



ARTIFICIAL INTELLIGENCE AND DIGITAL TAX GOVERNANCE IN NIGERIA: ASSESSING THE FISCAL IMPACTS OF GLOBAL MIGRATION

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Abstract

Rapid advancements in artificial intelligence (AI) and increasing global migration are reshaping the fiscal landscape of developing economies, particularly in the context of digital tax governance. This research provides a comprehensive empirical analysis of artificial intelligence and global migration on Nigeria's digital tax governance from 2000 to 2024. Employing an ex-post facto research design, the study utilizes annual time-series data and applies panel econometric techniques with structural break analysis around 2016. Data were obtained from official government publications and international databases. Prior to 2016, Gross Domestic Product (GDP) growth had a significant positive impact on tax revenue ($\beta = 0.65, p < 0.01$), while AI adoption and global migration indicators were statistically insignificant. Post-2016, AI adoption showed a significant positive effect on tax revenue ($\beta = 0.48, p < 0.001$), while net migration ($\beta = 0.23, p < 0.05$) and remittance inflows ($\beta = 0.31, p < 0.01$) had significant positive impact on tax revenue. Conversely, the ICT infrastructure index maintained a negative association with tax revenue ($\beta = -0.27, p < 0.05$), and inflation exerted a detrimental post-2016 effect ($\beta = -0.34, p < 0.05$). The study concludes that digital transformation and migration dynamics are reshaping Nigeria's fiscal system. It recommends AI integration in tax systems, remittance formalization, macroeconomic stability, and ICT policy reform to strengthen digital tax governance and enhance long-term revenue mobilization.

Keywords: artificial intelligence, digital taxation, global migration, fiscal policy, Nigeria

1. Introduction

The advancement of Artificial Intelligence (AI) and digital technologies is reshaping governance frameworks globally, especially in tax administration. For developing economies like Nigeria, AI presents a strategic opportunity to improve efficiency, transparency, and compliance in revenue mobilization (Organisation for Economic Co-operation and Development [OECD], 2020). However, traditional tax systems in Nigeria remain constrained by inefficiencies, corruption, and limited taxpayer data (Uchenna & Oduh, 2021). As the global economy grows more interconnected, Nigeria faces mounting fiscal challenges, including those associated with global migration.

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Global migration, driven by economic inequality, insecurity, and climate change, has significant implications for Nigeria's tax system. While migration contributes positively through remittances and diaspora investments, it also undermines domestic revenue by facilitating talent flight, informal employment abroad, and tax avoidance (World Bank, 2022). The central challenge is how Nigeria can deploy AI-powered digital tools to tap into the benefits of transnational economic activity while mitigating its fiscal downsides.

Recent research highlights the potential of digital tax governance to enhance revenue systems by tracking cross-border financial flows, addressing compliance gaps, and improving taxpayer profiling using big data analytics, machine learning, and biometric identification (Gupta et al., 2019; International Monetary Fund [IMF], 2021). Yet Nigeria continues to struggle with infrastructural deficits, limited digital penetration, and policy misalignments that obstruct effective AI adoption in taxation. These issues call for a robust evidence-based analysis of how AI can reshape fiscal outcomes amid migration-driven economic changes.

This study, therefore, aims to examine the fiscal impact of global migration on Nigeria's tax revenue and assess how AI-driven digital tax governance can improve revenue mobilization. Despite ongoing reforms and digitalization efforts, traditional systems remain ill-equipped to track cross-border income and assets, leading to tax evasion and capital flight. Weak regulatory structures, insufficient data integration, and poor coordination between migration and fiscal policies further hinder progress. Addressing these gaps is essential to harness AI's potential in building a more resilient and inclusive tax system in the era of global mobility.

The main objective of this study is to examine the role of Artificial Intelligence in digital tax governance and its fiscal implications within the context of global migration in Nigeria. Specifically, the study aims to:

- i. Assess the effect of AI Adoption, ICT Development, and Global Migration on Tax Revenue in Nigeria.
- ii. Examine how AI adoption, ICT development, and migration factors affected Nigeria's tax revenue between 2000 and 2024, focusing on a structural break in 2016.

To achieve this, the following null hypotheses are formulated:

H₀₁: Artificial Intelligence-driven digital tax systems do not have a significant impact on revenue mobilization and tax compliance in Nigeria.

