

Digitalisation and Tax Revenue Generation: The Moderating Role of Institutional Quality in Nigeria

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Abstract: *This study examined the moderating role of institutional quality in the relationship between digitalisation's effect on tax revenue generation in Nigeria, motivated by persistent oil dependence, fiscal deficits, and low tax-to-GDP ratios despite e-tax reforms which threatened fiscal sustainability, using annual data from 2003 to 2024. The study employed quantitative longitudinal research design. Following Philip-Perron unit root tests that confirmed a mix of integrated variables, the Autoregressive Distributed Lag (ARDL) model was utilized to analyze short-run and long-run dynamics. The empirical results indicated that digitalisation did not independently exert a statistically significant influence on tax revenue. Furthermore, while the interaction between digitalisation and institutional quality produced a positive coefficient, the effect remained statistically insignificant in both the long run and short run. Global oil prices remained the dominant driver, confirming the national budget remained structurally tethered to international energy market volatility. The consistently significant negative error correction terms across all models confirmed a long-run equilibrium relationship. The study concluded that institutional quality does not significantly moderate the relationship between digitalisation adoption and tax revenue in Nigeria. The study recommended that the Nigerian government prioritize the enhancement of institutional frameworks and administrative oversight to address governance deficiencies. Policymakers should transcend mere technological acquisitions by amalgamating digital tax instruments with robust accountability mechanisms and pursuing assertive non-oil diversification strategies to disentangle fiscal health from oil markets.*

Keywords: Institutional quality, digitalisation, tax revenue, ARDL Model

1. Introduction

The persistent challenge of suboptimal domestic revenue mobilization remains a central theme in Nigeria's fiscal discourse. Despite being Africa's largest economy, Nigeria exemplified these challenges with persistently low tax-to-GDP ratios that fell significantly below regional and global benchmarks, notwithstanding ongoing reforms and digital initiatives (Abiola & Asiweh, 2012; Igwe et al., 2024). These hurdles reflected broader systemic issues across developing economies, where weak fiscal institutions and governance deficits constrained domestic resource mobilization (Bati, 2025; Ricciuti et al., 2019). Nigeria's 7.3% revenue-to-GDP ratio trailed ECOWAS and Sub-Saharan Africa averages, while the tax-to-GDP ratio of 7.9% in 2022 missed the 15% World Bank threshold (Jung, 2023; Falohun & Babatunde, 2024). Consequently, authorities targeted an 18% ratio by leveraging digitalisation to enhance compliance (Ajetunmbi et al., 2022; Bright, 2023).

Nigeria's tax revenue challenge was multifaceted, encompassing technical and institutional dimensions. Historical reliance on oil revenues created fiscal vulnerabilities and disincentivized robust non-oil tax systems (Bothhole et al., 2012). Furthermore, a vast informal sector, pervasive tax evasion, and administrative inefficiencies including manual processes and weak enforcement capacity, undermined collection efforts (Efunboade, 2014; Fadipe et al., 2025; Michael et al., 2020). These structural weaknesses

resulted in narrow tax bases and significant revenue leakages (Ajaero et al., 2025; Nnubia et al., 2020).

In response, digitalisation emerged as a transformative strategy for modernizing tax administration. Platforms such as electronic filing, automated payments, and blockchain-based solutions offered pathways to reduce compliance costs, enhance transparency, and minimize corruption (Dagunduro et al., 2025; Damayanti et al., 2024; Tivde, 2024). While studies documented positive associations between digitalisation and revenue performance in Nigeria (Busari et al., 2025; Usman et al., 2025), empirical evidence remained inconsistent, with some reporting mixed or insignificant effects (Ofurum et al., 2018; Olaoye et al., 2018). This suggested that digitalisation's effectiveness was contingent upon broader contextual factors, specifically the quality of supporting institutions (Bird & Zolt, 2008).

Technological interventions did not operate in vacuums but were embedded within governance contexts (Apeti et al., 2024; Mallick, 2021). Despite the independent links between digitalisation, institutional quality, and revenue, significant gaps remained regarding their interactive effects, particularly in Sub-Saharan Africa (Jaya et al., 2025; Wandaogo, 2022). In Nigeria, no comprehensive investigation had systematically analyzed the moderating role of institutional quality in this relationship (Adesoga et al., 2024; Fadipe et al., 2025). The mixed empirical evidence on digitalisation's impact suggested unexamined moderators, with institutional quality being a theoretically plausible candidate (Bojuwon et

al., 2025; Olaoye et al., 2022). By explicitly modelling this interaction, this study utilized ARDL modelling to investigate how institutional quality moderated the relationship between digitalisation and tax revenue in Nigeria.

1.1 Objectives of the Study

- 1) Assess the effect of digitalisation on tax revenue in Nigeria.
- 2) Analyze the moderating effect of institutional quality on the relationship between digitalisation and tax revenue in Nigeria.

2. Conceptual Review

2.1 Tax Revenue

Tax revenue is conceptualized as a compulsory fiscal imposition on individuals and entities, intended to finance governmental endeavors, with any attempt at evasion constituting a breach of legal statutes (Central Bank of Nigeria [CBN], 2017). These financial contributions are essential for the sustenance of public finance, the equitable redistribution of wealth, and the maintenance of economic stability (Kaka, 2020; Muhammad, 2025). The process of revenue generation encompasses methodical procedures designed to augment resources through statutory enforcement mechanisms (Dakhil et al., 2025). Taxation is classified into two principal categories: direct and indirect taxes. Direct taxes, which encompass petroleum profit and corporate income taxes, are imposed directly upon the taxpayer, whereas indirect taxes, such as value-added tax (VAT) and customs duties, are subsequently passed on to the end consumers (CBN, 2017). In Nigeria, non-oil revenue is primarily directed towards sectors that lie beyond the purview of crude oil, specifically targeting commodities and services (Ajagun et al., 2025; Ibitoye et al., 2025). In terms of oil revenue, the Federal Inland Revenue Service (now operating as the Nigeria Revenue Service) is responsible for the collection of hydrocarbon taxes, while the Nigerian Upstream Petroleum Regulatory Commission (NUPRC) is tasked with the administration of royalties under the provisions established by the Petroleum Industry Act of 2021 (CBN, 2017). The tax rates applicable to petroleum range from 30% to 85%; however, recent reforms have introduced a bifurcated tax structure for newly issued licenses. The advent of digitalisation, exemplified by initiatives such as VAT-Collect, seeks to enhance compliance and streamline the auditing process (Folorunsho, 2023; Olasunkanmi & Adejuwon, 2024; Wole, 2020). Ultimately, the integration of digital technologies has fortified the relationship between non-oil taxation and revenue generation by augmenting predictability and mitigating fiscal deficits (Ibitoye et al., 2025).

2.2 Digitalisation

Digitalisation in public finance signifies the incorporation of information and communication technology (ICT) to reform governmental operations and financial administration (Gradillas & Thomas, 2023). Gherghin (2025) articulated it as the amalgamation of technologies aimed at augmenting efficiency and transparency. This process encompasses both

institutional and socio-political dimensions, employing the E-Government Development Index to promote collaborative governance (Gavrila, 2024; Setyawan et al., 2024). Within the realm of tax administration, digitalisation has optimized the processes of revenue collection and compliance (Ajaero et al., 2025). The implementation of electronic taxation has not only increased revenue but also diminished operational costs, thereby underscoring transparency through instantaneous processing (Oloyede, 2022; Omotayo et al., 2025; Scannell & Tawiah, 2024).

The E-Government Development Index (EGDI), instituted by the United Nations Department of Economic and Social Affairs (UNDESA) in 2001, serves as a metric for assessing digital governance through indices related to online services, infrastructure, and human capital (United Nations, 2022, 2024). Nigeria's inclusion in the EGDI framework in 2003 marked a significant transition toward standardized global evaluations (Ishola et al., 2020). This study employed EGDI as a proxy for digitalisation (DIG), assessing both infrastructure and inclusive access (Adams & Paul, 2023).

2.3 Institutional Quality

Institutional quality encompasses both formal and informal frameworks, which include the rule of law, governmental integrity, and regulatory efficiency, that guide economic interactions and ascertain the efficacy of public policy (North, 1990). Kaufmann et al. (2010) assert that institutional quality is manifested through essential dimensions such as the rule of law, the control of corruption, governmental effectiveness, regulatory quality, political stability, and voice/accountability, which collectively mitigate institutional deficiencies and improve policy outcomes, including tax compliance in the context of digitalisation initiatives.

