

Tax Quality Services, Audit, and Revenue Generation: Evidence from North Central Nigeria

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How to cite this paper: Aso, A. N., & Atiku, A. S. (2025). Tax quality services, audit, and revenue generation: Evidence from North Central Nigeria. *Lafia Journal of Economics and Management Sciences*, 10(2), 54-75. <https://doi.org/10.70118/lajems-10-2-2025-003>

Received: July 30, 2025

Accepted: November 9, 2025

Published: December 30, 2025

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Abstract

This study examined the effects of tax service quality and tax audit effectiveness on revenue generation in North Central Nigeria, using public choice theory as the framework. It pioneers the application of this theory to Nigerian tax administration and employs multinomial logistic regression to model categorical revenue outcomes. A survey research design was adopted, collecting primary data from 356 respondents across four states using structured 5-point Likert scale questionnaires. Revenue generation was categorized as high (32.6%), moderate

(39.9%), and low (27.5% - reference). Tax quality services and audit effectiveness were measured across multiple standardized dimensions. The regression analysis revealed significant positive relationships between both predictors and revenue generation. For high revenue generation, tax service quality showed a coefficient of 0.734 ($p = 0.026$), representing a 108% increase in odds, while tax audit effectiveness had a stronger effect (coefficient = 0.952, $p = 0.005$), indicating a 159% increase. For moderate revenue generation, coefficients were 0.281 ($p = 0.041$) and 0.325 ($p = 0.032$) respectively. Findings show that tax audits exert a stronger influence than service quality improvements. The study recommends that tax authorities prioritize audit capacity development through investments in modern audit technology, personnel training, and expanded sectoral coverage. Additionally, integrated tax administration frameworks should combine proactive taxpayer services with strong enforcement. Lastly, regional coordination platforms should be established across North Central states to share best practices and ensure continuous improvement in tax administration strategies.

Keywords: North Central Nigeria, Revenue Generation, Tax Audit, Tax Quality Services

JEL Classification Codes: H71, H20, H83, H83

1. Introduction

Taxpayer attitudes toward tax compliance represent a critical component of Nigeria's tax system, directly influencing the state's

ability to generate revenue for constitutional duties. Despite Nigeria's vast natural resources, including oil and gas reserves, fertile agricultural land, and Africa's largest population, the country faces persistent challenges in tax revenue generation due to widespread tax evasion and avoidance (Modugu & Anyaduba, 2014; Olaoye, et al., 2017).

The relationship between government-provided tax quality services and taxpayer compliance behavior is fundamental to effective revenue generation. Tax quality services and audit effectiveness, assessed through established codes of conduct, rules, and standards (Isallah, 2006), demonstrate strong correlations with taxation compliance. When governments provide transparent, ethical conduct and quality services, they build public trust that encourages voluntary tax compliance (Koumpias et al., 2020). Tax audits further support compliance by verifying taxpayer declarations, deterring tax evasion, and enhancing trust in the system (Chindengwiwe & Kira, 2021; Ajayi & Ijabo, 2020).

Audit functions moderate the relationship between tax quality services and revenue generation by reinforcing the credibility of tax administration. High-quality tax services promote taxpayer trust and willingness to comply, while effective audits ensure adherence to tax laws and deter non-compliant behaviors. This interaction strengthens overall revenue collection, as audits verify the accuracy of tax filings and reduce tax avoidance (Owolabi & Ojo, 2019). Thus, audit acts both as a control mechanism and a confidence booster, amplifying the positive effect of tax quality services on revenue generation.

Nigeria's tax system suffers from inadequate quality services and weak audit mechanisms, leading to mistrust and non-compliance. Citizens often express dissatisfaction with the lack of tangible benefits from their tax contributions, resulting in widespread apathy toward tax obligations (Adeyeye & Otusauya, 2015). This skepticism stems from government insincerity in revenue handling and poor reflection of tax benefits to taxpayers.

Despite various state-level taxes including pay-as-you-earn (PAYE), direct assessment, development levy, and road taxes, development in most Nigerian states remains inadequate. The National Bureau of Statistics (2019) indicates that these taxes should generate sufficient revenue for development, but current state economies suggest governments are failing to collect adequate funds for economic projects. This suggests poor tax compliance attributable

to inadequate quality services and weak audit structures (Olaoye et al., 2017).

