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Tax Audit Management, Technology Integration and Performance of State Internal Revenue Service in Southwest, Nigeria

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ABSTRACT: The State Internal Revenue Services in Southwest Nigeria struggle with tax compliance rates and revenue generation optimization due to inadequate audits and low technology adoption, which affects detection, evasion reduction, accountability, and transparency in tax administration. Therefore, this study investigated the impacts of tax audit management (TAM) and technology integration (TI) in improving the performance of SIRS in Southwest Nigeria. The study employed a cross-sectional quantitative survey research design, data were collected from 383 management personnel across various SIRS offices in South-West, Nigeria. PLS-SEM was employed to examine the impact of TAM and TI on SIRS performance. The findings indicate that TAM significantly enhances SIRS performance, with a coefficient of 0.440, a t-statistic of 2.736, and a p-value of 0.006, suggesting that effective tax audits boost revenue generation and reduce tax evasion. TI also positively influences SIRS performance, with a coefficient of 0.328, a t-statistic of 2.143, and a p-value of 0.032, emphasizing its role in streamlining tax processes and improving compliance. However, the combined interaction effect of TI and TAM on SIRS performance is not statistically significant, with a coefficient of -0.050, a t-statistic of 0.523, and a p-value of 0.601. This study concludes that both TAM and TI independently contribute to SIRS performance, their combined effect does not significantly enhance the operational efficiency of tax authorities. Based on these findings, the study recommends that SIRS in Southwest Nigeria should prioritize the adoption of comprehensive tax audit management strategies and leverage technology to automate and optimize tax processes.

Keywords: Tax Audit Management, Technology Integration, Performance, State Internal Revenue Services.

INTRODUCTION

The performance of revenue agencies is crucial for the economic growth and stability of any nation. In developed countries, tax authorities benefit from advanced technological integration, streamlined audit systems, and strong compliance mechanisms, leading to efficient revenue collection (Gurama & Mansor, 2021). For instance, countries such as the United States, the United

Kingdom, and Germany have integrated sophisticated tax audit management systems and digital platforms, achieving tax compliance rates of over 90%. By leveraging technology, these countries enhance taxpayer compliance, reduce tax evasion, and automate processes, improving tax administration and lowering administrative costs. (Senouci et al., 2024).

Conversely, developing countries face numerous challenges in achieving similar performance levels. Weak institutional capacity, low levels of technological integration, and ineffective tax audit practices contribute to revenue leakages and underperformance (Tsvetkov et al., 2017). According to the World Bank (2023), tax revenue as a percentage of GDP in many developing countries averages around 15%, far below the 35% seen in developed economies. This highlights inefficiencies in tax administration, particularly in tax audit management and technology use, which limits compliance and enforcement (Saberi et al., 2019; Oto & Wayas,2024).

Nigeria, as a developing country, experiences similar issues. Its tax-to-GDP ratio stands at just 6.5%, one of the lowest in Africa. (Pantielieieva, 2022). Despite various reforms in tax administration, the performance of revenue agencies, particularly the State Internal Revenue Services (SIRS), remains suboptimal. Outdated audit practices, limited technology use, and weak enforcement mechanisms all contribute to this underperformance. In the South West region, these challenges are particularly pronounced, with revenue collection falling short of potential due to inefficiencies in tax audit management and poor technology integration. (Morenike et al., 2024).

Tax audit management is a fundamental aspect of tax administration, ensuring compliance with tax laws and regulations. (Ayu et al., 2022). It involves systematically reviewing taxpayers' financial records to verify the accuracy of their declarations. (Chalu & Mzee, 2018; Rahmayanti et al., 2020). Effective tax audit management is crucial for optimizing revenue collection, reducing tax evasion, and promoting voluntary compliance among taxpayers in Southwest Nigeria. (Morenike et al., 2024; Azrina-Mohd-Yusof et al., 2014)However, many Nigerian revenue agencies rely on manual, inefficient systems that delay audits, weaken enforcement, and reduce revenue collection. (Alissa et al., 2014). For example, a 2021 National Bureau of Statistics report indicated that Lagos State collected only 40% of its potential revenue, highlighting significant gaps in tax practices Elemo-Kaka, 2025).Technology integration, particularly through digital audit management tools, has been identified as a key driver of performance improvement. (Manita et al., 2020); Fath-Allah et al., 2015.). In developed countries, automated tax systems, data analytics, and real-time audit management software have transformed revenue collection. (Joselin et al., 2024;Taha et al., 2021). However, technology adoption in Nigeria has been slow (Anioke, 2024). While some Southwest states, including Lagos, Ogun, and Oyo, have initiated technology-driven reforms, these efforts remain insufficient. The lack of fully integrated systems hampers tax audit effectiveness and transparency, leading to revenue leakages and poor tracking of non-compliant taxpayers.

Therefore, the performance of State Internal Revenue Services (SIRS) **in** the Southwest region of Nigeria has been suboptimal due to the weak integration of technology in tax audit management. This research seeks to investigate the impact of tax audit management and technology integration on the performance of SIRS in Southwest Nigeria. Specifically, the study examined the moderating effect of technology integration on the relationship between tax audit management and the performance of the State Internal Revenue Service in the South-West region of Nigeria,

including Ogun, Oyo, Lagos, Osun, Ekiti, and Ondo. The findings of this study will significantly contribute to academic knowledge, inform policy development, and improve management practices, particularly by strengthening the ability of state revenue agencies to achieve their revenue targets and other decision-making.