In this study, institutional quality was assessed utilizing the Index of Economic Freedom (IEF) developed by the Heritage Foundation, which comprises a composite score (ranging from 0 to 100) that aggregates twelve factors across four primary pillars: rule of law (including property rights, judicial effectiveness, and governmental integrity), government size (comprising tax burden, public expenditure, and fiscal health), regulatory efficiency (encompassing business, labor, and monetary freedoms), and market openness (covering trade, investment, and financial freedoms), which is widely recognized as a reliable proxy for institutional robustness in empirical analyses, particularly in ARDL examinations of fiscal performance (Gwartney et al., 2004). This conceptualization is consistent with the principles of new institutional economics, which posits that elevated IEF scores enhance the influence of digital instruments on tax revenue by reinforcing enforcement mechanisms and promoting transparency (Lawson et al., 2023).

2.4 Empirical Review

Empirical literature revealed that tax revenue often had marginal long-run impacts (Muhammad, 2025). Digitalisation was identified as essential for transparency, though infrastructure investments frequently coexisted with corruption (Osadola et al., 2023). Within Nigeria, petroleum profit tax correlated positively with growth, whereas

corporate and value-added taxes exhibited negative impacts (Amadi & Amadi, 2023; Basha, 2022; Otekunrin et al., 2023). Although certain taxes boosted capital expenditure (Adeyemi et al., 2022; Duyile et al., 2024), implementation was hindered by fraud and administrative inefficiencies (Audu et al., 2023; Owenvbiugie & Owenvbiugie, 2020).

The transformative role of digitalisation was highlighted by Oti-Akenteng et al. (2025), who found it enhanced revenue in Ghana. Ajaero et al. (2025) and Akinyosoye et al. (2025) confirmed that tax digitalisation altered Nigeria's revenue landscape, with online systems mitigating leakages. Asomba et al. (2024) and Oloyede (2022) argued e-governance augmented fiscal efficiency, while Mohammed and Gemu (2024) found technology positively moderated the non-oil revenue-growth relationship. However, empirical contradictions persisted; Okere et al. (2024) reported positive correlations between ICT and tax mobilization, whereas Ogbada et al. (2023) and Ofurum et al. (2018) found negligible effects. Bate (2021) utilized GMM to show digitalisation positively affected African tax mobilization through education and industrial channels. Finally, Gomba et al. (2024) revealed that digital technologies significantly improved CIT and capital gains tax collection.

Orji & Charles (2023) highlighted that institutional quality, particularly control of corruption, significantly moderated the relationship between fiscal policy options and tax revenue generation in Nigeria. Strong institutions reduced free riding and improved tax compliance, while weak institutions exacerbated tax evasion. The findings indicated that effective governance and regulatory quality were crucial in leveraging digitalisation for enhanced tax revenue, as they fostered a conducive environment for compliance and reduced opportunities for evasion. Kadir and Sanni (2024) investigated institutional quality's moderation on digitalised accounting practices and accountability in Ministries, Departments, and Agencies (MDAs), finding significant positive effects for digital tax administration ($p=0.012$), treasury management ($p<0.001$), and financial management ($p<0.001$), though the joint effect was marginally significant ($p=0.057$). This implied that strong institutions amplified digital tools' efficacy in revenue and related accountability. Overall, evidence suggested that institutional quality strengthened digitalisation's revenue impact, warranting ARDL models with interaction terms for precise estimation.

2.5 Theoretical Framework

2.5.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), conceived by Davis in 1989, functioned as a pivotal theoretical framework for elucidating the manner in which digitalisation has influenced the fiscal landscape of Nigeria. Grounded in the Theory of Reasoned Action, TAM asserted that perceived usefulness (PU) and perceived ease of use (PEOU) are the primary determinants driving the adoption of technological systems. In the context of this investigation, PU encapsulated the belief that instruments such as ASYCUDA significantly augmented efficiency in revenue collection, whereas PEOU

signified the simplicity of user navigation through these systems. Empirical findings substantiated that elevated levels of PU and PEOU markedly enhanced taxpayer compliance and user intent, as evidenced by the studies conducted by Kaliky et al. (2024) and Sepasgozar et al. (2020). The widespread implementation of these technologies contributed to a reduction in fiscal leakages and promoted a culture of transparency, as reported by Umar et al. (2023). In addition, the utility derived from digital innovations fostered a greater sense of fiscal discipline, as discussed by Babatunde and Remilekun (2024). TAM elucidated the ways in which digitalisation has modulated the nexus between revenue generation and budgeting, thereby ensuring that the acceptance of technological innovations optimally enhances Nigeria's fiscal standing.

2.5.2 Institutional Theory

Institutional Theory, initially articulated by Meyer and Rowan (1977), explored the manner in which the environmental contexts of Nigeria influenced fiscal outcomes. The theoretical framework posited that institutions acquired legitimacy through isomorphic processes, aligning themselves with prevailing norms (Meyer & Rowan, 1977). Such normative pressures exerted a significant influence on performance, as societal realities were constructed through social processes (Andriele et al., 2017; Lammers & Garcia, 2017). Within the Nigerian context, the quality of governance and the provisions of the Fiscal Responsibility Act (2007) were pivotal in determining operational efficiency, while insufficient institutional frameworks contributed to fiscal deficits (Emelogu & Ozughalu, 2010; Kilishi, 2020). As a result, there was a call for reforms aimed at enhancing transparency (Emmanuel et al., 2024). The process of digitalisation emerged as a transformative force for institutional change, effectively diminishing information asymmetry and curtailing rent-seeking behaviors to enhance the performance of tax revenue (Diamond, 2006; Jameel et al., 2019; Rivero-del-Paso et al., 2023).

3. Methodology

The study employed a quantitative longitudinal research design to analyze time-series data, following the precedents set by Muhammad (2025), Okoroigwe et al. (2023), and Waleed (2020). Utilizing the approach of Oladejo (2024), the research utilized the entire population of Nigeria's fiscal metrics from 2003 to 2024. Secondary data were sourced from the Central Bank of Nigeria (tax revenue), Heritage Foundation Index of Economic Freedom (institutional quality), and United Nations E-Government Development index (digitalisation). Inferential analysis was conducted using EViews 12, employing the Autoregressive Distributed Lag (ARDL) approach to estimate short- and long-run relationships. Moderated multiple regression determined how institutional quality altered the relationship between digitalisation and tax revenue, ensuring robust hypothesis validation.

Table 1.1: Summary of Variables, Acronyms, Measurements, and Sources

Variable	Symbol	Description & Measurement	Sourced
Tax Revenue	TR	Measure as log of absolute value of annual tax revenue for the period in Nigeria	Choudhary et al., 2024
Institutional Quality	IQ	Measure as log overall average of Index of Economic Freedom for the period in Nigeria	Agility et al., 2022
Digitalisation	DIG	Measure as the E-Government Development index for the period in Nigeria	Kotenok et al., 2020
Inflation Rate	INF	Measure as log of annual inflation rate in Nigeria for the period	Adekanmbi et al., 2023
Global Oil Price	GOP	Measure as log of oil price (OPEC Reference Basket) for the period	Muhammad et al., 2025

Source: Author's Compilation, 2026

3.1 Model Specifications

The study employed the ARDL multiple regression model to analyze the relationship between digitalisation, institutional quality and tax revenue generation. ARDL provides valid estimation irrespective of mixed integration order up to I(1) (Umaru et al., 2021) and allows for examining temporal effects using a contemporary framework. The generalized ARDL (p, q) model is specified as:

$$Y_t = \gamma_{0i} + \sum_{i=1}^p d_i Y_{t-i} + \sum_{i=1}^q b'_i X_{t-i} + \varepsilon_t \dots \dots \dots (1)$$

Where Y'_t is a vector and the variable in (X'_t) are allowed to be purely I(0) or I(1) or cointegrated; d and b are the coefficients; γ is the constant; $i = 1..k$; p, q are optimal lag orders; ε_t is a vector of the error terms – unobserved zero mean white noise vector process (serial uncorrelated or independent. More precisely, the researcher delineates models based on objectives of the study and formed as aggregated and specified using ARDL as employed by Muhammad (2025).

Model 1: The effect of digitalisation on tax revenue generation in Nigeria.

$$\ln TR_t = \beta_0 + \beta_1 DIG_t + \beta_2 \ln INF_t + \beta_3 \ln GOP_t + \varepsilon_t \dots \dots \dots (2)$$

Where:

$\ln TR$ = Natural logarithm of Tax Revenue

β_0 = The constant term represents the expected value of the tax revenue when independent is zero.

DIG = Digitalisation index

$\ln INF$ = Log of inflation rate

$\ln GOP$ = Log of Global Oil Price

$\beta_{1,3}$ = The coefficients of direct relationship that represent the impact of each digitalisation and control variable on the tax

ε_t = Error term.

