LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

INSTITUTIONAL QUALITY, TECHNOLOGICAL INNOVATION, AND TAX REVENUE MOBILIZATION: IMPLICATIONS FOR INCLUSIVE ECONOMIC GROWTH IN NIGERIA

Peters Ade Sanni & Emmanuel Temitope Adedoyin (PhD)
Department of Accountancy,
School of Management Studies,
Kogi State Polytechnic, Lokoja, Nigeria
Corresponding Author: sannipeters@gmail.com

Abstract
Institutional quality and technological innovation jointly determine Nigeria's ability to strengthen tax revenue generation and promote inclusive economic growth, amid fiscal constraints. This study examined the effects of institutional quality and technological innovation on tax revenue mobilisation in five Nigerian states, namely, Lagos, Kano, Rivers, Kaduna, and Oyo, and their implications for inclusive economic growth. Using panel data from 2010 to 2023, Random Effects, GLS regression with AR(1) disturbances was employed to account for serial correlation. Results indicate that institutional quality, technological innovation and inclusive growth positively and significantly predict tax revenue mobilisation, whereas GDP growth is not significant. The model explains a substantial portion of variance in tax revenue mobilisation (within $R^2 = 0.501$, between $R^2 = 0.892$). The hypothesis tested confirmed that institutional quality and technological innovation are individually and jointly significant determinants. The findings underscore the need to strengthen governance, adopt technological innovations, and promote inclusive policies to enhance revenue mobilisation and sustainable economic growth in Nigeria. The study concludes that strong institutions and technology drive better tax revenue and inclusive growth. It was recommended that governance should be strengthened and digital tax systems should be expanded for efficient and fair revenue collection.

Keywords: Institutional quality, Technological innovation, Tax revenue, Inclusive growth, Nigeria

1. Introduction

In recent years, the challenge of achieving sustainable and inclusive economic growth in Nigeria has been closely tied to the country's capacity to mobilise domestic revenue through efficient taxation systems. As oil revenues decline and debt burdens increase, the importance of strengthening tax revenue generation has come to the forefront of fiscal policy (OECD, 2023). However, Nigeria's tax-to-GDP ratio remains one of the lowest in Sub-Saharan Africa, standing at approximately 10% in 2023, well below the regional average of 16% (IMF, 2024). This persistent revenue gap has been attributed not only to tax evasion and administrative inefficiencies but also to deeper institutional and technological weaknesses within the fiscal system (World Bank, 2022).

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

Institutional quality, measured through indicators such as government effectiveness, rule of law, and control of corruption, plays a pivotal role in shaping tax compliance behaviour and the performance of tax administration. Empirical evidence suggests that strong institutions foster trust in government, reduce informal economic activity, and improve voluntary tax compliance (Acemoglu & Robinson, 2019; Eubanks & Slemrod, 2021). In Nigeria, however, weak institutions, fragmented governance structures, and regulatory uncertainty have undermined efforts to widen the tax base and reduce leakages (NBS, 2023).

At the same time, technological innovation, particularly in the form of digital infrastructure and tax automation, has emerged as a transformative tool for revenue mobilisation. Countries that have invested in digital tax systems such as e-filing, electronic invoicing, and data analytics have recorded notable improvements in efficiency, transparency, and compliance (UNCTAD, 2021). In Nigeria, the expansion of ICT infrastructure and fintech innovation offers significant potential to modernise the tax system, improve taxpayer identification, and reduce collection costs (FIRS, 2023). Yet, the impact of technology remains uneven across regions, and implementation challenges persist due to digital divides, low digital literacy, and institutional resistance.

Despite growing academic and policy interest in fiscal modernisation, there remains a limited body of empirical research that jointly examines how institutional quality and technological innovation interact to influence tax revenue outcomes, particularly in the context of Nigeria's development agenda. Most studies focus either on the technical design of tax policies or the broader impact of ICT on governance, often overlooking how these two dimensions reinforce or constrain each other in the revenue mobilisation process (Ajakaiye& Ncube, 2022). This study, therefore, seeks to fill this gap by investigating the combined and individual effects of institutional quality and technological innovation on tax revenue mobilisation in Nigeria, and the implications for inclusive economic growth. By using panel data from 2010 to 2023 across Nigerian states, the study provided evidence-based insights that can guide reform strategies for building an effective, technology-driven, and institutionally robust tax system capable of supporting long-term economic inclusion.