The absence of robust audit mechanisms, monitoring systems, and tracking capabilities enables tax evasion, reducing overall revenue generation. Weak tax quality services promote ineffective allocation and utilization of tax revenue, further eroding taxpayer trust and inspiring non-compliance behaviors. This vicious cycle where poor service delivery leads to reduced compliance in turn restricts resources for service improvement (Adesina, 2013).

Transparency and accountability emerge as crucial factors in tax compliance. Studies indicate that increased government transparency correlates with improved voluntary compliance (Chindengwike & Kira, 2021). Taxpayers contributing from hard-earned incomes show low tolerance for corruption and weak government performance, often punishing unaccountable leaders (Martin, 2013; Adeyeye & Otusauya, 2015). Recognizing these compliance challenges, Nigeria's Federal Government has implemented numerous tax reform initiatives. According to Alli (2009), these reforms aim to bridge the gap between national development needs and funding requirements, ensure taxation serves as an effective fiscal policy instrument, improve public service delivery, enhance tax derivation from non-oil activities, reduce tax evasion through law reviews, and improve tax administrator skills while maintaining taxpayer-friendly approaches.

The persistent nature of Nigeria's tax compliance problems, despite various reform efforts, necessitates urgent examination of how tax quality services and audit mechanisms influence revenue generation. This study focuses specifically on North Central Nigeria, where these dynamics require careful analysis to understand their impact on regional revenue generation and develop targeted solutions for improving tax compliance and government revenue collection. The study was conducted within the North Central State of Nigeria, specifically covering the states of Benue, Plateau, Nasarawa, and Abuja. This ensures a comprehensive understanding of the effects of tax audit and quality services on revenue generation in this distinct geographic area. The choice of the three states and Abuja is informed by their historical connection under a single regional administration. This historical context provides a unique backdrop for examining the evolution of tax policies, laws, and administration and their

implications for revenue generation. This study provided answers to these critical questions.

- i. What is the effect of tax quality services on revenue generation in North Central states, Nigeria?
- ii. To what extent has tax audit enhanced revenue generation in North Central states, Nigeria?

2. Literature Review

2.1 Conceptual Review

2.1.1 Taxes

Taxation is one of the oldest forms of revenue generation in organized societies, required to fund collective goods and services. It is defined as a compulsory levy imposed by the government on individuals or property to provide security and social amenities, thereby promoting economic well-being (Nwezeaku, 2012). Tax fulfills essential government functions and sustains public spending (Ezu & Okoh, 2016). As a sovereign prerogative, tax is critical for financing governance at all levels (Akinwunmi, 2021).

2.1.2 Tax Quality Services

Tax quality services encompass fundamental physical and institutional components vital for voluntary taxpayer compliance. Waziri et al. (2014) describe these as core structures enabling efficient tax administration, including tax education, counseling, public relations, taxpayer guidance, and record examination. Similarly, Ayodele (2012) and Ajakaiye (2002) emphasize facilities such as healthcare, transportation, telecommunications, and power as part of tax quality services that bolster compliance.

2.1.3 Tax Audit

Tax audit is a systematic inspection of business and financial records to ensure compliance with tax laws. It verifies the accuracy of self-assessed returns and determines adherence levels (Kanbiro, 2018; Olaoye et al., 2017, Oyebanji, 2006). Adediran et al. (2013) define tax audit as a financial audit to evaluate taxpayer conformity with fiscal regulations. Kirchler et al. (2008) states that tax audit confirms appropriateness and adequacy of taxpayer filings, serving as an enforcement tool that influences organizational and government revenue decisions.

2.1.4 Revenue Generation

Tax revenue generation is the aggregate amount collected by government within a fiscal year from various taxes on individuals and businesses. This revenue reflects the government's capacity to mobilize resources and finance public needs (World Bank, 2016). The amount is influenced by taxpayer compliance, economic activity, tax rates, and administrative efficiency. Balancing equity and voluntary compliance are essential to optimize revenue (Frank 2010).

