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Examining the Mediating Effect of ICT Adoption on Personnel Training and Technological Infrastructure in Local Government Revenue Generation

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Abstract

This study provides valuable insights into the dynamics of Information and Communication Technology (ICT) adoption concerning revenue generation within the Nigerian local government system. By analysing the mediating role of ICT adoption in relation to personnel training, technological infrastructure, and revenue collection, this study advances the understanding of how technology serves as a catalyst for converting human and technological resources into tangible organisational outcomes. This study investigates beyond surface-level interactions to reveal the complex interplay among these variables through a quantitative method of data collection and analysis. Data were collected through a structured questionnaire from the revenue staff of Ilorin West Local Government of Kwara State, Nigeria. The findings reveal that well-trained personnel and robust technological infrastructure synergistically contribute to the adoption of ICT, resulting in optimised revenue collection mechanisms. Thus, this study underscores the transformative potential of technology, positioning it as a cornerstone for organisational growth and efficiency. The findings provide a framework for comprehending the pathways through which technology permeates various dimensions of local government organisations, leading to enhanced revenue management and performance.

1. Introduction

In the historical antecedents of the Nigerian local government system, a decentralised administrative structure has been created to bring governance and services closer to the grassroots (Anayochukwu et al., 2022). This approach has endowed local governments with some freedom to manage their affairs, making them contribute to national development. Local governments were reorganised nationwide in the Local Government Reform of 1976 in an attempt to harmonise their operations and align across the country,

resulting in the current system of local government in use. This was a concerted attempt to reenergise local government for increased efficiency in revenue management and service delivery, particularly in rural regions (Oviasuyi et al.,2010). This reform was comprehensive in that it granted the local government a constitutional role in managing revenues. According to Idike (2014), these initiatives were intended to have local government as a component of a larger effort to address national development. Despite the aforementioned measures, local governments have been chastised for inadequate revenue management performance.

The decentralised arrangement of the country gives a sense of belonging to all levels of government, it has also brought to the forefront a series of challenges that local government units grapple with regularly. Among these challenges, inefficiencies in revenue generation have emerged as a particularly pressing concern (Abdulkareem et al., 2018; Oyedele et al., 2017). The inability of local governments to sustainably generate revenue is a foundation of their poor functional capacity and their role as providers of essential services to their constituents (Ajadi et al., 2020). Generally, revenue generation is inherently linked to the effectiveness and viability of local government units in fostering community development, maintaining public infrastructure, and delivering services that directly impact citizens' lives.

Local governments' financial challenges are not a new occurrence in the literature, as academics of local government and decentralisation have worked hard to find solutions (Oyedele et al., 2017). Because it is the lowest level of government in the federation, it receives fewer resources than the state and federal governments under the revenue-sharing structure. State governments are required by law to establish a Joint Account to receive their share of funding from local governments. This gives state governments undue influence over local governments by subjecting their funds to unwarranted deductions. According to studies, the majority of local governments in Nigeria are left with little funds and rely significantly on external funding for developmental endeavours (Abdulkareem et al., 2018; Ajadi et al., 2020). This frequently has major consequences, such as difficulties in the payment of employees' salaries and carrying out other developmental initiatives. Similarly, local governments are required by law to garner revenues internally through local taxes, fines, rates, and proceeds from commercial ventures to supplement funds from external sources. However, the ability of the local governments to generate adequate funds internally becomes a question of several age-long debates owing to their lower level of advancement in ICT adoption, poor presence of technological infrastructure, and low level of personnel skills and knowledge.

The adoption of ICT emerges as a beacon of hope in the challenges facing local governments (Duke et al., 2020). The potential of ICT to address the aforementioned challenges and transform local government operations has been widely acknowledged (Duke et al., 2020; Odendaal, 2003; Wang & Feeney, 2016). By leveraging ICT tools, local governments can streamline revenue collection processes, enhance transparency and accountability, and establish digital platforms for citizen engagement. In essence, ICT has the potential to infuse efficiency, effectiveness, and innovation into the very fabric of local government functioning. However, amidst this recognition of ICT's potential, a crucial gap remains,a gap that this research endeavours to bridge. While the benefits of ICT adoption in local governments are acknowledged, the extent to which this adoption influences revenue generation outcomes are still relatively unexplored. It is within this realm that the research aims to make its mark, unraveling the complex connections between ICT adoption, antecedent factors, and revenue generation in Nigerian local governments.

This study's significance lies in its potential to shed light on the interplay between antecedent factors, ICT adoption, and revenue generation in the context of Nigerian local governments. By understanding the mediating role of ICT adoption, local governments can make informed decisions about allocating resources for training and infrastructure development to optimise revenue collection. Furthermore, the study's findings could guide policymakers in devising strategies that leverage ICT to enhance revenue generation, thereby contributing to improved service delivery and community development. Additionally, the research holds relevance beyond the local context, offering insights that may apply to similar administrative setups in other regions and countries. By exploring the relationship between ICT adoption and revenue generation, this study contributes to the growing body of knowledge on ICT's transformative potential within the public sector.

2. Literature Review

2.1 Personnel Training and Development

In the multifaceted realm of local government operations, the significance of well-trained personnel is of significant importance (Mpofu & Hlatywayo, 2015). The personnel working within local government units serve as the engines that drive administrative processes, service delivery, and revenue collection. They are the human interface through which the complex web of policies, programs, and interactions with citizens

is realized. Thus, the quality of their skills, knowledge, and abilities reverberates throughout the entire local government machinery (Salam, 2021).

