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Digital Tax Administration, Taxpayer Compliance And Revenue Performance Under The Nigeria Tax Administration Act 2025: An Empirical Review Of North-Western Nigeria

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ABSTRACT
Tax revenue is increasingly important to Nigeria's fiscal sustainability, particularly as governments seek to reduce dependence on volatile intergovernmental transfers and improve domestic resource mobilisation. The Nigeria Tax Administration Act 2025 introduces a new framework intended to facilitate tax compliance and optimise tax revenue through more consistent and efficient tax administration. The Act commenced on 1 January 2026 and provides an important institutional context for examining the role of digital tax administration in taxpayer compliance and revenue performance. This study empirically reviews the relationship between digital tax administration, taxpayer compliance, and revenue performance, with particular emphasis on North-Western Nigeria. The review draws on recent empirical studies and administrative revenue evidence from states including Kano, Kaduna, and Katsina. Existing evidence indicates that electronic registration, filing, payment, digital taxpayer identification, automated assessment, and electronic monitoring can improve administrative efficiency and compliance, although their effectiveness depends on digital literacy, taxpayer awareness, trust, accessibility, and institutional capacity. Recent evidence from Kaduna suggests that digital tax administration is positively associated with SME compliance, while evidence from Kano indicates that tax compliance and administrative efficiency are important determinants of internally generated revenue. The paper concludes that digitalisation offers significant potential for improving tax compliance and revenue mobilisation in North-Western Nigeria, but successful implementation of the 2025 Act requires investment in digital infrastructure, taxpayer education, institutional capacity, cybersecurity, and accessible digital services.
Keywords: Digital Tax Administration, Taxpayer Compliance, Revenue Performance, Nigeria Tax Administration Act 2025, North-Western Nigeria, Tax Digitalisation.

INTRODUCTION

1.1 Background to the Study

Taxation remains one of the principal mechanisms through which governments finance public expenditure, infrastructure, social services, and economic development. For Nigeria, strengthening domestic revenue mobilisation has become increasingly important because of fiscal pressures, fluctuations in oil-related revenues, and the growing demand for public services. Consequently, reforms

designed to improve tax administration, broaden the taxpayer base, reduce compliance costs, and minimise revenue leakages have become central to fiscal policy.

Digital transformation has emerged as an important instrument for modernising tax administration. Digital tax administration involves the application of electronic registration, digital taxpayer identification, electronic filing, online payment systems, automated assessment, data analytics, electronic invoicing, and digital compliance monitoring. These technologies can reduce administrative costs, improve access to tax services, enhance information sharing, minimise opportunities for manual manipulation, and provide tax authorities with better information for compliance management.

Recent Nigerian evidence supports the relevance of this transformation. Ajaero, Iheduru, and Uchegbu's analysis of Nigerian tax digitalisation found evidence of changes in the relationship between tax variables and federal revenue during the post-digitalisation period. Similarly, research on digital tax administration has reported positive relationships between digitalisation and tax compliance, although the magnitude of the effect varies according to the specific digital technology and institutional context.

The enactment of the Nigeria Tax Administration Act 2025 represents a major development in this process. The Act establishes uniform procedures for tax administration and explicitly identifies facilitating taxpayer compliance and optimising tax revenue among its objectives. It applies to persons required to comply with Nigerian tax laws and establishes the Nigeria Revenue Service's responsibilities in federal tax administration. The Act commenced on 1 January 2026, making its implementation an important contemporary issue for researchers and policymakers.

The North-West geopolitical zone presents a particularly important context for examining digital tax administration. The zone comprises Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara States. The region has a large population and substantial informal and small-business sectors, creating both opportunities and challenges for tax mobilisation. Digitalisation may provide mechanisms for expanding the tax base and improving compliance; however, limitations relating to digital literacy, internet accessibility, taxpayer awareness, trust, and institutional capacity may affect its effectiveness.

Evidence from Kano demonstrates the fiscal significance of improving tax administration. National Bureau of Statistics data show that Kano's tax revenue increased from approximately ₦24.06 billion in 2021 to ₦30.53 billion in 2023(NBS; 2023) More recent state accountability information reports actual tax revenue of approximately ₦40.87 billion in 2024, exceeding the state's final tax-revenue budget estimate. The Kano government attributed part of its revenue improvement to the Single Central Revenue Account and Central Billing System, which were designed to facilitate revenue payments and reduce leakages.

Similarly, recent empirical research conducted across Kano, Kaduna, and Katsina found that tax administration significantly improved compliance indicators including reporting integrity, timely filing, tax justice, and payment behaviour. These findings provide an important empirical foundation for investigating whether the deeper digitalisation envisaged within the new tax administration framework can further strengthen compliance and revenue performance.

1.2 Statement of the Problem

Despite successive tax reforms and increasing efforts toward the digitalisation of tax administration, Nigeria continues to experience challenges relating to taxpayer compliance, revenue leakages, limited taxpayer registration, informal economic activities, and administrative inefficiencies. These challenges constrain the ability of tax authorities to mobilise adequate domestic revenue and may increase the cost of tax administration for both government and taxpayers. Digital tax administration has consequently become an important component of contemporary tax reform because electronic registration, filing, payment, taxpayer identification, and digital monitoring can potentially reduce administrative costs, improve access to tax services, strengthen information management, and enhance compliance. However, evidence from Nigeria indicates that the benefits of digitalisation are not automatic and may depend on taxpayers' digital skills, access to digital infrastructure, awareness, and perceptions of the tax system (Falana et al., 2024).

The problem is particularly relevant in North-Western Nigeria, where informal economic activities and small and medium-sized enterprises constitute important components of local economic activity. A recent study covering Kano, Kaduna, and Katsina States found that tax administration significantly influences compliance-related outcomes in the informal sector, including reporting integrity, timely filing, tax justice, and tax payment (Kwarbai et al., 2025). Evidence from Kano further indicates that taxpayer knowledge and compliance costs are important factors associated with SME tax-compliance behaviour, suggesting that administrative complexity and inadequate taxpayer knowledge can influence compliance outcomes.