2.2 Theoretical Review

2.2.1 Classical Theory of Taxation

The classical theory of taxation was propounded by Smith (1776), in his book "An Inquiry into the Wealth of Nations" which was later developed by Ricardo (1817) and Babbage (1945). The objective of the theory is basically concerned with how the wealth of nations or production capacity of the economy can be increased through private enterprise working on the basis of free market mechanism to ensure efficient use of resources, and rapid economic growth if left unfettered.

The assumption of the theory was that proceeds from taxes should be spent by the government for general or common benefits of all people. The theory also assumed that a good tax system must fulfill certain principles, if it is to raise adequate revenue to satisfy certain social objectives, and believe that taxation revenue was the only source of revenue to the state, which should be administered through the principle of equity, certainty, convenience and efficiency. The Classical theorists emphasises that taxation causes loss of welfare and distorts efficient resources allocation.

2.2.2 Cost of Service/Benefit Theory of Taxation

The cost of service or benefit theory of taxation was also rooted in the work of Smith (1776) and later articulated in modern form by several economists. The theory asserts that the government has a primary responsibility to protect lives and property and to provide essential services for its citizens. To finance these services, taxation becomes a fundamental source of government revenue. According to Smith (1960), as cited in Jhingan (2009), the cost incurred by the state in providing public goods should be borne by those who benefit directly from such services. This theory conceptualizes tax as payment by taxpayers for the benefits received

from government-provided services. It further suggests that only those who pay taxes should enjoy the benefits of such services, thereby linking taxation directly to service delivery.

2.2.3 Public Choice Theory

This study is grounded in public choice theory, which provides a robust framework for understanding the relationship between government and citizens in Nigeria's tax system. Developed by scholars like Buchanan and Tullock (1962), this theory applies economic principles to analyze political decision-making in non-market environments, treating both taxpayers and government officials as rational actors motivated by self-interest (Ostrom, 2019). The theory's relevance to tax systems lies in its ability to explain behavioral patterns on both sides of the fiscal relationship. Taxpayers, as rational economic actors, engage in what economists' call "compliance calculus" weighing the costs and benefits of tax payment against factors such as detection probability, penalty severity, tax rates, available incentives, and their perception of government effectiveness in public expenditure (Allingham & Sandmo, 1972). This decision-making process is influenced not only by economic considerations but also by trust in government institutions and perceived fairness of the tax system.

Similarly, government officials and policymakers operate within their own incentive structures, where political survival, career advancement, and policy effectiveness intersect. Their decisions regarding tax policy, enforcement mechanisms, and public service delivery reflect calculations about political costs, administrative feasibility, and personal interests alongside public welfare considerations (Ostrom, 2019). In Nigeria's context, this is particularly relevant given the complex intergovernmental fiscal relationships and the influence of oil revenues on tax policy priorities.

The theory generates important insights for understanding tax system dynamics. It suggests that sustainable tax compliance emerges when there is an implicit "fiscal contract" between citizens and government where taxpayers perceive a reasonable exchange between their tax contributions and the quality of public goods and services received (Levi, 1988). When this contract breaks down due to poor governance, corruption, or inadequate service delivery, rational taxpayers may reduce compliance even when enforcement is strong. Understanding these public choice dynamics is crucial for designing

effective tax policies and institutional reforms in Nigeria. The theory emphasizes that improving tax system performance requires aligning individual incentives with collective welfare through better accountability mechanisms, transparent governance, and efficient public service delivery.

2.3 Empirical Review

Tax quality service, audit, and revenue generation have attracted substantial scholarly attention due to their critical roles in enhancing tax compliance and government revenue, this includes that of Adegboyega et al. (2024), who examined the impact of tax audit on revenue generation among Small and Medium Enterprises (SMEs) in Nigeria. Using structured questionnaires, the authors measured audit frequency, audit quality, tax compliance rates, and revenue collection. Data were analyzed using multiple regression analysis to estimate the effect of audit variables on revenue outcomes. The study concluded that tax audits significantly enhance voluntary tax compliance and revenue, especially when audits are transparent and high quality. However, the study's national scope limits understanding of regional dynamics such as those in North Central Nigeria.