Effective revenue collection demands a multifaceted skill set that encompasses financial acumen, interpersonal skills, and technical proficiency. Schmitt (2010) argued that a workforce equipped with the necessary skills and knowledge is better positioned to navigate the intricacies of revenue collection processes. This includes efficiently managing financial transactions, accurately recording data, and effectively communicating with citizens and stakeholders. Professionally trained personnel understand the variations of revenue sources, legal frameworks, and collection methods, enabling them to optimise the revenue generation process (Liss-Levinson et al., 2019).

Training initiatives extend beyond mere technical proficiency; they also encompass a deep understanding of financial management principles (Liss-Levinson et al., 2019). Local government revenue units deal with diverse revenue streams, each with its intricacies and challenges. A well-trained workforce can effectively allocate resources, manage budgets, and make informed financial decisions. This capacity not only ensures revenue transparency and accountability but also enhances the local government's overall financial health. Similarly, training in this regard includes skill enhancement; they also cultivate a culture of accountability and professionalism. When personnel understand the significance of their role in revenue generation, they are more likely to take ownership of their responsibilities. Training programs can emphasize the ethical and legal dimensions of revenue collection, reinforcing the importance of adhering to standards and regulations (Abdulkareem & Ramli, 2021a). This culture of accountability can lead to improved revenue collection accuracy and reduced instances of errors and corruption.

The relationship between training programs and revenue generation outcomes has been substantiated by empirical research (Adi et al., 2015; Atakpa et al., 2012). Previous studies have examined the positive impact of well-training initiatives on revenue collection efficiency and effectiveness within the public sector (Adi et al., 2015; Kasozi et al., 2013). These studies have highlighted how well-trained personnel contribute to increased revenue collection rates, reduced arrears, and enhanced financial reporting accuracy. In essence, the training of personnel in local government revenue units transcends the acquisition of technical skills; it encompasses the cultivation of a professional mindset, the mastery of financial management, and the fostering of excellent customer service.

H1: Personnel training has a significant influence on revenue collection

2.2 Technological Infrastructure

In the process of local government revenue collection, the availability of robust physical and technological infrastructure emerges as a fundamental thread that joins together efficiency, accuracy, and transparency (Acharya et al., 2022). Infrastructure, both physical and technological, serves as the foundation upon which revenue collection operations are built, ensuring the seamless flow of transactions, data, and interactions (Dannin, 2011). At the heart of revenue collection lies the need for seamless and efficient transactions. Physical infrastructure, such as well-equipped payment centres, secure transaction points, and efficient cash-handling mechanisms, plays a pivotal role in facilitating timely payments (Abdulkareem & Ramli, 2021b). These infrastructure elements ensure that citizens can easily make payments, reduce delays and minimising inconveniences. Moreover, a well-designed physical infrastructure can accommodate a variety of payment methods, catering to diverse citizen preferences.

In the age of digital transformation, technological infrastructure holds equal significance. Adequate technological infrastructure encompasses functional payment systems and online platforms that empower citizens to make payments from the comfort of their homes or offices (Abdulkareem & Ramli, 2021b). These online platforms, accessible via various devices, provide a convenient and user-friendly means of settling obligations. By removing geographical barriers and time constraints, technological infrastructure significantly expands the revenue collection reach.

Research has underscored the central role of infrastructure in reducing bureaucratic hurdles that can hinder revenue collection (Uhunmwuangho & Aibieyi, 2013). A well-designed infrastructure can streamline administrative processes, ensuring that citizens encounter minimal bureaucratic obstacles when making payments (Evans & Yen, 2005). This expedites the payment process and encourages compliance. Inefficient infrastructure, on the other hand, can result in delays, frustrations, and increased arrears.

H2: Technological Infrastructure has a significant influence on revenue collection.

2.3 ICT Adoption

In the ever-evolving landscape of governance and administration, the adoption of Information and Communication Technology (ICT) has emerged as a sign of change and transformation (Abdulkareem et al.,

2016). With its transformative potential, ICT has cast a spotlight on local government units, offering avenues for efficiency, innovation, and enhanced service delivery (Ajadi et al., 2020). This escalating attention to ICT is reflective of a paradigm shift in how local governments harness technology to address contemporary challenges and fulfil their multifaceted roles.

One of the most prominent outcomes of ICT adoption is the streamlining of administrative processes (Bonsón et al., 2012; Evans & Yen, 2005). Mundane and time-consuming tasks, which were once manual and prone to human error, can now be automated with precision. Tasks like data entry, information retrieval, and transaction processing are executed swiftly and accurately, enabling local government officials to focus on higher-value strategic initiatives.

Also, ICT impacts citizen engagement. Online platforms enable citizens to access information, submit inquiries, and participate in decision-making processes, transcending geographical barriers (Abdulkareem et al., 2022). This democratisation of participation strengthens the bonds between local governments and their constituents, fostering a sense of ownership and shared responsibility. Citizens become active partners in shaping policies and priorities, amplifying the efficacy of governance (Abdulkareem et al., 2022).

H3: ICT adoption has a significant influence on revenue collection.

2.4. Mediating Effect of ICT Adoption

Research on ICT adoption as a mediator between personnel training, technology infrastructure, and revenue collection highlights its pivotal role in enhancing organisational efficiency. Studies show that effective training and robust infrastructure enable ICT adoption, which streamlines processes, improves user acceptance, and drives revenue collection, significantly boosting overall performance in diverse organisational contexts (Massawe & Mwanukuzi, 2023). Masele and Kagoma (2022) found that robust ICT infrastructure and training fully mediate the relationship between these inputs and revenue collection in Tanzanian municipalities, enhancing user acceptance and tax efficiency. Similarly, Taylor (2019) demonstrated full mediation in SMEs, where ICT adoption links training and infrastructure to performance, indirectly boosting revenue. Cuevas-Vargas et al. (2024) also reported full mediation, showing ICT adoption enhances absorptive capacity, connecting training and infrastructure to financial outcomes in Colombian SMEs. In contrast, Yuwono et al. (2024) also found partial mediation, emphasising training and infrastructure as enablers but not exclusive drivers of performance.