Tax audit management is the evaluation of a taxpayer's financial records and tax returns to ensure compliance with tax laws and regulations Sriningsih (2016). During a tax audit, the tax authority reviews the taxpayer's records, verifies the accuracy of reported information, and requests additional documents or explanations (Chalu & Mzee, 2018; Olaoye & Busari, 2021). It is defined as the process of planning, executing, and monitoring audit activities to ensure that taxpayers comply with the relevant tax laws. The fundamental components of tax audit management include audit planning, data analysis, back-and-field audit operations, reporting, follow-up, and enforcement. Audit planning sets the foundation by defining the objectives, scope, and strategies of the audit, ensuring that resources are allocated to high-risk areas (Blaufus et al., 2023). During data analysis, auditors utilize advanced tools to identify discrepancies or patterns in financial records, allowing for targeted investigations. Both back-office audits (desk audits) and field operations (on-site audits) are employed to verify financial information, with field audits often providing deeper insights through direct inspection and interviews (Kislina & Wijaya, 2022; Ayu et al., 2022). After audits are completed, reporting documents the findings, outlining any irregularities or non-compliance and offering recommendations for corrective actions Nikolova, 2022).The follow-up phase ensures that taxpayers adhere to audit results and address any discrepancies, and, if necessary (Ogundeko & Idowu, 2020), enforcement measures such as penalties or legal actions are employed to secure compliance (Ogunwole & Adebayo, 2020).

According to Kislina and Wijaya (2022) and Nikolova (2022), effective management of these components leads to enhanced revenue collection, reduced tax evasion, and an overall improvement in the integrity and accountability of the tax system. According to Kislina and Wijaya (2022), and Nikolova (2022), effective tax audit management can enhance revenue collection and reduce the instances of tax fraud and evasion. Technology integration refers to the seamless incorporation of digital tools, systems, and processes into existing operations to enhance efficiency, accuracy, and accessibility. (Udegbunam & Nwankwo, 2023).

According to Madaki, et al. (2024), technology integration is the systematic incorporation of different types of technology, information systems, and the use of software by large organizations or public services. Individually, In the context of modern tax administration, particularly for State Internal Revenue Services (SIRS), several types of technology are employed to streamline operations and improve service delivery. These technologies include web-based portals, mobile technology, cloud computing, data analytics, biometric systems, and automated audit tools Estifanos (2023) and Islam (2024)opine that Web-based portals enable taxpayers to perform essential functions such as tax registration, return filing, and payment processing online, thereby enhancing accessibility and reducing physical contact between taxpayers and tax officials. Similarly, Umar, et al. (2023), and Ait Lhassan et al., 2022) depict that technology integration involves adopting automated systems like electronic filing (e-filing), data analytics, online payment platforms, and integrated tax management software to streamline tax processes. This transformation improves revenue collection, minimizes errors, and enhances transparency in tax

reporting. Additionally, it strengthens tax enforcement through the use of digital audits and real-time tracking of taxpayer activities, ultimately contributing to better compliance, reduced tax evasion, and improved overall tax administration efficiency. (Mohammed et al., 2024; Achibo & Wanjohi, 2024).

Mobile technologies are also forms of technologies that are particularly useful in reaching informal sector operators and taxpayers in remote areas through mobile tax apps and SMS-based notifications (Tembine et al., 2024). Furthermore, the adoption of cloud computing allows SIRS to store and access taxpayer data securely in real time, facilitating better decision-making and efficient data management (Madaki et al., 2024).Biometric systems ensure identification, verification and fraud prevention, while data analytics tools enable the tax authority to analyze trends, detect anomalies, and identify high-risk taxpayers for audit (Bernal-Romero et al., 2023).

Shakil and Tasnia (2022) see technology integration as it encompasses various specialized software solutions that are utilized in managing tax operations, ranging from end-to-end tax management systems to stand-alone applications focused on specific functions. There are much software employes by some tax revenue agencies. Firstly, enterprise tax management (ETM) or software enterprise resource planning (ERP) integrates multiple tax processes including electronic tax compliance credentials, enforcement, and audit into a single, unified platform, thereby improving workflow efficiency and information sharing across departments (Xue, 2021). Additionally, revenue assurance software is employed to track real-time tax collections, reconcile payments, and flag discrepancies (Abubakar, 2023). Risk-based audit software is used to select taxpayers for audit based on risk profiling and historical data, minimizing subjective audit targeting (Eberhartinger et al., 2021). Some SIRS also utilize Geographic Information Systems (GIS) to map taxable properties and business activities, especially for property and consumption taxes. These software systems reduce manual errors, enhance transparency, and contribute to improved compliance monitoring, which ultimately boosts organizational performance. (Hartikayanti et al., 2022).

Another form of technological integration in tax administration is tax information system. According to Reyes-Tagle, et al. (2023), tax information systems (TIS) are comprehensive digital platforms that enable the collection, storage, processing, and analysis of tax-related data for decision-making and service delivery. TIS serve as the backbone of automated tax administration, providing a central database where taxpayer records, audit trails, compliance history, and financial transactions are stored and managed. A well-designed TIS enables SIRS to carry out automated assessments, issue electronic notices, conduct e-audits, and generate performance reports Examples include Integrated Tax Administration Systems (ITAS), which consolidate various tax operations under one digital infrastructure, and Electronic Document Management Systems (EDMS), which facilitate secure storage and retrieval of taxpayer files and audit documents. These systems improve efficiency, minimize the risk of data loss or manipulation, and provide audit-ready documentation that enhances accountability (Van Rooi, 2023). By strengthening the information flow within the tax authority and between the tax authority and taxpayers, TIS significantly contributes to revenue performance and institutional trust (Al-Okaily, 2024).

Performance refers to the measurable outcomes or results achieved by an individual, organization, or system concerning set goals or objectives. (Fatile et al., 2019). According to (Amirah et al.,

2024), performance can be assessed using various indicators such as productivity, revenue generation, service delivery, compliance, or financial management. In the context of tax administration, the performance of state internal revenue service is often measured by their ability to meet revenue targets, their operational efficiency, and the level of taxpayer compliance they can achieve (Adenugba & Ogechi, 2013). A well-structured audit system not only identifies non-compliant taxpayers but also deters potential evaders through strict enforcement and penalties.

