

Revenue Collection System Integration and Performance of County Government of Nairobi City County, Kenya

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DOI: <https://doi.org/10.5281/zenodo.20427494>

Published Date: 28-May-2026

Abstract: This study examined the influence of revenue collection system integration on the performance of Nairobi City County, Kenya. Specifically, it assessed the effects of ICT infrastructure, staff competence, data storage, and digital communication on organizational performance. The study was grounded in organizational theory, diffusion of innovation theory, and competence motivation theory. A cross-sectional research design was adopted, targeting 76 employees in the Nairobi City County Treasury, with a census approach used for data collection. Primary data was gathered using a semi-structured questionnaire, which was pre-tested in Kiambu County. Validity and reliability were ensured through content, construct, and criterion validity tests, and Cronbach's alpha coefficient (≥ 0.7). Data analysis combined descriptive and inferential statistics, including correlation and multiple regression analysis. Findings revealed that ICT infrastructure, staff competence, data storage, and digital communication all have a positive and statistically significant influence on the performance of Nairobi City County. The study concludes that ICT infrastructure enhances inter-sectoral communication and service delivery, promoting efficiency and economic growth. Staff competence improves service delivery, citizen satisfaction, and institutional trust through enhanced employee effectiveness and innovation. Data storage supports informed decision-making by enabling efficient data management and analysis, while digital communication improves transparency and citizen engagement through online platforms and mobile applications. The study recommends that Nairobi City County strengthen partnerships with private technology firms to expand ICT infrastructure, particularly in underserved areas, and enhance digital access. It further recommends continuous staff training in leadership, communication, and technical skills, adoption of cloud-based data storage systems to improve scalability and collaboration, and implementation of public digital literacy programs to improve citizen use of digital government platforms.

Keywords: Revenue collection system integration; ICT infrastructure; staff competence; data storage; digital communication; Nairobi City County.

1. INTRODUCTION

Organizational performance reflects the ability of an institution to effectively utilize internal and external resources to achieve both short-term and long-term objectives (Guo & Kga, 2019). Effective organizations align their mission and vision with actionable strategies and continuously evaluate performance through key performance indicators (KPIs), thereby enhancing productivity, customer satisfaction, accountability, and financial outcomes (Soltani et al., 2018; Owen et al., 2021). Performance evaluation also enables organizations to identify operational weaknesses, improve processes, and strengthen workforce capabilities in dynamic environments (Cordero, 2020; DeNisi & Smith, 2022). Organizational performance is therefore viewed not only in terms of outcomes achieved but also through operational efficiency, accountability, and public trust (Carton, 2019; Staw, McKechnie, & Puffer, 2016).

Revenue Collection System Integration (RCSI) has emerged as a critical mechanism for improving organizational efficiency and financial sustainability. RCSI consolidates multiple revenue streams into a unified system, thereby reducing redundancies, minimizing errors, and improving transparency in financial management (Kiema, 2017; Gicho, 2018).

Automated processes such as online payment platforms, data analytics, and integrated digital communication systems enhance efficiency by reducing manual interventions and accelerating revenue collection processes (Morrison, 2019; Kyenche, 2023; Kayombo, 2023). Key dimensions of RCSI include ICT infrastructure, staff competency, data storage systems, and digital communication capabilities, all of which contribute to improved operational effectiveness and decision-making (Karungani & Ochira, 2017; Salman, Ganie, & Saleem, 2020).

Globally, countries such as Canada, Australia, and Singapore have successfully integrated revenue collection systems to strengthen public sector efficiency, transparency, and service delivery. For instance, the Canada Revenue Agency improved tax administration and reduced fraud through advanced technologies and integrated systems (Petit et al., 2020). Similarly, the Australian Taxation Office adopted digital tools and data analytics to improve taxpayer compliance and service delivery (Granger & Sawyer, 2022). Singapore's integrated revenue systems enhanced government revenue mobilization, reduced operational costs, and strengthened financial management (Kiensia & Siongeo, 2021; Raval & Raval, 2023).

In Africa, integrated revenue collection systems have also improved public sector performance. South Africa's Revenue Management System enhanced tax administration efficiency and increased revenue collection for public service delivery (Manyaka, 2022). In Kenya, the adoption of the Integrated Financial Management Information System (IFMIS) improved financial transparency, accountability, and resource management within public institutions (Githinji et al., 2021). Integrated revenue systems have further enabled the Kenyan government to allocate resources more effectively toward sectors such as health, education, and infrastructure (Laban & Muthinja, 2023).

