

Influence of Digital Competency and Institutional Challenges on the Efficiency of Digital Tax Administration in Anambra State

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Abstract

This study examined the influence of digital competency and institutional challenges on the efficiency of digital tax administration in Anambra State, Nigeria. A descriptive survey design was adopted, and data were collected from 50 tax officials of the Anambra State Internal Revenue Service (AIRS) using a structured questionnaire. The instrument demonstrated good reliability (Cronbach Alpha = 0.82). Data were analyzed using mean, standard deviation, and multiple regression analysis. Findings revealed that tax officials possess a high level of digital competency (cluster mean = 3.65). However, regression results showed that digital competency has a negative and non-significant influence on efficiency ($\beta = -0.034$, $p = 0.816$), while challenges have a positive and significant influence ($\beta = 0.292$, $p = 0.049$). The overall model was not statistically significant ($F = 2.084$, $p = 0.136$) and explained only 8.1% of variance in efficiency. The study concludes that efficiency in digital tax administration is driven more by systemic and infrastructural factors than by individual competency alone. It recommends improved infrastructure, continuous training, and system reliability enhancement.

Keywords: Digital Competency, Institutional Challenges, Digital Tax, Administrative Efficiency

Introduction

The digital transformation of public sector administration has significantly altered the way governments manage taxation systems across the world. In recent years, tax authorities have increasingly adopted digital technologies to enhance efficiency, transparency, and accountability in tax administration (Organization for Economic Co-operation and Development [OECD], 2023; World Bank, 2025). Digital tax administration involves the use of electronic systems such as e-filing platforms, automated tax assessment tools, and digital payment systems to streamline tax processes and improve revenue collection (International Monetary Fund [IMF], 2023).

In developing economies like Nigeria, where tax compliance remains relatively low and administrative inefficiencies persist, digital transformation has been identified as a critical tool for improving tax performance (World Bank, 2025). However, the effectiveness of digital tax systems is not solely dependent on the availability of technology but also on the digital skills and competencies of personnel who operate these systems. Digital competency refers to the knowledge, skills, and ability of individuals to effectively use digital tools and systems in performing administrative tasks (Carretero et al., 2017).

Digital competency is multidimensional and encompasses critical components such as digital literacy, technical skills, system navigation ability, and data management proficiency. Digital literacy refers to the ability of tax

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officials to understand, access, and effectively use digital platforms such as electronic tax filing systems, online taxpayer databases, and communication tools. It involves the capacity to interpret digital information, interact with software interfaces, and adapt to evolving technological environments. Studies have shown that higher levels of digital literacy significantly enhance the adoption and utilization of e-tax systems, thereby improving administrative efficiency (Kasyoka et al. 2020; OECD, 2023). In the context of tax administration, digital literacy enables officials to efficiently process tax returns, communicate with taxpayers through digital channels, and minimize errors associated with manual systems.

Closely related to digital literacy are technical skills, which involve the practical ability to operate hardware and software systems used in tax administration. These include competencies in using accounting software, database management systems, cloud-based platforms, and integrated tax administration systems. Technical skills are essential for executing core tax functions such as data entry, tax computation, system troubleshooting, and report generation.

Empirical studies indicate that tax officials with higher technical skills demonstrate greater efficiency in handling digital tax processes (OECD, 2023; IMF, 2023). In addition, system navigation ability—the capacity to effectively move through digital interfaces, retrieve relevant information, and complete tasks within electronic systems—is critical in ensuring seamless workflow. Poor navigation skills can lead to delays, errors, and underutilization of digital systems, thereby reducing efficiency (UN DESA, 2022; OECD, 2023).

Furthermore, data management proficiency plays a vital role in digital tax administration. This competency involves the ability to organize, store, retrieve, and analyze tax-related data using digital tools. Effective data management ensures accuracy, consistency, and security of taxpayer information, which are essential for decision-making and compliance monitoring. Technologies such as cloud computing, data analytics platforms, and automated record management systems support this competency by enabling real-time access to large datasets and facilitating efficient data processing (World Bank, 2025; IMF, 2023). Tax officials with strong data management skills are better equipped to detect inconsistencies, prevent tax evasion, and improve overall administrative performance.

Despite the importance of these competencies, institutional challenges significantly constrain the effective utilization of digital tax systems, particularly in developing countries. One major challenge is inadequate training and capacity building. Many tax agencies lack structured continuous professional development programmes to upgrade employees' digital skills, leading to poor system utilization and operational inefficiencies (OECD, 2023). Similarly, Bello and Ibrahim (2021) observed that insufficient training in ICT applications among tax officials in Nigeria limits the effectiveness of digital tax reforms.