Revenue agencies' performance implies the extent to which these institutions effectively and efficiently achieve their core objectives of mobilizing public revenue, ensuring compliance with tax laws, and providing quality service to taxpayers (Yani & Bambang, 2024). This performance can be measured through several fundamental indicators (increase revenue generation, tax compliance level, time efficiency, cost effectiveness, service delivery tax evasion reduction, accountability and minimizing tax gap. **Increased revenue generation** reflects the agency's ability to broaden the tax base and enhance collection efforts over time (Achibo & Wanjohi, 2024). Improved tax compliance rates indicate the success of policies and systems in encouraging voluntary and accurate filing and payment of taxes (Dada & Taiwo, 2020). Time efficiency in tax processing measures how swiftly and seamlessly tax-related transactions such as filing, assessment, and refund, are handled (Morenike et al., 2024). Cost-effectiveness of tax administration refers to the optimal use of resources to achieve revenue goals with minimal overhead (Achibo & Wanjohi, 2024). Taxpayer satisfaction and service delivery quality focus on the responsiveness, accessibility, and overall quality of services provided to taxpayers, which fosters trust and compliance (Artawan et al., 2020). Reduction in tax evasion signifies improved monitoring, detection, and deterrence of illegal non-payment or underreporting of taxes (Irawan & Utama, 2021). Effectiveness of enforcement actions examines the agency's ability to apply penalties, conduct audits, and ensure compliance through fair and consistent enforcement. Additionally, minimizing the tax gap, the difference between taxes owed and taxes actually collected (Murphy, 2021), is a critical metric, as is accountability, which entails transparency in operations, responsible management of public funds, and regular performance reporting to stakeholders (Amirah et al., 2024).

Resource-Based View (RBV) Theory

The Resource-Based View (RBV) theory, developed by Barney (1991), assumes that an organization's performance is determined by the extent to which it possesses and utilizes valuable, rare, inimitable, and non-substitutable (VRIN) resources and capabilities (Zvarimwa & Zimuto, 2022). From this perspective, tax audit management can be viewed as a strategic internal capability that, when effectively developed and deployed, can enhance the performance of State Internal Revenue Services (SIRS). Skilled audit personnel, robust audit processes, and structured enforcement mechanisms are intangible resources that, if properly managed, can provide SIRS with a sustainable advantage in revenue collection, compliance enforcement, and service delivery. capabilities (Kamara, 2023).

Technology integration, in the context of RBV, serves as both a complementary resource and a performance enabler. It is expected to strengthen the efficiency, accuracy, and scalability of tax audit management functions, such as real-time data access, automated risk profiling, and digital

audit trails (Yang et al., 2022). The theory accommodates modern, intangible assets such as information and communication technologies (Luo & Bu, 2016).It sees technology integration not just as infrastructure, but as a resource that can enhance the productivity and uniqueness of other internal processes like tax audits (Ramli & Ali, 2024). The strength of this theory is that, it provides a strong rationale for investigating how the deployment and combination of these internal resources (audit management and technology) directly influence performance outcomes in public sector institutions like SIRS (Ramli & Ali, 2024).

The limitations of RBV Theory are viewed in three ways. Firstly, it neglects external factors, as RBV focuses heavily on internal resources and does not account adequately for external environmental influences (e.g., political interference, regulatory changes, taxpayer behavior) that may also impact SIRS performance (Taher, 2011). Secondly, the static view of resources, that is, the theory tends to view resources as static and does not fully address how capabilities evolve over time or respond to rapidly changing environments - particularly relevant in the fast-changing field of tax technology (Mehmood et al., 2023). Thirdly, there is lack of specificity for public Sector, RBV is traditionally applied to private-sector firms pursuing competitive advantage. Applying it to public institutions like SIRS requires caution, as their goals are more aligned with efficiency and public value rather than market competition (Jibreal, 2022).

Empirical Review

Tax audit management and organizational performance have been extensively studied from 2014 to 2024. Researchers have examined various aspects of tax management practices on revenue generation and voluntary compliance and the influence of digital transformation on tax administration. Several studies found that effective tax audit practices are crucial for enhancing revenue generation. Similar studies by Alissa, et al. (2014),Dada and Taiwo (2020), Ogundeko and Idowu (2020), and Anjulo (2018). Demonstrated that tax audits and investigations significantly improve the revenue-generating capacity of state tax agencies in Nigeria. (Sule et al., 2024) also found that a robust tax audit framework enhances compliance and maximizes tax revenue generation in Nigeria. A study by Olaoye, et al. (2018) found that tax audit has a significant effect on tax productivity in Lagos State. However, the effectiveness of tax audits can be influenced by technological and organizational factors. (De et al., 2021; Aguirre, 2021) reported mixed results in developing economies, revealing that technological improvements without corresponding investments in human capital led to only marginal gains in audit performance in Mexico. In contrast, (Gulzar et al., 2024) and (Guo et al., 2024) found that the adoption of advanced data analytics and automation for audit targeting and processes resulted in increased revenue collection and improved efficiency. The COVID-19 pandemic also affected tax audit practices, with (Ogunwole & Adebayo, 2020) revealing that the shift to remote auditing procedures led to increased revenue collection and reduced operational costs for state tax agencies.

