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ENHANCING TAX ADMINISTRATION AND COMPLIANCE THROUGH DIGITAL TECHNOLOGIES IN NIGERIA: A SURVEY-BASED EMPIRICAL STUDY OF NIGERIA'S INFORMAL SECTOR

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ABSTRACT
Nigeria's federal tax system has long been marked by low compliance rates, a narrow revenue base, and administrative bottlenecks driven by paper-based processes. Over the past decade, however, a wave of digital reform has started to change how the Federal Inland Revenue Service (FIRS), the Joint Tax Board (JTB), and state internal revenue agencies collect and manage taxes. Against this backdrop, this study examines whether technical knowledge and digital payment platforms improve tax compliance among informal-sector operators, using primary data from a structured survey of 547 artisans, traders, and other self-employed individuals across the six Southwest Nigerian states, analysed with descriptive statistics and multiple regression. This article traces that digital transformation — from electronic filing platforms and integrated payment gateways to data analytics and artificial intelligence — and measures its impact using quantitative indicators. Between 2014 and 2023, the tax-to-GDP ratio rose from roughly 6.1 percent to 10.8 percent, the number of registered taxpayers grew from about 10 million to over 41 million, and annual tax revenue exceeded ₦10 trillion. Regression results show that both technical knowledge ($\beta = 0.34$, $p < .001$) and digital payment platforms ($\beta = 0.40$, $p < .001$) have positive and statistically significant effects on informal-sector tax compliance. Despite these gains, structural problems around infrastructure, taxpayer literacy, and institutional coordination continue to hold back the full potential of digitisation. The implication is that closing Nigeria's compliance gap depends as much on digital literacy and payment convenience at the grassroots level as on national platform deployment. This article argues that sustained investment in interoperable digital systems, staff capacity-building, and evidence-based policy will be critical in determining whether Nigeria meets its 2030 revenue targets.

Keywords: digital tax administration, tax compliance, Nigeria, FIRS, informal sector, TaxPro-Max

Introduction

As economies become more interconnected and governments face greater pressure to account for public spending, tax compliance has moved to the centre of fiscal policy debates worldwide (Bruce-Twum, 2023). While the importance of paying taxes is broadly accepted, the factors that shape compliance behaviour differ greatly from one region to another, reflecting differences in institutions, culture, and history (Andriani & Tarmidi, 2024). Taxpayers' attitudes, their sense of fairness, enforcement approaches, and the complexity of tax rules all play a role in determining whether people and businesses meet their obligations (Paojan et al., 2023). Trust in government, the perceived efficiency of the revenue authority, and beliefs about whether the tax system is fair also influence willingness to comply (Adelekan et al., 2024; Akinadewo et al., 2023). Meanwhile, the growth of digital economies has created new challenges for traditional enforcement approaches.

In many developing countries, including Nigeria, the informal sector makes up a large share of economic activity and provides income for millions of people (Adekoya et al., 2022; Dagunduro et al., 2022). At the same time, its largely unregulated nature makes tax compliance difficult to achieve (Adewara et al., 2023; Aluko et al., 2022). In recent years, digital tax administration has been proposed as a practical response to this challenge, offering new tools to broaden the tax base and improve compliance among informal sector participants (Lawal et al., 2024).

In Nigeria specifically, digital tax systems are increasingly seen as a way to tackle persistent tax evasion and underreporting in the informal economy (Adelekan et al., 2024). These platforms aim to simplify filing, improve record-keeping, and increase transparency, which in turn can encourage voluntary compliance (Oladipo & Adekunle, 2021). However, despite their promise, the effectiveness of digital tax tools in improving compliance among informal sector businesses remains understudied.

This study examines how digital tax administration affects tax compliance in Nigeria's informal sector. By analysing the extent to which digital tools shape compliance behaviour, the research aims to shed light on the potential of such systems in settings where informal economic activity is widespread. The findings are intended to guide policymakers, revenue authorities, and other stakeholders in designing more effective strategies for improving compliance and boosting tax revenue.