H4: ICT adoption mediates the relationship between personnel training and revenue collection.
H5: ICT adoption mediates the relationship between technological infrastructure and revenue collection.

2.5 Conceptual Framework

This study's conceptual framework draws on the Resource-Based View (RBV) theory, which argues that organisations achieve competitive advantage by leveraging valuable resources. Here, personnel training and technological infrastructure are positioned as key antecedent resources that drive ICT adoption in local government revenue systems. Personnel training enhances staff digital literacy and financial management, while technological infrastructure provides the necessary platforms and tools. Together, these factors strengthen ICT adoption, which directly improves revenue collection by enhancing efficiency, accuracy, and transparency. Moreover, ICT adoption serves as a mediating mechanism through which training and infrastructure investments influence revenue outcomes. The framework tests five hypotheses: (H1) personnel training → ICT adoption; (H2) technological infrastructure → ICT adoption; (H3) ICT adoption → revenue collection; (H4) ICT adoption mediates between personnel training and revenue; (H5) ICT adoption mediates between technological infrastructure and revenue. This structure as shown in Figure 1 provides a clear path for evaluating how resource alignment enhances local government performance.

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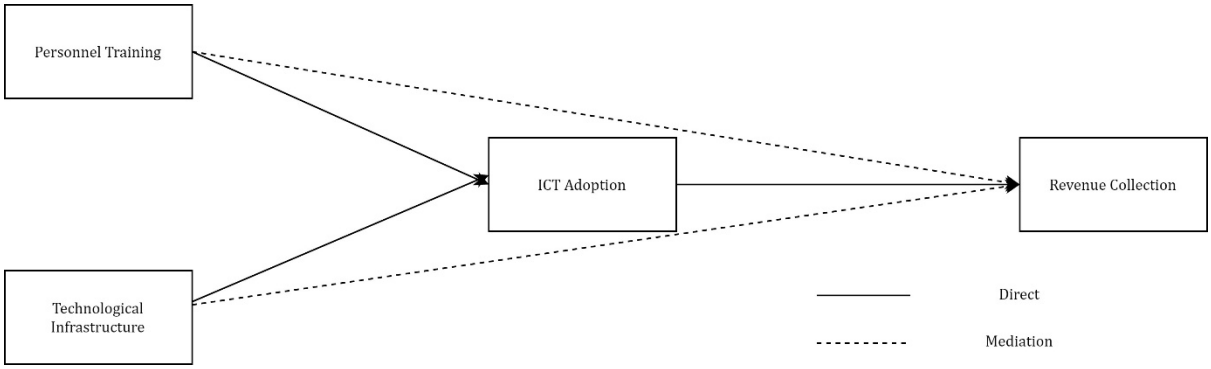

Fig. 1 *Conceptual model*

2.6 Theoretical Background

In the complex model of organisational study, the Resource-Based View (RBV) theory emerges as a guide, explaining how organisations can scale to competitive advantage by harnessing their distinctive resources and capabilities (Beamish & Chakravarty, 2021). Rooted in the idea that not all resources are equal and that valuable and rare resources create competitive differentiation, RBV offers a lens through which the dynamics of local government revenue generation can be profoundly understood. Within the context of this study, RBV provides a pivotal point to dissect how the adoption of ICT and the cultivation of a well-trained workforce can metamorphose into valuable and rare resources, ultimately enhancing revenue collection within local government units.

At the crux of RBV lies the notion that organisations possess resources and capabilities that are diverse in nature (Al Amiri et al., 2023; Madhani, 2010). In the realm of local government revenue generation, ICT adoption, personnel training and development, as well as technological infrastructure, surface as prime examples of such resources. ICT tools, integrated strategically within administrative processes, offer the potential to streamline revenue collection, enhance transparency, and facilitate citizen engagement (Abdulkareem et al., 2021). Simultaneously, a well-trained workforce exhibits competencies that extend beyond the technical, contributing to efficient financial management, superior customer service, and accurate data handling. These resources, when raised and harnessed effectively, become distinctive capabilities that elevate local governments' operations (Ajadi et al., 2020; Oyedele et al., 2017).

By adopting the views of RBV, this paper explores the transformative power of ICT adoption and well-trained personnel into valuable and rare resources within the context of local government revenue generation. The theory underscores the significance of strategic resource allocation, cultivation, and optimisation, guiding local governments toward competitive advantage. Through empirical analysis, this study endeavours to find pathways through which these resources contribute to revenue collection outcomes.

3. Methodology

Data for this study were obtained through a structured questionnaire precisely developed to stimulate targeted responses from personnel within the revenue unit of Ilorin West Local Government, Kwara State, Nigeria. The instrument focused on key variables, including ICT adoption, its antecedent factors specifically personnel training and infrastructure and revenue generation outcomes as shown in Table 1. ICT adoption was conceptualized as a mediating variable within the framework. Items measuring personnel training were adapted from Goldstein and Ford (2002), emphasising aspects of employee skill development, knowledge acquisition, and competency enhancement. The technological infrastructure construct was measured using items adapted from Wyse and Higgins (1993), focusing on the availability, adequacy, and functionality of hardware, software, and network systems. For ICT adoption, the study employed measurement items derived from Davis (1989) and his Technology Acceptance Model (TAM), which captures dimensions such as perceived usefulness and perceived ease of use. Lastly, the revenue collection construct was informed by the work of Adi et al. (2015), focusing on aspects such as collection efficiency, accuracy, and the overall effectiveness of revenue management. These adaptations ensured that the questionnaire items were grounded in prior validated research while being appropriately tailored to the local government context under study.