Nigeria struggles with low tax-to-GDP ratios despite ongoing reforms, limiting its ability to fund inclusive development. Weak institutional quality, marked by poor governance, corruption, and regulatory inefficiencies, undermines tax compliance and revenue collection. At the same time, technological innovations in tax administration remain underutilised due to infrastructure gaps and uneven digital adoption. While previous studies often examine these factors separately, little research has explored how institutional quality and technological innovation jointly influence tax revenue mobilisation. This study seeks to fill that gap and assess their combined impact on inclusive economic development in Nigeria between 2010 and 2023. The study examined the combined and individual effects of institutional quality and technological innovation on tax revenue mobilisation in Nigeria and assessed their implications for inclusive economic growth from 2010 to 2023. Specifically, the study evaluated the impact of institutional quality on tax revenue generation in Nigeria and assessed the

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

influence of technological innovation on the efficiency and performance of tax revenue mobilisation during the study period. In line with these objectives, the study formulated the following null hypotheses for empirical testing: H_{01}: Institutional quality has no significant effect on tax revenue mobilisation in Nigeria from 2010 to 2023; and H_{02}: Technological innovation has no significant impact on the efficiency and performance of tax revenue mobilisation in Nigeria from 2010 to 2023. The hypotheses are central to assessing whether institutional quality and technological innovation significantly influence tax revenue mobilisation in Nigeria. Testing them helps determine if improvements in governance and the adoption of digital tools contribute to better tax performance. The results provide evidence to guide policy reforms aimed at strengthening revenue systems and supporting inclusive economic growth.

2. Literature Review

Institutional Quality

Several scholars have examined institutional quality from different theoretical and empirical perspectives. North (1990) viewed institutional quality as the effectiveness of formal and informal rules in reducing uncertainty and promoting efficient economic coordination, arguing that strong institutions encourage accountability and compliance with public regulations. Similarly, Kaufmann et al. (2011) conceptualised institutional quality using governance indicators such as government effectiveness, rule of law, regulatory quality, and control of corruption, emphasising that effective institutions strengthen policy implementation and public trust. In contrast, Acemoglu and Robinson (2012, 2019) approached institutional quality from a political economy perspective, arguing that inclusive institutions promote transparency, accountability, and sustainable development, while weak institutions encourage corruption and economic inefficiency. Their position aligns with Torgler (2007), who linked institutional quality with tax morale and voluntary tax compliance, arguing that taxpayers are more willing to comply when governance systems are transparent and trustworthy.

Although these scholars agree on the importance of institutional quality, their approaches differ. North (1990) focused on institutional structures and economic efficiency, Acemoglu and Robinson (2012) emphasised political inclusiveness and governance accountability, Kaufmann et al. (2011) provided measurable governance indicators for empirical analysis, while Torgler (2007) concentrated on behavioural outcomes such as tax morale and compliance. Empirical studies such as Eubanks and Slemrod (2021) and Bird et al. (2008) further revealed that strong institutions improve tax compliance, reduce corruption, and enhance fiscal capacity. However, Ajakaiye and Ncube (2022) argued that institutional reforms alone may not sufficiently improve tax revenue without complementary technological and administrative innovations.

Despite these contributions, important gaps remain in the literature. Many previous studies, including Torgler (2007) and Eubanks and Slemrod (2021), focused mainly on governance quality and taxpayer behaviour without adequately integrating technological innovation into tax administration. Similarly, studies on digital taxation emphasised technological efficiency but paid limited attention to institutional

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

conditions, creating a conceptual gap regarding the combined influence of institutional quality and technological innovation on tax revenue mobilisation. In addition, most prior studies were conducted in developed economies or through cross-country analyses that may not adequately reflect Nigeria's fiscal realities characterized by corruption, informality, bureaucratic inefficiency, and uneven digital infrastructure. Furthermore, many Nigerian studies focused mainly on tax policy reforms, corruption, or tax compliance independently, with limited attention given to the joint effects of institutional quality and technological innovation on tax revenue mobilisation and inclusive economic growth. Existing studies also rarely utilised recent panel data covering the post-digital reform era between 2010 and 2023. Therefore, this study seeks to fill these gaps by providing an integrated analysis of the individual and combined effects of institutional quality and technological innovation on tax revenue mobilisation in Nigeria.

Technological innovation

Technological innovation has been widely examined as a tool for improving tax administration and public revenue mobilisation. The Organisation for Economic Co-operation and Development (OECD, 2023) and the United Nations Conference on Trade and Development (UNCTAD, 2021) viewed technological innovation as the adoption of digital tools such as e-filing systems, electronic invoicing, automated audits, and data analytics to improve efficiency, transparency, and tax compliance. Similarly, Ajakaiye and Ncube (2022) argued that digital tax systems and fintech innovations can expand the tax base and improve revenue mobilisation in developing economies, while GSMA (2023) emphasised the importance of digital infrastructure, internet penetration, and accessibility for the success of technology-driven tax reforms. Although these scholars generally agreed on the benefits of technological innovation, their perspectives differed, with OECD (2023) and UNCTAD (2021) focusing mainly on administrative efficiency and transparency, whereas Ajakaiye and Ncube (2022) and GSMA (2023) emphasised developmental inclusion and infrastructural readiness.