Despite these advancements, Nairobi City County continues to experience significant challenges in revenue collection and organizational performance. Corruption, poor communication, inadequate public participation, and weak system integration have undermined effective service delivery and public trust (Momanyi, Senaji, & Were, 2022; Shiundu & Rotich, 2023). The county has consistently failed to meet revenue targets, achieving an average of only 56% of projected revenues over the last five years. Challenges such as low property tax compliance, corruption-related revenue losses, ghost workers, and limited digitization of revenue processes continue to constrain performance. Furthermore, many employees lack adequate training to effectively operate integrated systems.

Previous studies have established a positive relationship between revenue collection automation and organizational performance in various contexts (Reth & Mwakhamah, 2019; Kirimi, 2021; Kamau, 2023; Laban & Muthinja, 2023). However, these studies reveal contextual and conceptual gaps, particularly regarding Nairobi City County. Consequently, this study sought to examine the influence of revenue collection system integration on the organizational performance of Nairobi City County, Kenya.

2. LITERATURE REVIEW

The study was anchored on four theories: Technology Organization Environment (TOE) Theory, Diffusion of Innovation (DOI) Theory, Competence Motivation Theory (CMT), and Resource-Based Theory (RBT). These theories provide a foundation for understanding how technological integration, organizational capabilities, employee competence, and strategic resources influence organizational performance. The Technology Organization Environment Theory advanced by Baker (2012) explains that technology adoption within organizations is influenced by technological, organizational, and environmental factors. The technological context includes both existing and emerging technologies that organizations can adopt to improve efficiency and effectiveness in operations (Hong & Zhu, 2006). Organizations may implement incremental, synthetic, or radical innovations depending on their operational needs and technological capabilities (Burns, 1962). The organizational context focuses on factors such as communication systems, decentralization, and management structures that facilitate innovation adoption. Environmental factors such as competition, regulatory frameworks, and support systems also influence innovation and technology integration (Ramanathan et al., 2017). This theory is relevant to the present study because it explains how ICT infrastructure and data storage systems can improve the performance of Nairobi City County Government through enhanced operational efficiency and transparency.

The Diffusion of Innovation Theory developed by Rogers (1962) explains how innovations spread within organizations and societies through communication channels over time. The theory categorizes adopters into innovators, early adopters, early majority, late majority, and laggards. DOI theory suggests that adoption of innovations enhances organizational efficiency, productivity, and service delivery (Makovholo et al., 2017). Organizations adopting innovations must determine whether the changes are incremental improvements or radical transformations that significantly alter operations (Okour, Chong, &

Abdel, 2021). Although critics argue that the theory oversimplifies the innovation adoption process and may not adequately explain all types of innovations (Tariq, Pangil, & Shahzad, 2017; Wu & Chiu, 2022), the theory remains useful in explaining how digital communication systems such as social media, mobile communication, and online payment platforms enhance revenue collection and organizational performance. The theory therefore supports the study variable of digital communication within Nairobi City County Government.

Competence Motivation Theory developed by Reeve (1985) emphasizes that individuals are motivated by the desire to demonstrate and improve competence. Employees who perceive themselves as competent are more likely to undertake challenging tasks, remain persistent, and perform effectively. According to Perry and Hamm (2017), competence motivation enhances employee engagement, confidence, and organizational productivity. Training and development programs further strengthen employee capabilities and self-efficacy, thereby improving organizational effectiveness (Yeager, Lee, & Dahl, 2022). Critics of the theory argue that it places excessive emphasis on competence while overlooking other motivational factors such as organizational culture, social dynamics, and external rewards (Trultsch-Wijnen, 2020). Nevertheless, the theory is applicable to this study because successful implementation of integrated revenue collection systems requires employees with adequate technical knowledge and competencies to utilize digital systems effectively.

The Resource-Based Theory gained prominence through the works of Wernerfelt, Prahalad and Hamel, and Barney during the 1980s and 1990s. The theory argues that organizational resources and capabilities are essential determinants of competitive advantage and organizational performance (Barney et al., 2001; Barney et al., 2011). These resources include both tangible and intangible assets such as ICT infrastructure, organizational culture, software, hardware, and technical expertise (Madhani, 2010; Mutuku, 2019). The theory further suggests that effective deployment of these resources improves operational efficiency, innovation, and service delivery (Furrer et al., 2004; Vasudevan et al., 2021). In relation to this study, the theory explains how ICT infrastructure resources contribute to improved organizational performance in Nairobi City County Government.