Table 1 *Number of items and sources of constructs*

Constructs	No. of Items	Source
Personnel Training	5	Goldstein and Ford (2002)
Technological Infrastructure	11	Wyse and Higgins (1993)
ICT Adoption	5	Davis (1989)
Revenue Collection	3	Adi et al. (2015)

Source: Author's work

A purposive sample of 57 staff members from the revenue unit was selected, reflecting the study's strategic focus on a specific organisational function. The study employed a purposive sampling method because it specifically targeted respondents with direct expertise and experience related to revenue generation within the local government system. Unlike random or stratified sampling, purposive sampling allowed the researchers to deliberately select revenue staff who possess specialised knowledge about the processes under investigation, thereby ensuring the data collected were both relevant and meaningful to the study's objectives. The choice of Ilorin West Local Government as the case study was justified by its prominence as one of the largest and most economically active local government areas in Kwara State. Its diverse revenue sources, substantial administrative size, and prior efforts at ICT integration made it a fitting and representative context for exploring the mediating effects of ICT adoption on revenue generation.

To ensure the reliability and validity of the instrument, several statistical measures were employed. Cronbach's Alpha was used to assess the internal consistency of the items within each construct, with values above 0.7 indicating acceptable reliability. Additionally, Composite Reliability (CR) was calculated, offering a more refined assessment of scale reliability by accounting for the varying loadings of each indicator. These metrics confirm that the instrument reliably measures the intended constructs, thereby supporting the validity of the study's findings and enhancing the robustness of the structural model.

Also, five samples were used for the pilot study to ensure the reliability of the study instrument. For the final phase of the analysis, the study used both descriptive analysis and Partial Least Squares- Structural Equation Modeling (PLS-SEM) as the analytical framework. This approach is well-suited for exploring complex relationships in smaller sample sizes and offers flexibility and robustness in analysing the interplay between variables. The questionnaire items for each of the variables were derived from previous studies related to the constructs of the study. Five items for personnel training were adapted from Goldstein and Ford (2002). Also, for technological infrastructure, network and service infrastructure items were adapted from Wyse and Higgins (1993). Similarly, for ICT adoption, construct items were adapted from (Davis, 1989).

3.1 Analysis

The demographic composition of the study shows that among the participants, 44% are male, while 66% are female, highlighting gender diversity within the sample. The age distribution reveals a balanced representation, with 42% falling between the ages of 18 and 30, 38% between 31 and 40, and 20% above the age of 40. Educational backgrounds vary, showcasing a spectrum of attainment: 16% possess secondary education, 61% have post-secondary qualifications, 21% hold postgraduate degrees, and 2% fall into other categories. 35% have spent between 5 and 10 years on the job, 52% have spent between 10 and 20 years, and 13% have spent beyond 20 years.

3.1.1 Measurement Model

The measurement model, as shown in Table 2, shows that the majority of the item loadings are> 0.705, indicating the strength of the relationship between variables and their respective mother constructs. This signifies a robust connection between the latent variables and their measured indicators, supporting the validity of the measurement model. Also, the Composite Reliability (CR) metric, a measure of the internal consistency of items within a construct, exceeds the threshold of 0.7. This underlines the reliability of the measurement model, indicating that the items within each construct consistently capture the same underlying concept. Similarly, Cronbach's Alpha > 0.7, confirming the homogeneity and coherence of the items within each construct, enhances confidence in their measurement. For the convergent validity, the Average Variance Extracted (AVE) > 0.5 signalling that a substantial proportion of the variance in the indicators is captured by the latent construct, validating their cohesion. Discriminant validity was also explored with the Heterotrait-Monotrait Ratio of Correlations (HTMT), a measure of discriminant validity,

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which falls below the threshold of 0.8, confirming that the constructs' correlations with their indicators are higher than their correlations with other constructs' indicators, substantiating their distinctiveness as shown in Table 3.

Table 2 *Measurement model result*

Constructs	Items	Loadings	CA	CR	AVE
Personnel Training	PT1	0.771	0.766	0.772	0.501
	PT2	0.718			
	PT3	0.716			
	PT4	0.814			
	PT5	0.725			
Technology Infrastructure	TF1	0.768	0.771	0.766	0.515
	TF2	0.763			
	TF3	0.759			
	TF4	0.755			
	TF5	0.751			
	TF6	0.747			
	TF7	0.742			
	TF8	0.738			
	TF9	0.734			
	TF10	0.730			
	TF11	0.726			
ICT Adoption	IC1	0.721	0.708	0.705	0.502
	IC2	0.719			
	IC3	0.726			
	IC4	0.728			
	IC5	0.801			
Revenue Collection	RC1	0.816	0.776	0.746	0.508
	RC2	0.713			
	RC3	0.716			

Source: Author's work

Table 3 *Discriminant validity (HTMT criterion)*

Constructs	Personnel Training	Technology Infrastructure	ICT Adoption	Revenue Collection
Personnel Training				
Technology Infrastructure	0.532			
ICT Adoption	0.485	0.549		
Revenue Collection	0.301	0.312	0.438	