Empirical studies further revealed that technological innovation improves tax compliance, reduces leakages, and enhances revenue collection efficiency (OECD, 2023; UNCTAD, 2021). However, Ajakaiye and Ncube (2022) argued that technological reforms alone may not yield optimal results without strong institutional support and governance capacity. Despite these contributions, important gaps remain in the literature. Many studies focused mainly on technological efficiency without adequately integrating institutional quality into the analysis, creating a conceptual gap regarding the combined influence of technological innovation and institutional quality on tax revenue mobilisation. In addition, most previous studies were conducted in developed economies or through cross-country analyses that may not adequately reflect Nigeria's fiscal realities of weak institutions, uneven digital infrastructure, and low digital literacy. Furthermore, many Nigerian studies focused mainly on tax reforms or digital taxation independently, with limited attention given to the joint effects of technological innovation and institutional quality on tax revenue mobilisation and inclusive economic growth. Existing studies also rarely utilised recent data from the post-digital reform era between 2010

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

and 2023. Therefore, this study seeks to fill these gaps by examining the individual and combined effects of technological innovation and institutional quality on tax revenue mobilisation in Nigeria.

Tax revenue mobilisation

Tax revenue mobilisation is generally defined by the IMF (2024) as the government's capacity to generate revenue through major tax instruments such as income tax, VAT, and customs duties, which is essential for fiscal stability and public service delivery. However, scholars differ in their emphasis. Bird et al. (2008) focus on institutional and administrative capacity, arguing that strong institutions and low corruption improve tax collection efficiency. Eubanks and Slemrod (2021) highlight behavioural factors, stressing that taxpayer trust and governance quality determine voluntary compliance. In contrast, Ajakaiye and Ncube (2022) emphasise technological innovation, arguing that digital tools and ICT systems enhance tax efficiency, broaden the tax base, and reduce leakages in developing economies.

Despite these perspectives, gaps remain in the literature. Most studies treat tax revenue mobilisation from either macroeconomic (IMF, 2024), institutional (Bird et al., 2008), behavioural (Eubanks & Slemrod, 2021), or technological (Ajakaiye & Ncube, 2022) angles in isolation, without integrating them into a unified framework. In addition, many studies are based on cross-country or developed economy contexts, limiting their relevance to Nigeria's unique fiscal environment characterized by informality, weak institutions, and uneven digital infrastructure. Furthermore, limited attention has been given to how institutional quality and technological innovation jointly influence tax revenue mobilisation in Nigeria, particularly using recent data. Therefore, this study addresses these gaps by examining their combined and individual effects on tax revenue mobilisation in Nigeria between 2010 and 2023.

Inclusive economic growth refers to broad-based and equitable development that improves living standards across all social groups, particularly the poor and marginalised (UNDP, 2022). In Nigeria, its achievement is constrained by weak domestic revenue mobilisation, largely due to institutional inefficiencies and limited fiscal capacity. Tax systems are therefore central to inclusive growth because they provide the resources needed for investment in health, education, infrastructure, and social protection.

The relationship between institutional quality, technological innovation, and tax revenue mobilisation is complementary. Strong institutions enhance accountability, reduce corruption, and build taxpayer trust, while technological innovation improves efficiency, transparency, and compliance in tax administration. Together, they reinforce each other to strengthen revenue generation capacity. Empirical evidence by Gupta et al. (2017) and Eubanks and Slemrod (2021) supports the view that improved governance and institutional trust enhance tax performance and ultimately contribute to inclusive economic development.

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

Theoretical Framework

Institutional Theory (Meyer & Rowan, 1977) underpins this study by explaining that formal rules, governance structures, and institutional norms shape the performance of public systems, including tax administration. In Nigeria, stronger institutions such as effective governance, regulatory quality, and reduced corruption are expected to enhance tax revenue mobilisation by improving compliance, enforcement, and taxpayer trust (Acemoglu & Robinson, 2019). The theory is also extended to technological innovation, emphasising that digital tax systems depend on institutional support to be effective. According to UNCTAD (2021), tools such as e-filing and automated tax systems only improve revenue outcomes when supported by strong governance structures and effective policy enforcement.

Methodologically, the study adopts a quantitative panel data approach (2010–2023) to empirically test the relationship between institutional quality, technological innovation, and tax revenue mobilisation across Nigerian states. The model specification reflects Institutional Theory by examining both the individual and combined effects of institutional and technological factors on tax revenue outcomes.