H₀₂: AI adoption, ICT development, and migration factors does not significantly mitigate Nigeria's tax revenue between 2000 and 2024, focusing on a structural break in 2016.

The study hypothesizes that AI-driven digital tax systems have no significant impact on revenue mobilization and tax compliance in Nigeria. It also posits that AI integration does not significantly mitigate revenue losses linked to global migration. These assumptions question the effectiveness of AI in improving fiscal outcomes. They reflect concerns about addressing migration-related challenges in Nigeria's tax administration.

2. Literature Review

Conceptualisation

Artificial Intelligence (AI) simulates human intelligence to perform tasks such as learning, reasoning, and decision-making (Russell & Norvig, 2016). In tax administration, AI technologies like machine learning and data analytics are used to automate fraud detection, taxpayer profiling, and compliance monitoring (Gupta et al., 2019). Globally, the adoption of AI in governance has increased due to its capacity to reduce human error, improve service delivery, and support informed decision-making (OECD, 2020). Digital tax governance involves the application of AI, big data, blockchain, and biometric technologies to implement and monitor tax systems (IMF, 2021). It aims to increase efficiency, transparency, and equity in tax collection. This approach enables the reduction of tax gaps and compliance costs while enhancing fiscal accountability.

In Nigeria, it offers a potential solution to long-standing problems like tax evasion, corruption, and poor record-keeping (Uchenna & Oduh, 2021). Global migration, prompted by economic hardship, insecurity, and climate change, significantly affects fiscal systems through remittances, labor shifts, and capital outflows (World Bank, 2022). While remittances and diaspora investments benefit the economy, the loss of skilled workers and taxpayers weakens domestic revenue bases (Dustmann & Frattini, 2014).

In Nigeria, increasing migration due to unemployment and instability adds pressure to public finance. The fiscal implications of migration include revenue decline, increased public expenditure, and administrative burdens (OECD, 2017). Governments struggle to track informal remittances and foreign earnings. AI offers tools to monitor cross-border flows, expand the tax net, and strengthen compliance mechanisms (Mickiewicz et al., 2020). However, these gains are limited by infrastructure gaps, weak regulation, and poor inter-agency collaboration (IMF, 2021; FIRS, 2022).

This study is guided by the Technology Acceptance Model (TAM) developed by Fred Davis in 1986, which explains how individuals accept and use new technologies based on two key factors: perceived usefulness and perceived ease of use. TAM is relevant for understanding how Nigerian tax administrators and policymakers adopt AI-driven digital tax systems. It offers insight into whether the perceived efficiency, transparency, and ease of using AI tools influence their implementation. The model also helps explain institutional and behavioral responses to digital reforms within bodies like the Federal Inland Revenue Service (FIRS), highlighting factors that drive or hinder the adoption of AI in tax governance.

Empirical Review

Abubakar et al. (2024) examined the benefits, challenges, and adoption barriers of AI and blockchain in tax systems for SMEs using literature review as the research design. The study analysed the data using qualitative analysis and findings indicate that AI and blockchain can improve tax accuracy and transparency but face adoption challenges. Development of supportive policies and infrastructure was recommended to facilitate technology adoption among SMEs.

Folorunso and Nwankwo (2024) explored AI's potential in enhancing Nigeria's tax system with the use of conceptual analysis as a research design. Thematic analysis was adopted to analyse the data and findings state that AI can improve tax compliance and revenue generation but requires

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addressing data privacy and infrastructure issues. Implementation of AI-driven tools in tax administration and invest in necessary infrastructure was recommended.

Ariyibi et al. (2024) examined AI's role in detecting and preventing tax fraud using review article for research design and comparative analysis of AI methodologies was adopted to analyse the data. Findings highlight AI techniques like machine learning and natural language processing are effective in identifying tax fraud. The study recommendations that adopting AI technologies in tax administrations will enhance fraud detection capabilities.

Adelekan and Bassey (2024) analyzed the integration of AI and blockchain in tax compliance. Comparative analysis and qualitative assessment were used for research design and data analysis respectively. Findings reveal that AI and blockchain enhance efficiency and transparency in tax administration and it was recommended that the adoption of these technologies will improve tax compliance.