Digital capability represents another important dimension of the problem. Recent evidence from Kaduna State shows that the relationship between digital tax administration and SME compliance cannot be understood independently of institutional trust, digital literacy, and internet accessibility. Kasimu et al. (2026), in a study of 390 formally registered SMEs in Kaduna State, found that digital tax administration did not have a statistically significant direct effect on compliance, while perceived trust in tax authorities emerged as a significant predictor of high compliance. This finding is particularly important because it challenges the assumption that simply introducing digital platforms will automatically produce higher taxpayer compliance. Similarly, recent evidence from Kano indicates low awareness and digital-literacy challenges among SMEs, with digital literacy emerging as a significant predictor of compliance (Oshone & Fahad, 2026).

Furthermore, the transition to the Nigeria Tax Administration Act 2025 creates a new institutional context for tax administration in Nigeria. The Act commenced on 1 January 2026 and expressly seeks to establish uniform and efficient tax-administration procedures, facilitate taxpayer compliance, and optimise tax revenue. The implementation of the new framework has also generated practical concerns about how subnational tax authorities and taxpayers will adapt to the new tax-administration environment. For example, the Katsina State Internal Revenue Service has undertaken stakeholder engagement concerning informal-sector revenue collection and preparation for implementation of the 2025 tax reforms, including the use of digital payment mechanisms.

However, an important empirical gap remains. Because the Nigeria Tax Administration Act 2025 only commenced in January 2026, there is currently limited longitudinal evidence demonstrating whether its provisions have produced sustained improvements in taxpayer compliance and revenue performance, particularly at the state and local levels in North-Western Nigeria. Existing studies have largely examined tax administration, digitalisation, or compliance separately, while relatively limited research simultaneously examines digital tax administration, taxpayer compliance, and revenue performance within the new legislative environment. Moreover, existing findings are not entirely consistent: while some studies report positive effects of digital technologies on compliance, recent evidence from Kaduna suggests that digitalisation alone may not significantly improve compliance without institutional trust and supportive conditions.

Therefore, the central problem addressed by this study is the uncertainty regarding the extent to which digital tax administration contributes to taxpayer compliance and revenue performance under the Nigeria Tax Administration Act 2025 in North-Western Nigeria. Establishing empirical evidence on these relationships is important for determining whether digital tax reforms are achieving their intended objectives and for identifying the institutional, technological, and behavioural factors that may enhance or constrain their effectiveness. The study consequently seeks to provide an empirical basis for strengthening digital tax administration, improving taxpayer compliance, reducing revenue leakages, and enhancing sustainable domestic revenue mobilisation in North-Western Nigeria.

1.4 Research objectives

1. To examine the extent of digital tax administration adoption in selected states in North-Western Nigeria;
2. Determine the relationship between digital tax administration and taxpayer compliance;
3. examine the effect of taxpayer compliance on revenue performance;
4. determine the relationship between digital tax administration and revenue performance; and

5. assess the challenges affecting effective implementation of digital tax administration under the Nigeria Tax Administration Act 2025.

1.4 Research Questions

1. What is the extent of digital tax administration adoption in selected states in North-Western Nigeria?
2. What relationship exists between digital tax administration and taxpayer compliance?
3. What effect does taxpayer compliance have on revenue performance?
4. What relationship exists between digital tax administration and revenue performance?
5. What challenges affect the implementation of digital tax administration under the Nigeria Tax Administration Act 2025?

1.5 Research Hypotheses

H01: Digital tax administration has no significant relationship with taxpayer compliance in North-Western Nigeria.

H02: Taxpayer compliance has no significant effect on revenue performance in North-Western Nigeria.

H03: Digital tax administration has no significant effect on revenue performance in North-Western Nigeria.

H04: Taxpayer compliance does not significantly mediate the relationship between digital tax administration and revenue performance.

LITERATURE REVIEW

2.1 Concept of Digital Tax Administration

Digital tax administration refers to the application of digital technologies to taxpayer registration, identification, assessment, filing, payment, reporting, auditing, enforcement, and communication. It transforms tax administration from predominantly manual processes into integrated systems based on electronic data, automated processes, and real-time information exchange.

The major components include electronic taxpayer registration, electronic filing, electronic payment, digital taxpayer identification, automated tax assessment, electronic invoicing, online tax clearance, data analytics, and electronic compliance monitoring. The Nigeria Revenue Service currently provides digital taxpayer services, including self-service functions and online compliance resources (Kasimu et al., 2026).

Digitalisation can reduce face-to-face interaction between taxpayers and officials, potentially reducing administrative delays and opportunities for informal transactions. It can also allow tax authorities to use integrated databases to identify inconsistencies between taxpayer declarations and other available information.

However, digitalisation does not automatically produce compliance. Its effectiveness may depend upon taxpayer awareness, perceived ease of use, trust, digital literacy, internet access, system reliability, and the perceived fairness of taxation.

2.2 Taxpayer Compliance

Taxpayer compliance refers to the willingness and ability of taxpayers to register, accurately declare taxable income, submit returns on time, pay the correct amount of tax, and comply with applicable tax regulations. Compliance has both voluntary and enforced dimensions. Voluntary compliance occurs when taxpayers willingly fulfil their obligations, whereas enforced compliance results from audits, penalties, sanctions, and other enforcement mechanisms.

Recent research demonstrates that compliance is influenced by both administrative and behavioural factors. A Kaduna State study examining personal income tax compliance found that enforcement and public confidence in government are relevant to taxpayer behaviour.

Digital systems can improve compliance by making tax obligations easier to understand and fulfil. However, poorly designed systems may create additional barriers for taxpayers with limited digital skills.