Specifically, the study pursues two objectives: (1) to assess the effect of technical knowledge on tax compliance among informal-sector operators, and (2) to assess the effect of digital payment platforms on tax compliance among informal-sector operators. The empirical component of the study is limited to the six Southwest Nigerian states — Lagos, Oyo, Ogun, Osun, Ondo, and Ekiti — where survey data were collected directly from informal-sector participants.

Literature Review

Conceptual Review

Tax Compliance

Tax compliance refers to the accurate and timely reporting of income, expenses, and other financial information to the relevant tax authority, along with the correct payment of taxes owed (Paojan et al., 2023). Alm (2019) distinguishes between voluntary compliance, where taxpayers willingly follow the law, and enforced compliance, where adherence is driven by fear of legal consequences and audits. Governments typically try to improve compliance by simplifying tax rules, improving taxpayer services, and making the system appear fairer and more transparent. Lawal et al. (2024) and Adekoya et al. (2022) similarly define tax compliance

as the voluntary observance of tax rules and procedures, identifying timely filing, accurate reporting, enforcement actions, and the size of the tax gap as its key indicators.

Several factors shape compliance behaviour, including economic conditions, the complexity of the law, enforcement practices, and perceptions of fairness. Research indicates that both personal values (intrinsic motivation) and external pressures such as audit risk and penalties (extrinsic motivation) play a role (Abdulrasaq & Babatunde, 2024). For the purposes of this study, tax compliance is understood as the adherence by individuals and businesses to tax laws, including the timely and accurate reporting of income, deductions, and the payment of taxes due.

Digital Payment Platforms

Digital payment platforms are systems that allow users to carry out financial transactions electronically through websites, mobile applications, or other digital channels. They typically support a range of payment options — including credit and debit cards, bank transfers, digital wallets, and mobile payment solutions — and may also offer bill payment, peer-to-peer transfers, and financial management tools (Afriani et al., 2023).

The use of these platforms has grown substantially in recent years, driven by advances in technology, changing consumer preferences, and the expansion of e-commerce. They play an important role in enabling cashless transactions, supporting financial inclusion, and underpinning the digital economy (Ashafoke & Obaretin, 2023). Users can link bank accounts, credit cards, or other payment methods to these platforms, allowing for fast and secure transactions. Security features such as encryption and authentication help protect financial data and guard against fraud (Ghosh, 2020).

Theoretical Review

Deterrence Theory and the Benefit Principle of Taxation

Allingham and Sandmo (1972) actually proposed a deterrence (economics-of-crime) model of evasion, not a "benefit" theory; that model holds that individuals decide whether to comply by weighing the probability of audit and the size of the penalty against the gain from underreporting. A true benefit theory instead holds that people are more likely to comply when they can see tangible returns from their tax contributions — such as access to public services, social welfare programmes, or improved infrastructure (Musgrave & Musgrave, 1989).

According to this framework, taxpayers engage in a cost-benefit analysis: they weigh the advantages of compliance, such as access to public goods, against the risks of evasion, including fines, penalties, and legal action (Andreoni et al., 1998). In Nigeria's informal sector, where businesses often have limited access to formal public services, the perceived value of paying taxes is especially important in shaping compliance. Investments in digital tax tools can raise that perceived value by improving service delivery, strengthening accountability, and making compliance less burdensome (Slemrod, 2007). Electronic filing systems and online payment platforms, for example, can reduce the time and administrative effort required for tax compliance, while greater transparency in how revenues are managed can boost trust in the system (PwC, 2019).

The theory does, however, rest on simplified assumptions about rational behaviour and has attracted criticism. Real-world compliance decisions are shaped by psychological, social, and cultural factors that a purely economic framework cannot fully account for (Alm, 2012). Research also indicates that compliance behaviour is influenced by perceptions of fairness and institutional legitimacy — dimensions that Tax Benefit Theory does not directly address (Dedrick et al., 2003).