Okafor et al. (2024) explored audit quality dimensions (auditor independence, professional competence, due care) and their influence on tax compliance and revenue generation. The researchers collected cross-sectional survey data from tax administrators and taxpayers and applied ordinary least squares (OLS) regression and diagnostic tests to assess relationships. Results indicate that higher audit quality positively affects taxpayer compliance behavior and revenue performance, leading the authors to recommend stronger regulatory frameworks to enhance audit standards. The study, however, does not fully explore contextual variations in audit effectiveness across Nigerian regions.

Focusing on digital transformation in tax administration, Asaolu et al. (2024) assessed digital adoption, compliance rates, and revenue generation. The authors combined administrative tax records with survey data on digital uptake and employed panel regression techniques (fixed effects) across tax offices to identify the effect of digitalization on compliance and revenue over time. Their quantitative results show that effectively implemented digital tax systems improve compliance and administrative efficiency. They recommend

investments in technology and staff training and call for regional validation.

Moreover, Okello et al. (2024) compared pre-reform and post-reform revenue and compliance rates at the Federal Inland Revenue Service. The authors used an interrupted time-series / before–after design, applying time-series regression and difference-in-differences methods to isolate the reforms’ impact on revenue streams. Findings indicate that reforms positively influenced revenue generation, though infrastructural and capacity constraints limited full implementation gains.

Investigating digital tax services and taxpayer compliance, Santoro et al. (2023) measured e-service adoption rates and related those to demographic variables (education, gender). The study relied primarily on descriptive statistics and cross-tabulations from survey data, with some chi-square tests for association. Results show lower digital adoption among less educated and female taxpayers with smaller businesses, constraining compliance and revenue. The authors recommend targeted digital literacy initiatives. However, lack of causal modeling limits the strength of policy inferences.

In Nigeria, Alabede et al (2018) examined the role of tax knowledge in fostering voluntary compliance, with public trust as a moderator. Using validated survey instruments, the authors measured tax knowledge, compliance behavior, and trust indicators and applied structural equation modeling (SEM) to test direct and moderating effects. They found that public trust strengthens the relationship between tax knowledge and compliance, highlighting psychological factors in tax administration. The study leaves operational elements (audit quality, service delivery) underexplored.

Omesi and Appah (2022) examined tax enforcement strategies and revenue generation in Nigeria. The study was conducted in the South-South region using a cross-sectional survey design of employees in Federal Inland Revenue Service offices. Data was analyzed using multiple regression and other multivariate analyses. The findings revealed positive and significant relationships between tax audit, penalty, amnesty, litigation, and withholding tax revenue.

Ezekiel et al. (2022) investigated tax audit and investigation as a panacea to increase revenue generation in Nigeria. Structured questionnaires were administered among FIRS staff in the South-West zone, and regression analysis was employed to evaluate the impact of desk audits, field audits, and audit investigations on revenue

outcomes. The results demonstrated that all three audit approaches significantly contribute to revenue generation

Olowookere et al. (2022) examined how variations in tax quality services across Nigerian states affect internally generated revenue. Using panel data from 2010–2020 and state-level indicators of tax service quality, the authors applied fixed-effects and random-effects panel regressions and conducted Hausman tests to determine robust estimators. Results suggest that improvements in service quality (taxpayer education, taxpayer service centers, digital filing) are associated with statistically significant increases in state revenue.

3. Methodology

This study employed a survey research design, although none of the empirical studies used multinomial logistic regression. However, following the empirical work of Omesi and Appah (2022), who examined the effect of tax enforcement strategies on revenue generation in Nigeria. His model was deemed appropriate for adaption because the dependent variable (revenue generation) is measured on a continuous scale, and multiple regression effectively estimates the influence of explanatory variables on a dependent variable. The functional model thus;

$$RG = f(\text{TAXAUD}, \text{TAXPEN}, \text{TAXAMN}, \text{TAXLIT}) \dots \dots \dots (1)$$

Their econometric model is expressed as;

$$RG = \beta_0 + \beta_1\text{TAXAUD} + \beta_{24}\text{TAXPEN} + \beta_{T3}\text{AXAMN} + \beta_4\text{TAXLIT} + \mu \dots \dots \dots (2)$$

Where:

RG = Revenue generation

TAXAUD = Tax Audit

TAXPEN = Tax Penalty

TAXAMN = Tax Amnesty

TAXLIT = Tax Litigation

β_0 = Constant term

$\beta_1, \beta_2, \beta_3, \beta_4$ = Parameters to be estimated

μ = Error term

This study adapts the above model by focusing on Tax Quality Services (TQS) and Tax Audit (TAU) as the main explanatory variables influencing revenue generation in North Central Nigeria. Therefore, based on public choice theory, the relationship is expressed as:

$$RG = f(\text{TQS}, \text{TAU}) \dots \dots \dots (3)$$

However, unlike Omesi and Appah (2022), the dependent variable in this study revenue generation is categorical (i.e., High, Moderate, Low). Therefore, the multinomial logistic regression model, originally developed by Berkson, J. (1944), is employed to capture the likelihood of revenue generation categories as a function of tax quality services and audit.

$$\ln \left(\frac{P(RG_i)}{P(RG_0)} \right) = \beta_0 + \beta_1 TQS_i + \beta_2 TAU_i + \varepsilon_i \dots\dots\dots(4)$$

Where:

RG_i = Revenue generation category (High, and Moderate as reference)

RG₀ = Reference revenue generation category (Low)

TQS = Tax Quality Services (measured via 5-point Likert scale)

TAU = Tax Audit effectiveness (measured via 5-point Likert scale)

β₀, β₁, β₂ = Parameters to be estimated

ε_i = Error term

The dependent variable, Revenue Generation, is measured categorically to reflect performance levels across tax authorities: High Revenue Generation (consistently exceeding targets), Moderate Revenue Generation (generally meeting targets), and Low Revenue Generation (falling short of targets), which serves as the reference category in the multinomial logistic regression model. The independent variables, Tax Quality Services (TQS) and Tax Audit (TAU), are measured using 5-point Likert scales (1 = Strongly Disagree to 5 = Strongly Agree) across five dimensions each, capturing the effectiveness of service delivery and the quality of audit activities, respectively.

The population comprises taxpayers in North Central Nigeria (Benue, Plateau, Nasarawa, FCT) totaling approximately 15,523,657 people. The population figure was derived from the 2006 National Population Census conducted by the National Population Commission and projected using a 3% annual growth rate. Using Yamanes (1967) formula, formula given as:

$$n = \frac{N}{1 + Ne^2} \dots\dots\dots(5)$$

Where:

n = sample size;

N = Population size (15523657); and e=the error of 5 per cent

Substituting the above into the formula

$$n = \frac{15,523,657}{1 + 15,523,657 (0.05)^2}$$

$$\begin{aligned}
 &= \frac{15,523,657}{1 + 15,523,657 (0.0025)} \\
 &= \frac{15,523,657}{1 + 38809.1425} \\
 &= \frac{15,523,657}{38810.1425} \\
 n &= 399.9
 \end{aligned}$$

Approximately 400 sample size was determined.

Primary data was collected via structured questionnaires and analyzed using SPSS with descriptive statistics and multinomial logistic regression. The study a priori expectation are $\beta_1, \beta_2 > 0$ (positive relationships expected). Statistical significance determined at 5% level ($p < 0.05$).

4. Results and Discussion

The researcher distributed four hundred (400) copies of questionnaires to the respondents and successfully recovered three hundred and six (356) duly completed. This shows a response rate of 89% and found to be valid for further analysis and computation. The response rate is considered sufficient going by the suggestion of Linus (2021) that a sample size should be within the range of five and ten times the number of study variables.

Table 1: Demographic Characteristics of Respondents

Category	Frequency	Percent
Gender		
Male	236	66.3
Female	120	33.7
Age		
18-30 years	97	27.2
31-40 years	102	28.7
41-50 years	93	26.1
51 and above	64	18.0
18-30 years	97	27.2
Occupation		
Civil Servant	174	48.9
Private employee	102	28.7

Self-employee	50	14.0
Other	30	8.4

Source: Field Survey, 2024; Computed with SPSS 25

The demographic profile shows 236 male respondents (66.3%) and 120 female respondents (33.7%), indicating male dominance in the sample. Age distribution was relatively balanced, with the largest group being 31-40 years (28.7%), followed by 18-30 years (27.2%). Occupationally, civil servants dominated the sample with 174 respondents (48.9%), followed by private sector employees (28.7%) and self-employed individuals (14.0%).