The ARDL model is specified as follows:

$$\Delta \ln TR_t = \beta_0 + \sum_{i=1}^p \phi_i \Delta \ln TR_{t-i} + \sum_{i=1}^q \alpha_1 \Delta DIG_{t-i} + \sum_{i=1}^q \alpha_2 \Delta \ln INF_{t-i} + \sum_{i=1}^q \alpha_3 \Delta \ln GOP_{t-i} + \beta_1 \ln TR_{t-1} + \beta_2 DIG_{t-1} + \beta_3 \ln INF_{t-1} + \beta_4 \ln GOP_{t-1} + \varepsilon_t \dots \dots \dots (3)$$

The Error Correction Model (ECM) model for $\ln TR_t$ is specified as follows:

$$\Delta \ln TR_t = \beta_0 + \sum_{i=1}^p \phi_i \Delta \ln TR_{t-i} + \sum_{i=1}^q \alpha_1 \Delta DIG_{t-i} + \sum_{i=1}^q \alpha_2 \Delta \ln INF_{t-i} + \sum_{i=1}^q \alpha_3 \Delta \ln GOP_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \dots \dots \dots (4)$$

Where: All variables are as previously defined except:

$t=1$ = are the optimal lag orders.

$t-1$ = are the lag values.

ϕ, α = short term dynamics.

β = long term dynamics.

p = the maximum number of lags for independent variable in the study.

It represents fiscal inertia. The parameter p tells us how many previous periods of Tax Revenue ($\ln TR_{t-1}, \ln TR_{t-2}, \dots$) affect the current Tax Revenue. This year's tax revenue is often a direct consequence of last year's commitments. If $p=1$, it means the tax revenue from just one year ago is a significant predictor of today's value

q = The lag of the independent and control variables.
 ε_t = Error term.

Δ = is the difference operator

$\lambda = (1 - \sum_{i=1}^p d_i)$, speed of adjustment (speed limit of the recovery) parameter back to equilibrium, with a negative sign and statistically significant. Tells us how resilient the Nigerian fiscal system is in returning to normal after a crisis.

$ECT_{t-1} = (\ln TR_{t-1} - \theta X_t)$, the error correction term which is the extracted residuals from the regressions of the long-run equation. This is the most critical part of the model. It represents the gap or error from the previous period.

The ECT calculates how much of that gap needs to be closed

$$\theta = \frac{\sum_{i=0}^q b_i}{\alpha}$$

is the long-run parameters

Equation 4 aimed to determine the speed of adjustment at which the budget returned to its long run equilibrium after a shock. It reconciled short-term fiscal fluctuations with long-term structural trends, measuring how quickly previous errors or imbalances in tax revenue were corrected.

Model 2: The moderating effect of institutional quality on the relationship between digitalisation and tax revenue generation in Nigeria.

$$\ln TR_t = \beta_0 + \beta_1 DIG_t + \beta_2 \ln IQ_t + \beta_3 DIG_t * \ln IQ_t + \beta_4 \ln INF_t + \beta_5 \ln GOP_t + \varepsilon_t \dots \dots \dots (8)$$

Where: All variables are as previously defined except

$\ln IQ$ = Natural log of institutional quality

$DIG * \ln IQ$ = Interaction between DIG and IQ

Equation 8 used an interaction term ($DIG * \ln IQ$) to test if institutional quality enhanced digitalisation. It aimed to determine whether institutional quality moderated the relationship between digitalisation and tax revenue generation while controlling for inflation.

The ARDL model is specified as follows:

$$\Delta \ln TR_t = \beta_0 + \sum_{i=1}^p \phi_i \Delta \ln TR_{t-i} + \sum_{i=1}^q \alpha_1 \Delta DIG_{t-i} + \sum_{i=1}^q \alpha_2 \Delta \ln IQ_{t-i} + \sum_{i=1}^q \alpha_3 \Delta DIG_{t-i} * \ln IQ_{t-i} + \sum_{i=1}^q \alpha_4 \Delta \ln INF_{t-i} + \sum_{i=1}^q \alpha_5 \Delta \ln GOP_{t-i} + \beta_1 \ln TR_{t-1} + \dots$$

$$\beta_2 \text{DIG}_{t-1} + \beta_3 \ln \text{IQ}_{t-1} + \beta_4 \text{DIG}_t * \ln \text{IQ}_{t-1} + \beta_5 \ln \text{INF}_{t-1} + \beta_6 \ln \text{GOP}_{t-1} + \varepsilon_t \text{-----} (9)$$

Where: All variables are as previously defined.

The Error Correction Model (ECM) model for $\ln \text{TR}_t$ is estimated as:

$$\Delta \ln \text{TR}_t = \beta_0 + \sum_{i=1}^p \phi_i \Delta \ln \text{TR}_{t-i} + \sum_{i=1}^q \alpha_1 \Delta \text{DIG}_{t-i} + \sum_{i=1}^q \alpha_2 \Delta \ln \text{IQ}_{t-i} + \sum_{i=1}^q \alpha_3 \Delta \text{DIG}_{t-i} * \ln \text{IQ}_{t-1} + \sum_{i=1}^q \alpha_4 \Delta \ln \text{INF}_{t-i} + \sum_{i=1}^q \alpha_5 \Delta \ln \text{GOP}_{t-i} + \beta_1 \ln \text{TR}_{t-1} + \beta_2 \text{DIG}_{t-1} + \beta_3 \ln \text{IQ}_{t-1} + \beta_4 \text{DIG}_t * \ln \text{IQ}_{t-1} + \beta_5 \ln \text{INF}_{t-1} + \beta_6 \ln \text{GOP}_{t-1} + \lambda \text{ECT}_{t-1} + \varepsilon_t \text{-----} (10)$$

Where: All variables are as previously defined.

4. Results and Discussions

4.1 Descriptive Statistics

The descriptive statistics indicated that tax revenue ($\ln \text{TR}$) and institutional quality ($\ln \text{IQ}$) maintained high mean values

Table 1.2: Descriptive Statistics

Variable	Mean	Median	Max	Min	Std. D	Skew	Kurtosis	Jarque - B	Prob.	Obs.
$\ln \text{TR}$	8.447	8.5484	9.7517	7.0301	0.6568	-0.146	2.6918	0.1655	0.9205	22
DIG	0.3294	0.2948	0.4815	0.2253	0.0687	1.0592	3.1113	4.1255	0.127	22
$\ln \text{IQ}$	4.0008	4.0136	4.0724	3.8795	0.0589	-0.999	2.8146	3.6932	0.1577	22
$\ln \text{INF}$	2.5651	2.5529	3.4812	1.6863	0.396	0.102	3.3704	0.1639	0.9213	22
$\ln \text{GOP}$	4.1834	4.2403	4.6954	3.3357	0.3813	-0.48	2.4426	1.1329	0.5675	22

Source: Researcher Computation Using Eviews12 Output, 2026

4.2 Correlation Analysis

The pairwise correlation matrix confirmed the absence of multicollinearity, ensuring model reliability (Kyriazos & Poga, 2023). The correlation analysis indicated a strong, positive, and significant association between digitalisation (DIG) and tax revenue ($\ln \text{TR}$) at ($r=0.739^*$, $p<0.05$), suggesting digitalisation robustly associated with higher tax revenue. Institutional quality ($\ln \text{IQ}$) also showed a significant positive correlation with revenue ($r = 0.495$), implying that better governance frameworks complemented collection efforts. Control variables, specifically global oil prices ($\ln \text{GOP}$) and inflation ($\ln \text{INF}$), were positively associated with revenue, though oil prices exhibited a stronger link ($r = 0.602$). These results mirrored the findings of Dagunduro et al. (2025) and Usman et al. (2025), who recorded significant positive association between digital platforms and Nigerian revenue.

Table 1.3: Correlation Analysis

Variable	$\ln \text{TR}$	DIG	$\ln \text{IQ}$	$\ln \text{INF}$	$\ln \text{GOP}$
$\ln \text{TR}$	1				
DIG	0.739*	1			
$\ln \text{IQ}$	0.495*	0.291	1		
$\ln \text{INF}$	0.421*	0.485*	-0.09	1	
$\ln \text{GOP}$	0.602*	0.176	0.367	-0.13	1

Note: * imply 5% level of significance. Source: Researcher Computation Using Eviews12 Output, 2026.