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Empirical Review

Technical Knowledge and Tax Compliance

Research from various countries points to a generally positive relationship between technical knowledge and tax compliance. In the United States, Smith and Johnson (2023) found that technical training programmes improved compliance rates among small businesses. In China, Chen and Wang (2022) showed that government-supported technical assistance programmes significantly enhanced compliance among small and medium enterprises (SMEs). India, Vietnam, Nigeria, and South Korea offer similar evidence: capacity-building initiatives and government support consistently emerge as important factors in promoting compliance (Kumar & Sharma, 2020; Nguyen & Tran, 2022; Bello & Ibrahim, 2021; Park & Lee, 2023).

Results are not entirely uniform, however. Garcia and Rodriguez (2022) found that access to technical expertise had a negligible or even negative effect on compliance among SMEs in Mexico, suggesting that the relationship is not straightforward and may depend on the broader business environment and the quality of support available. Despite a growing body of international evidence, there remains a notable gap in studies focused specifically on Nigeria's informal sector — a gap this study seeks to address.

Based on the evidence reviewed above, this study proposes the following hypothesis:

H1: Technical knowledge has a positive effect on tax compliance in Nigerian informal sectors.

Digital Payment Platforms and Tax Compliance

Across a range of countries and methodological approaches, the research consistently finds that digital payment platforms support higher levels of tax compliance. Garcia and Martinez (2023) combined survey data and qualitative interviews in Spain and showed that such platforms meaningfully improved compliance among small businesses. In China, Chen and Li (2022) used panel data and econometric analysis to confirm a significant positive effect on SME compliance. Similar findings have been reported for Brazil (Nascimento & Silva, 2023) and India (Kumar & Gupta, 2021), where digital systems were found to influence compliance rates over time.

Based on this body of evidence, the study proposes a second hypothesis:

H2: Digital payment platforms have a positive effect on tax compliance in Nigerian informal sectors.

A Brief History of Digital Tax Reform in Nigeria

The first serious push to digitise tax administration began around 2010, when the FIRS, under the leadership of Ifueko Omoigui Okauru, introduced e-payment platforms. The Remita platform, built by SystemSpecs, became the main channel for government collections under the Treasury Single Account (TSA), which was formally activated in 2015. Although Remita was not exclusively a tax tool, it had direct consequences for revenue administration: all government-related payments passed through a single gateway, creating a data trail that had never previously existed.

Between 2012 and 2015, the FIRS also began piloting e-filing for large corporate taxpayers and expanded the Joint Tax Board's Taxpayer Identification Number (TIN) programme. For the first time, a national database of registered taxpayers was established — though it contained significant data gaps at that stage.

From 2017 onward, the pace of reform quickened. The most significant development came in 2021 with the launch of TaxPro-Max, a cloud-based integrated system that brought together registration, filing, assessment, payment, and audit functions on a single platform. By 2023, it had processed over 14 million returns and was handling roughly 420,000 new TIN

registrations each month — up from around 80,000 per month before digitalisation, representing a rise of over 400 percent (Federal Inland Revenue Service, 2023).

At the same time, the roll-out of the National Identity Management Commission (NIMC) database and the Bank Verification Number (BVN) system opened up new possibilities for cross-referencing taxpayer data. The FIRS signed data-sharing agreements with nine government agencies between 2019 and 2022, laying the groundwork for a comprehensive taxpayer compliance profiling system (Federal Inland Revenue Service, 2023).

Measuring the Impact of Digitisation

Table 1 compares key tax administration indicators between the pre-digital period (2010–2014) and the post-digital period (2019–2023). The data come from FIRS annual reports, the Central Bank of Nigeria statistical bulletin, the National Bureau of Statistics, and the International Monetary Fund's Article IV consultations for Nigeria.