Sani (2023) examined how factors like tax morale and education affect tax evasion. The study used survey research design and multiple regression analysis was adopted to analyse the data. Findings indicate that tax morale and education positively influence compliance, while deterrents have a negative effect. It was recommended that absolute focus on enhancing tax morale and education will reduce tax evasion.

Bello et al. (2023) assessed how taxpayers' perceptions influence tax compliance among MSEs. The study used survey research and Partial Least Squares Structural Equation Modeling (PLS-SEM) for research design and analysis of data respectively. Findings reveal that trust in authorities and perceived fairness will enhance compliance and perception of corruption will not have significant effect. It was recommended that improvement of government transparency and fairness will boost tax compliance.

Ugo (2023) assessed the influence of AI technologies on accounting practices in Nigeria using survey research design. Findings reveal that expert systems and neural networks significantly enhance accounting practices. It was recommended that AI training should be incorporated in accounting curricula and encourage continuous professional development in AI tools.

Adeagbo (2021) investigated the impact of diaspora remittances on human capital development. The study used econometric analysis as research design and Ordinary Least Squares (OLS) estimation was adopted to analyse the data. Findings show that remittances positively affect human capital development in Nigeria. It was recommended that study will facilitate remittance flows through formal channels and investing in social infrastructure will help to maximize benefits.

Several studies address AI in tax administration and the fiscal impact of migration, but few integrate both areas. In developing countries like Nigeria, research often treats AI and migration separately, overlooking their combined effects on revenue and compliance. Empirical evidence on AI's role in mitigating migration-induced tax base erosion remains scarce.

This gap is more evident in federated systems with poor digital infrastructure and data fragmentation. Nigeria, facing these exact issues, serves as a key case for such an integrated study. This research explores how AI-driven tax governance can offset fiscal disruptions from global migration. It offers a detailed understanding of their interplay. The study provides tailored, evidence-based insights for Nigeria's unique context.

3. Methodology

This study utilizes annual data from 2000 to 2024, a total of 25 years as the population of the study and a sample size of 24 annual observations (due to data availability) to examine the fiscal impacts of Artificial Intelligence (AI) adoption and global migration on digital tax governance in Nigeria. The study employed *ex-post facto* (after-the-fact) research design. *Ex-post facto* research design is a study after the happening had taken place and the data was already available.

Key variables include Tax Revenue (% of GDP), AI Adoption Index, ICT Development Index, Remittance Inflows (USD), Net Migration, GDP Growth Rate (%), and Inflation Rate (%). Data were sourced from Nigerian official statistics and international agencies such as the World Bank and United Nations. The study employed some statistical analysis tool in describing the data as well as diagnosing the data. Descriptive Statistics and Visualization were computed for all relevant variables to describe their distributions and trends over time. Graphical analysis was conducted to visualize the co-movements of Tax Revenue and AI Adoption trends from 2000 to 2024.

Correlation Analysis was carried out through the use of Pairwise correlation coefficients in order to assess the strength and direction of relationships between explanatory variables and tax revenue, aiding in the detection of multicollinearity prior to regression modeling.

To ensure the robustness of the regression results, several diagnostic tests were performed. In ensuring that the data are free from multicollinearity, the variance inflation factor (VIF) was computed for each predictor variable. A VIF value greater than 10 indicates severe multicollinearity. Test for Heteroskedasticity was carried out by applying the Breusch-Pagan test for non-constant variance of residuals. The null hypothesis states that residual variance is constant (homoskedastic). The test for autocorrelation was carried out by employing the Breusch-Godfrey test was performed to detect serial correlation in residuals. The test estimates the regression of residuals on lagged residuals and original regressors. The null hypothesis is no autocorrelation.

Model Specification

The study specified the model in a multiple linear regression form. It is expressed as:
The baseline empirical model is specified as:

$TaxRev_t = \alpha + \alpha_1 GDPGrowth_t + \alpha_2 Inflation_t + \alpha_3 ICTIndex_t + \alpha_4 AIAdopt_t + \alpha_5 NetMigration_t + \alpha_6 Remittance_t + \epsilon_t$; where: $TaxRev_t$ is Tax Revenue at time t ; $GDPGrowth_t$ is Annual GDP growth rate (%); $Inflation_t$ is Annual Inflation rate (%); $ICTIndex_t$ is ICT infrastructure index score; $AIAdopt_t$ is AI adoption index ; $NetMigration_t$ is Net migration rate (per 1,000 population); $Remittance_t$ is Remittance inflows; ϵ_t is Error term.