Source: Author's work

3.1.2 Structural Model

The structural model analysis, as shown in Table 4, revealed significant relationships between the variables. The results indicated that personnel training has a substantial positive influence on ICT adoption ($\beta = 0.411$, $t = 12.128$, $p < 0.001$). Similarly, the relationship between tech infrastructure and ICT adoption was also significant, with a positive effect ($\beta = 0.297$, $t = 8.551$, $p < 0.001$). Furthermore, the study found a positive association between ICT adoption and revenue collection ($\beta = 0.531$, $t = 13.113$, $p < 0.001$). Regarding mediating effects, the analysis revealed that personnel training's influence on revenue collection was partially mediated by ICT adoption ($\beta = 0.198$, $t = 7.517$, $p < 0.001$). Similarly, tech infrastructure's

impact on revenue collection was also partially mediated by ICT adoption (β = 0.217, t = 7.926, p < 0.001). The study's model explained a substantial proportion of the variance in the outcome variable, with an R^2 value of 0.582. This indicates that the included variables collectively account for 58.2% of the variability observed in revenue collection, emphasizing the relevance of personnel training, tech infrastructure, and ICT adoption in shaping the organisation's revenue outcomes.

Table 4 *Hypothesis testing*

Hypothesis	β	T-value	p-value	Decision
H1: Personnel Training -> ICT Adoption	0.411	12.128	0.000	Supported
H2: Tech Infrastructure -> ICT Adoption	0.297	8.551	0.000	Supported
H3: ICT Adoption -> Revenue Collection	0.531	13.113	0.000	Supported
H4: Personnel Training -> ICT Adoption -> Revenue Collection	0.198	7.157	0.000	Supported
H5: Tech Infrastructure -> ICT Adoption -> Revenue Collection	0.217	7.926	0.000	Supported

The predictive relevance analysis for the dependent variable which is **revenue collection** confirms the robustness of the research model as shown in Table 5. Using the blindfolding procedure in PLS-SEM, the cross-validated redundancy metric (Q^2) for all three indicators of revenue collection (RC1, RC2, RC3) consistently exceeds zero (ranging from **0.188 to 0.205**). This confirms the model's **substantial predictive power** for revenue outcomes, as $Q^2>0$ implies the theoretical framework outperforms a simple benchmark model in forecasting real-world observations.

Notably, **RC1** (loading: 0.816), which measures *collection efficiency*, exhibits the strongest predictive relevance (Q^2=0.188), aligning with its high contribution to the latent construct. The negative **PLS-LM RMSE** values (ranging from **-0.012 to -0.016**) further validate the PLS-SEM model's superiority over traditional linear regression (LM), indicating greater accuracy in predicting revenue collection patterns.

Table 5 *Predictive relevance*

Constructs	Items	PLS RMSE	Q^2 predict	LM RMSE	PLS-LM RMSE
Revenue Collection	RC1	0.816	0.188	0.832	-0.016
	RC2	0.713	0.205	0.725	-0.012
	RC3	0.716	0.197	0.730	-0.014

The structural model illustrating the hypothesized relationships among personnel training, technological infrastructure, ICT adoption, and revenue collection is presented in Figure 2. The path coefficients confirm the significant influence of both personnel training and technological infrastructure on ICT adoption, as well as the strong positive effect of ICT adoption on revenue collection.

To further explore the mediating role of ICT adoption, the results of the mediation analysis are summarized in Table 6. These findings indicate that ICT adoption partially mediates the relationship between personnel training and revenue collection (β = 0.198, t = 7.157, p < 0.001), as well as between technological infrastructure and revenue collection (β = 0.217, t = 7.926, p < 0.001).

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Table 6 *Mediation analysis*

Total Effect IV → RC β	*p*	T-value	Direct Effect IV → RC β	*P*	T-value	Indirect Effect IV → Med → RC: Hypothesis	β	T-value	*p*	Percentile Bootstrap 95% Confidence Interval
PT → RC 0.596	0.000	13.012	0.398	0.000	10.155	H4: PT → ICT → RC	0.198	7.157	0.000	[0.223, 0.182]
TI → RC 0.514	0.000	11.230	0.297	0.000	7.203	H5: TI → ICT → RC	0.217	7.926	0.000	[0.256, 0.194]