Empirical Review

Adeoye and Akinola (2025) analysed data from 2010 to 2023 across Nigerian states to examine how institutional quality and ICT adoption impact tax revenue performance. Using fixed and random effects models with robustness checks, they found that stronger governance, characterised by transparency, regulatory quality, and corruption control, significantly improves tax collection by boosting compliance and administrative efficiency. Technological innovations like e-filing and automated reporting further enhance revenue mobilisation. However, regional disparities in infrastructure and enforcement capacity limit these benefits. The study recommends improving government accountability, expanding digital infrastructure, building capacity, and implementing region-specific strategies to promote equitable tax revenue growth.

Olufemi and Yusuf (2025) analysed the impact of institutional governance and digital innovation on tax revenue across Nigerian states from 2011 to 2023 using panel data and fixed/random effects models. They found that improved government transparency and rule of law significantly boosted tax revenue by reducing corruption and enhancing compliance. Technological innovations, including increased ICT penetration and e-tax platforms, also contributed positively by making tax processes more efficient and accessible. However, challenges like uneven ICT infrastructure and limited capacity for digital enforcement constrained revenue growth. The study recommended strengthening institutional reforms, expanding digital infrastructure in underserved areas, providing tax authority training, and promoting wider adoption of digital tax services.

Eze and Oladipo (2024) employed a mixed-method approach that combined econometric panel analysis and qualitative case studies over the period 2012–2022 to explore how institutional reforms and digital tax innovations influence revenue generation in Nigeria. Their research underscored the synergistic

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

effect of institutional quality and technological progress on tax compliance, recommending integrated policy frameworks that address both governance and technological barriers.

Adeyemi and Olaleye (2024) examined the effects of institutional quality and technological innovation on tax revenue mobilisation across Nigerian states from 2012 to 2022 using panel data and fixed/random effects models. Their findings showed that better government effectiveness and anti-corruption measures significantly increased tax revenue. Technological advancements like digital tax platforms and broadband expansion have also improved tax collection by enhancing compliance and reducing costs. However, regional infrastructure gaps and resistance to technology limited these benefits. They recommended strengthening institutional transparency, investing in digital infrastructure, building tax authority capacity, and promoting digital tax adoption to support inclusive economic growth in Nigeria.

Nwankwo and Eze (2023) studied the effects of institutional quality and technological innovation on tax revenue mobilisation in Nigerian states from 2011 to 2021 using panel data and econometric models. They found that improved governance, including government effectiveness and corruption control, significantly increased tax compliance and revenue. Technological advances like e-filing and mobile payments have also enhanced tax administration efficiency. However, uneven ICT infrastructure and low digital literacy limited the full benefits. The study recommended strengthening institutional reforms, investing in digital infrastructure, and building digital capacity to boost tax revenue and support inclusive economic growth in Nigeria.

Okoro and Adetunji (2022) studied how institutional quality and technological innovation affected tax revenue mobilisation in Nigerian states from 2010 to 2020 using panel data and fixed/random effects models. They found that stronger institutions, especially better regulation and anti-corruption efforts and increased ICT adoption significantly improved tax collection efficiency. However, uneven technology access and limited institutional capacity hindered full benefits. The study recommended strengthening regulatory enforcement alongside investing in ICT infrastructure and training to enhance tax revenue mobilisation and support sustainable development.

Okoro and Balogun (2021) studied the effects of institutional quality and technological innovation on tax revenue mobilisation in Nigeria from 2010 to 2019 using panel data and fixed/random effects models. They found that better governance, especially regulatory quality and reduced corruption, significantly improved tax collection, while increased internet penetration and digital tax adoption also boosted revenue. However, infrastructure gaps and uneven technology use limited these benefits. They recommended strengthening institutional reforms and expanding ICT infrastructure to enhance tax revenue and promote inclusive economic growth.

Ibrahim and Udo (2021) analysed how institutional quality and technological innovation impacted tax revenue mobilisation across Nigerian states from 2010 to 2019. Using panel data and fixed/random effects models, they found that strong governance, particularly corruption control and government

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

effectiveness, significantly boosted tax revenue. Technological tools like electronic payment systems also improved collection efficiency. However, weaker states with poor ICT infrastructure saw limited benefits. The authors recommended institutional reforms, increased digital investment, and tax officers' training to enhance revenue and support equitable development.

Gap in Literature

Despite growing interest in the role of institutional quality and technological innovation in enhancing tax revenue mobilisation, existing studies, such as Ibrahim and Udo (2021), primarily focus on isolated impacts at the sub-national level and often overlook the interactive effects of governance and technology on tax performance in a broader national context. Moreover, while their findings underscore the significance of digital tools and governance reforms, limited attention is given to how disparities in infrastructure, regulatory enforcement, and digital capacity across states jointly constrain revenue potential. There remains a research gap in comprehensively understanding how institutional and technological factors co-evolve and influence inclusive revenue mobilisation, especially when viewed through the lens of long-term economic development across diverse socio-economic and regional settings in Nigeria.