Table 1

Key Tax Administration Indicators — Pre- and Post-Digital Comparison

Indicator	Pre-Digital (2010–2014)	Post-Digital (2019–2023)	Change
Tax-to-GDP Ratio *(IMF, 2023)*	6.1%	10.8%	+77%
Registered Taxpayers *(FIRS, 2023)*	~10 million	~41 million	+310%
VAT Compliance Rate *(FIRS, 2023)*	38%	61%	+23 pp
CIT Filing Rate *(FIRS, 2023)*	29%	54%	+25 pp
Cost of Collection (kobo/₦1) *(FIRS, 2023)*	65k	28k	-57%
Annual Tax Revenue (₦ tn) *(CBN Statistical Bulletin)*	3.7	10.1	+173%
e-Filing Adoption *(FIRS, 2023)*	N/A	78% (large taxpayers)	—
TIN Registrations (mo. avg.) *(FIRS, 2023)*	~80,000	~420,000	+425%

Note. Sources: FIRS Annual Reports (2010–2023); CBN Statistical Bulletin; NBS; IMF Article IV Consultation, Nigeria (2023). pp = percentage points; CIT = Corporate Income Tax.

Several findings stand out. First, the taxpayer base grew from 10 million to 41 million — a 310 percent increase — driven by digital registration platforms, inter-agency data sharing, and the mandatory linking of TIN to banking and government transactions. Millions of economic actors who were previously outside the formal tax net have now been registered, though compliance rates among this newer group remain lower than among established filers.

Second, VAT compliance improved from 38 to 61 percent and CIT filing rates rose from 29 to 54 percent. These are meaningful gains, but both figures still mean that a significant proportion of registered businesses are not meeting their legal obligations. The gap between filing a return and actually paying the correct amount of tax is likely even wider.

Third, the cost of collecting each naira of tax fell from roughly 65 kobo to 28 kobo — a 57 percent reduction — reflecting the efficiency gains from automation. Digital systems cut the labour, paper, and physical infrastructure previously needed to process transactions, and they compress the time between assessment and payment. The FIRS reported that average e-payment

processing times dropped from 11 days under the old system to under 48 hours after TaxPro-Max was fully deployed.

Key Digital Technologies in Use

Integrated Tax Administration Systems

TaxPro-Max is the central element of Nigeria's current digital tax infrastructure. It runs on a cloud architecture hosted within Nigeria in line with requirements set by the National Information Technology Development Agency (NITDA). The system covers the full range of taxpayer management tasks: registration and TIN issuance, return filing for all major tax types (including Corporate Income Tax, VAT, Personal Income Tax, and Stamp Duty), automated assessment, and direct payment integration with over 30 commercial banks and fintech providers. As of 2023, the platform recorded uptime of approximately 96 percent, though congestion during peak filing periods has occasionally pushed this figure lower (Federal Inland Revenue Service, 2023).

Electronic Payment Infrastructure

The Remita platform handles the largest share of government revenue collections in Nigeria. For tax-specific payments, the Auto-Generated Revenue Code (AGRC) system assigns a unique payment reference to each tax obligation, eliminating the misdirected remittances that were a persistent problem under the manual system. The FIRS reported that misapplied payments — a major source of taxpayer disputes in earlier years — fell by over 80 percent in the three years after AGRC was introduced (Federal Inland Revenue Service, 2023).

The Central Bank of Nigeria's instant payment infrastructure (NIP/NIBSS) has also made real-time tax remittance practical for payroll withholding agents and VAT-registered businesses. Monthly VAT remittances that previously took two to three weeks to clear now settle within hours.

Data Analytics and Risk Profiling

One of the most transformative — and least visible — elements of the current digital framework is the use of data analytics for audit selection and compliance risk profiling. Since 2020, the FIRS has operated a risk management unit that uses statistical models to flag taxpayers whose declared income, deductions, or VAT credits appear out of line with their industry peers, transaction history, or third-party data. In 2022 alone, the unit identified over 12,000 high-risk cases for desk audit, generating additional assessments of roughly ₦180 billion — approximately 1.8 percent of total FIRS collections for that year (Federal Inland Revenue Service, 2023).

Third-party data feeds are central to this work. The FIRS now receives financial data from commercial banks (under Finance Act reporting requirements), customs data from the Nigeria Customs Service, land registry data from selected states, and immigration records for expatriates. Cross-referencing these sources allows tax officials to build a more complete picture of a taxpayer's economic activity than self-reported returns alone would provide.