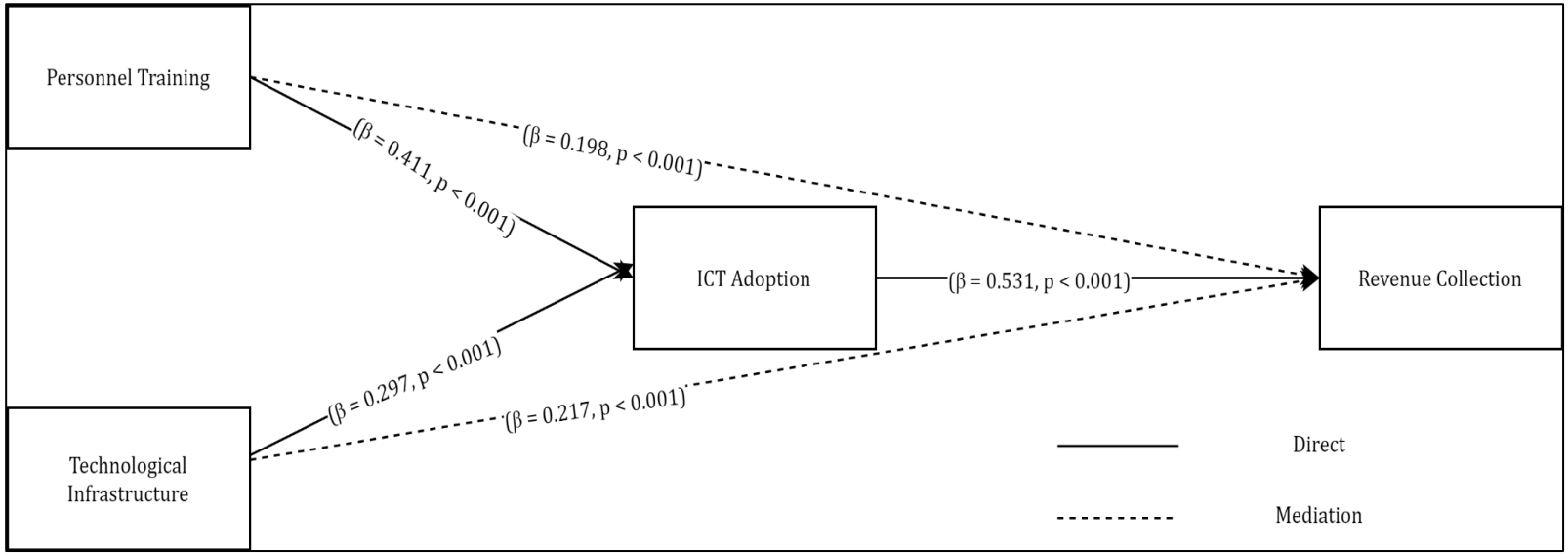

Fig. 2 *Structural model result*

4. Discussion

This study investigated the relationships between personnel training, technological infrastructure, ICT adoption, and revenue collection within the local government context. The findings of the structural model analysis reveal insightful insights into the intricate dynamics that drive these relationships, shedding light on how investments in personnel training and technological infrastructure can contribute to enhanced revenue collection through the adoption of ICT.

The first major finding of this study pertains to the significant positive relationship between personnel training and ICT adoption. The results underscore the pivotal role of adequately trained personnel in fostering the integration and utilisation of information and communication technology. This finding aligns with prior research that highlights the importance of human capital development in enabling technological advancements (Abdulkareem & Ramli, 2021a). Organisations that invest in training programs tailored to enhance employees' digital literacy and ICT skills are likely to witness a smoother transition toward adopting innovative technologies. The strong correlation between personnel training and ICT adoption emphasises the necessity of not only technological investments but also human-centered initiatives to drive successful technology integration (Abdulkareem & Ramli, 2021a).

Consistent with the literature, the study also identified a positive association between technological infrastructure and ICT adoption (Abdulkareem & Ramli, 2021b; Nchunge et al., 2013). This finding resonates with the resource-based view of the firm, which suggests that superior technological assets can enhance an organisation's capabilities (Barney, 1991; Barney et al., 2001). A robust technological infrastructure provides the foundation for the effective implementation of ICT solutions. Organisations equipped with advanced hardware, software, and networking systems are better positioned to harness the potential benefits of ICT adoption (Mallick, 2021). This result implies that managerial decisions to upgrade technological infrastructure can have direct implications for the organisation's overall digital transformation journey.

Perhaps the most noteworthy finding of this study is the significant positive effect of ICT adoption on revenue collection. This finding underscores the transformative power of ICT in enhancing revenue-related processes. The positive relationship suggests that organisations that embrace ICT are likely to experience streamlined revenue collection procedures, reduced errors, improved data accuracy, and enhanced customer engagement, ultimately leading to increased revenue generation (Mallick, 2021; Ofori et al., 2022). This finding corroborates previous research that highlights the positive impact of ICT adoption on various organisational outcomes, including financial performance (AbuAkel & Ibrahim, 2023; Ofori et al., 2022).

Moving beyond the direct effects, the study also delved into the mediating effects of ICT adoption in the relationship between personnel training, technological infrastructure, and revenue collection. The mediating role of ICT adoption implies that the adoption of ICT acts as a conduit through which the effects of personnel training and technological infrastructure flow influence revenue collection outcomes. This mediation effect highlights the pivotal role that technology plays in translating human capital investments and technological assets into tangible organisational outcomes (AbuAkel & Ibrahim, 2023). It underscores the need for a holistic approach that combines both human resource development and technological enhancement to achieve optimal performance.

Similarly, the partial mediation reveals constraints, as ICT's impact on revenue is limited by systemic barriers. Infrastructure gaps, such as unstable power and poor internet connectivity, bureaucratic resistance to digitisation, and political interference, hinder ICT's transformative potential. Despite these challenges, training and infrastructure still contribute directly to revenue gains (e.g., through manual efficiency from skilled staff), though operational disruptions and low citizen trust in digital systems prevent ICT from fully leveraging these resources.

The cumulative variance explained by the model ($R^2 = 0.582$) indicates that the included variables collectively account for a substantial proportion of the variability in revenue collection. This implies that personnel training, technological infrastructure, and ICT adoption are robust predictors of revenue collection outcomes. However, it also suggests that there are other factors not included in the model that contribute to revenue collection, indicating potential avenues for future research.

5. Implications of the findings

The findings of this study hold important theoretical implications for understanding the dynamics of personnel training, technological infrastructure, ICT adoption, and revenue collection within the context of local government organisations. The study extends existing theoretical frameworks by providing empirical

evidence of the interplay between these variables, shedding light on their combined effects on revenue-related outcomes.

Firstly, the study contributes to the resource-based view (RBV) theory by highlighting the pivotal role of both human capital and technological assets in driving revenue collection outcomes. In the local government context, where resources are often constrained, the study underscores the importance of aligning investments in personnel training and technological infrastructure to enhance revenue generation. The RBV perspective posits that organisations can achieve sustainable competitive advantage through the strategic allocation of resources, and this study provides insights into how such allocation can yield positive outcomes in the realm of revenue collection.