Table 2: Tax Quality Services (TQS) Response Distribution

Response Scale	Frequency	Percentage%
Strongly Disagree (1)	45	12.6%
Disagree (2)	67	18.8%
Neutral (3)	89	25.0%
Agree (4)	102	28.7%
Strongly Agree (5)	53	14.9%
Total	356	100%

Mean = 3.14, Std. Dev = 1.23

Source: Field Survey, 2024; Computed with SPSS 25

The response distribution for Tax Quality Services reveals mixed perceptions among respondents in the North Central region. A total of 155 respondents (43.6%) expressed positive views about tax quality services, with 102 respondents (28.7%) agreeing and 53 respondents (14.9%) strongly agreeing with the service quality statements. Conversely, 112 respondents (31.4%) held negative perceptions, with 67 respondents (18.8%) disagreeing and 45 respondents (12.6%) strongly disagreeing with the quality service measures. A notable 89 respondents (25.0%) remained neutral on tax service quality issues. The mean score of 3.14 on the 5-point Likert scale indicates a slightly above-neutral perception of tax quality services, suggesting moderate satisfaction levels among taxpayers. The standard deviation of 1.23 shows considerable variation in responses, indicating diverse experiences with tax service delivery.

across the region. The near-equal distribution between positive and negative responses (43.6% vs 31.4%) suggests that while tax quality services show promise, significant improvements are needed to achieve broader taxpayer satisfaction.

Table 3: Tax Audit (TAU) Response Distribution

Response Scale	Frequency	Percentage%
Strongly Disagree (1)	38	10.7%
Disagree (2)	71	19.9%
Neutral (3)	84	23.6%
Agree (4)	108	30.3%
Strongly Agree (5)	55	15.5%
Total	356	100%

Mean = 3.20, Std. Dev = 1.19

Source: Field Survey, 2024; Computed with SPSS 25

The Tax Audit response distribution shows slightly more favorable perceptions compared to tax quality services. A total of 163 respondents (45.8%) expressed positive views about tax audit effectiveness, with 108 respondents (30.3%) agreeing and 55 respondents (15.5%) strongly agreeing with audit effectiveness statements. Meanwhile, 109 respondents (30.6%) held negative perceptions, with 71 respondents (19.9%) disagreeing and 38 respondents (10.7%) strongly disagreeing. Additionally, 84 respondents (23.6%) maintained neutral positions on tax audit effectiveness.

The mean score of 3.20 indicates moderately positive perceptions of tax audit effectiveness, slightly higher than tax quality services perceptions. The standard deviation of 1.19 suggests somewhat less variation in audit perceptions compared to service quality, indicating more consistent experiences with tax audit processes. The higher percentage of positive responses (45.8% vs 30.6% negative) suggests that taxpayers generally view tax audit processes more favorably than general service delivery, possibly reflecting clearer procedures and more structured interactions during audit processes.

Table 4: Revenue Generation Categories

Revenue Generation Level	Frequency	Percentage
Low Revenue (Reference)	98	27.5%
Moderate Revenue	142	39.9%
High Revenue	116	32.6%
Total	356	100.0%

Source: Field Survey, 2024

The distribution shows that 39.9% of respondents perceived moderate revenue generation in their areas, while 32.6% indicated high revenue generation and 27.5% reported low revenue generation.