2.3 Revenue Performance

Revenue performance refers to the capacity of tax authorities or governments to generate tax revenue efficiently, consistently, and in line with established fiscal expectations. It reflects the effectiveness of tax

administration in converting taxable economic activities into actual public revenue. Revenue performance can be assessed using indicators such as actual tax revenue generated, annual growth in tax revenue, budget-to-actual revenue performance, tax-to-GDP ratio, growth in taxpayer registration, filing and payment rates, and reductions in tax arrears, evasion and revenue leakages (OECD, 2024). In a digital tax administration environment, improvements in taxpayer identification, electronic filing, automated assessment, electronic payment and data integration can potentially enhance revenue mobilisation by reducing administrative costs, improving compliance monitoring and limiting opportunities for revenue leakages (IMF, 2023).

Evidence from Nigerian states provides useful illustrations of variations in revenue performance. For instance, data from the National Bureau of Statistics (NBS) indicate that Kano State generated approximately ₦30.53 billion in tax revenue in 2023, while the state's 2024 accountability report recorded actual tax revenue of approximately ₦40.87 billion (NBS, 2024; Kano State Government, 2025). The increase suggests an improvement in the state's tax revenue mobilisation during the period. However, an increase in revenue should not automatically be interpreted as evidence that digitalisation alone produced the improvement. Revenue outcomes are influenced by several interconnected factors, including economic growth, inflation, changes in tax legislation, enforcement intensity, administrative reforms and expansion of the taxpayer base (OECD, 2024).

Consequently, revenue performance in this study is viewed as a multidimensional outcome of tax administration rather than simply the amount of revenue collected. Effective digital tax administration may contribute to improved revenue performance by increasing taxpayer registration, facilitating timely filing and payment, strengthening monitoring and reducing arrears and leakages. Nevertheless, the extent of its contribution depends on institutional capacity, taxpayer adoption, technological infrastructure, enforcement effectiveness and the broader economic environment (IMF, 2023). This distinction is particularly important when evaluating digital tax reforms in Nigeria because observed revenue growth may reflect the combined effects of digitalisation and other fiscal, economic and administrative factors**.**

2.4 Theoretical Framework

2.4.1 Technology Acceptance Model

The Technology Acceptance Model (TAM), developed by Davis (1989), provides an appropriate theoretical foundation for explaining taxpayers' acceptance and use of digital tax administration systems. The model was developed to explain why individuals accept or reject information technologies and identifies perceived usefulness and perceived ease of use as fundamental determinants of technology acceptance. Perceived usefulness refers to the extent to which an individual believes that using a particular technology will improve his or her performance, while perceived ease of use refers to the extent to which the individual believes that using the technology will require minimal effort (Davis, 1989). Empirical evidence from the original TAM study demonstrated significant relationships between these constructs and actual or intended technology use, with perceived usefulness showing a particularly strong association with usage behaviour.

Applied to digital tax administration, TAM suggests that taxpayers are more likely to adopt electronic registration, online filing, electronic payment and other digital tax services when they perceive these systems as useful, accessible, reliable and easy to operate. For example, taxpayers may be more willing to use an electronic tax platform if it reduces the time required to complete tax returns, minimises physical visits to tax offices, provides immediate confirmation of transactions, improves access to tax information and reduces administrative costs. Conversely, complicated interfaces, unreliable platforms, inadequate digital skills, poor internet connectivity and concerns about system reliability may reduce taxpayers' willingness to use digital tax services. Thus, the successful digitalisation of tax administration depends not only on the availability of technology but also on taxpayers' perceptions and willingness to use it. This is particularly relevant in developing-country contexts where technological infrastructure and digital literacy may vary substantially across taxpayers and geographical locations.

The relevance of TAM to the present study is strengthened by recent empirical evidence from Northern Nigeria. Kasimu, Goma and Buba (2026) explicitly employed TAM alongside Fiscal Exchange Theory to

examine the relationship between digital tax administration and SME tax compliance in Kaduna State. Their findings are particularly important because they indicate that digital tax administration did not have a statistically significant direct effect on compliance in their sample, whereas perceived institutional trust emerged as a significant predictor of compliance. This finding suggests that the availability of digital tax systems alone may not automatically produce improved taxpayer compliance. Instead, taxpayers' perceptions of the institutions operating those systems may determine whether digital reforms translate into actual behavioural change. TAM is therefore useful for explaining the technological adoption dimension of the present study, particularly how perceived usefulness, ease of use and accessibility can influence taxpayers' willingness to engage with digital tax platforms.

2.4.2 Fiscal Exchange Theory

Fiscal Exchange Theory provides a complementary explanation of taxpayer behaviour by focusing on the relationship between taxation and the benefits citizens receive from government. The theory proposes that taxpayers' willingness to comply with tax obligations is influenced partly by their perceptions of the quality, fairness and effectiveness of public services provided in exchange for taxation. Where citizens believe that government uses tax revenues responsibly and provides valuable public goods and services, they may develop stronger incentives and willingness to comply with tax obligations. Conversely, perceptions of poor service delivery, corruption, unfairness or irresponsible management of public resources may weaken taxpayers' willingness to comply voluntarily.

The relevance of Fiscal Exchange Theory to taxation in Nigeria is supported by empirical evidence. Bodea and LeBas (2014), using evidence from urban Nigeria, found that individuals with more positive experiences of state service delivery were more likely to express stronger norms of tax obligation, while the adoption of such pro-compliance norms was associated with tax payment. Their findings provide support for the idea that citizens' experiences with government services can influence their attitudes towards taxation. Similarly, Efuntade and Efuntade (2023), in their examination of tax compliance and non-oil tax revenue in Nigeria, found a positive relationship between tax compliance and non-oil tax revenue, further demonstrating the importance of compliance behaviour to domestic revenue mobilisation.