Moreover, the study delves into the complex dynamics of ICT adoption within the context of local government organisations, shedding light on the multifaceted process of integrating technology. By highlighting the pivotal mediating role of ICT adoption in the complex interplay among personnel training, technological infrastructure, and revenue collection, the research significantly contributes to a deeper comprehension of how technology serves as a transformative agent. This study propels the understanding beyond mere surface-level interactions and propounds a more profound understanding of how the convergence of human capacity building and technological readiness materializes into tangible and impactful outcomes for the organisation.

From a practical perspective, this study is particularly relevant for local government entities seeking to enhance revenue collection efficiency and effectiveness while navigating the challenges specific to their context. First, the study underscores the importance of investing in personnel training. Local government organisations should design and implement training programs that equip their employees with the necessary digital literacy and ICT skills. By providing ongoing learning opportunities, local government employees can adapt to the changing technological landscape, enabling them to effectively utilize technology tools for improved revenue collection processes.

Similarly, the study emphasizes the need for continuous evaluation and enhancement of technological infrastructure. Local governments should allocate resources to maintain up-to-date hardware, software, and networking systems. By doing so, they can create a supportive environment for successful ICT adoption and utilization. This infrastructure is essential not only for revenue collection but also for the overall efficiency of administrative processes.

Furthermore, local government entities should view ICT adoption as a strategic initiative rather than a mere technological upgrade. The study's findings highlight the potential for ICT adoption to streamline revenue collection processes, enhance data accuracy, and improve customer engagement. Therefore, local governments should consider implementing tailored ICT solutions that align with their revenue goals and customer needs. This might involve digital payment gateways, online service platforms, and automated communication systems to facilitate revenue collection and improve citizen satisfaction.

Additionally, local governments should recognize the interdependence of personnel training, technological infrastructure, and ICT adoption. Instead of isolated investments, a holistic approach that integrates human capital development and technological enhancement is crucial. Collaborative efforts between HR departments and IT teams can lead to a more effective synergy between trained personnel and advanced technology, maximizing revenue collection outcomes.

6. Conclusions

This study examined the complex relationships between personnel training, technological infrastructure, ICT adoption, and revenue collection within the context of local government in Nigeria. The findings underscore the significant role that well-trained personnel and robust technological foundations play in fostering the successful adoption of ICT, ultimately leading to improved revenue collection outcomes. The mediating effects of ICT adoption highlighted the transformational power of technology as a conduit for translating investments in human capital and technological resources into tangible organisational benefits. These insights provide local government entities with valuable guidance for strategically enhancing their revenue collection processes and overall operational efficiency.

Despite the contributions of this study, there are some limitations. Firstly, the purposive sampling of 57 staff from a single revenue unit in Ilorin West Local Government creates inherent generalizability constraints. This limitation is not merely geographical but potentially introduces selection bias, as the perspectives captured may represent organisational-specific practices rather than broader governmental patterns. Therefore. The unique characteristics and resource constraints of local governments may influence the relationships examined in this study differently from others. The cross-sectional design presents a significant temporal limitation. Beyond simply noting an inability to establish causality, this approach fails to capture the evolutionary nature of ICT implementation processes. Revenue collection

improvements often manifest gradually, and the snapshot methodology may miss critical transition phases or technology adoption cycles that influence outcomes. The quantitative instrument, while structured, potentially sacrifices depth for breadth. The questionnaire format may inadequately capture the organisational dynamics and implementation challenges that qualitative methods might reveal. This methodological choice limits the understanding of the "how" and "why" behind statistical relationships. Another limitation lies in the exclusion of other potential variables that could influence revenue collection outcomes in local government settings. Factors such as political factors, policy changes, and socioeconomic conditions could interact with the variables studied here, shaping revenue collection processes differently. Similarly, exploring potential mediating and moderating factors, such as organisational culture, leadership styles, and citizen engagement, could provide a more nuanced understanding of the complex relationships between the variables.

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Conflict of Interest

The authors declare no conflict of interest.

Author Contribution

The authors confirm contribution to the paper as follows: ***Study conception and design:*** *Abdulkareem, A.K., Akintola, M.A., Ameen, A;* ***data collection:*** *Abdulkareem, A.K, Rafiu, I.O.J.A;* ***Analysis and interpretation of results:*** *Abdulkareem, A.K., Akintola, M;* ***draft manuscript preparation****: Isiaka, S.B., Isa, O., Abdulkareem, A.K,* ***manuscript critical review:*** *Isiaka, S.B.*

References

Abdulkareem, A. K., & Ramli, R. M. (2021a). Does digital literacy predict e-government performance? An extension of Delone and Mclean information system success model. Electronic Government, an International Journal, 17(4), 466-493.

Abdulkareem, A. K., & Ramli, R. M. (2021b). Evaluating the Performance of E-government: Does Citizens' Access to ICT Matter? Pertanika Journal of Social Sciences and Humanities, 29(3), 1507-1534.

Abdulkareem, A. K., Abdulkareem, Z. J., Ishola, A. A., Bello, M. L., & Oladimeji, K. A. (2022). The influence of openness of public organisations and social media use on e-participation: the mediating effect of trust in e-government. International Review of Public Administration, 1-16.

Abdulkareem, A. K., Ameen, A., & Ishola, A. A. (2016). A Review of E-Government as a Tool for Building Citizens Trust in the Nigerian Government. Sahel Analyst: Journal of Management Sciences, 13(2), 10.

Abdulkareem, A. K., Ishola, A. A., & Abdulkareem, Z. J. (2021). E-Government and Bureaucratic Corruption in Nigeria: Successes and Challenges. Jurnal Studi Pemerintahan, 12(1), 1-20.

