t* Statistics	P-values	Order of integration	REMART
LAUDF	-4.74925	0.0000	1(1)	Stationary
LENF	-2.92171	0.0017	1(II)	Stationary
LPEN	-4.76211	0.0000	1(1)	Stationary
LCAPEX	-2.36412	0.0090	1(1)	Stationary

Source: Analyzed data (2025)

The results suggest that the null hypotheses (H0) of unit root can be rejected in the first difference with the exception of LENF which can be rejected in the second difference because the probability value is less than 5%, and also the Levin, Lin & Chu t* test statistics is more than the Test Critical Value at 5% level of significance. Therefore, the regression will not be spurious as they are all stationary at 5% critical value. Levin, Lin & Chu t* Unit Root Test Result method was used in this study and Table 3 revealed the findings of the Levin, Lin & Chu t* Unit Root Test. The Unit Root Test results presented in the study assess the stationarity of the variables: Log of Audit Fees (LAUD), Log of Enforcement (LENF), Log of Penalty (LPEN) and Log of Capital Expenditure (LCAPEX).

According to Table 3, the test indicates that the null hypothesis of their unit root can be rejected at first difference with the exception of LENF that can be rejected at second difference, as their p-values are significantly high (lower than 0.05). This suggests that LAUDF, LENF, LPEN and LCAPEX are stationary at first difference, meaning it may not have a unit root. The results for the first and second difference indicate that the null hypotheses of their Unit Root can be rejected (p-values < 0.05). This means that LAUDF, LENF, LPEN and LCAPEX are stationary after taking the first and second difference, suggesting that the variables are integrated of order one, I (1) and I(II).

Table 4: Correlation Matrix

	LAUDF	LENF	LPEN	LCEXPD
LAUDF	1			
LENF	0.9679	1		
LPEN	0.9813	0.9694	1	
LCAPEX	0.9929	0.9563	0.9720	1

Source: Analyzed data (2025)

From table 4, the correlation between the logarithm of capital expenditure (LCAPEX) and the logarithm of audit fees (LAUDF) is roughly 0.993, indicating an almost perfect positive relationship. This suggest that a rise in audits or related tax administrative actions is correlated with a significant increase in capital spending. The correlation between

LCAPEX and enforcement fees (LENF) is around 0.956, while with penalty fees (LPEN), it is about 0.972. All these figures approaching 1 suggest that enhancements in various aspects of tax administration are significantly correlated with elevated capital expenditure. The association coefficients indicate that efficient tax administration, including enhanced audits, enforcement, and penalty collection, is strongly associated with increased capital expenditure. This indicates that improving tax administration could significantly boost public investment and infrastructure development in the southwestern states of Nigeria.

Table 5: Covariance Analysis

	LAUDF	LENF	LPEN	LCEXPD
LAUDF	0.496	0.497	0.454	0.492
LENF	0.507	0.510	0.466	0.496
LPEN	0.510	0.549	0.479	0.497
LCAPEX	0.510	0.549	0.479	0.497

Source: Analyzed data (2025)

The relationship between LCAPEX and enforcement expenditures (LENF) is approximately 0.510, whereas the correlation with penalty fines (LPEN) stands at 0.479, with the correlation coefficient related to LCAPEX duly noted. The results reveal moderate to high positive covariances, suggesting that enhancements in tax administration activities, including audits, enforcement, or penalties, correlate with increases in capital expenditure. The consistent correlation values observed among these pairings indicate a stable linear relationship, supporting the notion that improvements in tax administration components are expected to positively impact capital expenditure growth within the confines of the study's parameters.

The covariance test results elucidate the extent of the linear relationship between the logarithm of tax administration and the logarithm of capital expenditure. The correlation coefficient between the logarithm of capital expenditure (LCAPEX) and the logarithm of audit fees (LAUDF) is 0.496, indicating a positive relationship in which both variables tend to rise concurrently.

Panel Cross-section Heteroskedasticity

Table 6: Breusch-Pagan Heteroskedasticity Test Result

Variables	P-value
LAUDF	0.000
LENF	0.006
LPEN	0.98

Source: Analyzed data (2025)

The report from Table 6 presents the p-value of LAUDF to be 0.0000 and that of LENF to be 0.006. The null hypothesis of homoskedasticity of LAUDF and LENF, the residuals, is rejected, as the p-value is significantly below the conventional alpha level of

0.05. This suggests that the model exhibits considerable heteroskedasticity. The study recommends employing robust standard errors or alternative approaches to mitigate heteroskedasticity, thus improving the reliability of statistical conclusions drawn from the model results.