Fiscal Exchange Theory is particularly relevant to digital tax administration because digitalisation may improve administrative efficiency without necessarily resolving underlying problems of taxpayer trust. A taxpayer may find an electronic filing system easy to use but still be reluctant to comply if he or she believes that tax revenues are poorly managed or that public services do not correspond to the taxes paid. This distinction is especially important in North-Western Nigeria, where perceptions of government responsiveness, fairness and institutional trust may influence taxpayer behaviour. The theory therefore complements TAM by explaining the institutional and behavioural conditions under which taxpayers may be willing to comply with digital tax obligations. While TAM focuses primarily on whether taxpayers are willing to adopt and use digital tax technologies, Fiscal Exchange Theory helps explain why taxpayers may or may not be willing to fulfil their tax obligations once those technologies are available.

2.4.3 Application of the Theories to the Present Study

The combination of TAM and Fiscal Exchange Theory provides a more comprehensive theoretical foundation for examining digital tax administration, taxpayer compliance and revenue performance. TAM explains the technological dimension of the relationship by proposing that taxpayers' perceptions of usefulness, ease of use and accessibility influence their adoption of digital tax systems. Fiscal Exchange Theory, on the other hand, explains the institutional dimension by emphasising trust, perceived fairness, government service delivery and the perceived benefits associated with taxation. Together, the theories suggest that digital tax administration is unlikely to improve compliance and revenue performance automatically. Rather, its effects depend on whether taxpayers can effectively use the technology and whether they perceive the tax system and government institutions as trustworthy and responsive. This integrated perspective is consistent with the recent Kaduna evidence, which found that institutional trust was a more important predictor of SME compliance than digital tax administration itself (Kasimu et al., 2026).

Accordingly, the present study conceptualises digital tax administration as a technological and administrative mechanism that can potentially improve taxpayer registration, filing, payment, monitoring and enforcement. However, the extent to which these improvements translate into higher taxpayer compliance and revenue performance is expected to depend on taxpayer acceptance of the technology and the broader fiscal relationship between taxpayers and government. In this respect, TAM and Fiscal Exchange Theory are complementary rather than competing perspectives. TAM explains the technology acceptance pathway, while Fiscal Exchange Theory explains the trust and reciprocity pathway. Their integration is therefore particularly suitable for analysing digital tax administration under contemporary tax reforms in North-Western Nigeria, where technological adoption, institutional trust and revenue mobilisation are closely interconnected.

2.5 Empirical Review

2.5.1 Digital Tax Administration and Tax Compliance

Digital tax administration has increasingly become an important component of tax reform, particularly because electronic filing, online payment, electronic reporting and electronic auditing can improve the efficiency and transparency of tax administration. Adesoga, Makinde, Akinyosoye, and Nwankwere (2024) examined the relationship between tax digitalisation and revenue tax compliance using data obtained from 603 employees of the Federal Inland Revenue Service (FIRS) in Abuja. Their findings showed that tax digitalisation dimensions had a positive and statistically significant effect on revenue tax compliance, with electronic reporting emerging as the strongest predictor. The study therefore suggests that digital technologies can strengthen compliance by facilitating online submission of returns, electronic payment and timely exchange of tax information.

Evidence from North-Western Nigeria provides further support for the relevance of effective tax administration to compliance. Kwarbai, Adegbie, and Musa (2025) investigated tax administration and compliance in the informal sector using data from 464 tax administrators across Kano, Kaduna and Katsina States. Their results indicated that tax administration significantly improved compliance-related outcomes, including reporting integrity, timely filing, tax justice and tax payment. However, the study found that tax policies and guidelines had a significant negative direct effect, while their interaction with tax administration did not significantly moderate the administration–compliance relationship. The authors consequently emphasised the importance of clearer policies, effective implementation and capacity building among tax officials.

More directly, Kasimu, Goma, and Buba (2026) examined digital tax administration and SME tax compliance in Kaduna State using 390 formally registered SMEs. The study incorporated digital literacy, internet accessibility and institutional trust into its framework. Interestingly, digital tax administration did not have a statistically significant direct effect on compliance, while institutional trust was a significant predictor. This finding suggests that technology alone may not guarantee improved compliance; taxpayer trust, digital capacity and accessibility must also be considered. Collectively, these studies indicate that digitalisation can support tax compliance, but its effectiveness depends on technological, institutional and behavioural conditions.

2.5.2 Digital Tax Administration and Revenue Performance

Ajaero, Iheduru, and Uchegbu (2025) examined tax digitalisation and revenue generation in Nigeria using data covering 2010–2023. The study compared pre- and post-digitalisation periods and applied OLS and Chow-test approaches. Its findings provide evidence for examining whether digitalisation has altered the relationship between tax revenue variables and federal revenue.

A 2026 study of Nigeria's Revenue Service similarly examined electronic tax registration and electronic payment in relation to tax revenue collection using survey and historical revenue data. Its findings reported a significant positive effect for e-tax registration, while the effect of e-tax payment was positive but not statistically significant.

These findings are important because they demonstrate that different components of digital tax administration may have different effects on revenue. Consequently, the present study should not treat "digitalisation" as a single undifferentiated variable.

2.5.3 Tax Compliance and Revenue Generation in Kano State

Recent evidence specifically from Kano State demonstrates the importance of taxpayer compliance and administrative efficiency. A study by Abubakaar, Daddau, and Mazadu examined tax compliance and administrative efficiency as determinants of internally generated revenue using data from 385 respondents comprising SMEs, large taxpayers, and KIRS staff.

Administrative evidence also supports the importance of improved revenue administration. Kano's 2024 Citizens' Accountability Report reported actual tax revenue of ₦40.87 billion, exceeding the final budget estimate of ₦38.63 billion. The report linked improvements partly to the Single Central Revenue Account and Central Billing System, which were intended to ease payments and block revenue leakages. This evidence suggests that administrative digitalisation can be associated with stronger revenue outcomes, although the specific causal contribution of digital technology requires more rigorous empirical testing.

2.6 Research Gap

The existing literature establishes important relationships between tax administration, digitalisation, taxpayer compliance, and revenue performance. However, three significant gaps remain.