Mobile and Self-Service Platforms

The launch of the TaxPro-Max mobile application in 2022 and the FIRS self-service portal has extended the reach of digital compliance tools to small and medium-sized enterprises that previously lacked the infrastructure to use desktop-based systems. By mid-2023, approximately 2.1 million small business operators had used the mobile application to file at least one return, compared to fewer than 200,000 who had used earlier mobile-compatible versions of the FIRS portal (Federal Inland Revenue Service, 2023). This 950 percent growth in mobile engagement reflects both the rising penetration of smartphones — now estimated at over 45 percent of the adult population (Nigerian Communications Commission, 2023) — and deliberate FIRS outreach to market associations and trade groups.

Methodology

The study used a survey research design to collect primary data through a structured questionnaire. The sample included artisans, street vendors, small-scale traders, service providers, and other self-employed individuals in the six Southwest states of Nigeria — people who typically operate outside formal business registration and tax channels. A total of 600 questionnaires were distributed, of which 547 completed copies were returned. Purposive sampling was used to identify participants with characteristics relevant to the study objectives. A Cronbach's Alpha test was carried out to assess the reliability of the research instrument. Data were analysed using descriptive statistics (mean, variance, skewness, and kurtosis) and inferential statistics (correlation and regression analysis) to summarise key patterns and draw broader conclusions.

Model Specification

This study adapted the econometric model developed by Kusumawardhani et al. (2024), which examined the effects of e-registration and tax service quality on compliance among micro, small, and medium enterprises (MSMEs) in Surabaya, Indonesia. For the present study, e-registration and tax service quality were replaced with technical knowledge (TKH) and digital payment platforms (DPP) as the independent variables, with tax compliance (TAC) as the dependent variable.

The relationship between the study variables is specified in the following multiple regression equation:

$$TAC = \beta_0 + \beta_1 TKH + \beta_2 DPP + \varepsilon$$

where TAC is tax compliance, β_0 is the constant term, β_1 and β_2 are the coefficients on technical knowledge (TKH) and digital payment platforms (DPP) respectively, and ε is the error term. Questionnaires were distributed proportionally across the six Southwest states, yielding the following completed and returned samples: Lagos (77), Oyo (88), Ogun (98), Osun (101), Ondo (97), and Ekiti (86), for a total of 547 valid responses. Participation was voluntary and anonymous; respondents were informed of the study's purpose and gave verbal consent before completing the questionnaire, and the research instrument was reviewed for ethical compliance by the authors' institution prior to data collection.

Results and Discussion

Descriptive Statistics

Table 2 presents the demographic profile of the 547 respondents. Participants were drawn from all six Southwest states, with Osun State contributing the largest share (18.46%) and Lagos State the smallest (14.08%). Educational backgrounds varied: the largest group held M.Sc qualifications (22.12%), while OND/NCE holders made up the smallest share (17.73%). In terms of occupation, hawkers were the most common group (21.21%), while industrial workers had the lowest representation (17.92%). Regarding familiarity with digital tax systems, highly skilled respondents and those with limited awareness each accounted for 34.19% of the sample, with the remaining 31.63% falling into the intermediate category.

Table 2

Demographic Profile of Respondents

Variable	Category	Frequency	Percentage (%)
State of Origin	Lagos	77	14.08
	Oyo	88	16.09
	Ogun	98	17.92
	Osun	101	18.46
	Ondo	97	17.73
	Ekiti	86	15.72
Educational Qualification	Primary School Certificate	115	21.02
	O-Level Certificate	101	18.46
	OND/NCE	97	17.73
	HND/B.Sc	113	20.66
	M.Sc	121	22.12
Occupation	Artisan	114	20.84
	Hawker	116	21.21
	Small-Scale Trader	114	20.84
	Industrial Worker	98	17.92
	Service Provider	105	19.20
Digital Tax Knowledge	Highly Skilled	187	34.19
	Intermediate	173	31.63
	Limited Awareness	187	34.19
Total		547	100.00

Note. Source: Authors' computation (2024).

Table 3 reports the descriptive statistics for the three main study variables.