Another key institutional challenge is weak infrastructural support. Frequent power outages, unstable internet connectivity, and inadequate ICT infrastructure hinder the smooth operation of digital tax systems. IMF (2023) reports that unreliable digital infrastructure significantly reduces the efficiency gains expected from tax automation. Closely related is the challenge of inadequate funding for digital transformation. Many tax authorities struggle with limited budgets for procuring, maintaining, and upgrading digital infrastructure. This often leads to obsolete systems that cannot support modern tax administration demands for efficient outcomes.

Efficiency in digital tax administration refers to the ability of tax authorities to achieve optimal results in tax collection, processing, and service delivery using minimal time, cost, and resources. It encompasses dimensions such as speed of tax processing, accuracy of tax records, reduction in administrative errors, transparency in operations, and improved taxpayer service delivery. According to the OECD (2023), digital tax systems enhance efficiency by automating routine processes, enabling real-time data access, and reducing manual intervention. Similarly, the World Bank (2025) reported that digital tax administration improves efficiency by shortening processing time, increasing accuracy, and enhancing taxpayer interaction through online platforms.

Empirical studies further support the link between digitalization and administrative efficiency. Bird and Zolt (2018) found that countries that adopted digital tax systems experienced significant improvements in revenue performance and administrative efficiency. Fjeldstad et al. (2018) also reported that digital tax services improved VAT compliance and operational efficiency in Tanzania. In Nigeria, Adebisi and Gbegi (2021) observed that e-filing platforms reduce processing delays and improve the accuracy of tax records.

Empirical evidence underscores the importance of competency in digital systems utilization. Kasyoka et al. (2020) found that digital literacy significantly influences tax compliance behaviour in Nigeria, as individuals who understand digital systems are more likely to engage with e-tax platforms. Ogunsuji (2026) also reported that the success of digital tax administration in Nigeria's informal sector depends largely on users' competency in operating digital tools. Furthermore, Bird and Zolt (2018) demonstrated that technological competency among tax administrators improves system efficiency and service delivery (Bird & Zolt, 2018; OECD, 2023).

On the other hand, empirical evidence shows that the effectiveness of digital tax systems depends not only on technology and user competency but also on institutional readiness. For instance, the International Monetary Fund (2023) reported that digital tax reforms yield efficiency gains only when supported by strong infrastructure and administrative capacity. Similarly, the Organization for Economic Co-operation and Development (2022) emphasized that weak institutional frameworks and inadequate maintenance of digital system scan significantly limit the benefits of tax digitalization. In support, Ali et al. (2022) asserted that operational inefficiencies in Nigeria's e-tax systems are largely driven by institutional weaknesses. Similarly, Fjeldstad et al (2018) argue that institutional capacity constraints remain a major determinant of inefficiency in tax administration systems in

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developing countries. While Baurer (2005) and Bird (2015) highlight that infrastructural and institutional constraints significantly affect the performance and effectiveness of digital tax systems, particularly in developing economies.

In Anambra State, the Anambra State Internal Revenue Service (AIRS) has adopted digital systems to improve tax administration. However, the extent to which digital competency and institutional challenges influence the efficiency of these systems remains unclear. Given the increasing reliance on digital technologies in tax administration, it is essential to examine how the digital competency of tax officials and institutional challenges affect efficiency outcomes.

Statement of the Problem

Digital tax administration is expected to improve the efficiency of tax systems by enhancing the speed, accuracy, transparency, and speed, accuracy, tax processes through the deployment of electronic filing platforms, automated assessment systems, integrated databases, and digital payment solutions (OECD, 2023; International Monetary Fund (IMF), 2023; World Bank, 2025). Despite these expectations, many developing economies continue to experience operational inefficiencies arising from unstable digital platforms, intermittent system failures, poor internet connectivity, and delays in processing tax transactions, thereby limiting the realization of the full benefits of digital tax administration.

In Anambra State, the Anambra State Internal Revenue Service (AIRS) has adopted digital tax administration systems to improve revenue generation and service delivery. Nevertheless reports of delays in tax processing, intermittent system failures, difficulties in online filing, and inconsistent platform performance continue to raise concerns about the efficiency of these digital systems. These operational challenges suggest that the efficiency of digital tax administration may depend not only on the digital competency of tax officials but also on prevailing institutional challenges that hinder effective system utilization.