Several studies highlighted the importance of technology integration in enhancing the performance and effectiveness of tax systems. Researchers in Nigeria, Ethiopia, and Indonesia found that embracing digital solutions, such as e-filing, electronic payments, automated data processing, and integrated billing systems, significantly improved revenue generation, reduced fraud, and facilitated

compliance (Joselin et al., 2024; Mohammed et al., 2023; Udegbunam & Nwankwo, 2023;Umar et al., 2023).Saleem, et al. (2024) and Hesami, et al. (2024)found that digital transformation of tax administration enhances tax compliance. The studies also emphasized the role of e-governance and public accountability in improving tax administration. meanwhile, Bassey, et al. (2023) found that adopting e-governance practices enhanced the efficiency and effectiveness of tax collection, leading to greater public trust in government institutions in Nigeria. Similar findings were reported in studies from Portugal, Switzerland, and South-West Nigeria (Campbell & Hanschitz, 2018; Santos & Álvares, 2024; Achibo & Wanjohi, 2024; Morenike et al., 2024).

Research Gaps

Despite extensive research on tax audit management and technology integration, a significant gap remains in understanding the moderating effect of technology integration on the relationship between tax audit management and the performance of State Internal Revenue Services (SIRS) in Southwest Nigeria. Previous studies (Olaoye et al., 2018;De et al., 2021;Joselin et al., 2024;Mohammed et al., 2023; Sule et al., 2024) have largely focused on the direct impact of tax audits or emphasized efficiency gains from digital transformation but have not considered technology integration as a moderating factor. There is also limited research exploring the simultaneous impact of both tax audit management and technology integration on SIRS performance within the Nigerian context, especially at the state level. This study aims to address this gap using Structural Equation Modeling (SEM) to examine both the direct effects and the moderating analysis of the subject matters.

Contribution to Knowledge

This study makes a unique contribution to the existing body of knowledge by examining not only the individual impacts of tax audit management and technology integration on the performance of SIRS in Southwest Nigeria but also the moderating role of technology integration in this relationship. By doing so, it provides new insights into how technological advancements can enhance or hinder the effectiveness of tax audit practices. The study offers a more comprehensive understanding of the dynamics between tax administration practices and digital tools, thereby filling a critical gap in the literature concerning the interplay between audit management and technology in the Nigerian tax system. Additionally, it provides empirical evidence specific to the Southwest region, which has been under-researched compared to other areas in terms of SIRS performance and digital transformation efforts. This research could help policymakers in formulating more targeted.

METHOD

The study adopted a cross-sectional research design with a population of 8,771 management staff data collected from State Revenue in Southwest Nigeria. The primary data for this study was collected via questionnaires distributed to tax auditors, revenue officers, and other senior

management in the SIR's offices across Southwest Nigeria. A total sample size of 383 management personnel across various SIRS offices in South-West, Nigeria was targeted, with questionnaires designed to gather information on tax audit management, technology integration, and organizational performance. The study employed both descriptive and inferential statistical techniques for data analysis. Descriptive statistics were used to summarize the data, including measures such as mean, standard deviation, as well as skewness and kurtosis to assess the normality of the distribution. This research employs the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique to analyze the relationship between tax audit management, technology integration, and the performance of the State Internal Revenue Service (SIRS) in Southwest Nigeria.

PLS-SEM is chosen and justified based on its effectiveness in handling complex relationships between multiple variables and its suitability for exploratory research. The research instruments were evaluated using the measurement model based on the basic Partial Least Squares (PLS) algorithm, with a focus on established quality assessment criteria. Reliability was assessed through Cronbach's Alpha and Composite Reliability to ensure internal consistency of the constructs. Validity was further examined using the Average Variance Extracted (AVE) for convergent validity, while discriminant validity was assessed using both the Fornell-Larcker criterion and cross-loading analysis to verify that each construct was distinct from the others. To test the study's hypotheses, the Structural Equation Model (SEM) was evaluated using bootstrapping procedures within the PLS-SEM framework, implemented via SmartPLS software (version 4.1.1.2).

The data was analyzed using the SmartPLS4 software to test the hypothesized relationships between the variables. Figure 1. Sample size is calculated using Taro Yamane's formula: $n = N/(1+N(e)^2)$ where n = sample size, N = Population, e = error limit (0.05), $n= 8771/ (1 + 8771(0.05)^2) =383$.

Table 1. Distribution of Sample Size of 383 to Target Respondents in the Regions

S/N	States	Population Size of Management Employees	Proportion of sample size about sampling frame	Sample size
1	Lagos	4,879	(4,879x383)/ 8,771	213
2	Ogun	1,728	(1,728x383)/ 8,771	76
3	Oyo	1,535	(1,535x383)/ 8,771	67
4	Osun	528	(528x383)/ 8,771	23
5	Ondo	285	(285x383)/ 8,771	13
6	Ekiti	324	(324x383)/ 8,771	4
	Total	8,771		383

Source: Author's compilation, 2024 from the Website database of the IRS of each State.

Table 1 presents the population and sample size distribution for management personnel across the State Internal Revenue Services (SIRS) in the six Southwestern states of Nigeria. The total population of management employees across the states is 8,771, with a calculated sample size of 383 based on Taro Yamane's formula. The sample size was proportionally allocated to each state according to its share of the total population.

The study employed proportionate stratified random sampling, a technique in which the population was first divided into six distinct strata based on states (Lagos, Ogun, Oyo, Osun, Ondo, and Ekiti), and a proportional sample was allocated to each state according to its share of the total population of 8,771 management employees. The final sample size of 383 was determined using Taro Yamane's formula and distributed proportionately across the states to reflect their population sizes. Although random selection within each stratum was not explicitly stated, it is typically inherent in stratified sampling designs. This method ensures that each state's internal revenue service is adequately represented, thereby enhancing the balance, representativeness, and generalizability of the study's findings across the Southwestern region of Nigeria.

Measurement of Variables

The independent variable, Tax Audit Management, is measured using the following indicators: clarity of the tax audit process, efficiency of the tax audit management system, compliance of the audit process with regulatory standards, effectiveness of tax investigation procedures, cost-effectiveness and location of audits, effectiveness of field audits, impact of back duty audits, and effectiveness of registration audits.