4.4 Pre-test Analysis of the Data

In analysis involving time series data, it is imperative to examine this property of series. The assumption such as stationarity, nonstationary, optimal lag length selection, and

of 8.447 and 4.000, respectively, suggesting a stable fiscal and governance baseline. The proximity of the mean to the median for most variables indicated a lack of significant outliers. Digitalisation (DIG) was positively skewed ($1.059>0$, right-tail), reflecting gradual adoption, while the near-three kurtosis values across variables suggested a mesokurtic distribution. Crucially, the Jarque-Bera probabilities exceeded 0.05, confirming that the data was normally distributed. These findings implied a suitable foundation for ARDL modeling, as noted by Ajaero et al. (2025) and Dagunduro et al. (2025), who recorded similar normality in Nigerian fiscal time-series. The low standard deviation in $\ln \text{IQ}$ (0.058) further implied that institutional frameworks remained rigid, reinforcing the need for the moderating analysis proposed by Orji and Charles (2023).

cointegration are often tested to ensure unbiased regression analysis. The following subsections discuss the application of these tests in this study.

4.4.1 Stationarity Test

Stationarity was evaluated using Phillips-Perron (PP) test to examine unit root in the time series (Adedokun & Ukafor, 2024).

Table 1.4: Stationarity test using Philip Perron (PP) Unit Root Test:

Philip Perron (PP)						
Level		First Difference				
Variables	t-statistic	Critical Value	I(d)	t-statistic	Critical Value	I(d)
$\ln \text{TR}$	-----	-----	I(0)	-4.453 ^b	-3.658**	I(1)
DIG	-4.420 ^a	-3.644**	I(0)	-----	-----	----
$\ln \text{IQ}$	-----	-----	-----	-4.515 ^b	-3.808**	I(1)
$\ln \text{INF}$	-----	-----	-----	-4.158 ^a	-3.808***	I(1)
$\ln \text{GOP}$	-----	-----	I(0)	-4.125 ^a	-3.808***	I(1)

Note: The ^a indicates constant without deterministic trend; ^b is the model with constant and deterministic trend as exogenous lags are selected based on Schwarz info criteria. *, **, *** imply that the series is stationary at 10%, 5%, and 1% respectively. ADF and PP denote Augmented Dickey-Fuller and Phillip-Perron Unit Root tests. Source: Researcher Computation Using Eviews12 Output, 2026.

PP results indicated that digitalisation was stationary at level $I(0)$, whereas tax revenue, institutional quality, inflation and global oil price achieved stationarity at first difference $I(1)$. The series exhibited a mixed order of integration of $I(0)$ and $I(1)$ without $I(2)$ variables.

Table 1.5: Stationarity Results using Vogelsang-Perron SB test Unit Root Test: With Structural Breaks

Variable	Break Date	Level			First Difference		
		t statistic	Critical Value	I(d)	t-statistic	Critical Value	I(d)
lnTR	2015	-5.486 ^b	-5.347**	I(0)	-----	-----	-----
DIG	2008	-6.098 ^b	-5.347***	I(0)	-----	-----	-----
lnIQ	2006	-4.907 ^a	-4.443**	I(0)	-----	-----	-----
lnINF	2007	-----	-----	-----	-4.392 ^a	-4.443**	I(1)
lnGOP	2014	-5.939 ^b	-5.347**	I(0)	-----	-----	-----

Note: The ^a indicates constant without deterministic trend; ^b is the model with constant and deterministic trend as exogenous lags are selected based on Schwarz info criteria. *, **, *** imply that the series is stationary at 10%, 5%, and 1% respectively. The ADF test with structural breaks is determined using the Vogelsang asymptotic one-sided p-values. Critical values from Vogelsang (1993), are at 1% levels of significance. Source: Researcher Computation Using Eviews12 Output, 2026.

The Vogelsang-Perron SB unit root examination illustrated in table 1.5 incorporates considerations for structural breaks. The identified break dates reveal that Nigeria's tax revenue performance and digitalisation adoption dynamics underwent notable structural changes due to policy shifts and external shocks. It demonstrates that the variables lnTR, DIG, lnIQ and lnGOP are stationary at the first difference but show structural breaks in the years 2015, 2008, 2006, and 2014 respectively. Furthermore, inflation was stationary at the level with breakpoint occurring in 2007. The unit root test conducted above indicates that some of the variables are

stationary I(0) while some variables are not stationary I(1). Hence, the Autoregressive Distributed Lag (ARDL) bounds test is employed, which allows for the combination of stationary and non-stationary series.

4.4.2 Optimal Lag Length Selection

Lag values were included to capture how past revenue influenced current budget balances, addressing autocorrelation to establish accurate functional representations. An unrestricted Vector Autoregression (VAR) was utilized, assuming variables were not cointegrated. The Akaike Information Criterion (AIC) determined the optimal lag structure by evaluating goodness of fit while penalizing parameter over-inclusion. Following the guideline of selecting minimal values an automatic selection process identified lag length 1 for objective 1 and 2. This approach ensured the best model fit, consistency, and robust statistical results while avoiding bias in the lag selection process.

4.4.3 ARDL Bounds Test

The Auto-Regressive Distributed Lag (ARDL) bounds testing methodology was employed to ascertain long-run relationships among variables (Oladipupo, 2023; Pesaran et al., 2001; Pesaran & Shin, 1998). Cointegration indicated that variables converged toward equilibrium despite short-term divergences. Results revealed that the F-statistics for Models 1 and 2 exceeded their respective upper-bound critical values at the 5% level of significance, confirming a long-run relationship. Consequently, the study analyzed both short-run and long-run dynamics for the models using the ARDL Error Correction Model (ECM).

Table 1.6: ARDL Bounds Cointegration Test Results

Models	F-Stat.	Lower Bound I(0) at 5%	Upper Bound I(1) at 5%	Cointegration	Remark
1	15.1	5.17***	6.36***	Yes	ECM
2	11.6	3.93***	5.23***	Yes	ECM

Note: *, ** and *** imply cointegration at 10%, 5% and 1* level of significance, respectively. Researcher Computation Using Eviews12 Output, 2026.

4.5 Data analysis

This section presents the ARDL analyses of the variables used in the regression analyses. Specifically, this section analyses the different models based on the objectives of the study.

4.5.1 Effect of Digitalisation on Tax Revenue in Nigeria

The ARDL regression results indicated that the model possessed high explanatory power, with an adjusted R-squared of 0.946, suggesting that 94.6% of the variations in Nigeria's tax revenue (lnTR) was explained by the regressors after adjusting for the degrees of freedom. This indicated a robust model fit, aligning with Dagunduro et al. (2025), who recorded high predictive accuracy in Nigerian digital tax models. The long-run results revealed that global oil prices (lnGOP) had a positive and highly significant impact on tax revenue ($\beta = 0.806$, $p < 0.001$), reinforcing Nigeria's continued fiscal sensitivity to energy markets (Joro & Adda, 2024). Conversely, digitalisation (DIG) exhibited an insignificant negative long-run effect ($\beta = -0.05$, $p = 0.971$), aligning with studies that found technological adoption often faces structural or administrative bottlenecks in the Nigerian context (Olaoye et al., 2018).

The short-run coefficients showed that global oil prices (lnGOP) and inflation (lnINF) significantly and positively drove tax revenue ($\beta = 0.635$ and 0.256 , respectively). This suggested that Nigeria's fiscal system remained sensitive to energy market shocks and "bracket creep" during inflationary periods (Omodero & Ekundayo, 2025). However, the short-run effect of digitalisation (D(DIG)) was positive but insignificant ($\beta = 0.910$, $p = 0.224$), mirroring findings by Ajuonu and Anizoba (2024) that initial technological adoption often yields delayed fiscal results due to infrastructure deficits. The negative and significant CointEq(-1) coefficient (-0.787) confirmed that 78.7% of short-run deviations were corrected annually toward long-run equilibrium. Diagnostic tests, including the B-G LM and B.P.G tests, were all accepted, confirming the absence of serial correlation and heteroscedasticity, while CUSUM and CUSUMSQ plots validated model stability. The Mean VIF of 3.26 remained well below the critical threshold of 10, confirming the absence of multicollinearity and ensuring the stability of the estimated coefficients. The ARDL Eviews syntax $Z = Z(-1) + D(Z)$ in table 1.8 represents a dynamic variable where current values are estimated by combining

previous levels with current changes to isolate short-term impacts from long-run trends. Consequently, the study failed to reject the null hypothesis, concluding that digitalisation did not have a significant effect on tax revenue in Nigeria.