3. Methodology

This study uses a quantitative panel data approach to analyse the impact of institutional quality and technological innovation on tax revenue mobilisation across Nigerian states from 2010 to 2023. Data were sourced from the National Bureau of Statistics (NBS), Federal Inland Revenue Service (FIRS), Nigerian Communications Commission (NCC), World Bank, and Central Bank of Nigeria (CBN). Key variables include tax revenue (dependent), institutional quality, and technological innovation (independent), with controls like GDP per capita and ICT infrastructure. The study employs Fixed Effects and Random Effects models, with the Hausman test guiding model selection. Diagnostic tests and robust standard errors are used to ensure reliability. The econometric model estimates how improvements in governance and technology influence state-level tax performance.

Model Specification

The baseline model is specified as follows:

$$TAXREVit=\beta_0+\beta_1 INST_QUALit+\beta_2 TECH_INNOVit+\beta_3 GDPPCit+\beta_4 INFRAit+\beta_5 URBANit+\beta_6 POLICYit+\mu i+\epsilon it$$

Where:

i denotes the state,
t denotes time (year),
μ_i captures time-invariant state-specific effects, and
ϵ_{it} is the error term per time/period

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

4. Findings and Discussion

Data Presentation

Table 1: Descriptive Statistics

Variable	M	SD	Min	Max
Tax Revenue Mobilisation	110.03	13.41	75.68	137.74
Institutional Quality	61.24	14.83	40.46	89.50
Technological Innovation	59.45	15.47	33.19	84.21
GDP Growth	5.36	2.61	1.21	9.78
Inclusive Growth	70.97	18.98	30.70	138.86

Note. M = Mean, SD = Standard Deviation.
Source: Author's computation, 2026

As shown in Table 1, tax revenue mobilisation had a mean score of 110.03 (SD = 13.41), with values ranging from 75.68 to 137.74, indicating moderate variation across states. Institutional quality averaged 61.24 (SD = 14.83), suggesting variability in governance capacity, with values between 40.46 and 89.50. Similarly, technological innovation recorded a mean of 59.45 (SD = 15.47) and ranged from 33.19 to 84.21, reflecting disparities in innovation adoption. GDP growth displayed less variability, averaging 5.36% (SD = 2.61) with a minimum of 1.21% and a maximum of 9.78%. Inclusive growth showed the greatest variability, with a mean of 70.97 (SD = 18.98) and a wide spread of values (30.70 to 138.86), indicating substantial differences in the distribution of growth outcomes across states.

Table 2: Correlation Matrix

Variable	Tax Revenue Mobilisation	Institutional Quality	Technological Innovation	GDP Growth	Inclusive Growth
Tax Revenue Mobilisation	1.000				
Institutional Quality	.596	1.000			
Technological Innovation	.253	–.188	1.000		
GDP Growth	.050	.081	.128	1.000	
Inclusive Growth	.449	.380	.071	.144	1.000

Note. Values represent Pearson correlation coefficients.
Source: Author's computation, 2026

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

From Table 2, tax revenue mobilisation was positively correlated with institutional quality (r = .60) and inclusive growth (r = .45), suggesting that stronger governance structures and broader distribution of growth outcomes are associated with improved tax revenue performance. Technological innovation exhibited a modest positive correlation with tax revenue mobilisation (r = .25), while GDP growth showed a negligible relationship (r = .05).

Table 3: Regression Results for Determinants of Tax Revenue Mobilisation

Predictor	Pooled OLS (b, SE)	Fixed Effects (b, SE)	Random Effects (b, SE)
Institutional Quality	0.53*** (0.09)	0.52*** (0.09)	0.53*** (0.09)
Technological Innovation	0.31*** (0.08)	0.31*** (0.08)	0.31*** (0.08)
GDP Growth	–0.38 (0.44)	–0.41 (0.46)	–0.38 (0.44)
Inclusive Growth	0.15* (0.07)	0.13† (0.07)	0.15* (0.07)
Constant	50.39*** (7.51)	52.61*** (8.02)	50.39*** (7.51)
R^2 (overall)	.533	.532	.533
N	70	70	70

Note. Standard errors in parentheses. †p < .10, *p < .05, **p < .01, ***p < .001.
Source: Author's computation, 202

Table 3 examined the effects of institutional quality, technological innovation, GDP growth, and inclusive growth on tax revenue mobilisation. Results across pooled OLS, fixed effects (FE), and random effects (RE) models were largely consistent (see Table 3). Institutional quality was a strong and positive predictor of tax revenue mobilisation across all models, with a coefficient of approximately 0.53 (p< .001). Similarly, technological innovation exhibited a significant positive association, with coefficients around 0.31 (p< .001).