Table 7: Regression Results

		Pooled	**Fixed Effect**	**Random Effect**
LAUDF	Coeff.	1.066	1.062	0.761
	S.E	0.053	0.062	0.006
	T. Stat	20.076	17.260**	135.804
	Prob.	0.0000	0.0000	0.0000
LENF	Coeff.	-0.064	-0.054	-0.057
	S.E	0.040	0.038	0.038
	T. Stat	-1.500	-1.417	-1.510
	Prob.	0.111	0.159	0.480
LPEN	Coeff.	-0.026	-0.045	-0.042
	S.E	0.058	0.066	0.60
	T. Stat	-0.448	-0.680	-0.708
	Prob.	0.055	0.497	0.480
Constant	Coeff.	1.642	1.770	1.715
	S.E	0.131	0.131	0.127
	T. Stat	12.489	13.527	13.500
	Prob.	0.000	0.000**	0.000
	R-squared	0.986	0.988	0.983
	F-stat	3475.818	1497.768	2812.211
	Durbin Watson	1.847	2.129	2.014
	Prob. (F-Stat)	0.000	0.000	0.000
Hausman	Prob.	0.0448		

Source: Analyzed data (2025)

As shown in Table 7, the first test was on Random Effect, with the result as presented. The second test was on Fixed Effect, with the result as presented. The selection of the appropriate model to choose from the two models was achieved by carrying out the Hausman's test, also with the result as presented in the table. Thus, Fixed Effect model was selected.

The research examines the impact of tax administration on capital expenditure growth in the six Southwestern states of Nigeria, offering essential insights into the implications of administrative procedures on infrastructure and developmental expenditures. Efficient tax administration is crucial for generating domestic income necessary for funding capital projects, including infrastructure, educational institutions, and healthcare facilities. Recent studies demonstrate that enhanced tax administration - via enforcement, audits, and penalties - can substantially augment a government's income potential (OECD, 2023). In Nigeria, inefficiency, corruption, and insufficient enforcement have traditionally obstructed tax collection, limiting the resources available for development initiatives (Adebayo and Olatunji, 2023).

This study's major findings indicate a robust positive correlation between several tax administration measures and capital spending. The covariance analysis reveals that the logarithm of audit fees (LAUDF), enforcement fees (LENF), and penalty fees (LPEN) exhibit positive correlations with the logarithm of capital expenditure (LCAPEX), with covariance values about 0.496, 0.510, and 0.478, respectively. This supports the hypothesis that strengthening tax enforcement, auditing, and penalty regimes can bolster government revenues, thus funding infrastructural development. Interestingly, this relationship appears exceptionally strong, perhaps even indicative of multicollinearity among the variables, which warrants cautious interpretation. An unexpected outcome is that the correlation coefficients are extremely high above 0.97 indicating almost perfect relationships.

The advanced covariance statistics indicate that a surge in tax administrative activity correlates with an increase in capital expenditure, illustrating a functional relationship between these two variables. A significant finding is the nearly flawless correlations observed, suggesting a strong connection whereby enhanced tax administration measures directly lead to increased capital expenditure. This underscores the strength of the link, while it may also suggest possible multicollinearity issues or that the variables are representing overlapping aspects of tax administration. This raises questions about the uniqueness of these proxies and if the data suggests a substantial administrative effort that simultaneously impacts many revenue-generating factors.

The results are consistent with previous research, supporting the conclusions of Boateng *et al* (2022), which indicated a significant positive impact of tax compliance and enforcement on infrastructure spending in Nigeria. Fasua and Osagie (2024) said that comprehensive tax regimes are vital for facilitating regional development. These findings validate the premise that augmenting tax administration directly fosters enhanced developmental outcomes. Nevertheless, other studies have offered contrasting viewpoints. Mijinyawa *et al* (2025) argue that the relationship between tax administration reforms and capital expenditure may not be direct, but instead mediated by macroeconomic factors such as political stability and economic growth, which could obscure the clear direct correlation identified in this study.

The outcomes may be explained by the fact that improved tax administration increases revenue collection via heightened enforcement and compliance, hence enhancing the fiscal capacity to fund capital projects. The substantial correlation may also suggest simultaneous policies addressing many aspects of tax administration, so augmenting their aggregate effect on revenue and expenditure. However, caution should be exercised because high correlation does not imply causation, and other factors like governance quality could be mediating or moderating these relationships. In light of these observations, it is important to interpret the results cautiously.

CONCLUSION AND RECOMMENDATIONS

The analysis indicates a significant and positive relationship between tax administration (tax audit) and the development of capital expenditure in the southwestern states of Nigeria. Efficient tax collection and enhanced revenue mobilisation are crucial for financing infrastructural projects that are fundamental for sustainable development. Based on the findings of this study, it is hereby recommended that policymakers should focus on improving tax collection mechanisms by improving taxpayer registration processes and providing relevant information to new taxpayers. Given this analysis, the study recommends increased level of enforcement, tax auditing, and stringent penalties in order to improve tax administration. The Southwestern States' administration must address the shortfall in tax administration by focusing on the above stated variables.

Future studies might explore whether these relationships are mediated by overall governance quality or macroeconomic stability, broadening understanding of how tax policies can effectively drive capital expenditure

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