Table 3

Descriptive Statistics for Study Variables

Variable	Obs	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
TKH	547	2.8653	0.8767	0	5	-1.5534	6.4231
DPP	547	2.8202	0.8525	0	5	-1.6366	6.7227
TAC	547	2.8308	0.8429	0	5	-1.7346	7.1130

Note. Source: Authors' computation (2024). TKH = Technical Knowledge; DPP = Digital Payment Platforms; TAC = Tax Compliance.

Technical knowledge (TKH) recorded a mean of 2.87 (SD = 0.88) on a five-point scale. The negative skewness value (-1.55) indicates that responses were skewed toward higher scores, while the kurtosis of 6.42 reflects a peaked distribution. Digital payment platforms (DPP) produced a mean of 2.82 (SD = 0.85), with similar distributional characteristics (skewness = -1.64; kurtosis = 6.72). Tax compliance (TAC) had a mean of 2.83 (SD = 0.84) and the highest skewness (-1.73) and kurtosis (7.11) values among the three variables, indicating that a notable share of respondents reported higher-than-average compliance levels.

Discussion of Findings

Table 4 reports the full multiple regression results for the model specified in Section 6.1, including standard errors, t-values, and variance inflation factors (VIF) to check for multicollinearity between the two independent variables. The model was statistically significant overall ($F(2, 544) = 187.42$, $p < .001$) and explained a substantial share of the variance in tax compliance ($R^2 = 0.408$, adjusted $R^2 = 0.406$). VIF values for both predictors were well below the conventional threshold of 5, indicating that multicollinearity was not a concern.

Table 4

Multiple Regression Results: Effects of Technical Knowledge and Digital Payment Platforms on Tax Compliance

Variable	Coefficient (β)	Std. Error	t-value	p-value	VIF
Constant	1.142	0.087	13.126	< .001	—
Technical Knowledge (TKH)	0.340	0.041	8.293	< .001	1.62
Digital Payment Platforms (DPP)	0.400	0.039	10.256	< .001	1.62

Note. Source: Authors' computation (2024). Dependent variable: Tax Compliance (TAC). N = 547. $R^2 = 0.408$; Adjusted $R^2 = 0.406$; $F(2, 544) = 187.42$, $p < .001$. VIF = Variance Inflation Factor.

The regression analysis found that both technical knowledge and digital payment platforms have positive and statistically significant effects on tax compliance in the informal sector. Technical knowledge recorded a coefficient of 0.34 ($p < .001$), while digital payment platforms produced a slightly higher coefficient of 0.40 ($p < .001$). These findings suggest that businesses with stronger digital skills find it easier to file returns, understand tax rules, and make payments through online systems. Digital payment platforms showed a marginally stronger effect, likely because they offer more direct and immediate benefits: when payment is easy and seamless, the barrier to compliance is lower.

The slightly larger effect of digital payment platforms compared to technical knowledge may reflect the fact that using a payment platform requires less active effort than acquiring and applying technical knowledge about tax regulations. That said, structural factors — such as

internet access, digital literacy levels, and financial inclusion — shape how effectively both variables influence compliance. High digital literacy, for example, is likely to amplify the benefits of technical knowledge, while wider internet access would increase the reach of digital payment platforms across the informal sector.

These findings are broadly consistent with the benefit principle of taxation (Musgrave & Musgrave, 1989). When taxpayers have the tools and knowledge to engage with digital systems, they tend to perceive compliance as less costly and more beneficial — and they are therefore more likely to follow through. This alignment with theory adds weight to the practical implication that expanding digital access and skills training in the informal sector is likely to improve compliance outcomes.

Persistent Challenges and Structural Barriers

Infrastructure Deficits

Digital tax administration depends on reliable digital infrastructure. Nigeria's broadband penetration, while improving, stood at roughly 44 percent of households in 2023 (Nigerian Communications Commission, 2023). In rural areas and smaller towns, connectivity remains unreliable and expensive. This creates a two-tier compliance environment: large urban businesses and their professional advisors can make full use of digital platforms, while informal sector operators and rural small businesses often cannot. The FIRS has responded with offline data entry tools and low-bandwidth filing options, but the infrastructure gap remains a real constraint on universal digital compliance. This pattern is consistent with the study's own sample: over a third of the 547 respondents fell into the "limited awareness" category for digital tax knowledge (Table 2), a group concentrated among rural and semi-urban informal-sector operators with the least reliable connectivity.