Empirical studies have also established relationships between ICT infrastructure, staff competence, data storage, digital communication, and organizational performance. Bin-Obaidellah et al. (2023) found that ICT infrastructure positively influenced the performance of manufacturing enterprises in Yemen. Similarly, Mutua and Muthimi (2019) established that ICT systems significantly improved operational management and service delivery at Kenya Railways Corporation, while Otwal and Aliata (2021) reported that ICT infrastructure positively affected organizational performance in Migori County Government. However, these studies focused on different sectors and contexts, thereby creating contextual and methodological gaps.

Studies on staff competence similarly indicate a positive relationship with organizational performance. Wangui, Muhoho, and Kahuthia (2021) established that staff competence significantly influenced the performance of county governments in Central Kenya. Ooko, Byaruhanga, and Otuya (2019) further found that employee competency training positively affected organizational achievement in county governments in Western Kenya. Jonah (2019) also reported that human capital factors significantly influenced the performance of devolved governments in South Eastern Kenya. Despite these findings, the studies were conducted in different county contexts and therefore present contextual gaps relevant to the present study.

Research on data storage demonstrates its importance in enhancing organizational efficiency and performance. Oro and Odhiambo (2020) observed that effective storage systems improved operational efficiency among supermarkets in Kisumu City. Chepkoech, Omare, and Kamau (2023) established a strong positive relationship between record storage and staff productivity at the National Land Commission in Nairobi. Similarly, Hawash et al. (2023) found that electronic records management systems positively influenced organizational performance in oil and gas firms. However, methodological differences and sector-specific contexts limit the applicability of these findings to Nairobi City County Government.

Studies on digital communication also show its contribution to organizational performance. Soka and Kimencu (2017) established that e-communication significantly enhanced organizational performance at World Vision Kenya. Kainat and Jamshid (2022) found that digital communication tools improved project performance among humanitarian organizations in Pakistan, particularly when systems were user-friendly. Musheke and Phiri (2021) further reported that effective communication positively influenced organizational performance. Nevertheless, these studies focused on humanitarian organizations and alternative theoretical perspectives, creating contextual and theoretical gaps that justify the current study on Nairobi City County Government.

3. RESEARCH METHODOLOGY

The study adopted a cross-sectional descriptive design to examine the relationship between revenue collection system integration and organizational performance in Nairobi City County. This design allows data collection at a single point in time and supports analysis of relationships among variables (Olsen & George, 2018; Maier et al., 2023).

The target population comprised 76 employees from Nairobi City County Treasury (managers, ICT officers, and finance officers), and a census approach was used to include all respondents (Nairobi City County HRM Report, 2024; Mugenda & Mugenda, 2003).

Data was collected using a semi-structured Likert-scale questionnaire covering ICT infrastructure, staff competence, data storage, digital communication, and organizational performance. A pilot test with seven respondents from Kiambu County was conducted to improve validity and reliability (Reynolds et al., 2019). Reliability was confirmed using Cronbach's Alpha ($\alpha = 0.715$), indicating acceptable internal consistency (Bolarinwa, 2021).

After obtaining ethical approvals (Kenyatta University, NACOSTI, and Nairobi City County), questionnaires were administered to respondents. Data was analyzed using SPSS through descriptive statistics, correlation, and multiple regression analysis. The regression model used was:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

where Y is organizational performance and X_1-X_4 represent ICT infrastructure, staff competence, data storage, and digital communication.

4. RESEARCH FINDINGS AND DISCUSSIONS

4.1 Descriptive Statistics Results

This section presents the respondents' level of agreement on ICT infrastructure, staff competence, data storage, digital communication, and organizational performance using percentages, mean (M), and standard deviation (SD) based on a 5-point Likert scale.

4.1.1 ICT Infrastructure

Table 4.1 ICT Infrastructure

ICT Infrastructure	M	SD
Enhanced ICT infrastructure facilitates instant communication among government departments, enabling quicker decision-making and response times	3.94	1.202
A robust ICT infrastructure facilitates data consolidation, enhancing accessibility and information sharing among government workers	3.90	1.253
ICT infrastructure supports the development of e-government services, letting citizens access information and services online, promoting transparency	3.97	1.204
ICT infrastructure facilitates better engagement with citizens through online platforms, surveys, and feedback mechanisms	4.14	1.219
Strong ICT systems ensure critical data is backed up and recoverable, minimizing downtime	3.73	1.284
ICT systems optimize resource allocation and ensure effective use of funds and materials	3.73	1.284
Aggregate score	3.90	1.241

Overall, respondents agreed that ICT infrastructure positively influences performance (aggregate mean = 3.90). Most respondents (73.6%) agreed, 11.7% were neutral, and 14.8% disagreed. The findings align with Karungani and Ochiri (2017), who emphasize ICT's role in improving efficiency, transparency, and coordination in revenue systems.