Structural Break Analysis

Given the significant digital policy reforms and AI integration commencing around 2016, a structural break was hypothesized. A dummy variable, break period, was defined:

$$D_t = \begin{cases} 0 & \text{if } t < 2016 \\ 1 & \text{if } t \geq 2016 \end{cases}$$

Separate regressions were run for pre- and post-2016 sub-periods to capture changes in the relationships between variables and tax revenue. The **Chow test** was employed to statistically verify the presence of a structural break. The null hypothesis is that no structural break exists. Hence, in this study, Seemingly Unrelated Estimation method was utilized to estimate the models jointly and perform a Wald test for coefficient equality between periods.

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$$+\beta_6 \text{Remittance}_t + \gamma_1 D_{2016} + \gamma_2 (D_{2016} \times \text{AI Adopt}_t) + \gamma_3 (D_{2016} \times \text{NetMigration}_t) + \gamma_4 (D_{2016} \times \text{Remittance}_t)$$

Where: D_{2016} is Dummy variable (0 for years ≤ 2016 , 1 for years > 2016); interaction terms capture the changing impact of AI adoption and migration variables post-2016. This rigorous methodological framework ensures the empirical validity of the study's findings and enables detailed analysis of AI and migration impacts on Nigeria's digital tax governance.

4. Results and Discussion

Descriptive Statistics

Table 1

Descriptive Result

Variable	Mean	SD	Minimum	Maximum
AI Adoption	2.70	2.35	0.20	8.00
Remittance (USD)	1.58×10^{10}	7.81×10^9	1.06×10^9	2.41×10^{10}
Net Migration	3,210.83	61,635.36	-116,162	78,685
GDP Growth (%)	5.05	3.63	-1.79	15.33
Inflation (%)	13.13	4.46	5.39	24.66
Tax Revenue (% of GDP)	14.48	7.25	5.12	28.81

Source: Author's Computation, (2025)

Table 1 summarizes the key variables from 24 yearly observations (2000–2024). The AI adoption rate averaged 2.70 (SD = 2.35), reflecting moderate and varied technological integration. Remittance inflows were substantial but highly variable ($M \approx 15.8$ billion USD, $SD \approx 7.81$ billion), while net migration showed extreme fluctuations ($M = 3,210.83$; $SD = 61,635.36$), indicating shifting migration trends.

Economic indicators showed moderate growth (GDP growth $M = 5.05\%$, $SD = 3.63$) and inflation averaged 13.13% ($SD = 4.46$), signaling some inflationary pressure. Tax revenue averaged 14.48% of GDP ($SD = 7.25$), with marked variability over time. These findings highlight a dynamic fiscal and economic context underpinning Nigeria's evolving digital tax governance and AI adoption.

Assess Effects of AI Adoption, ICT Development, and Global Migration on Tax Revenue

This section examines the impacts of AI adoption, ICT development, net migration, and remittance inflows on Nigeria's tax revenue from 2000 to 2024. Using trends and regression analysis, it explores how these digital and migration factors affect fiscal outcomes.