Table 5: Parameter Estimates for Revenue Generation Categories

Variables	High vs Low Revenue		Moderate vs Low Revenue	
	Coeff	Sig.	Coeff	Sig.
Tax Quality Services (TQS)	0.734	0.026*	0.281	0.041*
Tax Audit (TAU)	0.952	0.005**	0.325	0.032*
Constant	-8.388	0.072	-3.417	0.453

*Significant at 5% level, **Significant at 1% level

Source: SPSS Output, 2024

The multinomial logistic regression analysis revealed significant relationships between tax quality services, tax audit, and revenue generation categories. For high revenue generation compared to low revenue generation (reference category), Tax Quality Services showed a coefficient of 0.734 ($p = 0.026$), while Tax Audit demonstrated a coefficient of 0.952 ($p = 0.005$). For moderate revenue generation compared to low revenue generation, Tax Quality Services had a coefficient of 0.281 ($p = 0.041$), and Tax Audit showed a coefficient of 0.325 ($p = 0.032$). These coefficients indicate that Tax Quality Services increases the odds of achieving high revenue generation by 108% ($e^{0.734} = 2.08$) compared to low revenue generation, while Tax Audit increases these odds by 159% ($e^{0.952} = 2.59$). For moderate revenue generation, Tax Quality Services increases the odds by 32% ($e^{0.281} = 1.32$), while Tax Audit increases

the odds by 38% ($e^{0.325} = 1.38$) compared to low revenue generation.

The hypothesis that tax quality services have significant positive effects on revenue generation levels was supported with p-values less than 0.05 for both revenue category comparisons. Similarly, the hypothesis that tax audits have significant positive effects on revenue generation levels was strongly supported, with p-values of 0.005 for high revenue and 0.032 for moderate revenue categories.

4.1 Discussion of Findings

The findings reveal that both tax quality services and audit effectiveness exert significant positive effects on revenue generation in North Central Nigeria, with varying magnitudes across different revenue performance levels.

The study found that tax quality services significantly enhance revenue generation outcomes in the North Central region. This finding aligns strongly with Olowookere et al. (2022), who demonstrated that improvements in service quality including taxpayer education, service centers, and digital filing are associated with statistically significant increases in state revenue across Nigeria. The present study extends this relationship by showing that service quality improvements not only affect taxpayer satisfaction but translate directly into measurable revenue generation outcomes across different performance categories.

The positive effect observed supports the predictions of public choice theory, where taxpayers respond rationally to improved service delivery. This finding implies that when tax service delivery is robust and accessible, these psychological components are strengthened, leading to enhanced voluntary compliance and revenue outcomes. The current study provides empirical evidence that these attitudinal improvements manifest in actual revenue generation differences. However, the moderate magnitude of the service quality effect suggests that while improvements are beneficial, they may face diminishing returns beyond certain thresholds. This observation complements the work of Santoro et al. (2023), who identified constraints to digital service adoption among less-educated and female taxpayers with smaller businesses. The present findings indicate that service quality improvements must address accessibility barriers to maximize revenue impacts across diverse taxpayer segments.

The findings demonstrate that tax audit has a substantial positive effect on revenue generation, with stronger impacts observed at higher revenue performance levels. This result strongly corroborates Adegboyega et al. (2024), who concluded that tax audits significantly enhance voluntary tax compliance and revenue generation, especially when audits are transparent and of high quality. The present study provides quantitative evidence of this relationship across different revenue strata in the North Central context. The significant audit effect aligns closely with Okafor et al. (2024), who found that higher audit quality characterized by auditor independence, professional competence, and due care positively affects taxpayer compliance behavior and revenue performance. The current findings confirm these relationships and demonstrate that audit effectiveness translates into categorical improvements in revenue generation, validating the importance of investing in audit quality dimensions.

Furthermore, the study's results echo the findings of Ezekiel et al. (2022), who demonstrated that desk audits, field audits, and audit investigations all significantly contribute to revenue generation in Nigeria's South-West zone. The present study extends this evidence to the North Central region, confirming that comprehensive audit approaches are effective across different Nigerian contexts. Similarly, Omesi and Appah (2022) reported positive and significant relationships between tax audit and withholding tax revenue in the South-South region, further supporting the present study's findings that audit effectiveness is a critical lever for revenue enhancement nationwide.

An interesting pattern emerging from this study is the progressively stronger effect of audit at higher revenue performance levels. This suggests that audit mechanisms become increasingly important as revenue performance improves, possibly because audit effectiveness helps sustain and build upon existing compliance foundations. This finding was less emphasized in earlier studies but is implied in the work of Ezekiel et al. (2022), where stronger audit tools yielded larger revenue gains.