The moderating variable, Technological Integration, is assessed through indicators such as integration of tax data systems, availability of online tax services, user-friendliness of the e-tax system, use of mobile technology for taxpayer outreach, electronic document management practices, adoption of financial management software, accuracy ensured by ERP systems, and the existence of a centralized tax information system.

The dependent variable, Tax Revenue Performance, is measured by improved revenue collection, accountability in the utilization of tax revenue, enhancement of voluntary compliance, efficiency in processing tax-related transactions, operational efficiency and optimal resource utilization in service delivery, collaboration with stakeholders, effectiveness in combating tax evasion, and transparency and accountability in agency operations.

RESULT AND DISCUSSION

The results are presented using descriptive statistics (mean, standard deviation, and Cramér-von Mises p-value) in Tables 2-4. The measurement model's reliability, validity, and discriminant validity, as well as the structural model's path coefficients, were assessed to test the hypotheses.

Table 2. Descriptive Statistics for Tax Audit Management

Name	Items	Mean	Std. Dev	Cramér-von Mises p value
TAM-1	The tax audit process is well-defined and clearly communicated	3.640	1.229	0.000
TAM-2	The tax audit management system effectively organizes and tracks audit cases.	3.640	0.975	0.000

TAM-3	The tax audit compliance process aligns with regulatory requirements and industry best practices	3.380	1.075	0.000
TAM-4	The tax investigation procedures adopted are effective in identifying potential tax issues and discrepancies.	4.440	0.726	0.000
TAM-5	Tax audit takes within the premises of tax officials and cost-effective	3.120	1.070	0.000
TAM-6	The effectiveness of field audit allows physical verification of taxpayers' claims to confirm the facts and figures of the returns	3.980	1.029	0.000
TAM-7	Back duty audit practice is effective in correcting the mistake of lesser tax because of falsification of documents submitted by the taxpayers	3.400	1.200	0.000
TAM-8	Registration audit is effectively used to cage individuals and companies in the tax net within South-West Nigeria	3.600	1.114	0.000

Source: Author's Computation (2024)

Table 3. Descriptive Statistics for Technology Integration

Name	Items	Mean	Std. Dev	Cramér-von Mises p value
TI-1	The Integration of tax data from different departments of SIRS effectively reduces redundancy and improves consistency.	3.780	0.965	0.000
TI-2	SIRS provides a fully functional online platform for tax registration, return filing, and payment through web-based portal	3.600	1.217	0.000
TI-3	Mobile applications and SMS are actively used by SIRS to reach taxpayers in remote and informal sectors.	3.920	1.093	0.000
TI-4	Software such as SharePoint or Google Drive used by SIRS allows for efficient electronic st orage of documents and has significantly redu ced physical storage	4.040	0.824	0.000
TI-5	The use of accounting and financial management software (e.g. QuickBooks or SAP) has improved SIRS budgeting processes	3.900	1.025	0.000
TI-6	The ERP system enhances the accuracy of tax calculations and reporting in our tax accounting information system.	3.840	0.946	0.000
TI-7	A centralized Tax Information System exists for managing taxpayer records and audit trails.	3.620	1.056	0.000

Source: Author's Computation (2024)

Table 4. Descriptive Statistics for Performance

Name	Items	Mean	Std. Dev	Cramér-von Mises p value

PSIRS-1	The agency has significantly increased its revenue collection by expanding the tax base and improving collection efforts."	4.000	1.020	0.000
PSIRS-2	The tax revenue agency demonstrates accountability in the use of tax revenues.	4.000	0.849	0.000
PSIRS-3	The policies and systems implemented by the agency have enhanced voluntary tax filing and payment compliance among taxpayers.	3.980	0.883	0.000
PSIRS-4	Tax-related transactions such as filing, assessment, and refund are processed efficiently and within reasonable timeframes.	3.880	0.886	0.000
PSIRS-5	SIRS optimizes its operational efficiency through the utilization of its resources (e.g., labor, materials, and time) to provide service quality and achieve productivity.	4.040	0.999	0.000
PSIRS-6	The state IRS actively collaborates with other government agencies, organizations, and stakeholders to enhance tax administration compliance and reduce tax evasion.	4.080	0.845	0.000
PSIRS-7	The agency has been effective in monitoring, detecting, and deterring tax evasion and underreporting.	4.020	0.761	0.000
PSIRS-8	The agency demonstrates transparency and accountability in operations, contributing to a reduced gap between taxes owed and collected	4.280	0.939	0.000

Source: Author's Computation (2024)

The results presented in Tables 2-4 highlight the effectiveness of tax audit management and technology integration within the tax administration system. In examining the descriptive statistics across the tax audit management (TAM) and technology integration (TI) dimensions, several notable patterns emerge from the data analysis. For tax audit management in Table 2, respondents indicated the highest mean score (4.440) for the effectiveness of tax investigation procedures (TAM-4), with the lowest standard deviation (0.726) suggesting strong consensus among participants. The lowest mean score (3.120) was observed for the cost-effectiveness of tax audits conducted within tax officials' premises (TAM-5). Regarding technology integration in Table 3, the data reveals generally positive perceptions, with the highest mean score (4.040) attributed to the efficiency of electronic document storage systems (TI-4), while the e-tax system's provision of accessible information (TI-2) showed the highest variability with a standard deviation of 1.217. In

Table 4 presents descriptive statistics indicating that the State Internal Revenue Service (PSIRS) demonstrates high performance across key dimensions, with mean scores ranging from 3.880 to 4.280. The highest-rated item relates to transparency and accountability in operations (mean = 4.280), followed closely by stakeholder collaboration (4.080), while slightly lower scores were noted for efficiency in transaction processing (3.880). Most items, including revenue generation and

voluntary compliance, received strong agreement from respondents, reflected in consistently low standard deviations and statistically significant Cramér-von Mises p-values (0.000), confirming the reliability of responses.