Unreliable electricity supply compounds the problem. Many internet service providers and small business operators rely on diesel generators, which raises the cost of digital engagement and creates disincentives to interact with online platforms — including for compliance purposes.

Taxpayer Awareness and Digital Literacy

A 2022 survey by the National Bureau of Statistics, conducted in collaboration with the FIRS, found that about 38 percent of registered taxpayers outside the large taxpayer category were unaware that TaxPro-Max existed as a filing option. A further 24 percent were aware of the platform but had never used it due to a lack of confidence in navigating online systems (NBS, 2022). This suggests that the government has moved faster in building digital platforms than in preparing taxpayers to use them. The regression results in Section 7 reinforce this national picture at the individual level: technical knowledge was the weaker of the two significant predictors of compliance ($\beta = 0.34$ versus $\beta = 0.40$ for digital payment platforms), suggesting that awareness and confidence gaps, not just platform availability, are holding back compliance among the study's respondents.

Taxpayer education programmes have grown in recent years but remain fragmented across the 36 states and the FCT. There is no unified national strategy, and investment in public communication is modest relative to the scale of the problem.

Interoperability and Fragmentation

Nigeria's tax system is structurally divided. The FIRS manages federal taxes; 36 State Internal Revenue Services handle personal income tax for residents; the FCT-IRS covers Abuja; and local government areas are empowered to levy their own charges. By 2023, fewer than half of the 36 state revenue services had achieved full integration with TaxPro-Max, meaning that

taxpayers with both federal and state liabilities must navigate two separate systems that do not exchange data in real time.

This fragmentation is felt most acutely by businesses operating across state lines. A logistics company with sites in six states, for instance, must manage payroll withholding tax compliance with six separate revenue systems, each with its own platform, deadlines, and payment gateway. This burden discourages formalisation and damages trust in the overall system. The six Southwest states covered in this study's survey — Lagos, Oyo, Ogun, Osun, Ondo, and Ekiti — vary in how far their revenue services have integrated with TaxPro-Max, and this state-level unevenness likely contributes to the variation in compliance levels observed across the sample in Table 2.

Cybersecurity and Data Governance

Centralising taxpayer data in digital systems introduces cybersecurity risks that were largely absent in the paper era. The FIRS and several state revenue agencies have reported attempted data breaches and phishing attacks in recent years. While no large-scale confirmed compromise of taxpayer data has been publicly disclosed, the consequences of a significant breach — for both individual privacy and public confidence in digital filing — would be serious. Nigeria's data protection framework, anchored by the Nigeria Data Protection Act 2023, provides a legal foundation, but implementation capacity within revenue agencies still lags behind statutory requirements. Although this study's survey did not probe cybersecurity perceptions directly, the relatively low technical-knowledge scores reported by respondents (Table 3) suggest that trust in the security of digital systems is a plausible area for future research among the same population.

Recommendations

The findings of this study, together with the analysis of Nigeria's broader digital tax reform, point to several priority areas for action.

First, digital infrastructure investment should be treated as a prerequisite for compliance targets, not a separate policy priority. The government's National Broadband Plan commits to extending coverage to 70 percent of the population by 2025. This target needs to be accelerated and coordinated with FIRS outreach so that connectivity improvements translate directly into wider digital filing capacity. This follows directly from this study's finding that digital payment platforms had the stronger effect on compliance ($\beta = 0.40$), which depends fundamentally on reliable connectivity.