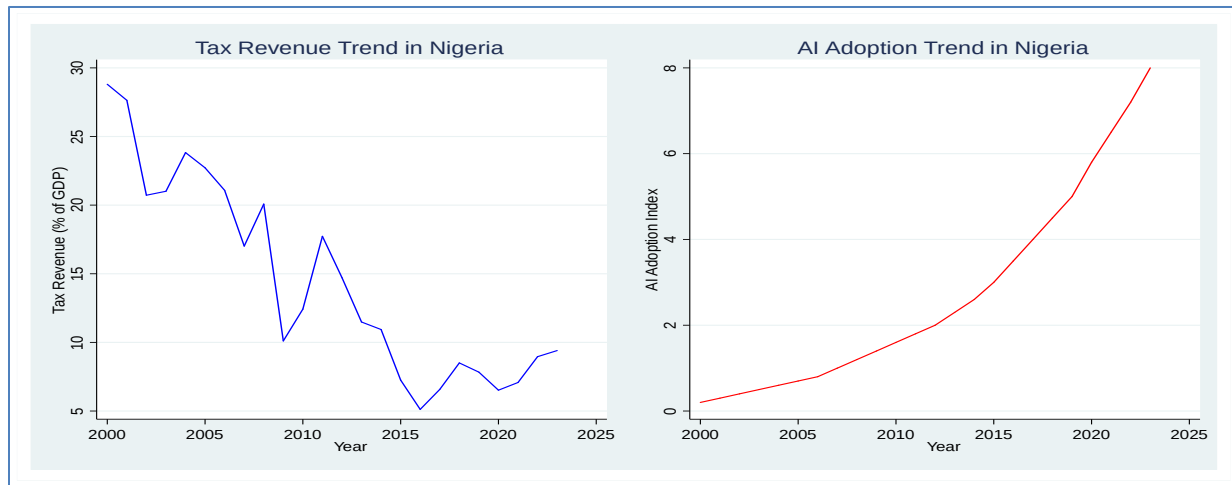


Figure 1: Comparative Trends: Tax Revenue and AI Adoption (2000-2024)

Source: Author's Computation (2025)

From Figure 1, the left panel displays Nigeria's tax revenue (as a percentage of GDP) from 2000 to 2025. The trend shows a steady decline, beginning at approximately 28% of GDP in 2000 and falling to below 10% by 2025. The decrease is not uniform, with noticeable drops around 2008–2010 and 2014–2016, likely reflecting economic shocks such as the global financial crisis (2008) and Nigeria's oil-price-driven recession (2015–2016). A slight recovery appears post-2020, though tax revenues remain significantly lower than initial levels.

The right panel illustrates the AI adoption index over the same period. Unlike tax revenue, AI adoption exhibits strong growth, starting near 0.2 in 2000 and rising sharply to 8.0 by 2023. The trend accelerates after 2015, suggesting a possible link to Nigeria's digital tax reforms and broader technological advancements.

Relationship between the Variables

This section presents the correlation analysis of key variables, showing the strength and direction of relationships between AI adoption, remittance inflows, net migration, GDP growth, inflation, and tax revenue. These associations offer insight into their combined effects on Nigeria's tax revenue.

Table 2

Correlation Matrix Results

Variable	AI Adoption	Remittance	Net Migration	GDP growth	Inflation	Tax Revenue
AI Adoption	1.00					
Remittance	0.57	1.00				
Net Migration	-0.57	-0.47	1.00			
GDP growth	-0.65	-0.54	0.28	1.00		
Inflation	0.49	-0.07	-0.05	-0.19	1.00	
Tax Revenue	-0.77	-0.78	0.47	0.61	-0.15	1.00

Source: Author's Computation (2025)

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The correlation analysis in Table 2 revealed several significant relationships among the variables. Tax revenue was strongly and negatively correlated with AI adoption ($r = -0.77$) and remittance inflows ($r = -0.78$), indicating that higher levels of AI adoption and remittance inflows were associated with lower tax revenue during the study period. Conversely, tax revenue showed moderate positive correlations with net migration ($r = 0.47$) and GDP growth ($r = 0.61$), suggesting that increases in these factors corresponded with higher tax revenue. Inflation had a weak and negative correlation with tax revenue ($r = -0.15$), indicating a negligible relationship.

Furthermore, notably from Table 2, AI adoption was positively correlated with inflation ($r = 0.49$) but negatively correlated with GDP growth ($r = -0.65$) and net migration ($r = -0.57$), reflecting complex interactions between technological adoption, economic growth, and migration trends. Similarly, remittance inflows exhibited moderate negative correlations with net migration ($r = -0.47$) and GDP growth ($r = -0.54$), suggesting that increases in remittances coincided with slower economic growth and lower net migration.

Overall, these findings highlight the intricate fiscal dynamics linking digital transformation, migration, and economic variables in Nigeria between 2000 and 2024.