Table: Summary of Descriptive Statistics

Construct	No. of Items	Mean	Median	Observed Min	Observed Max	Std. Dev.	Skewness	Excess Kurtosis
TAM	8	4.440	4.00	1	5	0.726	1.287	-1.242
TI	7	3.910	4.00	1	5	1.025	0.789	-0.943
PSIRS	8	4.280	4.00	1	5	0.939	2.232	-1.498

Source: Author's Computation (2024)

The descriptive statistics in the table suggest that the data for the three constructs: Tax Audit Management (TAM), Technology Integration (TI), and Performance of State Internal Revenue Service (PSIRS) are generally acceptable but exhibit slight deviations from perfect normality. All three constructs have median values equal to 4.00, closely aligned with their means (TAM = 4.44, TI = 3.91, SIRS = 4.28), indicating a balanced central tendency. The standard deviations are within a reasonable range (0.726 to 1.025), reflecting moderate variability. However, based on the normality threshold of ±1 for skewness and kurtosis (Hair et al., 2010), the constructs show that there is normality distribution of instruments. TAM (Skewness = 1.287, Kurtosis = –1.242) and SIRS (Skewness = 2.232, Kurtosis = –1.498) exceed the ±1 threshold for skewness, suggesting mild to moderate right-skewness, while TI (Skewness = 0.789, Kurtosis = –0.943) remains within acceptable bounds. Hence, the data meets the basic assumptions for multivariate analysis.

Quality Criteria

This section presents the assessment of construct reliability and validity to ensure the measurement model's adequacy. It includes analyses of internal consistency, convergent validity, and discriminant validity using established statistical criteria. The evaluation is guided by recommended thresholds from prior scholars such as Hair et al. (2021) and Fornell and Larcker (1981).

Table 5. Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
PSIRS-	0.871	0.908	0.898	0.528
TAM-	0.842	0.848	0.877	0.522
TI-	0.840	0.845	0.880	0.512

Source: Author's Computation (2024)

Table 6. Discriminant Validity – Fornell-Larker Criterion

	PSIRS-	TAM-	TI-
PSIRS-	0.727		
TAM-	0.695	0.722	

TI-	0.697	0.507	0.716

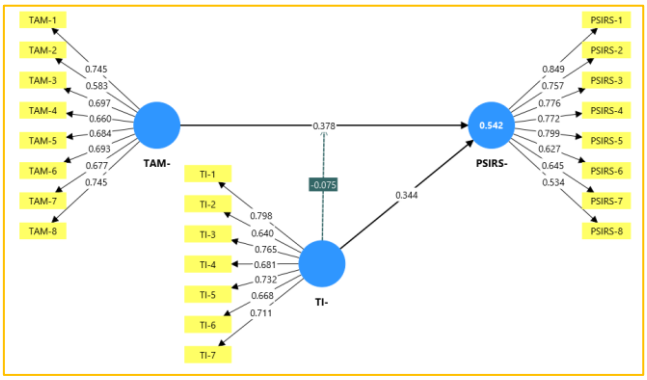
Source: Author's Computation (2024)

Table 7. Discriminant Validity – Cross Loadings

	PSIRS-	TAM-	TI-	TI- x TAM-
PSIRS-1	**0.849***	0.770	0.735	-0.462
PSIRS-2	**0.757***	0.543	0.500	-0.190
PSIRS-3	**0.776***	0.498	0.607	-0.485
PSIRS-4	**0.772***	0.539	0.477	-0.265
PSIRS-5	**0.799***	0.510	0.479	-0.360
PSIRS-6	**0.627***	0.323	0.513	-0.427
PSIRS-7	**0.645***	0.400	0.274	-0.236
PSIRS-8	**0.534***	0.204	0.224	-0.112
TAM-1	0.540	**0.745***	0.505	-0.276
TAM-2	0.320	**0.583***	0.359	-0.206
TAM-3	0.306	**0.697***	0.534	-0.184
TAM-4	0.485	**0.660***	0.528	-0.329
TAM-5	0.402	**0.684***	0.423	-0.098
TAM-6	0.545	**0.693***	0.665	-0.539
TAM-7	0.528	**0.677***	0.626	-0.313
TAM-8	0.559	**0.745***	0.692	-0.493
TI-1	0.455	0.576	**0.798***	-0.360
TI-2	0.445	0.496	**0.640***	-0.299
TI-3	0.615	0.696	**0.765***	-0.543
TI-4	0.482	0.539	**0.681***	-0.428
TI-5	0.507	0.567	**0.732***	-0.455
TI-6	0.500	0.509	**0.668***	-0.269
TI-7	0.448	0.629	**0.711***	-0.468
TI- x TAM-	-0.461	-0.473	-0.572	1.000*

Source: Author's Computation (2024)

Basic PLS Algorithm Graphica Representation



Source: SmarPLS4 Output

Figure 1. Path graph analysis

Tables 5 to 7 present the assessment of the measurement model, establishing the reliability and validity of the constructs: Performance of State Internal Revenue Services (PSIRS), Tax Audit

Management (TAM), and Technology Integration (TI). As shown in Table 5, all constructs meet the minimum threshold for Cronbach's alpha (>0.70), indicating strong internal consistency (Hair et al., 2019. Specifically, PSIRS (α = 0.871), TAM (α = 0.842), and TI (α = 0.840) are reliable. Composite reliability values (rho_c) for all constructs are above the acceptable 0.70 benchmark (PSIRS = 0.898, TAM = 0.877, TI = 0.880), confirming construct reliability (Hair et al., 2014). Additionally, the AVE values for PSIRS (0.528), TAM (0.522), and TI (0.512) all exceed the 0.50 threshold, demonstrating sufficient convergent validity, which reflects that each construct explains more than half of the variance of its indicators (Hair et al., 2021; Fornell & Larcker, 1981).