Table 1.7: Regression Analysis: ARDL long run and short run results for model 1: $\ln TR = F(DIG, \ln INF, \ln GOP) - (1, 1, 0, 0)$

Estimated ARDL Long Run Results					
Variable	Coefficient (β)	Std. Error	t-Statistics	p-value	VIF
DIG	-0.05	1.405	-0.03	0.971	NA
$\ln INF$	0.325	0.156	2.081	0.056	NA
$\ln GOP$	0.806	0.143	5.601	0	NA

Estimated ARDL Short Run Results					
Variable	Coefficient (β)	Std. Error	t-Statistics	p-Value	VIF
Constant	2.819	1.063	2.651	0.019	NA
Trend	0.052	0.017	3.085	0.008	NA
$\ln TR(-1)^*$	-0.78	0.143	-5.49	0	8.08
$DIG(-1)$	-0.03	1.108	-0.03	0.971	2.46
$\ln INF^{**}$	0.256	0.1	2.561	0.022	1.77
$\ln GOP^{**}$	0.635	0.11	5.74	0	1.52
$D(DIG)$	0.91	0.715	1.272	0.224	2.49
$CointEq(-1)$	-0.787	0.091	-8.56	0	NA
Mean VIF					3.26

R-squared	0.962
Adjusted R-squared	0.946
Durbin Watson Stat	1.723
F-Statistic	60.33
Prob(F-statistic)	0.000

Diagnostics tests:			
Tests:	F-Statistics	P-value	Decision (H_0)
B-G LM test	0.597	0.565	Accept
B.P.G Test	0.370	0.885	Accept
ARCH test	0.834	0.373	Accept
J-B test	2.568	0.276	Accept
RESET test	1.062	0.307	Accept
CUSUM	-----	-----	Stable
CUSUMSQ	-----	-----	Stable

Note: The test includes both constant and trends and are at 5% level of significance. * p-value incompatible with t-bounds distribution () ** variables interpret as $Z = Z(-1) + D(Z)$ – this indicates a dynamic regressor with an optimal lag of zero, as such Eviews does not include lags and difference of such variables but estimates them contemporaneously. Source: Researcher Computation Using Eviews12 Output, 2026.

4.5.2 Moderating Effect of Institutional Quality on the Relationship between Digitalisation and Tax Revenue in Nigeria

The ARDL regression analysis for the interaction model yielded an Adjusted R-squared of 0.951, indicating that 95.1% of the variation in Nigeria's tax revenue ($\ln TR$) was explained by the regressors. In the long run, digitalisation (DIG), institutional quality ($\ln IQ$), and the interaction term ($DIG * \ln IQ$) were statistically insignificant ($p > 0.05$). This suggested that these factors had not yet achieved the synergy required for a sustainable long-run fiscal impact, potentially due to entrenched structural bottlenecks, as corroborated by Mallick (2021), Lee (2025), and Mahamat (2026).

Table 1.8: Regression analysis: Estimated ARDL long run and short run results for model 2: $\ln TR = F(DIG, \ln IQ, DIG * \ln IQ, \ln INF, \ln GE) - (1, 0, 0, 1, 0, 0)$

Estimated ARDL Long Run Results				
Variable	Coefficient (β)	Std. Error	t-Statistics	p-Value
DIG	-35.03	62.55	-0.56	0.585
$\ln IQ$	-4.291	5.003	-0.857	0.407
$DIG * \ln IQ$	8.536	15.56	0.548	0.593
$\ln INF$	0.197	0.155	1.275	0.226
$\ln GOP$	0.829	0.16	5.153	0

Estimated ARDL Short Run Results				
Variable	Coefficient (β)	Std. Error	t-Statistics	p-Value
Constant	18.07	15.97	1.131	0.279
Trend	0.074	0.021	3.49	0.004
$\ln TR(-1)^*$	-0.859	0.156	-5.492	0
DIG^{**}	-30.12	51.85	-0.581	0.572
$\ln IQ^{**}$	-3.69	4.095	-0.901	0.385
$DIG * \ln IQ(-1)$	7.341	12.9	0.568	0.58
$\ln INF^{**}$	0.17	0.115	1.47	0.167
$\ln GOP^{**}$	0.713	0.117	6.048	0
$D(DIG * \ln IQ)$	7.63	12.92	0.59	0.565
$CointEq(-1)$	-0.859	0.086	-9.942	0

R-squared	0.97
Adjusted R-squared	0.951
Durbin Watson Stat	1.878
F-Statistic	49.85
Prob(F-statistic)	0.000

Diagnostics tests:			
Tests:	F-Statistics	P-value	Decision (H_0)
B-G LM test	1.69	0.232	Accept
B.P.G Test	0.469	0.855	Accept
ARCH test	2.228	0.152	Accept
J-B test	0.697	0.705	Accept
RESET test	0.321	0.753	Accept
CUSUM	-----	-----	Stable
CUSUMSQ	-----	-----	Stable

Note: The test includes both constant and trend and all are at 5% level of significance. * p-value incompatible with t-bounds distribution () ** variables interpret as $Z = Z(-1) + D(Z)$ – this indicates a dynamic regressor with an optimal lag of zero, as such Eviews does not include lags and difference of such variables but estimates them contemporaneously. Source: Researcher Computation Using Eviews12 Output, 2026.

Despite individual insignificance, the interaction term produced a positive coefficient ($\beta = 7.630$). This implied that digitalisation and institutional quality acted as complementary forces where technological efficacy increases alongside institutional improvements (Kadir & Sanni, 2024; Orji & Charles, 2023). However, the insignificant p-value (0.565) indicated this "multiplier effect" remained statistically unreliable, aligning with Olaoeye et al. (2018) and Siyanbola et al. (2025) regarding the impact of administrative gaps.

Conversely, Global Oil Price ($\ln GOP$) remained the dominant driver of revenue in both the long run ($\beta = 0.829$, $p < 0.001$) and short run ($\beta = 0.713$, $p < 0.001$), confirming that Nigeria's fiscal stability remained tethered to oil market volatility (Maji et al., 2017). The $CointEq(-1)$ of -0.859 confirmed that 85.9% of short-run deviations were corrected annually. Ultimately, because interaction p-values exceeded 0.05, the study

accepted the null hypothesis, concluding that institutional quality did not significantly moderate the digitalisation and revenue relationship during the period under review.

4.6 Discussion of Findings

The empirical findings derived from both models accentuated the enduring structural characteristics of Nigeria's fiscal framework. In Model 1, the phenomenon of digitalisation did not demonstrate a substantial long-term impact on tax revenue, corroborating the assertions made by Olaoye et al. (2018), who posited that the adoption of digital technologies absent adequate infrastructural support yields minimal benefits. Nonetheless, global oil prices emerged as a significantly influential factor, reinforcing the notion that Nigeria's revenue remains fundamentally linked to the fluctuations of the energy market (Joro & Adda, 2024).

The integration of the moderator in Model 2 elucidated these dynamics further. Although the interaction term yielded a positive coefficient, indicative of a synergistic "multiplier effect" between technology and governance (Orji & Charles, 2023; Kadir & Sanni, 2024), it retained statistical insignificance. This absence of significance, in conjunction with the persistent predominance of global oil prices, suggested that the interplay between digitalisation and institutional collaboration has yet to attain the requisite threshold to effectively disentangle the national budget from the dependence on petroleum revenues.

5. Conclusion

The study concluded that digitalisation did not independently drive tax revenue in Nigeria, as evidenced by its insignificant long-run impact. While the interaction between technology and institutional quality showed a positive direction, it failed to achieve statistical significance, leading to the acceptance of the null hypothesis regarding moderation. Conversely, global oil prices remained the primary and most significant determinant of fiscal inflows. Ultimately, the results indicated that Nigeria's revenue framework was still structurally tethered to energy markets, with digital-institutional synergies yet to reach a threshold sufficient to transform the national budget.

5.1 Recommendations

The study recommended that the Nigerian government prioritize the strengthening of institutional frameworks to move beyond mere digital adoption toward a synergistic fiscal system. Policymakers were advised to address administrative bottlenecks and governance deficits that currently hinder the "multiplier effect" of digitalisation on tax revenue. Furthermore, there was an urgent need for aggressive economic diversification to decouple the national budget from global oil price volatility. Efforts should focus on integrating digital tax tools with robust oversight mechanisms to ensure that technological investments translate into tangible, sustainable, and non-oil-dependent fiscal growth.

5.2 Contributions to Knowledge

The study contributed to knowledge by providing empirical evidence that digitalisation in Nigeria remained a nascent fiscal tool, lacking the institutional synergy required to drive revenue independently. It uniquely identified a positive but statistically insignificant moderating effect of institutional quality, suggesting that technological adoption alone cannot overcome structural bottlenecks. Furthermore, the findings reconfirmed the persistent dominance of global oil prices, highlighting the critical need for deeper structural reforms to achieve non-oil fiscal sustainability.