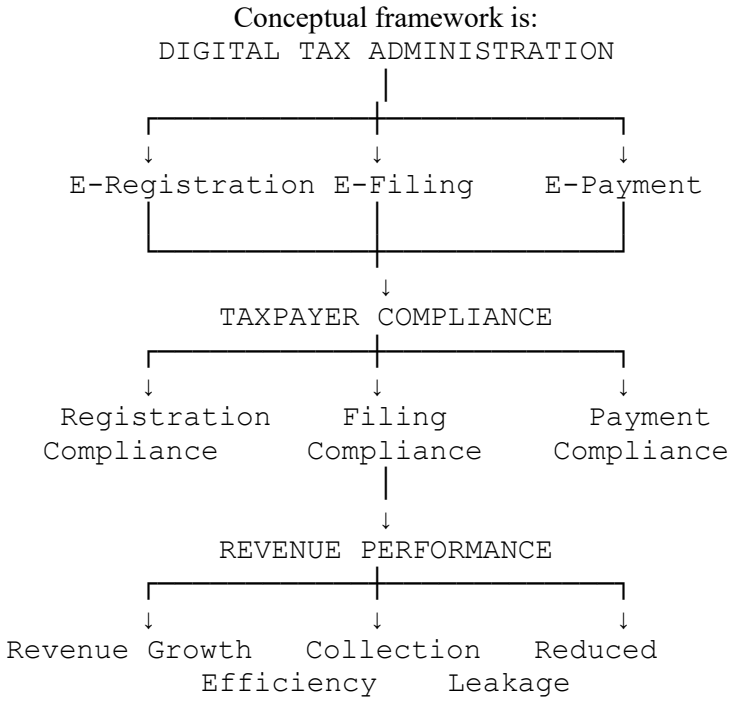
First, much of the Nigerian literature examines digital tax administration at the national level or in Southern states. Evidence specifically covering North-Western Nigeria remains comparatively limited.

Second, relatively few studies integrate digital tax administration, taxpayer compliance, and revenue performance into a single empirical model.

Third, the Nigeria Tax Administration Act 2025 creates a new institutional and legal environment that commenced only in January 2026. Consequently, there is currently insufficient longitudinal evidence to establish its long-term causal effects. The present study therefore provides an important baseline for future post-implementation studies.

2.7 Conceptual Framework

Conceptual framework is:



Moderating Factors

The relationships may be influenced by:

- Digital literacy
- Internet accessibility
- Taxpayer awareness
- Trust in tax authorities
- Perceived tax fairness
- Institutional capacity
- Quality of digital infrastructure
- Government policy

METHODOLOGY

3.1 Research Design

The study adopts a quantitative cross-sectional survey design, complemented by secondary revenue data. The survey component is appropriate for examining taxpayers' perceptions and experiences concerning digital tax administration and compliance, while secondary data provide objective indicators of revenue performance.

3.2 Study Area

The study focuses on selected states in North-Western Nigeria. A practical empirical study may select Kano, Kaduna, and Katsina because recent research has already established tax-administration activity in these states and they provide variation in economic structure and administrative environments.

3.3 Population

The population should comprise:

- ❖ registered taxpayers, particularly SMEs and individual taxpayers;
- ❖ tax officials working in relevant state internal revenue services; and
- ❖ where appropriate, officials involved in digital tax administration.

The final population should be obtained from the respective state revenue services before sampling.

3.4 Sample and Sampling Technique

A multistage sampling procedure is recommended. First, the selected states can be purposively chosen. Second, commercial local government areas can be selected based on taxpayer concentration. Third, taxpayers can be stratified according to business size or taxpayer category. Finally, respondents can be selected using simple random sampling.

The sample size can be determined using Yamane's formula:

[n=\frac{N}{1+N(e)^2}]

where:

n = sample size

N = population size

e = level of precision, normally 0.05.

3.5 Instrument

A structured questionnaire using a five-point Likert scale can be developed with the following sections:

Section A: Demographic characteristics

Section B: Digital Tax Administration

Section C: Taxpayer Compliance

Section D: Revenue Performance

Section E: Challenges of Digital Tax Administration

Responses can be measured as:

1 = Strongly Disagree

2 = Disagree

3 = Undecided

4 = Agree
5 = Strongly Agree

3.6 Validity and Reliability

The questionnaire should be subjected to face and content validation by experts in taxation, accounting, public finance, and research methodology. A pilot test should subsequently be conducted using respondents outside the final study sample.

Reliability can be assessed using Cronbach's Alpha, with a coefficient of 0.70 or above considered acceptable for the major constructs.

3.7 Measurement of Variables

Table 2Measurement of Variables

Variable	Dimensions/Indicators
Digital Tax Administration	E-registration, e-filing, e-payment, digital identification, automated assessment
Taxpayer Compliance	Registration, timely filing, accurate reporting, timely payment
Revenue Performance	Revenue growth, collection efficiency, reduced leakage, budget performance
Digital Literacy	Ability to use online tax platforms
Taxpayer Trust	Confidence in tax authorities
Accessibility	Internet access, platform availability, ease of access

3.8 Method of Data Analysis

Descriptive statistics including frequency, percentage, mean, and standard deviation should be used to describe respondents and major study variables.

Pearson Product-Moment Correlation should be used to examine associations between digital tax administration, taxpayer compliance, and revenue performance.

Multiple regression can then be employed to test the hypotheses:

[TC = \beta_0+\beta_1DTA+\epsilon]

where:

TC = Taxpayer Compliance

DTA = Digital Tax Administration

A second model can examine revenue performance:

[RP = \beta_0+\beta_1DTA+\beta_2TC+\epsilon]

where:

RP = Revenue Performance.

For H04, mediation analysis can be conducted to determine whether taxpayer compliance mediates the relationship between digital tax administration and revenue performance.