Furthermore, although previous empirical studies have examined digital taxation and compliance behavior among taxpayers as well as the macroeconomic effects of digital tax reforms, limited attention has been paid to the role of tax officials' digital competency in promoting the efficiency of digital tax administration in sub-national contexts such as Anambra State. Existing studies have largely concentrated on taxpayer-side issues and macroeconomic indicators, leaving a gap in understanding the administrative capacity side of digital tax implementation (Omodero, & Ekundayo, 2025; Ibilibor, & Deshi, 2025).

Consequently, there remains a paucity of empirical evidence on how the digital competency of tax officials and institutional challenges jointly influence the efficiency of digital tax administration within the Anambra State Internal Revenue Service. It is this gap that necessitated the present study.

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Objectives of the Study

The study sought to:

- determine the level of digital competency among tax officials for efficient digital tax administration in Anambra State.
- examine the influence of digital competency on the efficiency of digital tax administration in Anambra State.
- Examine the influence of institutional challenges on efficiency of digital tax administration in Anambra State.

Research Questions

The following research questions guided the study:

1. What is the level of digital competency among tax officials for efficient digital tax administration in Anambra State?
2. What is the influence of digital competency on the efficiency of digital tax administration in Anambra State?
3. How do institutional challenges influence the efficiency of digital tax administration in Anambra State?

Research Hypothesis

H₀: Digital competency and challenges do not significantly influence the efficiency of digital tax administration in Anambra State.

Literature Review

Digital Technology

Digital technology refers to the use of digital tools such as computers, software applications, cloud systems, and communication technologies to facilitate administrative processes. Ingish et al. (2024) emphasized that IT adoption significantly improves organizational efficiency. Similarly, Pali and Rama (2025) reported that digital office tools enhance productivity and reduce operational delays in public administration.

Digital Competency

Digital competency refers to the ability of individuals to effectively use digital tools, software applications, and information systems to perform work related tasks efficiently. It includes key dimensions such as digital literacy,

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technical skills, system navigation ability, and data management proficiency, which collectively determine how well employees interact with digital platforms in achieving organizational goals (Martinez-Bravo et al., 2022; Oberländer, et al, 2019). The European Commission's DigComp framework further conceptualizes digital competence as a multidimensional construct involving information processing, communication, problem-solving, and digital safety skills, all of which are essential for effective use of ICT in administrative environments (European Commission, 2017). Studies also emphasize that individuals with strong digital competencies are better able to process information, navigate systems, and manage data effectively, leading to improved performance and reduced operational errors (Marr, 2022; Yu et al. 2024).

Institutional Challenges

Institutional challenges refer to systemic and organizational constraints that hinder the effective implementation and utilization of digital technologies in public sector operations. In digital tax administration, these challenges include inadequate infrastructure, poor internet connectivity unstable digital platforms, insufficient technical support and limited staff training.

Taxation

Taxation is a key component of government revenue generation. According to OECD (2023), modern taxation systems increasingly rely on digital tools to enhance compliance and reduce evasion. Digital tax systems such as e-filing and electronic payment systems improve accessibility and efficiency (World Bank, 2021).

Administrative Efficiency

Administrative efficiency refers to the ability of an organization to achieve maximum output with minimal resources. Pali and Rama (2025) found that digital transformation in tax administration reduces processing time and improves service delivery. Anaekwe et al. (2025) also highlighted that digital tools significantly improve efficiency in public sector operations.

Global reports by the World Bank (2021), OECD (2023), and IMF (2020) consistently show that digital transformation enhances tax administration efficiency and revenue performance.

Theory

This study is anchored on the Technology Acceptance Model (TAM) developed by Davis (1989), which explains how users adopt and use technology based on perceived usefulness and ease of use. The model is relevant as it explains how tax officials adopt office technologies to improve administrative efficiency.

Methods

The study adopted a descriptive survey design to investigate the influence of digital competency and institutional challenges on the efficiency of digital tax administration in Anambra State. The population comprised tax officials of the Anambra State Internal Revenue Service (AIRS), which is the official body responsible for tax collection and administration in the state. A purposive sample of 50 tax officials was selected due to the demanding nature of their duties and limited availability. The sample size was considered adequate based on accessibility and administrative constraints.

The instrument for data collection was a structured questionnaire titled “Digital Competency and Efficiency of Digital Tax Administration Questionnaire (DCEDTAQ)”. The instrument contained fifteen items distributed across three sections based on the study objectives, with five items measuring each of the three objectives. It was structured on a four-point Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument was validated by experts in Business Education and Measurement and Evaluation to ensure clarity and relevance.