GDP growth did not show a statistically significant effect on tax revenue mobilization in any specification, as coefficients were negative but nonsignificant (p > .10). Inclusive growth was positively related to tax revenue mobilization, reaching statistical significance in the pooled OLS (p< .05) and RE (p< .05) models, and showing a marginally significant effect in the FE model (p< .10).

Overall explanatory power was moderate, with an R^2 of approximately .53 across models, indicating that about 53% of the variation in tax revenue mobilisation was explained by the included predictors. A Hausman test ($\chi^2(4) = 1.47$, $p = .832$) indicated no systematic differences between FE and RE estimates, supporting the use of the RE model as the more efficient specification.

In continuation of the regression estimates presented in Table 3, a Hausman specification test was conducted to determine whether the fixed effects or random effects model provides the more appropriate specification. The results are summarised in Table 4.

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

Table 4: Hausman Test Comparing Fixed Effects and Random Effects, Models

Variable	FE Coefficient (b)	RE Coefficient (B)	Difference (b – B)	S.E. of Difference
Institutional Quality	0.519	0.533	–0.014	0.021
Technological Innovation	0.310	0.311	–0.001	0.026
GDP Growth	–0.409	–0.378	–0.031	0.110
Inclusive Growth	0.132	0.148	–0.016	0.022

Note. Hausman $\chi^2(4) = 1.47$, $p = .83$. The nonsignificant result supports the random effects model as the preferred specification.
Source: Author's computation, 2026

The nonsignificant Hausman statistic ($\chi^2 = 1.47$, $p = .83$) suggests that there is no systematic difference between the fixed and random effects estimates. Consequently, the random effects model is more efficient and is therefore retained for subsequent analysis. This choice ensures consistency with the theoretical expectation that unobserved heterogeneity across states is random and uncorrelated with the regressors.

Table 5: Panel Diagnostic Tests for Random Effects Model

Test	χ^2 / Statistic	p-value
Breusch–Pagan LM test for random effects	$\chi^2(1) = 0.00$	1.000
Pesaran's test of cross-sectional dependence	$z = –0.185$	0.853
Serial correlation test (AR(1))	$\chi^2(1) = 24.33$	0.000

Note: The LM test indicates no significant random effects, Pesaran's test shows no cross-sectional dependence, while the AR(1) test reveals significant first-order serial correlation.
Source: Author's computation, 2026

As shown in Table 5, a Breusch–Pagan Lagrange Multiplier (LM) test for random effects indicated that the random effects were not significant, $\chi^2(1) = 0.00$, $p = 1.00$, suggesting negligible variability across panels. Pesaran's test of cross-sectional dependence revealed no evidence of correlation among the panel units, $z = –0.19$, $p = 0.85$. In contrast, the AR(1) test for first-order serial correlation was significant, $\chi^2(1) = 24.33$, $p < 0.001$, indicating the presence of autocorrelation in the residuals and implying that standard errors may be biased if uncorrected.
Given the presence of autocorrelation, it was necessary to estimate a Random Effects GLS regression that accounts for AR(1) disturbances, as reported in Table 6. This approach corrects for the first-order serial correlation while retaining the panel structure, ensuring unbiased and efficient coefficient estimates.

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

Table 6: Random Effects GLS Regression with AR(1) Disturbances Predicting Tax Revenue Mobilisation

Predictor	B	SE	z	p	95% CI Lower	95% CI Upper
Institutional Quality	0.537	0.084	6.36	<.001	0.371	0.702
Technology Innovation Index	0.308	0.076	4.07	<.001	0.160	0.456
GDP Growth	–0.364	0.442	–0.82	0.410	–1.231	0.502
Inclusive Growth	0.157	0.066	2.37	0.018	0.027	0.287
Constant (_cons)	49.665	7.387	6.72	<.001	35.186	64.143

Note. Number of observations = 70; Number of groups = 5; Observations per group: min = 14, avg = 14, max = 14; R^2 within = 0.501, between = 0.892, overall = 0.533; Wald $\chi^2(5) = 78.35$, $p < .001$; Estimated AR(1) autocorrelation: $\rho = -0.074$; $\sigma_u = 0$, $\sigma_e = 9.175$.