Table 3

Regression Result

Variable	Coefficient (B)	Std. Error	t	P	95% Confidence Interval
AI Adoption	4.79	1.67	2.86	.011	[1.26, 8.32]
Net Migration	0.000007	0.000013	0.51	.617	[-0.000021, 0.000034]
Remittance	1.89e-10	1.85e-10	1.02	.321	[-2.01e-10, 5.78e-10]
ICT Index	-0.94	0.23	-4.16	.001	[-1.41, -0.46]
Inflation	-0.06	0.19	-0.30	.768	[-0.45, 0.34]
GDP growth	-0.12	0.23	-0.54	.598	[-0.60, 0.36]
Constant	38.50	4.81	8.00	<.001	[28.35, 48.65]

Note: Model fit: $F(6, 17) = 23.10$, $p < .001$; $R^2 = .89$; Root MSE = 2.79; $N = 24$.

Source: Author's Computation (2025)

Table 3 presents the regression analysis examining the effects of AI adoption, ICT development, migration, inflation, and GDP growth on Nigeria's tax revenue from 2000 to 2024. The results indicate that AI adoption significantly predicts tax revenue, with a positive coefficient ($B = 4.79$, $p = .011$), suggesting that greater adoption of AI is associated with higher tax revenue. Conversely, the ICT index shows a significant negative relationship ($B = -0.94$, $p = .001$), indicating that increases in ICT index correspond to decreases in tax revenue.

Furthermore, from table 3 other variables, including net migration ($B = 0.000007$, $p = .617$), remittance inflows ($B = 1.89e-10$, $p = .321$), inflation ($B = -0.06$, $p = .768$), and GDP growth ($B = -0.12$, $p = .598$), were not statistically significant predictors of tax revenue in this model. The model demonstrates a strong overall fit, explaining 89% of the variance in tax revenue ($R^2 = .89$, $F(6,17) = 23.10$, $p < .001$), with a Root Mean Squared Error of 2.79. These findings suggest that among the variables studied, AI adoption and ICT development exert the most notable influence on tax revenue trends in Nigeria during the period examined.

Table 4

Diagnostic Tests for Regression Model Predicting Nigeria's Tax Revenue (2000–2024)

Diagnostic Test	Variable / Test	Statistic	Value	p-value
Multicollinearity (VIF)	ICT Index	VIF	57.64	
	AI adoption		45.81	
	Remittance		6.15	
	Inflation		2.05	
	GDP growth		2.03	
	Net Migration		1.95	
Heteroskedasticity Test	Breusch-Pagan / Cook-Weisberg	$\chi^2(1)$	0.06	0.806
Autocorrelation Test	Breusch-Godfrey LM test (lag 1)	$\chi^2(1)$	0.283	0.595

Source: Author's Computation (2025)

From table 4, the diagnostic tests revealed no evidence of heteroskedasticity (Breusch-Pagan test, $\chi^2(1) = 0.06$, $p = .806$) or autocorrelation (Breusch-Godfrey LM test, $\chi^2(1) = 0.28$, $p = .595$), supporting the model's validity. However, multicollinearity was a concern, with high variance inflation factors for AI adoption (VIF = 45.81) and ICT index (VIF = 57.64), suggesting possible overlap in explanatory power among predictors.

Structural Breaks and Changing Impacts of Digital and Migration Factors on Tax Revenue

This section examines how AI adoption, ICT development, and migration factors affected Nigeria's tax revenue between 2000 and 2024, focusing on a structural break in 2016. The year 2016 was chosen because it marked significant growth in Nigeria's ICT sector, with digital transformation accelerating (Gartner, 2016), alongside a sharp decline in the tax-to-GDP ratio from 9.7% in 2010 to 5.3% in 2016 (OECD, 2018). Analyzing data before and after 2016 helps capture how these digital and migration factors' impacts on tax revenue shifted amid changing economic and technological conditions.

Table 5

Regression Results Before and After the Structural Break on Tax Revenue Determinants

Variable	Pre-Break Coef. (SE)	Pre-Break p	Post-Break Coef. (SE)	Post-Break p
AI Adoption	7.83 (10.71)	.465	4.57 (0.99)	< .001
Net Migration	0.000036 (0.000019)	.053	0.000006 (0.000002)	.003
Remittance	1.83e-10 (3.11e-10)	.556	7.91e-10 (6.96e-11)	< .001
ICT Index	-1.09 (0.86)	.204	-0.58 (0.19)	.002
GDP Growth	-0.63 (0.13)	< .001	-0.32 (0.05)	< .001
Inflation	0.07 (0.11)	.550	-0.15 (0.05)	.002
Constant	40.97 (7.01)	< .001	5.92 (6.25)	.344

Note: No. of observations = 24. Robust standard errors in parentheses. Coefficients significant at $p < .05$ are bold.