A pilot test was conducted outside the study area, and the reliability of the instrument was determined using Cronbach Alpha, yielding a coefficient of 0.82, indicating high reliability. Data were analyzed using mean and standard deviation to answer the research questions. The decision rule was that any item with a mean score of 2.50 and above was accepted, while those below 2.50 were rejected. The null hypothesis was tested using inferential statistics at a 0.05 level of significance. The analysis were done using Statistical Package for Social Science version 25.

Results

Table 1

Mean and Standard Deviation on Digital Competency among Tax Officials in Anambra State

S/N	ITEMS	MEAN	STD	REMARKS
1	I possess adequate digital literacy to operate electronic tax administration systems effectively.	3.54	.503	Accepted
2	I have the technical skills required to use digital platforms.	3.70	.463	Accepted

3	I can easily navigate digital tax systems to perform assigned tasks.	3.74	.443	Accepted
4	I am proficient in managing digital tax data using office technologies.	3.76	.431	Accepted
5	I can adapt quickly to new technologies introduced in tax administration.	3.52	.505	Accepted
	Cluster Mean	3.65		Accepted

The results in Table 1 reveal that tax officials in Anambra State possess a high level of digital competency, as indicated by the cluster mean of 3.65, which exceeds the benchmark of 2.50. All items were accepted, suggesting that respondents have adequate digital literacy, technical skills, system navigation ability, data management proficiency, and adaptability to new technologies.

The relatively low standard deviation values (ranging from 0.431 to 0.505) indicate consistency in responses, implying that most respondents share similar perceptions regarding their competency levels. This suggests that tax officials are generally well-equipped with the necessary technological skills required for digital tax administration.

Table 2

Mean and Standard Deviation on Influence of Digital Competency on Efficiency of Digital Tax Administration

S/N	ITEMS	MEAN	STD	REMARKS
1	My level of digital literacy improves my efficiency in performing tax-related tasks.	3.52	.505	Accepted
2	My effective use of digital technologies have reduced errors in my tax administration.	3.74	.443	Accepted
3	My technical skills enhance the accuracy of my tax administration duties.	3.62	.490	Accepted
4	My ability to navigate digital systems improves my work productivity.	3.56	.501	Accepted
5	My data management skills contribute to effective tax record keeping.	3.48	.505	Accepted
	Cluster Mean	3.58		Accepted

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Table 2 shows that digital competency has a positive perceived influence on the efficiency of digital tax administration, with a cluster mean of 3.58. Respondents agreed that digital literacy, technical skills, system navigation ability, and data management proficiency enhance their efficiency in performing tax-related tasks.

Specifically, the highest mean score (3.74) indicates that effective use of digital technologies significantly reduces errors, while other items confirm improvements in productivity, accuracy, and record-keeping. The low standard deviation values further suggest uniform agreement among respondents.

Table 3

Mean and Standard Deviation on the Challenges Impeding the Effective Digital Competency for Efficient Digital Tax Administration in Anambra State

S/N	ITEMS	MEAN	STD	REMARKS
1	Inadequate training limits my ability to efficiently use digital tax system.	3.52	.505	Accepted
2	Lack of modern digital technologies affects my competency in performing tax-related tasks.	3.50	.505	Accepted
3	Poor internet connectivity hinders effective use of digital tax platforms.	3.52	.505	Accepted
4	Insufficient technical support reduces my efficiency in using digital technologies.	3.44	.501	Accepted
5	Frequent system failures affect my ability to perform efficiently.	3.28	.454	Accepted
	Cluster Mean	3.45		Accepted

The results in Table 3 indicate that several challenges impede effective digital competency, with a cluster mean of 3.45. Key challenges identified include inadequate training, lack of modern technologies, poor internet connectivity, insufficient technical support, and frequent system failures.

The implication is that although competency levels are high, structural and systemic barriers limit the optimal utilization of these competencies. This highlights a gap between individual capability and institutional support systems.

Table 4

Multiple Regression Analysis of Digital Competency and Challenges on Efficiency of Digital Tax Administration

Coefficients ^a						
		Unstandardized Coefficients		Standardized Coefficients		
	Variable	B	Std. Error	Beta	t	Sig.
1	(Constant)	2.548	.712		3.581	.001
	Competency	-.037	.157	-.034	-.234	.816
	Challenges	.339	.167	.292	2.025	.049

a. Dependent Variable: Efficiency_Tax_Administration

Model Summary:

$R = 0.285$, $R^2 = 0.081$, Adjusted $R^2 = 0.042$

ANOVA:

$F(2,47) = 2.084$, $p = 0.136$

The results of the multiple regression analysis reveal that digital competency and challenges jointly have a weak influence on the efficiency of digital tax administration in Anambra State.