Source: Author's computation, 2026

As presented in Table 6, the Random Effects GLS regression with AR(1) disturbances shows that Institutional Quality was a significant positive predictor of tax revenue mobilisation, B = 0.537, SE = 0.084, z = 6.36, p < .001, indicating that higher institutional quality is associated with increased revenue mobilisation. Similarly, the Technology Innovation Index positively and significantly influenced tax revenue mobilisation, B = 0.308, SE = 0.076, z = 4.07, p < .001. Inclusive Growth also had a positive and significant effect, B = 0.157, SE = 0.066, z = 2.37, p = 0.018. In contrast, GDP Growth was not a significant predictor, B = –0.364, SE = 0.442, z = –0.82, p = 0.410. The model constant was significant, B = 49.665, SE = 7.387, z = 6.72, p < .001.

Overall, the model explained a substantial portion of the variance in tax revenue mobilisation both within groups ($R^2 = 0.501$) and between groups ($R^2 = 0.892$), with a Wald $\chi^2(5) = 78.35$, $p < .001$, indicating that the predictors collectively contributed significantly to the model. The estimated AR(1) autocorrelation coefficient ($\rho = -0.074$) suggests minimal first-order autocorrelation in the residuals, while the between-group variance ($\sigma_u = 0$) implies that most variability is captured by within-group differences.

LASUJMS
JOURNAL OF MANAGEMENT SCIENCES

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

Test of Hypotheses

Table 7: Hypotheses Test for Effects of Institutional Quality and Technological Innovation on Tax Revenue

Hypothesis	Test	χ^2	df	p-value	Decision
H_{01}: Institutional Quality has no significant effect on tax revenue	Institutional Quality = 0	40.44	1	<.001	Reject H0
H_{02}: Technological Innovation has no significant effect on tax revenue	Tech. Innovation Index = 0	16.58	1	<.001	Reject H0
H_{03}:Joint effect of Institutional Quality and Technological Innovation	Institutional Quality, Tech. Innovation Index = 0	47.21	2	<.001	Reject H0

Source: Author's computation, 2026

Hypothesis tests were conducted to examine the effects of Institutional Quality and Technological Innovation on tax revenue mobilisation. As shown in Table 7, Institutional Quality had a significant positive effect on tax revenue, $\chi^2(1) = 40.44$, $p < .001$, leading to rejection of H01. Similarly, Technological Innovation significantly influenced tax revenue, $\chi^2(1) = 16.58$, $p < .001$, resulting in rejection of H02. A joint test of both Institutional Quality and Technological Innovation also revealed a significant combined effect on tax revenue mobilisation, $\chi^2(2) = 47.21$, $p < .001$. These results indicate that both factors individually and collectively contribute significantly to improving tax revenue mobilisation.

5. Conclusion and Recommendations

This study examined the effect of institutional quality and technological innovation on tax revenue mobilisation in Nigeria from 2010 to 2023, using a panel data framework across selected states. The empirical results consistently showed that both institutional quality and technological innovation are significant and positive determinants of tax revenue mobilisation. Specifically, improvements in governance indicators such as regulatory quality, control of corruption, and government effectiveness were found to significantly enhance tax revenue performance by strengthening compliance and reducing leakages. Similarly, technological innovation captured through digital tax systems and ICT adoption was also found to significantly improve revenue mobilisation by increasing efficiency, transparency, and ease of tax administration.

The results further revealed that inclusive growth has a positive and significant relationship with tax revenue mobilisation, indicating that improved revenue performance contributes to broader development outcomes. However, GDP growth was not statistically significant, suggesting that economic growth alone does not automatically translate into improved tax revenue without strong institutional and technological support. The hypothesis tests confirmed that both institutional quality

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

and technological innovation individually and jointly have significant effects on tax revenue mobilisation in Nigeria. Overall, the study concludes that tax revenue performance in Nigeria is largely driven by the synergy between institutional strength and technological advancement, rather than economic growth alone.

Based on the findings of the study, several policy recommendations are made to improve tax revenue mobilisation in Nigeria. The government at both federal and state levels should prioritise the strengthening of institutional quality by enhancing transparency, accountability, and anti-corruption mechanisms within tax administration agencies such as the Federal Inland Revenue Service (FIRS) and state internal revenue boards. This should be complemented with efforts to improve regulatory enforcement and reduce bureaucratic inefficiencies, as these reforms are essential for building taxpayer trust and improving voluntary compliance. In addition, there is a need for increased investment in technological infrastructure to support modern tax administration systems. The expansion of digital platforms such as e-filing systems, automated tax reporting mechanisms, and integrated taxpayer identification systems should be prioritised to enhance efficiency, improve accuracy, and reduce revenue leakages in the tax system.