AbuAkel, S. A., & Ibrahim, M. (2023). The Effect of Relative Advantage, Top Management Support and IT Infrastructure on E-Filing Adoption. Journal of Risk and Financial Management, 16(6), 295.

Acharya, B., Lee, J., & Moon, H. (2022). Preference heterogeneity of local government for implementing ICT infrastructure and services through public-private partnership mechanism. Socio-Economic Planning Sciences, 79, 101103.

Adi, A. A., Magaji, I. Y., & Eche, E. (2015). Internal revenue generation in Taraba state, Nigeria: Problems and prospects. International Journal of Economic Commerce and Management, 3 (2), 1-13.

Ajadi, I. A., Kayode, A. A., Lawan, B. M., Olaniyi, D. E., & Damilola, O. A. (2020). Internally generated revenue and local government sustainability in Nigeria. Dynamics Of Public Administration, 37(2), 141-149.

Al Amiri, N., Rahim, R. E. A., & Ahmed, G. (2023). The organisational resources and knowledge management capability: A systematic review. Journal of Information & Knowledge Management, 2350039.

Atakpa, M., Ocheni, S., & Nwankwo, B. C. (2012). Analysis of options for Maximizing Local Government internally generated Revenue in Nigeria. International journal of learning and Development, 2(5), 94-104.

Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99-120.

Barney, J., Wright, M., & Ketchen Jr, D. J. (2001). The resource-based view of the firm: Ten years after 1991. Journal of Management, 27(6), 625-641.

Beamish, P. W., & Chakravarty, D. (2021). Using the resource-based view in multinational enterprise research. Journal of management, 47(7), 1861-1877.

Bonsón, E., Torres, L., Royo, S., & Flores, F. (2012). Local e-government 2.0: Social media and corporate transparency in municipalities. Government Information Quarterly, 29(2), 123-132.

Cuevas-Vargas, H., Aguirre, J., & Parga-Montoya, N. (2022). Impact of ICT adoption on absorptive capacity and open innovation for greater firm performance. The mediating role of ACAP. Journal of Business Research, 140, 11-24.

Dannin, E. (2011). Crumbling infrastructure, crumbling democracy: Infrastructure privatization contracts and their effects on state and local governance. Nw. JL & Soc. Pol'y, 6, 47.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.

Evans, D., & Yen, D. C. (2005). E-government: An analysis for implementation: Framework for understanding cultural and social impact. Government information quarterly, 22(3), 354-373.

Goldstein, I. L., & Ford, J. K. (2002). Training in organisations: Needs assessment. Development, and Evaluation, 4th ed., Wadsworth, Belmont, CA.

Kasozi, S. M., Kayise, C., & Kirabo, K. B. J. (2013). Institutional capacity and local revenue generation in Nakasongola Town Council.

Liss-Levinson, R., Franzel, J., & Young, G. (2019). Financial literacy programs for local government employees. Center for State and Local Government Excellence.

Madhani, P. M. (2010). Resource based view (RBV) of competitive advantage: an overview. Resource based view: concepts and practices, Pankaj Madhani, ed, 3-22.

Mallick, H. (2021). Do governance quality and ICT infrastructure influence the tax revenue mobilisation? An empirical analysis for India. Economic Change and Restructuring, 54(2), 371-415.

Massawe, E., & Mwanukuzi, P. (2023). Geospatial information technology systems and revenue collection: the case of Ilala City Council and Kinondoni Municipal Council. Tanzania Journal for Population studies and Development, 30(1), 78-104.

Mpofu, M., & Hlatywayo, C. K. (2015). Training and development as a tool for improving basic service delivery; the case of a selected municipality. Journal of Economics, Finance and Administrative Science, 20(39), 133-136.

Nchunge, D. M., Sakwa, M., & Mwangi, W. (2013). Assessment of ICT infrastructure on ICT adoption in educational institutions: a descriptive survey of secondary schools in Kiambu county Kenya. Journal of Computer Science & Information Technology, 1(1), 32-45.

Ofori, P., Ofori, I. K., & Asongu, S. (2022). Towards efforts to enhance tax revenue mobilisation in Africa: Exploring the interaction between industrialisation and digital infrastructure. Available at SSRN 4164101.

Oyedele, S. O., Osezua, E. M., Abdulkareem, A. K., & Ishola, A. A. (2017). Local government administration and national development in Nigeria: challenges and prospects. Ilorin Journal of Human Resource Management, 1(1), 13.

Salam, R. (2021). The implementation of good governance with a view to improving the competence of state civil apparatus in the regional government. Budapest International Research and Critics Institute-Journal (BIRCI-Journal), 4(1), 1198-1206.

Schmitt, J. (2010). The wage penalty for state and local government employees. Washington, DC: Center for Economic and Policy Research.

Taylor, P. (2019). Information and Communication Technology (ICT) adoption by small and medium enterprises in developing countries: The effects of leader, organisational and market environment factors. International Journal of Economics, Commerce and Management United Kingdom, 7(5).

Uhunmwuangho, S., & Aibieyi, S. (2013). Problems of revenue generation in local government administration in Nigeria. AFRREV IJAH: An International Journal of Arts and Humanities, 2(3), 192-209.

Wyse, J. E., & Higgins, C. A. (1993). MIS integration: a framework for management. Journal of Systems Management, 44(2), 32.

Yuwono, T., Suroso, A., & Novandari, W. (2024). Information and communication technology in SMEs: a systematic literature review. Journal of Innovation and Entrepreneurship, 13(1), 31.