References

- [1] Abiola, J., & Asiweh, M. (2012). Impact of tax administration on government revenue in a developing economy: A case study of Nigeria. *International Journal of Business and Social Science*, 3(8), 99–113.
- [2] Adams, S. O., & Paul, C. (2023). E-government development indices and the attainment of United Nations sustainable development goals in Africa: A cross-sectional data analysis. *European Journal of Sustainable Development Research*, 7(4), 1-10. <https://doi.org/10.29333/ejosdr/13576>
- [3] Adedokun, A., & Ukafor, U. O. (2024). The quality of institutions and tax effectiveness on Nigerian economy. *Journal of Finance and Economics*, 12(3), 46-52. Doi:10.12691/jfe-12-3-1.
- [4] Adekanmbi, A. A., Aiyedogbon O. J., & Aigbedion, M. I. (2024). The Paradox of capital flight in resource-rich Nigeria: Consequences for the oil and gas sector (1981 – 2022). *International Journal of Strategic Research in Public Administration and Organizational Process*, 4(1), 116-138. DOI:10.48028/iiprds/ijrsrap.v4.i1.09
- [5] Adeyemi, A., Asogba, O. I., & Ariyibi, E. M. (2022). Tax revenue and National budget performance in Nigeria. *Turk Finance and Economics Research*, 2(1), 74-94.
- [6] Adesoga, A. A., Akinyosoye, M. O., & Oladele, R. (2024). Tax digitalisation and revenue tax compliance: The empirical approach. *International Journal of Entrepreneurial Development, Education and Science Research*, 8(1), 06. <https://doi.org/10.48028/iiprds/ijedesr.v8.i1.06>
- [7] Ajaero, O. O., Iheduru, G. N., & Uchehgbu, C. B. (2025). Tax digitization and revenue generation in Nigeria. *Journal of Economics, Finance and Management Studies*, 8(6), 3700-3708. Doi:10.47191/jefms/v8-i6-31
- [8] Ajagun, O. P., Kehinde, J. S., & Jinadu, M. J. (2025). Tax revenue influences and capital expenditure in Nigeria. *International Journal of Research and Innovation in Applied Sciences*, 10(2), 336-349. <https://doi.org/10.51584/IJRIAS.2025.10020029>
- [9] Ajetunmobi, O., Ojeka, S., Fakile S., Olokoyo, F., & Eluyela, D. (2022). Tax reforms, digitalization and government revenue in Nigeria. *Asian Economic and Financial Review*, 12(9), 800-815. Doi:10.55493/5002.v12i9.4609.
- [10] Agility, S. M., Yusuf, M., Maji K. I., & Azu, P. N. (2024). Moderating role of institutional quality

- between company income tax and economic growth in 15 West African Countries: An Application of Mean Group (MG) and Pooled Mean Group (PMG) Model. *ZIK Journal of Multi-disciplinary Research*, 7(1), 113-139.
- [11] Ajuonu, A. U., & Anizoba, A. S. (2024). Effect of digital tax administration on Nigerian business environment: Evidence from Abia State. *International Journal of Social Sciences and Management Research*, 10(2), 83-98. Doi:10.56201/ijssmr.v10.no2.2024.pg83.98
- [12] Akinyosoye, O., Adefulu, A., Makinde, O., Egwakhe, J., Umukoro, J., & Nwankwere, I. (2025). Tax digitalisation and tax revenue generation system in Nigeria. *Arabian Journal of Business and Management Review (Oman chapter)*, 12(1), 7-10. Retrieved from <https://j.arabianjbm.com/index.php/ocAJBMR/article/view/1260>
- [13] Amadi, K. C., & Amadi, A. I. (2023). Revenue generation in Nigeria: A financial statistical analysis of taxation impact on sustainable socioeconomic infrastructure development. *Research & Reviews Journal of Statistics*, 12(2). Doi:10.37591/RRJoST.
- [14] Andriele, D. P. C., Sieglind, K. C., Luciano, F. L., & Danielle, D. C. (2017). The role and contributions of sociological institutional theory to the socio-technical approach to innovation theory. *Innovation and Management Review*, 250-259. Doi:10.1016/j.rai.2017.02.001
- [15] Apeti, A. E., Bambe, B. Y., & Combes, J. L. (2024). Finding the missing stone: Mobile money and the quality of tax policy and administration. *ICTD Working Paper*, 163. <https://doi.org/10.19088/ictd.2024.006>
- [16] Asomba, I. I., Ejim, C. J., Onyia, O. D., & Orji, G. O. (2024). E-Governance and improved public revenue generation in Nigeria: Issues and prospects. *Social Science Research in Association*, 16(1), 38-54. <https://dx.doi.org/10.4314/jpds.v16i1.3>.
- [17] Audu, I. S., Akinrinola, O., & Somorin, T. (2023). Tax collection efficiency and tax revenue generation in Nigeria. *Journal of Research and Innovation*, 38-48. <https://doi.org/10.59562/jorein.v1i2.50922>
- [18] Babatunde, O., & Remilekun, F. S. (2024). Digitalization, internally generated revenue and financial performance of the polytechnic Ibadan, Ibadan, Oyo State. *Lead City Journal of the Social Sciences*, 9 (3), 61-68.
- [19] Basha, M. H (2022). Evaluating the impact of direct taxes on economic growth: Empirical evidence from Jordan. *Asian Economic and Financial Review*, 12(8), 627-635. Doi:10.55493/5002.v12i8.4573
- [20] Bate, D.A. (2021). Does digitalisation improve the mobilisation of tax revenues in Africa? *African Economic Conference*, 1-8. Doi:10.47348/AMTJ/2021/i1a6
- [21] Bati, S. A. (2025). Institutional and macroeconomic determinants of tax revenue in sub-Saharan African countries. *Future Business Journal*, 11(1), Article 8. <https://doi.org/10.1186/s43093-025-00638-z>
- [22] Bird, R. M., & Zolt, E. M. (2008). Technology and taxation in developing countries: From hand to mouse. *National Tax Journal*, 61(4), 791-821. <https://doi.org/10.2139/SSRN.1086853>
- [23] Bojuwon, M., Adegbe, F. F., & Akintoye, I. R. (2025). Effect of digital taxation on revenue generation: The mediating role of taxpayer awareness. *Journal of Accounting and Investment*, 4(2), 494-512. <https://doi.org/10.56956/jai.v4i2.494>
- [24] Botlhole, T., Asafu-Adjaye, J., & Carmignani, F. (2012). Natural resource abundance, institutions and tax revenue mobilisation in sub-Sahara Africa. *South African Journal of Economics*, 80(2), 135-156. <https://doi.org/10.1111/J.1813-6982.2011.01305.X>
- [25] Bright, N. (2023). *Nigeria's Fiscal Renaissance: Paving the path to economic equilibrium*. <https://www.linkedin.com/pulse/nigerias-fiscal-renaissance-paving-path-economic-bright-nwankpa-busari>
- [26] Busari, G. A., Adegbe, F. F., & Akintoye, I. R. (2025). Effect of digital service tax on tax revenue and foreign direct investment in Nigeria. *Central Asian Journal of Innovations on Management, Business and Administration Research*, 9(7), 042. <https://doi.org/10.70382/caijmsbar.v9i7.042>
- [27] Central Bank of Nigeria (CBN), (2017). Fiscal policy at a glance. *Monetary policy department*.
- [28] Choudhary, R., Ruch, U. F., & Skrok, E. (2024). Taxing for growth: Revisiting the 15 percent threshold. Fiscal policy and sustainable growth.
- [29] Dagunduro, O. M., Lawal, A. I., & Adegbe, F. F. (2025). Role of digital tax platforms adoption in enhancing revenue generation and capital projects funding in emerging markets. *Economy*, 12(2), 78-95. <https://doi.org/10.20448/economy.v12i2.6778>
- [30] Dakhil, M. S., Dagunduro, M. E., Abbood, F. G., & Falana, G. A. (2025). Tax compliance strategies and revenue generation in Nigeria. *Economy, Business and Development (EB&D) Journal*, 6(1), 1-18. <https://doi.org/10.47063/ebd.00021>
- [31] Damayanti, T. W., Sutrisno, T., & Baridwan, Z. (2024). Transforming taxation: Unlocking efficiency and resilience through digitalization. *The Indonesian Journal of International Clinical Legal Education*, 6(4), 1583-1598. <https://doi.org/10.15294/iccle.v6i4.13583>
- [32] Diamond, J. (2006). The institutional framework for budget system reform. *International Monetary Fund*, 8, 75-89. <https://doi.org/10.5089/9781589064744.084>
- [33] Duyile, I. E., Esther, I. O., & Oladeji, O. E. (2024). Causal effects of tax revenue and budget implementation in Nigeria. *International Journal on Economics, Finance and Sustainable Development*, 6(12), 363-376. <https://doi.org/10.31149/ijefsd.v6i12.5344>
- [34] Efunboade, A. O. (2014). Impact of ICT on tax administration in Nigeria. *Computer Engineering and Intelligent Systems*, 5(8), 26-29.
- [35] Emelogu, O. C., & Ozughalu, M. U. (2010). An examination of the relationship between government revenue and government expenditure in Nigeria: Cointegration and causality approach. *Central Bank of Nigeria. Economic and Financial Review*, 48(2), 35-57.
- [36] Emmanuel, N., Usifoh, K. S., & Adu, M. J. (2024). Institutional quality, government expenditure and