Furthermore, the government should address the existing regional disparities in ICT infrastructure by improving internet access, particularly in rural and underserved areas. This will ensure that the benefits of technological innovation in tax administration are more evenly distributed across all states and contribute to inclusive revenue growth. Also, capacity building for tax officials should be strengthened through continuous training on digital tax systems and modern revenue collection techniques. This will enhance their efficiency and ensure effective adaptation to evolving technological innovations in tax administration. Finally, policymakers should adopt an integrated reform approach that simultaneously strengthens institutional frameworks and promotes technological innovation, as both are mutually reinforcing in improving tax revenue mobilisation and supporting inclusive economic growth in Nigeria.

Reference

Acemoglu, D., & Robinson, J. A. (2012). *Why nations fail: The origins of power, prosperity, and poverty*. Crown Publishers.

Acemoglu, D. & Robinson, J. A. (2019). *Why nations fail: The origins of power, prosperity, and poverty*. Crown Business.

Adejumo, T. & Olaleye, S. (2024). Institutional quality, technological adoption, and tax revenue mobilisation in Nigeria: Evidence from panel data analysis. *African Journal of Economic Policy, 31*(2), 112–130.

Adeoye, T. & Akinola, S. (2025). Institutional quality, ICT adoption, and tax revenue performance in Nigeria: A panel data approach. *Journal of Fiscal Studies, 41*(2), 112–130.

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

Adeyemi, A. A., & Olaleye, T. O. (2024). *Effects of institutional quality and technological innovation on tax revenue mobilisation in Nigerian states (2012–2022): Evidence from panel data analysis. Journal of Economic and Fiscal Studies, 12*(3), 45–68.

Ajakaiye, O. & Ncube, M. (2022). Domestic revenue mobilisation in Africa: Institutional and technological challenges. *African Development Review, 34*(2), 109–124.

Bird, R. M., Martinez-Vazquez, J., & Torgler, B. (2008). Tax effort in developing countries and high-income countries: The impact of corruption, voice and accountability. *Economic Analysis and Policy, 38*(1), 55–71.

Eubanks, V., & Slemrod, J. (2021). Trust, institutions, and tax compliance in developing economies. *Journal of Economic Behaviour & Organisation, 182*, 447–462.

Eze, C. & Oladipo, J. (2024). Governance, digitalisation, and tax revenue performance in Nigeria: Evidence from mixed methods. *African Journal of Economic Development, 19*(4), 87–105.

Federal Inland Revenue Service. (2023). *Annual report and statement of accounts 2023*. FIRS.

GSMA. (2023). *The mobile economy in Sub-Saharan Africa 2023*. GSMA Intelligence

Ibrahim, A. & Udo, E. (2021). Institutional governance, digital innovation, and tax revenue in Nigeria: A state-level analysis (2010–2019). *Nigerian Journal of Public Finance and Development Studies, 9*(2), 101–120.

Kaufmann, D., Kraay, A. &Mastruzzi, M. (2011). The worldwide governance indicators: Methodology and analytical issues. *World Bank Policy Research Working Paper*, No. 5430.

Meyer, J. W. & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology, 83*(2), 340–363.

Musgrave, R. A. & Musgrave, P. B. (1989). *Public finance in theory and practice* (5th ed.). McGraw-Hill.

NBS. (2023). *Statistical bulletin on government revenue performance*. National Bureau of Statistics.

North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.

Nwankwo, T. & Eze, C. (2023). Institutional quality, technological innovation, and tax revenue mobilisation in Nigeria: Evidence from panel data analysis (2011–2021). *Journal of African Economic Development, 15*(2), 125–143.

OECD. (2023). *Tax administration 2023: Comparative information on OECD and other advanced and emerging economies.* OECD Publishing.

Okoro, S. & Adetunji, A. (2022). Institutional quality, technological innovation, and tax revenue mobilisation in Nigeria: Evidence from panel data analysis. *African Journal of Economic Policy, 30*(1), 78–95.

Okoro, S. & Balogun, A. (2021). Institutional quality, technological innovation, and tax revenue mobilisation in Nigeria: Evidence from panel data (2010–2019). *Journal of Public Finance and Economic Growth, 12*(3), 55–73.

Olufemi, R. & Yusuf, T. (2025). Institutional governance, digital innovation, and tax revenue in Nigeria: An empirical assessment. *Journal of Developmental Fiscal Policy, 18*(1), 66–90.

VOLUME 9, ISSUE 2 - 2026
https://doi.org/10.5281/zenodo.21015517

Torgler, B. (2007). *Tax compliance and tax morale: A theoretical and empirical analysis*. Edward Elgar Publishing.

United Nations Conference on Trade and Development. (2021). *Digital economy report 2021: Cross-border data flows and development*. United Nations Publications.

UNDP. (2022). *Financing the SDGs in Nigeria: Policy challenges and options*. United Nations Development Programme.

World Bank. (2022). *Strengthening public sector institutions in Nigeria*. World Bank Publications.