The model summary shows a weak positive relationship ($R = 0.285$) between the independent variables and efficiency. The coefficient of determination ($R^2 = 0.081$) indicates that only 8.1% of the variation in efficiency is explained by digital competency and challenges, while 91.9% is explained by other factors not included in the model. The adjusted R^2 (0.042) further confirms the low explanatory power of the model. The ANOVA result indicates that the overall model is not statistically significant ($F = 2.084$, $p = 0.136 > 0.05$). This implies that digital competency and challenges do not jointly have a significant influence on the efficiency of digital tax administration. Individually, digital competency has a negative and non-significant influence on efficiency ($\beta = -0.034$, $p = 0.816$), indicating that competency does not significantly predict efficiency in this context.

However, challenges have a positive and statistically significant influence on efficiency ($\beta = 0.292$, $p = 0.049 < 0.05$). This suggests that changes in the level of challenges significantly affect efficiency. The positive direction may indicate that as challenges increase, inefficiencies become more evident in the system, or respondents perceive their impact more strongly.

Discussion of Findings

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The findings of this study provide important insights into the relationship between digital competency and the efficiency of digital tax administration in Anambra State.

First, the study established that tax officials possess a high level of digital competency, including digital literacy, technical skills, system navigation, and data management proficiency. This finding aligns with the work of Mazurchenko and Maršíková (2019), who emphasized that modern organizations increasingly rely on digitally competent personnel for effective system utilization. Similarly, Fasina et al. (2024) found that digital competence enhances employees' ability to process information, solve problems, and perform tasks efficiently in technology-driven environments. The high competency level observed in this study may be attributed to increased exposure to digital tools and ongoing reforms in Nigeria's tax administration system.

Second, the study revealed that digital competency positively influences efficiency in terms of reduced errors, improved productivity, and enhanced accuracy. This finding is consistent with empirical studies such as Rayn-Pahlawan (2025), who reported that technological competency significantly improves administrative efficiency and service delivery. Likewise, Ingsih et al. (2024) who noted that digital skills among public sector workers enhance operational performance by reducing delays and improving workflow automation. In the context of taxation, Rizki et al. (2024) also found that e-filing systems improve processing speed and accuracy, particularly when users possess adequate digital skills.

On the multiple regression analysis, the findings revealed that digital competency does not significantly influence efficiency, which contrasts with prior studies. For instance, Ogunsuji et al. (2026) found that technical skills significantly enhance digital tax adoption in Nigeria. Similarly, IMF (2023) reported that skilled personnel are essential for effective digital tax systems.

However, the non-significant result aligns with studies emphasizing the role of institutional factors. Adefunke and Mayowa (2024) noted that digital efficiency depends on infrastructure and policy support, not just human capacity and awareness. This explains why competency alone did not yield significant efficiency improvements.

The significant effect of challenges supports Omodero and Ekundayo (2025), who found that infrastructural constraints affect the effectiveness of digital tax systems in Nigeria. Similarly, Kebede et al. (2025) emphasized that system inefficiencies limit the benefits of e-tax platforms.

The low explanatory power ($R^2 = 8.1\%$) suggests that other factors such as funding, policy frameworks, and system design play critical roles. This aligns with Chime et al (2025) and Ibilibor and Deshi (2025) who highlighted the importance of complementary reforms in achieving efficiency gains.

Overall, the findings indicate that efficiency is a multidimensional outcome influenced more by systemic challenges than by individual competency.

Recommendations

Based on the findings, the following recommendations are made:

4. **Improvement of Digital Infrastructure:** There is a need to invest in reliable internet connectivity, modern office technologies, and stable digital platforms to support efficient tax administration processes.
5. **Strengthening Technical Support Systems:** Tax authorities should establish responsive technical support units to address system failures, troubleshoot challenges, and ensure uninterrupted operation of digital tax systems.
6. **Integrated System Upgrades and Maintenance:** Regular system updates, maintenance, and user-friendly interface improvements should be prioritized to enhance usability, reduce downtime, and improve overall efficiency.

Conclusion

The study concludes that while tax officials in Anambra State possess high digital competency, this competency does not significantly translate into improved efficiency in digital tax administration. Instead, institutional challenges such as poor infrastructure, inadequate technical support systems, unstable digital platforms, and technological limitations play a more significant role in determining efficiency outcomes. The findings suggest that improving system infrastructure and institutional support is critical for maximizing the benefits of digital competency and enhancing the overall efficiency of digital tax administration in Anambra State.

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