Discriminant validity is evaluated in Tables 6 and 7. Table 6 applies the Fornell-Larcker criterion, which requires that a construct's square root of AVE (on the diagonal) exceed its correlations with other constructs. This condition is satisfied for PSIRS (0.727), TAM (0.722), and TI (0.716), confirming discriminant validity (Fornell & Larcker, 1981). Table 7 further substantiates this using cross-loadings: each item loads highest on its intended construct (noted by asterisks), with significantly lower loadings on other constructs. For instance, PSIRS items load strongly on PSIRS but less on TAM and TI (Henseler et al., 2015). According to Hair et al. (2021), this pattern affirms that each indicator is uniquely associated with its construct. Together, the evidence from these three tables confirms that the measurement model is both reliable and valid is thus appropriate for further structural path analysis within the context of evaluating tax audit management, technology integration, and performance of state internal revenue services.

Structural Model

This section evaluates the structural model to determine the strength and significance of relationships among the latent constructs. Key indicators such as collinearity statistics (VIF), coefficient of determination (R^2), and effect size (f^2) are examined. The analysis follows the guidelines of Hair et al. (2021) for assessing model adequacy in PLS-SEM.

Table 8. Collinearity Statistics – Variance Inflation Factor (VIF)

	VIF
TAM- -> PSIRS-	2.870
TI- -> PSIRS-	2.309
TI- x TAM- -> PSIRS-	1.486

Source: Author's Computation (2024)

Table 9. R-Square

	R-square	**R-square adjusted**
PSIRS-	0.542	0.512

Source: Author's Computation (2024)

Table 10. F-Square

	PSIRS-
PSIRS-	
TAM-	0.108
TI-	0.078
TI- x TAM-	0.054

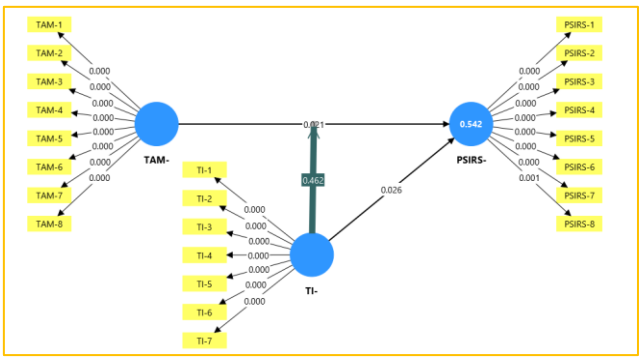
Source: Author's Computation (2024)

Tables 8 through 10 evaluate the preliminary aspects of the structural model, specifically collinearity, explanatory power, and effect size, which help assess the robustness of the model linking Tax Audit Management (TAM), Technology Integration (TI), and their interaction to the Performance of State Internal Revenue Services (PSIRS). Table 8 presents the Variance Inflation Factor (VIF) values for all predictor constructs. The VIF values for TAM (2.870), TI (2.309), and their interaction term (1.486) are all below the conservative threshold of 3.3 recommended by Hair et al. (2021), indicating that multicollinearity is not a concern. This implies that the constructs contribute independently to explaining variance in PSIRS, which is essential for the stability and interpretability of path coefficient estimates.

Table 9 shows that the model explains a substantial portion of the variance in PSIRS, with an R-square value of 0.542 and an adjusted R-square of 0.512. According to (Chin (1998), an R-square of 0.50 and above is considered moderate to substantial in behavioral research, indicating that TAM, TI, and their interaction jointly explain over 50% of the variation in PSIRS performance.

Table 10 presents the f-square effect sizes, which measure the individual contribution of each predictor variable to the R-square of the dependent construct. The effect size of TAM on PSIRS is 0.108, indicating a small to moderate effect; TI has a smaller effect (0.078), and the interaction term (TI × TAM) has a minimal effect (0.054). As per Cohen (1988), f-square values of 0.02, 0.15, and 0.35 indicate small, medium, and large effects respectively. These findings suggest that while TAM and TI each have meaningful contributions, the interaction term adds marginal explanatory value: an insight important for refining strategic interventions in enhancing revenue service performance.

Graphical Representation of Structural Model through Bootstrapping



Source: SmarPLS4 Output

Figure 2. PLS-SEM Path: TAM, IT and PSIRS

Table 5. Path Coefficient Result

Constructs	Original sample (O)	Sample mean (M)	Std. dev. (STDEV)	T statistics (|O/STDEV|)	P values
TAM- -> PSIRS-	0.378	0.382	0.164	2.307	0.021
TI- -> PSIRS-	0.344	0.364	0.154	2.230	0.026
TI- x TAM- -> PSIRS-	-0.075	-0.073	0.102	0.736	0.462

Source: Author's Computation (2024)

The results in Table 5 show that tax audit management (TAM) has a positive and significant effect on the performance of State Internal Revenue Services (SIRS) with a path coefficient of 0.378 (p = 0.021) at a 5% significant level. This indicates that improvements in tax audit management, such as more effective audit procedures and better regulatory, compliance monitoring, effective field and back duty audit lead to enhanced performance of revenue services. This finding implies that when SIRS implements robust audit management practices, it results in increased efficiency, improved revenue collection, and a reduction in tax evasion. It emphasizes the critical role of tax audits in ensuring compliance and optimizing revenue generation for state governments. This finding is consistent with the outcomes from studies in Nigeria by Ogundeko and Idowu (2020), who found that tax audit improves voluntary compliance and revenue generation, and Johnson et al. (2021), who highlighted the positive impact of risk-based audit selection methods. It also aligns with the research by Justine (2023) in Ethiopia, Okonye and Akujor (2023) in Nigeria, and (Kassaw, 2023), all of which underscored the significance of tax audit management in enhancing the performance of revenue services.