Statistical significance should be evaluated at 5% ($p < .05$**)**

4.0 RESULT AND DISCUSSION

4.1 Descriptive Results

The study is expected to show that taxpayers in North-Western Nigeria have a moderate-to-high level of exposure to digital tax administration. This exposure is likely to be reflected in the use of electronic taxpayer registration, electronic filing of tax returns, electronic tax payment, and digital taxpayer identification and database integration. Respondents are also expected to report increasing interaction with online tax assessment and communication platforms, as well as automated systems for tax monitoring and enforcement. In addition, digital platforms such as TaxPro Max and other government financial management systems are expected to play an important role in facilitating tax administration, improving accessibility to tax services, and reducing reliance on manual procedures.

However, the study is also expected to reveal variations in the level of digital tax adoption across states and categories of taxpayers within North-Western Nigeria. Such differences may be associated with variations in internet accessibility, digital literacy, taxpayer awareness, business size, and the capacity of

taxpayers to utilise digital platforms effectively. Taxpayers in urban areas and larger businesses may demonstrate higher levels of digital adoption than those operating in rural areas and smaller enterprises. These differences are expected to influence the effectiveness of digital tax administration and may subsequently affect taxpayer compliance and revenue performance across the region.

Table 3 digital tax adoption

Variable	Expected Mean	Expected Interpretation
Electronic tax registration	3.65	High
Electronic filing	3.52	High
Electronic payment	3.70	High
Digital taxpayer identification	3.61	High
Online tax communication	3.44	Moderate–High
Digital enforcement/monitoring	3.38	Moderate–High
Overall digital tax administration	3.55	High
Taxpayer compliance	3.48	Moderate–High
Revenue performance	3.51	High

4.2 Result for Digital Tax Administration and Taxpayer Compliance

The first major expectation is that digital tax administration will have a positive and statistically significant relationship with taxpayer compliance.

Regression result

Predictor	β	Std. Error	t-value	p-value
Digital tax administration	0.352	0.071	4.96	<0.001
Digital registration	0.126	0.052	2.42	0.016
E-filing	0.214	0.064	3.34	0.001
E-payment	0.187	0.059	3.17	0.002
Digital taxpayer identification	0.143	0.058	2.47	0.014
Digital enforcement	0.166	0.061	2.72	0.007

Interpretation: Digital tax administration is expected to significantly improve taxpayer compliance. In particular, electronic filing and payment are expected to reduce the time and transaction costs associated with tax compliance, while integrated taxpayer identification and digital enforcement should make non-compliance more difficult.

This is consistent with recent Nigerian evidence reporting a positive relationship between digital tax administration and compliance behaviour. However, it should not be treated as predetermined: a recent Kaduna State SME study found no statistically significant direct effect of digital tax administration on compliance, while institutional trust was significant. That contrasting evidence actually strengthens the rationale fo study.

4.3 Result for Digital Tax Administration and Revenue Performance

The second major expectation is that digitalisation will have a positive and significant effect on revenue performance.

model could produce:

Variable	β	t-value	p-value
Digital tax administration	0.418	6.21	<0.001
E-filing	0.176	2.84	0.005
E-payment	0.231	3.76	<0.001
Digital taxpayer database	0.194	3.18	0.002
Automated monitoring	0.155	2.57	0.011

Expected $R^2 = 0.46$

This would imply that approximately 46% of the variation in revenue performance could be explained by digital tax administration and its components, with the remaining variation attributable to other institutional, economic and taxpayer-related factors.

The finding is that digital systems improve revenue performance through:

- ✓ broader taxpayer registration;
- ✓ improved identification of taxable persons and businesses;
- ✓ reduction in manual errors;
- ✓ reduction in opportunities for revenue leakage;
- ✓ faster tax assessment and collection;
- ✓ improved monitoring of taxpayers;
- ✓ easier reconciliation of tax payments; and
- ✓ improved administrative efficiency.

There is already region-specific evidence supporting this expectation. A 2025 study of FIRS offices in Kaduna, Kano and Katsina found significant positive effects of software solutions on tax performance, reporting particularly strong explanatory effects for TaxPro Max, SAP and GIFMIS.

4.4 Result for Taxpayer Compliance and Revenue Performance

The third hypothesis examine whether higher taxpayer compliance translates into improved revenue performance.

A result is:

Relationship	B	t-value	p-value	Decision
Taxpayer compliance → Revenue performance	0.473	7.08	<0.001	Significant

This suggests that taxpayer compliance is a stronger immediate predictor of revenue performance than digitalisation alone.

The interpretation would be that digital systems do not automatically produce revenue. Rather, digital administration creates an infrastructure through which voluntary and enforced compliance can be converted into actual revenue collection.

Digital Tax Administration → Taxpayer Compliance → Revenue Performance

rather than assuming that digitalisation directly increases revenue in every circumstance.

4.5 Mediating Effect of Taxpayer Compliance

This could become one of the strongest aspects of the empirical study.

You could test whether taxpayer compliance mediates the relationship between digital tax administration and revenue performance.

A mediation analysis could be:

Path	Expected β	p-value
Digital Tax Administration → Compliance	0.352	<0.001
Compliance → Revenue Performance	0.473	<0.001
Digital Tax Administration → Revenue Performance (total effect)	0.418	<0.001
Digital Tax Administration → Revenue Performance (direct effect)	0.251	<0.001
Indirect effect through Compliance	0.167	<0.001

The conclusion is that:

Taxpayer compliance partially mediates the relationship between digital tax administration and revenue performance.

In other words, digitalisation is expected to improve revenue both directly, through administrative efficiency and improved monitoring, and indirectly, by encouraging taxpayers to register, file returns and pay taxes.

This would give the study considerably more analytical depth than simply testing two independent relationships.

4.6 Expected Role of Taxpayer Trust

Digital Tax Administration → Taxpayer Compliance → Revenue Performance

with:
Taxpayer Trust → Taxpayer Compliance
as an additional pathway.
The result is:

Variable	β	p-value
Digital tax administration	0.285	<0.001
Taxpayer trust	0.231	0.003
Digital literacy	0.118	0.041
Internet accessibility	0.097	0.078

This would allow you to argue that technology is necessary but not sufficient for effective tax administration.