Source: Author's Computation (2025)

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Table 5 presents regression results examining the determinants of tax revenue in Nigeria before and after the 2016 structural break. Before 2016, none of the digital and migration variables, AI adoption, net migration, and remittance inflows showed statistically significant effects on tax revenue, although GDP growth was strongly negatively associated ($B = -0.63$, $p < .001$). Inflation and ICT index also had no significant impact pre-break.

After 2016, however, the landscape changes markedly. AI adoption became a significant positive predictor of tax revenue ($B = 4.57$, $p < .001$), indicating that increased AI integration in the economy contributed to higher tax collections. Similarly, net migration and remittance inflows, previously insignificant, gained significance with positive effects (net migration $B = 0.000006$, $p = .003$; remittance $B = 7.91e-10$, $p < .001$), suggesting growing importance of these global demographic factors on fiscal revenue.

Table 5 shows that the ICT index retained a negative association with tax revenue post-break ($B = -0.58$, $p = .002$), but the magnitude of the effect lessened compared to pre-break, implying possible structural adjustments in how ICT development influences fiscal outcomes. GDP growth remained negatively related to tax revenue ($B = -0.32$, $p < .001$), albeit with a smaller effect size than before, and inflation shifted from a positive but nonsignificant effect pre-break to a significant negative effect post-break ($B = -0.15$, $p = .002$). The constant term's sharp decline and loss of significance post-2016 reflect changing baseline tax revenue levels due to broader economic or policy shifts.

Overall, these findings indicate a clear shift in the drivers of tax revenue in Nigeria, with digital and migration factors gaining importance after 2016, likely reflecting evolving economic structures and policy environments during this period.

5. Conclusion and Recommendations

Conclusion

This study examined the fiscal impact of AI adoption and global migration on Nigeria's digital tax governance from 2000 to 2024. It found a shift in tax revenue drivers following increased digitalization. Before 2016, GDP growth was the primary source of revenue, while AI and migration had minimal effects.

After 2016, AI adoption significantly improved revenue collection, and migration indicators like net migration and remittances gained fiscal relevance. However, the persistent negative link between ICT infrastructure and tax revenue suggests challenges in its effective use for taxation. The findings underscore the growing influence of technology and migration on Nigeria's fiscal system and call for integrated policy approaches that address both digital and demographic trends.

Recommendations

The findings offer practical guidance for policymakers seeking to enhance digital tax governance and optimize fiscal outcomes within Nigeria's rapidly digitalizing economy:

- (i) Given the significant positive impact of AI adoption on tax revenue, Nigerian fiscal authorities should prioritize integrating AI technologies into tax administration. Investments in AI-driven analytics, automated compliance systems, and fraud detection mechanisms can improve tax collection efficiency and mitigate evasion in the evolving digital economy.

- (ii) The increasing fiscal relevance of migration-related variables underscores the need for comprehensive tax policies that consider the economic activities of migrant populations and remittance inflows. Formalizing remittance channels and enhancing financial inclusion for migrants could expand the tax base and support sustained revenue growth.
- (iii) The observed negative association between the ICT index and tax revenue signals the need to reformulate how ICT advancements are utilized for fiscal purposes. Policymakers should revisit digital taxation laws to prevent tax avoidance being facilitated by ICT expansion and ensure that digital enterprises contribute their fair share to public revenues.
- (iv) The adverse effect of inflation on tax revenue in the post-2016 period highlights the importance of implementing macroeconomic policies aimed at maintaining price stability. Sustained economic growth will further foster an environment conducive to effective digital tax governance.
- (v) Finally, recognizing the changes observed after 2016, fiscal policy needs to remain flexible and responsive to ongoing technological and demographic dynamics. Continuous evaluation and policy innovation are imperative to align Nigeria's tax system with the realities of AI adoption and global migration in the digital era.

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