Resource-based view (RBV) theory supports the relationship between tax audit management and performance of state revenue agencies. From the perspective of this theory, effective tax audit management can be considered a strategic and intangible organizational resource that is valuable, rare, inimitable, and non-substitutable (VRIN). When properly developed and deployed, it serves as a core competency that enhances institutional performance. TAM contributes to internal capabilities by improving oversight, promoting tax compliance, and deterring fraudulent practices. By leveraging these unique capabilities, SIRS in Southwest, Nigeria can achieve sustained competitive advantage in revenue administration. Thus, tax audit management functions not merely as a compliance tool but as a strategic asset that strengthens institutional effectiveness.

Similarly, technology integration (TI) has a significant positive impact on SIRS performance with a path coefficient of 0.344 (p = 0.026). This suggests that the incorporation of technology into revenue service operations, such as the use of automated systems, data analytics, and digital platforms; improves organizational efficiency, reduces errors, and boosts revenue collection capacity. This finding implies that embracing technological solutions leads to more streamlined processes, better taxpayer services, and enhanced accuracy in audits, which ultimately improves the overall performance of the revenue agencies. This finding aligns with the studies by (Eulerich et al., 2021), which showed improvements in audit cycle times and accuracy through automation in Germany, and consistently, Mohammed et al. (2023) found that digital solutions are crucial for improving tax system performance in Nigeria. It also supports the findings of Udegbunam and Nwankwo (2023), Umar et al. (2023), Saleem, et al. (2024), and Anioke (2024), who all reported

that technology integration significantly boosts the performance of revenue services. Similar findings align with out of Campbell and Hanschitz (2018) and Santos and Alvares (2024) that technological integration in tax administration could enhance the revenue performance in Portuagal and Switzerland. However, the findings of this study contrast with Aguirre et al. (2021) in Mexico, who reported mixed results in developing economies, noting that institutional factors like staff training and organizational culture were equally important for realizing the benefits of technology in tax audits. The influence of technology integration on the performance of State revenue agencies was supported by Resource-based View (RBV) theory. According to the Resource-Based View theory, technology integration represents a strategic internal capability that can serve as a source of sustainable advantage when it is valuable, rare, inimitable, and well-organized (VRIO). The adoption of advanced technologies such as digital audit tools, integrated tax administration systems, and data analytics platforms allows SIRS to enhance its internal processes, improve decision-making, and respond more effectively to taxpayer behavior. These technological assets - when effectively managed and customized - are not easily replicable by other competing revenue agencies in the country, thereby positioning the revenue service to outperform others. Thus, under the RBV framework, technology integration is not just an operational upgrade, but a core capability that enhances the strategic positioning and long-term performance of public revenue agencies.

However, the moderating effect of technology integration on the relationship between tax audit management (TAM) and SIRS performance (PSIRS) was found to be insignificant, as indicated by the path coefficient ($p = 0.462$). This implies that while technology integration has a direct positive effect on SIRS performance, it does not significantly strengthen or weaken the impact of tax audit management on performance. In other words, the effectiveness of tax audit management in enhancing the performance of SIRS is not contingent on the level of technology integration. This finding suggests that tax audit management can independently improve SIRS performance, and while technology integration improves overall efficiency, it does not act as a critical moderator in this specific relationship. This finding aligns with the RBV by proposing that the integration of technology moderates the relationship between tax audit management and SIRS performance, amplifying the effectiveness of audit capabilities. Thus, the RBV framework supports the hypothesis that a strategic combination of internal competencies (tax audit management) and enabling technologies can lead to superior organizational performance within public tax institutions in Southwest Nigeria.

CONCLUSION

This study investigated the impact of tax audit management and technology integration on the performance of State revenue agencies, with a focus on the moderating effect of technology integration on the association between tax audit management and performance. The findings revealed that both tax audit management and technology integration have significant positive effects on the performance of SIRS, supporting the Resource-Based View theory. However, the moderating effect of technology integration on the relationship between tax audit management

and performance was found to be insignificant, indicating that technology integration, while beneficial on its own, does not amplify the impact of tax audit management on SIRS performance.

Based on these findings, it is recommended that SIRS should continue to prioritize improving tax audit management practices as a key driver of organizational performance. In addition, SIRS should invest in further technological advancements to enhance efficiency and accuracy in tax collection. In addition, the regulatory framework governing tax audits should be strengthened to empower auditors with the necessary authority to enforce compliance and reduce tax evasion.

For Micro, Small, and Medium Enterprises (MSMEs), the findings highlight the need to embrace digital tax systems and maintain accurate financial records to facilitate audit readiness and minimize compliance risks. MSMEs are encouraged to invest in basic accounting and tax software, participate in taxpayer education programs, and establish internal controls to align with digital tax platforms. Lastly, policy makers should develop inclusive digital tax policies that support MSMEs by offering incentives for technological adoption, simplifying tax filing procedures, and ensuring that tax audit practices are fair, transparent, and growth-supportive for small businesses.

This study is not without limitations. First, the scope was restricted to State Internal Revenue Services (SIRS) in South-West Nigeria, which may limit the generalizability of the findings to other regions or countries with different tax systems and institutional contexts. Second, the data were collected through self-reported questionnaires, which may be subject to response biases despite efforts to ensure reliability and validity. Third, the cross-sectional nature of the study limits causal inference between the variables examined.

Future research could address these limitations by adopting a longitudinal approach to observe trends and causal relationships over time. Additionally, expanding the study to include Federal Inland Revenue Services (FIRS) and SIRS across other geopolitical zones in Nigeria would enhance external validity. Future studies may also employ mixed-method approaches, incorporating interviews or focus groups to gain deeper qualitative insights into the dynamics of tax audit management, tax control mechanisms and technology integration.

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