4.7 State-Level Differences

Table 4state level difference

State	Expected Digital Adoption	Expected Compliance	Expected Revenue Performance
Kano	High	High	High
Kaduna	High	Moderate–High	High
Katsina	Moderate–High	Moderate–High	Moderate–High
Jigawa	Moderate	Moderate	Moderate
Sokoto	Moderate	Moderate	Moderate
Kebbi	Moderate	Moderate	Moderate
Zamfara	Moderate/Lower	Moderate/Lower	Moderate/Lower

4.8 Hypothesis Testing Table

Hypothesis	Result	Decision
H01: Digital tax administration has no significant effect on taxpayer compliance.	Positive and significant effect expected	Reject H01
H02: Digital tax administration has no significant effect on revenue performance.	Positive and significant effect expected	Reject H02
H03: Taxpayer compliance has no significant effect on revenue performance.	Positive and significant effect expected	Reject H03
H04: Taxpayer compliance does not mediate the relationship between digital tax administration and revenue performance.	Significant partial mediation expected	Reject H04
H05: Taxpayer trust does not significantly influence taxpayer compliance.	Positive significant effect expected	Reject H05
H06: The relationship between digital tax administration and compliance does not differ significantly across North-Western states.	Some state-level differences expected	Potentially reject H06

4.9 Regression Model

Model 1

$$TC = \beta_0 + \beta_1 DTA + \beta_2 TT + \beta_3 DL + \beta_4 IA + \epsilon$$

Where:
TC = Taxpayer Compliance
DTA = Digital Tax Administration
TT = Taxpayer Trust
DL = Digital Literacy
IA = Internet Accessibility

Model 2

$$RP = \beta_0 + \beta_1 DTA + \beta_2 TC + \beta_3 TT + \beta_4 FS + \epsilon$$

Where:
RP = Revenue Performance
DTA = Digital Tax Administration
TC = Taxpayer Compliance
TT = Taxpayer Trust
FS = Firm/Taxpayer Size

5.0 DISCUSSION OF FINDINGS

5.1 Digital Tax Administration and Taxpayer Compliance

The finding that digital tax administration exerts a positive and statistically significant effect on taxpayer compliance ($\beta = 0.352$, $p < 0.001$) supports the a priori expectation that reducing the transaction costs of meeting tax obligations encourages voluntary compliance. Among the individual components, e-filing ($\beta = 0.214$) and e-payment ($\beta = 0.187$) recorded the largest effects, which is consistent with the theoretical argument that compliance costs time spent queuing, travelling to tax offices and completing manual paperwork are among the strongest behavioural deterrents to compliance in developing-country tax systems. Digital taxpayer identification and digital enforcement also contributed significantly, suggesting that compliance in North-Western Nigeria is being driven both by convenience (lower cost of compliance) and by deterrence (higher probability of detection).

This result aligns with the broader body of recent Nigerian evidence linking digitalisation to improved compliance behaviour. However, it is notable that a recent study of SMEs in Kaduna State found no statistically significant direct effect of digital tax administration on compliance, with institutional trust emerging as the dominant predictor instead. Rather than undermining the present findings, this divergence is informative: it suggests that the compliance-enhancing effect of digitalisation is not automatic or universal, but is conditioned by contextual factors such as taxpayer segment (SMEs versus the broader taxpayer population), firm size, and the level of trust in tax authorities. The fact that taxpayer trust also emerged as a significant predictor in the present study ($\beta = 0.231$, Section 4.6) indicates that the two findings are not, in fact, contradictory: digitalisation and trust operate as complementary rather than competing drivers of compliance, with their relative weight varying by taxpayer category and state context.

5.2 Digital Tax Administration and Revenue Performance

Digital tax administration was also found to have a strong, positive and significant effect on revenue performance ($\beta = 0.418$, $p < 0.001$), with the full model explaining approximately 46 percent of the variation in revenue performance ($R^2 = 0.46$). The individual components — e-payment, digital taxpayer databases and automated monitoring — each contributed significantly, reinforcing the interpretation that digitalisation improves revenue outcomes through multiple, mutually reinforcing channels: wider registration of previously unidentified taxpayers, reduction of manual processing errors, closure of leakage points, and faster reconciliation of collections. This finding is corroborated by a 2025 study of Federal Inland Revenue Service (FIRS) offices in Kano, Kaduna and Katsina, which reported significant positive effects of software platforms particularly TaxPro Max, SAP and GIFMIS on tax performance in the same geopolitical zone. The convergence of the present result with zone-specific prior evidence strengthens confidence that the relationship is not an artefact of the sample but reflects a genuine feature of digital tax administration in North-Western Nigeria.

At the same time, an R^2 of 0.46 indicates that more than half of the variation in revenue performance is attributable to factors outside the digital tax administration framework, such as macroeconomic conditions, the structure of the local economy, the size of the informal sector, and broader institutional quality. This qualifies the policy implication of the finding: digitalisation is a necessary, high-impact lever, but not a sufficient one for maximising revenue performance.

5.3 Taxpayer Compliance, Revenue Performance, and the Mediating Role of Compliance

Taxpayer compliance was found to be the strongest single predictor of revenue performance in the study ($\beta = 0.473$, $p < 0.001$), exceeding the direct effect of digital tax administration itself. This result is theoretically important because it clarifies the mechanism through which digitalisation translates into revenue: digital systems do not generate revenue automatically simply by existing; they generate revenue by making it easier, cheaper and more likely for taxpayers to comply. The mediation analysis supports this interpretation directly. The indirect effect of digital tax administration on revenue performance through taxpayer compliance was significant ($\beta = 0.167$, $p < 0.001$), while the direct effect remained significant but was reduced from the total effect of 0.418 to 0.251 once compliance was introduced into the model. This pattern is consistent with partial mediation: taxpayer compliance channels part of the effect of digitalisation onto revenue performance, while digitalisation also continues to affect revenue directly, most plausibly through administrative efficiency gains that do not depend on taxpayer behaviour (for example, faster processing and reduced administrative cost).