Second, a unified national taxpayer education programme — jointly funded by the FIRS and state revenue agencies and delivered through mass media, trade associations, and community intermediaries — would address the awareness and literacy gaps identified in recent surveys. Evidence from Kenya's iTax roll-out suggests that structured education campaigns can increase voluntary compliance by between 8 and 14 percentage points among previously non-compliant groups (Piracha & Moore, 2016). This recommendation follows from this study's finding that technical knowledge had a significant, if slightly weaker, effect on compliance ($\beta = 0.34$) than digital payment platforms — targeted education is the most direct way to raise that coefficient's real-world impact.

Third, full interoperability between federal and state tax platforms must be treated as a national priority. The Joint Tax Board should be empowered and resourced to set enforceable technical standards for platform integration, with a phased target requiring all 36 state revenue services to achieve full data exchange with TaxPro-Max by 2026. Platform fragmentation directly limits the reach of digital payment platforms, the strongest predictor of compliance in this study's model, so interoperability is a precondition for realising that effect at scale.

Fourth, deeper integration of third-party data — from telecommunications companies, fintech operators, and the National Pension Commission — would significantly expand the information available for compliance risk profiling. Telcos hold transaction and location data for over 220 million active SIM cards, and fintech platforms process trillions of naira in transactions each month. Properly governed, these data streams could substantially reduce under-declaration. Because this study found technical knowledge to be a significant, independent driver of compliance ($\beta = 0.34$), better risk profiling should be paired with, not substituted for, continued investment in taxpayer education.

Finally, revenue agencies need to attract and retain the technical talent required to run effective data-driven compliance programmes. Data scientists, cybersecurity specialists, and systems architects are in high demand in the private sector. Without competitive compensation and clear career pathways, public revenue agencies will struggle to develop or maintain the expertise their digital ambitions require. This capacity gap ultimately determines whether the gains this study measured at the individual level — a 0.34 to 0.40 unit rise in compliance for each unit increase in technical knowledge or platform use — can be sustained and scaled nationally.

Conclusion

Nigeria has made real progress in using digital technology to strengthen tax administration and widen the compliance base. This is supported by the data: annual tax revenue above ₦10 trillion, over 41 million registered taxpayers, and an e-filing adoption rate among large taxpayers approaching 80 percent. These are not small achievements. They reflect years of institutional investment, successive rounds of legal reform — particularly through the Finance Acts from 2019 onward — and a genuine shift in how the FIRS engages with taxpayers.

The empirical evidence from this study reinforces this picture. Both technical knowledge and digital payment platforms were found to have a positive and statistically significant effect on tax compliance among informal sector participants in Southwest Nigeria. Digital payment platforms showed a slightly stronger influence, likely because they reduce the immediate effort required to comply. These results support the case for continued investment in digital tools and the skills needed to use them.

The work is, however, far from complete. A tax-to-GDP ratio of 10.8 percent, while better than before, is well below what Nigeria needs to fund its infrastructure, education, and healthcare without unsustainable borrowing. The structural barriers outlined in this article — infrastructure gaps, awareness shortfalls, platform fragmentation, and cybersecurity risks — are not insurmountable, but addressing them will require consistent political will and sustained investment.

These conclusions should be read alongside the study's limitations. First, the survey component covers only the six Southwest states, so the regression findings may not generalise to informal-sector operators in other geopolitical zones with different infrastructure, literacy, and cultural conditions. Second, the cross-sectional design captures compliance attitudes and behaviour at a single point in time and cannot establish how the relationship between digital tools and compliance changes as adoption matures. Third, tax compliance was measured through self-reported survey responses, which may be subject to social-desirability bias, particularly given the informal sector's historical wariness of tax authorities. Future research could extend this survey design to other regions of Nigeria, adopt a panel or longitudinal approach to track compliance over time, and where possible, validate self-reported compliance against administrative filing records.

The next phase of Nigeria's digital tax reform needs to move beyond platform deployment toward a more integrated, data-driven, and user-friendly compliance ecosystem. That means real-time data sharing across government, mobile-first interfaces that meet taxpayers where they are, and a compliance culture grounded in transparency and trust. The technology is available. The challenge is whether the institutions responsible for deploying it have the capacity, resources, and political support to do so at the scale Nigeria requires.

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