The dominance of audit effects in this study may also reflect the sample composition, where civil servants comprise a substantial portion of respondents. This demographic characteristic resonates with Alabede et al. (2018), who found that tax knowledge influences voluntary compliance behavior with public trust as a moderator. Civil servants, being more familiar with institutional processes and

regulatory frameworks, may respond more strongly to formal audit mechanisms than to general service improvements, explaining the relatively larger effects observed for tax audit effectiveness.

While recent studies by Asaolu et al. (2024) and Santoro et al. (2023) emphasize the importance of digital transformation and e-services in modern tax administration, the present findings confirm that traditional structures audits, effective enforcement, and service quality remain foundational for revenue generation. Asaolu et al. (2024) found that effectively implemented digital tax systems improve compliance and administrative efficiency, while Santoro et al. (2023) revealed lower digital adoption among certain taxpayer segments.

The current study's results suggest that these digital innovations should complement rather than replace fundamental audit and service quality mechanisms. Technology may enhance the efficiency and reach of tax administration, but the core elements of quality service delivery and effective audit remain essential for sustainable revenue generation. This integration perspective helps reconcile the digital transformation literature with traditional tax administration effectiveness.

The findings address a gap identified in several reviewed studies regarding regional dynamics. Adegboyega et al. (2024) noted that their national scope limited understanding of regional dynamics such as those in North Central Nigeria. The present study provides specific evidence from the North Central context, demonstrating that while general patterns align with national studies, the relative magnitudes of service quality and audit effects may vary by region and institutional context. Additionally, Okafor et al. (2024) acknowledged that their study did not fully explore contextual variations in audit effectiveness across Nigerian regions. The current findings contribute to filling this gap by demonstrating how audit effectiveness operates specifically in North Central states, where unique institutional and demographic characteristics may influence the relative importance of different tax administration strategies.

5. Conclusion and Recommendations

In conclusion, both research questions are answered affirmatively: tax quality services positively affect revenue generation in North Central Nigeria, and tax audit has substantially enhanced revenue generation in the region. These findings align with and extend the empirical literature by confirming relationships documented in

other Nigerian regions while revealing nuanced patterns specific to the North Central context. The study validates public choice theory's predictions about rational responses to institutional quality and demonstrates that both service improvements and audit effectiveness are critical, complementary strategies for enhancing revenue generation in Nigerian tax administration. Therefore, strengthening tax quality services and audit mechanisms represents not merely administrative reform but an economic imperative for fiscal sustainability

Based on the findings of this study, the following recommendations are proposed for enhancing revenue generation in North Central Nigeria:

- i. Tax authorities in North Central Nigeria should prioritize comprehensive strengthening of audit systems as a primary revenue enhancement strategy. This requires investment in modern audit technology, regular training of audit personnel on risk-based audit techniques, and expansion of audit coverage to include high-revenue potential sectors. Audit capacity building should focus on improving auditor independence, professional competence, and due care while ensuring transparency in audit processes to maintain taxpayer trust. Establishing specialized audit units for different taxpayer categories will enhance effectiveness and allow for targeted enforcement strategies that maximize revenue outcomes.
- ii. Rather than pursuing audit and service quality improvements as isolated interventions, tax authorities should develop integrated tax administration strategies that leverage the complementary effects of both mechanisms. This integrated approach should combine proactive taxpayer support services including accessible service centers, digital platforms, and taxpayer education programs with effective monitoring and enforcement systems. Particular attention should be given to addressing digital literacy gaps and ensuring that service improvements reach less-educated taxpayers, women entrepreneurs, and rural businesses. The integration of service delivery and enforcement will create synergistic effects that enhance both voluntary compliance and revenue collection.
- iii. Tax authorities across North Central states should establish regional coordination platforms for sharing best practices, harmonizing procedures, and implementing joint capacity-building initiatives. This regional approach will enable states to pool resources

for technology investments, conduct collaborative training programs, and address cross-border compliance challenges more effectively.

iv. Additionally, robust monitoring and evaluation systems should be instituted to track the effectiveness of implemented reforms, assess both audit outcomes and service quality metrics, and enable evidence-based adjustments. Regular performance assessment will ensure that interventions remain responsive to the economic realities and fiscal challenges facing the region while maximizing returns on investments in tax administration.

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