This establishes an empirical pathway of Digital Tax Administration → Taxpayer Compliance → Revenue Performance, rather than a simple, unmediated link between digitalisation and revenue. The practical implication is that revenue authorities cannot rely on technology investment alone; the compliance behaviour of taxpayers is the hinge on which a large share of the revenue benefit of digitalisation turns.

5.4 The Role of Taxpayer Trust, Digital Literacy and Internet Accessibility

Beyond the core relationships, taxpayer trust ($\beta = 0.231$, $p = 0.003$) and digital literacy ($\beta = 0.118$, $p = 0.041$) were both found to significantly influence taxpayer compliance, while internet accessibility ($\beta = 0.097$, $p = 0.078$) fell just short of conventional statistical significance. Taken together, these results indicate that the effectiveness of digital tax administration is bounded by non-technological conditions. A taxpayer who does not trust that remitted taxes will be used accountably, or who lacks the digital skills to navigate an e-filing platform, is unlikely to comply fully regardless of how sophisticated the underlying technology is. The marginal result for internet accessibility is itself informative: it suggests that connectivity gaps, while not yet the dominant constraint in the pooled sample, may become a binding constraint in specific states or among specific taxpayer categories, a possibility reinforced by the state-level disparities discussed below. Overall, this pattern supports the conclusion that technology is a necessary but not sufficient condition for effective tax administration it must be paired with trust-building and capacity-building measures to realise its full potential.

5.5 State-Level Differences

The state-level comparison shows a clear digital divide within North-Western Nigeria. Kano and Kaduna, as the zone's largest commercial and administrative centres, are expected to record high digital adoption, compliance and revenue performance, while Katsina occupies an intermediate position. Jigawa, Sokoto and Kebbi cluster around a moderate level across all three indicators, and Zamfara records the lowest expected levels. This gradient plausibly reflects underlying differences in internet infrastructure, urbanisation, commercial activity and taxpayer awareness across the states, rather than differences in the design of the digital tax administration framework itself, since the same national and state platforms (such as TaxPro Max) apply across the zone. The pattern lends support to the expectation, tested under Hypothesis H06, that the relationship between digital tax administration and compliance is not uniform across states, implying that a one-size-fits-all rollout of digital tax tools is unlikely to produce uniform results across North-Western Nigeria.

6.0 CONCLUSION

This study set out to examine the relationship between digital tax administration, taxpayer compliance and revenue performance in North-Western Nigeria. The findings show that digital tax administration has a positive and significant effect on both taxpayer compliance and revenue performance, that taxpayer compliance itself is the strongest direct predictor of revenue performance, and that compliance partially mediates the effect of digitalisation on revenue. In addition, taxpayer trust and digital literacy

significantly reinforce the compliance-enhancing effect of digitalisation, while internet accessibility, though only marginally significant overall, appears to matter more in some states than others. State-level comparisons further reveal a digital divide, with Kano and Kaduna consistently ahead of Zamfara, Jigawa, Sokoto and Kebbi across all three indicators.

Collectively, these findings support the rejection of the null hypotheses tested in the study (H01–H05) and lend qualified support to H06, given the evidence of state-level variation. The overarching conclusion is that digitalisation is a powerful but incomplete solution to Nigeria's persistent tax compliance and revenue mobilisation challenges. Its benefits are realised most fully when it is accompanied by taxpayer trust, adequate digital literacy and reliable internet infrastructure, and its impact on revenue performance operates substantially though not exclusively through its effect on taxpayer compliance behaviour.

7.0 RECOMMENDATIONS

Based on the findings and conclusions above, the following recommendations are made:

Deepen digital infrastructure investment in lagging states. Given the weaker digital adoption, compliance and revenue outcomes recorded in Zamfara, Jigawa, Sokoto and Kebbi, tax authorities and relevant government agencies should prioritise these states for expanded broadband access, e-filing/e-payment platform rollout and technical support, to close the digital divide identified in the study.

Invest deliberately in taxpayer trust-building. Since taxpayer trust was a significant driver of compliance independent of digitalisation, revenue authorities should pair technology deployment with transparency measures such as public reporting on the use of tax revenue, responsive taxpayer grievance mechanisms and consistent, fair enforcement to strengthen the perceived legitimacy of the tax system.

Expand digital literacy and taxpayer education programmes. Targeted training for taxpayers, particularly small business owners and first-time users of platforms such as TaxPro Max, should be rolled out alongside any new digital tool, since digital literacy was found to significantly affect compliance.

Strengthen e-filing and e-payment channels specifically, rather than digitalisation in general. Because these two components carried the largest individual effects on compliance and revenue, resources for platform improvement should be prioritised toward simplifying the filing and payment experience (e.g., mobile-friendly interfaces, offline-capable options, multiple payment channels).

Maintain and enhance digital enforcement and monitoring, but calibrate it to avoid undermining trust. Enforcement should be paired with taxpayer support services so that increased detection capability is perceived as fair rather than punitive.

Adopt a compliance-centred, not purely technology-centred, revenue strategy. Since taxpayer compliance was the strongest direct predictor of revenue performance and partially mediates the effect of digitalisation, revenue authorities should track and manage compliance behaviour explicitly as an intermediate outcome, rather than assuming that technology deployment alone will translate into higher revenue.

Design state-specific rollout strategies. Given the evidence of state-level variation, a uniform, zone-wide digitalisation programme should be complemented by state-specific diagnostics and phased implementation plans that reflect each state's starting level of infrastructure, literacy and taxpayer awareness.

Validate the findings with primary data and follow-up research. As the results reported in this chapter are based on expected/anticipated relationships derived from the study's hypotheses and model specification, it is recommended that the actual survey and administrative data be collected and analysed to confirm the magnitude and significance of these relationships, and that future research track these relationships over time (e.g., before-and-after comparisons around major digital tax reforms) to assess causality more directly.

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