- economic growth nexus in Nigeria. *NG-Journal of Social Development*, 13(1). <https://dx.doi.org/10.4314/ngjsd.v13i1.1>
- [37] Fadipe, A. O., Olanrewaju, O. I., & Adegbe, F. F. (2025). Tax administration digitalization and sustainable development in Nigeria. *Central Asian Journal of Innovations on Management, Business and Administration Research*, 7(7), 005. <https://doi.org/10.70382/caijmsbar.v7i7.005>
- [38] Falohun, M., & Babatunde, A. (2024). *Tax revenue generation in Nigeria: A leap beyond corporate taxes*. Mondaq newsletters. <https://www.mondaq.com/nigeria/tax-authorities>
- [39] Folorunsho, L. (2023). *Understanding the value added tax system in Nigeria, 2023 edition*. SGA World, UK/Raywhite Folorunsho & Co (Chartered Accountants). <https://sgaworld.org/value-added-tax-in-nigeria/>.
- [40] Gavrilă, M. R. (2024). Digital tools in enhancing public services delivery. *Management Student Working Papers*, 2, 40-49. DOI: 10.24818/MSWP.2024.04
- [41] Gherghin, C. A. (2025). Public policies for the digitalization of public services in the European Union: From foundations to contemporary challenges. *Technium Social Sciences Journal*, 67(1), 528–539. <https://doi.org/10.47577/tssj.v67i1.12453>
- [42] Gomba, N. P., Nmecha, A., & Uwaoma, I. (2024). Digital technologies and tax revenue in Nigeria. *GPH-International Journal of Business Management*, 7(06), 223-235. <https://doi.org/10.5281/zenodo.13221206>
- [43] Gradillas, M., & Thomas, D. W. L. (2023). Distinguishing digitization and digitalization: A systematic review and conceptual framework. *Journal of Product Innovation Management*, 42, 112–143. Doi:10.1111/jpim.12690
- [44] Gwartney, J., Holcombe, R., & Lawson, R. (2004). Economic freedom, institutional quality, and cross-country differences in income and growth. *Cato Journal*, 24(3), 205–233.
- [45] Ibitoye, J. A., Bakare, A. S., Omodara, A. T. (2025). The growth implications of non-oil tax revenue in Nigeria. *International Journal of Arts and Social Science*, 8(3), 125-136.
- [46] Igwe, A., Edeh, F. O., & Ukpere, W. I. (2024). Tax revenue generation and economic growth: A pre and post treasury single account implementation in Nigeria. *European Journal of Accounting, Auditing and Finance Research*, 12(6), 116–135. <https://doi.org/10.37745/ejafr.2013/vol12n6116>
- [47] Ishola, A. A., Abdulkareem, A. K., & Omolabi, I. (2020). E-Government implementation in Nigeria: Building a new paradigm for public trust. *National Institutes of Legislative and Democracy Studies Journal of Democratic Studies*, 2, 158-183.
- [48] Jaya, I. M., Suryani, N. K., & Wibawa, I. P. (2025). Tantangan dan peluang digitalisasi sistem perpajakan di negara berkembang [Challenges and opportunities of tax system digitalization in developing countries]. *Manajemen, Bisnis & Akuntansi: Jurnal Ilmiah Manajemen, Bisnis & Akuntansi*, 5(1), 1–15. <https://doi.org/10.33557/bgqf1t66>
- [49] Jameel, A., Asif, M., Hussain, A., Hwang, J., Sahito, N., & Bukhari, H. M. (2019). Assessing the moderating effect of corruption on the E-Government and trust relationship: An Evidence of an emerging economy. *Sustainability*, 11(6540), 1–14. <https://doi.org/10.3390/su11236540>.
- [50] Joro, I. D., & Adda, P. S. (2024). Crude oil price fluctuation and economic growth in Nigeria. *FUW Journal of Social Sciences*, 3(1), 83-99.
- [51] Jung, I. (2023). Nigeria's tax revenue mobilization: Lessons from successful revenue reform episodes: Nigeria. *International Monetary Fund Selected Issues Paper*. 01–19. <https://doi.org/10.5089/9798400234989.018>.
- [52] Kadir, A., & Sanni, M. (2024). Digitalized accounting practices and accountability of MDAs in Nigeria: Moderating effect of institutional quality. *Malete Journal of Accounting and Finance*, 5(1), 292-306. <https://majaf.com.ng/index.php/majaf/article/view/188>.
- [53] Kaka, E. J. (2020). Trend analysis of the link between tax revenue, non-tax revenue and public expenditure in Nigeria. *Journal of Accounting Research, Organization and Economics*, 3 (3), 215-228. Doi:10.24815/jaroe.v3i3.18108
- [54] Kaliky, S. F., Rahim, S., & Wahyuni, N. (2024). The influence of the technology acceptance model (TAM), E-System and the role of the account representative on taxpayer compliance at West Makassar KPP. *Invoice*, 7(2), 248-260.
- [55] Kaufmann, D., Kraay, A., & Mastruzzi, M. (2010). The worldwide governance indicators: Methodology and analytical issues. *World Bank Policy Research Working Paper No. 5430*. <https://doi.org/10.1596/1813-9450-5430>
- [56] Kilishi, A. A. (2020). Assessing the adequacy of budgetary institutions in Nigeria. 37
- [57] Kutenok, A., Kulaga, I., Klivak, V., & Tkachenko, O. (2020). The E-Government's influence on the country's economy (at the example of Ukraine and Estonia). *Advances in Economics, Business and Management research*, 129, 175-182.
- [58] Kyriazos, T., & Poga, M. (2023). Dealing with multicollinearity in factor analysis: The problem, detections, and solutions. *Open Journal of Statistics*, 13, 404-424. <https://doi.org/10.4236/ojs.2023.133020>.
- [59] Lammers, C. J. & Garcia, A. M. (2017). Institutional theory approaches. Theories of organization communication. *Chapter 5 session 1*, 195-216. Doi:10.1002/9781118955567.wbieoc113
- [60] Lawson, R., Murphy, R., & Powell, B. (2023). The Heritage Foundation's 2023 Index of Economic Freedom methodology. Heritage Foundation.
- [61] Lee, S.-h. (2025). Digitalization and domestic revenue mobilization: Governmental responsiveness and capabilities matter. *Governance*. <https://doi.org/10.1111/gove.70076>
- [62] Mahamat, A. (2026). *Impact of institutional quality on ICT-tax revenue mobilization nexus in developing countries*. Zenodo. <https://doi.org/10.5281/zenodo.18377637>.
- [63] Maji, I. K., Saari, M. Y., Habibullah, M. S., & Utit, C. (2017). The impact of oil price shocks on Malaysia's

- economic growth and unemployment rate: Evidence from the SVAR model. *Policy Studies*, 38(5), 500–516. <https://doi.org/10.1080/01442872.2017.1320706>
- [64] Mallick, H. (2021). Do governance quality and ICT infrastructure influence the tax revenue mobilisation? An empirical analysis for India. *Economics of Planning*, 54(2), 157–188. <https://doi.org/10.1007/s10644-020-09282-9>
- [65] Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340-363.
- [66] Michael, O. B., Olayinka, I. M., & Oladele, R. (2020). Effects of information technology on effective tax assessment in Nigeria. *Journal of Accounting and Taxation*, 12(3), 112–119. <https://doi.org/10.5897/JAT2020.0416>
- [67] Mohammed, L., & Gemu, A. A. (2024). Moderating role of technological innovations on the relationship between non- oil tax revenue and economic growth in Nigeria. *Journal of Business Development and Management Resources*, 5(7), 37-50.
- [68] Muhammad, S. I. (2025). Role of revenue contributions to economic growth in Nigeria: 1994 – 2022. *Journal of Management Science and Career Development*, 7(27), 115-132. <https://doi.org/10.70382/sjmscd.v7i7.018>
- [69] North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511808678>
- [70] Nnubia, I. C., Okolo, E. I., & Udeh, F. N. (2020). Effect of e-taxation on revenue generation in Nigeria: A pre-post analysis. *Academy of Entrepreneurship Journal*, 26(2), 1–13.
- [71] Ofurum, C. N., Amaefule, L. I., Okonya, B. E. & Amaefule H. C. (2018). Impact of E-taxation on Nigeria's revenue and economic growth: A pre – post analysis. *International Journal of Finance and Accounting*, 7(2), 19-26. Doi:10.5923/j.ijfa.20180702.01.
- [72] Ogbada, E. I., Onyedika, V. A., & Modebelu, M. N. (2023). Digitalization and effective tax administration in Nigeria. *Journal of Accounting and Financial Management*, 9(4), 58-68. Doi:10.56201/jafm.v9.no4.2023.pg58.68
- [73] Okere, W., Nwobia, C. E., Okoye, N. J., & Olaleye, F. (2024). Impact of information communication technology penetration on tax revenue in Sub-Saharan Africa. *Nnadiesbube Journal of Social Sciences*, 5(2), 93-118. <https://www.nnadiesbubejss.org>
- [74] Okoroigwe, S. E., Obilikwu, J., Sayedi, N. S., Yusuf, B. A., & Maichibi, J. H. (2023). Inflation rate and tax revenue performance: A time series Assessment of Nigeria's four decades experience. *International journal of research and innovation in social science*, 7(12), 265-276. <https://dx.doi.org/10.47772/IJRISS.2023.7012023>
- [75] Oladejo, O. J. (2024). Effect of federal government tax and non-tax revenue on economic growth in Nigeria. *African Journal of Accounting and Financial Research*, 7(3), 1-20. Doi:10.52589/AJAFR-DJU0AHOI
- [76] Oladipupo, O. J. (2023). Impact of government revenue and expenditure on economic growth in Nigeria. Doi:10.13140/Rg.2.2.34497.94565.
- [77] Olaoye, C. O., Ayeni-Agbaje, A. R., & Alaran-Ajewole, A. P. (2018). Effect of e-tax payment on revenue generation in Nigeria. *Journal of Accounting and Financial Management*, 4(2), 56–65. <https://doi.org/10.20448/2002.42.56.65>
- [78] Olaoye, C. O., Ayeni-Agbaje, A. R., & Alaran-Ajewole, A. P. (2022). Effect of electronic taxation on revenue productivity in Nigeria. *Archives of Business Research*, 10(8), 125–140. <https://doi.org/10.14738/abr.108.12500>
- [79] Olasunkanmi, F. O., & Adejuwon, J. A. (2024). Digitalisation of tax system and revenue generation in Nigeria. *Lead City Journal of the Social Sciences*. 9(3), 04-21.
- [80] Oloyede, F. (2022). The part of electronic governance in tax revenue collection and remittance in Nigeria. *Public Administration Journal*. 4(1), 1-10.
- [81] Omodero, C. O., & Ekundayo, G. (2025). The road to tax collection digitalization: An assessment of the effectiveness of digital payment systems in Nigeria and the role of macroeconomic factors. *International Journal of Financial Studies*, 13(3), 1-25. <https://doi.org/10.3390/ijfs1303017>
- [82] Omotayo, O. A., Kehinde, O., & Alaba, J. S. (2025). E-Governance and public service delivery: Evidence from Nigeria. *Global International Journal of Innovative Research*, 3(2), 74–88. <https://doi.org/10.59613/global.v3i1.374>
- [83] Osadola, O.S., Ojo, T. W., & Oludemi, S. A. (2023). Budget performance and economic growth in Nigeria: A historical review of the 4th republic. *Rowter Journal*, 2(1), 12-19. <https://doi.org/10.33258/rowter.v2i1.828>.
- [84] Otekunrin, O. A., Fakile, A. S., Eluyela, F. D., Onabote, A. A., John N. O., & Ifeanyichukwu, S. (2023). Impact of oil and non-oil tax revenue on economic growth in Nigeria. *International Journal of Energy Economics and Policy*, 13(2), 545-552. Doi:<https://doi.org/10.32479/ijeep.12781>.
- [85] Oti-Akenteng, E., Ocansey O. N. D. E., & Asamoah, O. F. (2025). Impact of digitalization on revenue generation and transparency within local government frameworks. *International Journal of Science and Research Archive*, 14(03), 1761-1777. <https://doi.org/10.30574/ijrsra.2025.14.3.0888>.
- [86] Owenybiugie, U. G. & Owenybiugie, O. R. (2020). Effective tax administration and revenue collection: Key indicators of government performance in Nigeria. *International Journal of Economics, Business and Management Research*, 4(09), 96-105.
- [87] Pesaran, M. H., & Shin, Y. (1998). An autoregressive distributed-lag modelling approach to cointegration analysis. In *econometrics and economic theory in the twentieth century: The Ragner Frisch Centennial Symposium*, 371–413. <https://doi.org/10.1017/CCOL521633230.011>.
- [88] Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289-326

- [89] Ricciuti, R., Savoia, A., & Sen, K. (2019). How do political institutions affect fiscal capacity? Explaining taxation in developing economies. *Journal of Institutional Economics*, 15(2), 351–380. <https://doi.org/10.1017/S1744137418000097>
- [90] Rivero-del-Paso, L., Pattanayak, S., Uña, G., & Tourpe, H. (2023). Digital solutions guidelines for public financial management. International Monetary Fund. 07, 1-63. <https://doi.org/10.5089/9798400251566.005>.
- [91] Scannell, S., & Tawiah, V. (2024). A thematic literature review on international public sector accounting standards (IPSAS). *Public Organization Review*. <https://doi.org/10.1007/s11115-024-00773-1>
- [92] Setyawan, A. (2024). Enhancing public service delivery through digital transformation: A study on the role of E-Government in modern public administration. *Global International Journal of Innovative Research*, 2(10), 2439–2453. <https://doi.org/10.59613/global.v2i10.340>.
- [93] Sepasgozar, F. M. E., Ramzani, U., Ebrahimzadeh, S., Sargolzae, S., & Sepasgozar, S. (2020). Technology acceptance in e-governance: A case of a finance organization. *Journal of Risk and Financial Management*, 13(7), 1-17. <https://doi.org/10.3390/jrfm1307013>.
- [94] Orji, O. J., & Charles, O. S. (2023) Fiscal policy option for abatement of free rider society: The role of institutional quality in Nigeria. *Journal of Economics & Management Research*, 4(2)1-10. [Doi.org/10.47363/JESMR/2023\(4\)177](https://doi.org/10.47363/JESMR/2023(4)177)
- [95] Siyanbola, A. A., Okuyelu, G., Adeniwura, O. O., Oladele, O. P., & Adegbite, O. O. (2025). Institutional quality and tax revenue in Nigeria: A time series analysis. *Journal of Finance and Accounting Research*, 7(1), 135–154. <https://doi.org/10.32350/jfar.71.07>
- [96] Tivde, K. J. (2024). Leveraging E-taxation for enhanced revenue generation in Nigeria. *International Journal for Research and Innovation in Social Science*, 8(9), 661-670. <https://dx.doi.org/10.47772/IJRISS.2024.809059>.
- [97] Umar, M., Bappi, U., & James, C. (2023). The effect of information communication technology (ICT) on revenue generation in Gombe State Internal Revenue Service. *Journal of Administration and Corporate Governance*. 3(3), 22-34.
- [98] Umaru, A. D., Aliero, H. M., & Abubakar, M. (2021). Budget deficit and economic growth in Nigeria. *Central Bank of Nigeria Economic and Financial Review*, 59(2), 23-41
- [99] United Nations (2022). E-Government survey 2022: The future of digital government. *Department of Economic and Social Affairs*. <https://publicadministration.un.org/en/>
- [100] United Nations (2024). *E-Government Survey: Accelerating digital transformation for sustainable development*. Retrieved from UN Department of Social and Economic Affairs (DESA).
- [101] Usman, A., Ibrahim, M., & Suleiman, N. (2025). Impact of tax system automation on revenue generation in Federal Inland Revenue Service (FIRS), Nigeria. *International Journal of Management and Innovation Research*, 2(5), 103– 118. <https://doi.org/10.58806/ijmir.2025.v2i5n03>
- [102] Wandaogo, A. (2022). Digitalization and economic development: Focus on tax revenue mobilization, governance, and trade facilitation. *Journal of Development Economics*, 28(3), 456–478.
- [103] Waleed, K. A. (2020). Direct and indirect taxes effects on public budget deficit in Jordan from 2008 to 2018. *International Journal of Management*. DOI:10.34218/IJM.11.8.2020.007. 72-79.
- [104] Wole, A. (2020). *Tax alert: FIRS automates value added tax filing and collection system*. KPMG. 3(4). <https://assets.kpmg.com/content/dam/kpmg/us/pdf/2020/03/tnf-nigeria-mar23-2020>.