4.1.2 Staff Competence

Table 4.2 Staff Competence

Staff Competence	M	SD
Experienced employees identify and address issues more effectively	4.56	0.629
Experienced employees work more efficiently due to familiarity with processes	4.54	0.606
Technical skills improve task completion effectiveness	4.21	0.961
Technical abilities enhance creativity and innovation	4.11	1.123
Education enhances critical thinking and problem-solving	3.64	1.319
Training attracts and retains skilled talent	3.79	1.226
Aggregate score	4.14	0.977

Overall, staff competence was strongly associated with improved performance (mean = 4.14), with 83.4% agreement. Findings align with Shet, Patil, and Chandawarkar (2019), who emphasize competence in improving system use, efficiency, and decision-making.

4.1.3 Data Storage

Table 4.3 Data Storage

Data Storage	M	SD
Databases enable efficient data storage and retrieval	3.97	1.191
Databases protect data integrity through validation and constraints	3.51	1.294
Cloud storage reduces capital expenditure	3.67	1.359
Cloud storage allows scalability	3.59	1.359
Encryption enhances data security	4.41	0.670
Security protocols ensure data accuracy and integrity	3.79	1.089
Aggregate score	3.82	1.160

Respondents generally agreed that data storage enhances performance (mean = 3.82). This supports Aljumah, Nuseir, and Alam (2021), who argue that effective data storage improves efficiency, cash flow, and decision-making.

4.1.4 Digital Communication

Table 4.4 Digital Communication

Digital Communication	M	SD
Social media enables real-time public feedback monitoring	3.90	1.241
Social media improves citizen engagement and loyalty	4.11	1.123
Instant messaging supports real-time collaboration	3.90	1.241
Instant messaging reduces operational costs	3.64	1.319
Digital communication enables flexible work arrangements	3.82	1.160
Digital communication improves adaptability	4.14	0.977
Aggregate score	3.92	1.177

The findings indicate general agreement (mean = 3.92) that digital communication improves performance, consistent with Kainat and Jamshid (2022).

4.1.5 Organizational Performance

Table 4.5 Organizational Performance

Organizational Performance	M	SD
Improved accountability	3.16	1.84
Customer satisfaction improved	3.51	1.49
Public trust improved	3.05	1.95
Aggregate score	3.24	1.76

Overall, respondents showed mixed perceptions of organizational performance (mean = 3.24), indicating uncertainty about County performance outcomes.

4.2 Inferential Statistics Results

4.2.1 Correlation Analysis

Table 4.6 Correlation Analysis

	ICT infrastructure	Staff competence	Digital communication	Data storage	Performance
ICT infrastructure	1				
Staff competence	.211*	1			
Digital communication	.163	.274	1		
Data storage	.203	.269	.337	1	
Performance	.706**	.754**	.791**	.711**	1

ICT infrastructure, staff competence, data storage, and digital communication all show strong positive correlations with performance, indicating significant relationships.

4.2.2 Multiple Regression Analysis

Table 4.7 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error
1	0.888	0.789	0.741	1.0254

The model explains 74.1% of variation in performance.

Table 4.8 ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	91.578	4	22.8945	35.799	0.004
Residual	41.569	65	0.639		
Total	133.147	69			

The regression model is statistically significant ($p < 0.05$).

Table 4.9 Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	0.598	0.118		5.068	0.004
ICT infrastructure	0.784	0.254	0.0254	3.087	0.002
Staff competence	0.704	0.317	0.0511	2.221	0.003
Data storage	0.788	0.229	0.0369	3.441	0.002
Digital communication	0.762	0.322	0.0299	2.367	0.003

Regression Equation: Performance = 0.598 + 0.0254(ICT infrastructure) + 0.0511(staff competence) + 0.0369(data storage) + 0.0299(digital communication)

All variables significantly and positively influence performance, consistent with prior empirical studies cited in the literature.

5. CONCLUSIONS AND RECOMMENDATIONS

The study concludes that ICT infrastructure significantly improves interdepartmental communication, service delivery, and economic inclusion through enhanced e-governance and digital payment systems. It streamlines access to public services, reduces bureaucratic inefficiencies, and strengthens transparency and accountability in Nairobi City County.

It is further concluded that staff competence positively influences organizational performance by improving service delivery, increasing employee productivity, reducing turnover, and fostering innovation in public service processes. Skilled employees enhance citizen satisfaction and strengthen institutional efficiency.

The study also concludes that effective data storage enhances decision-making by enabling timely access, sharing, and analysis of information across departments. It reduces operational silos, improves coordination, and supports evidence-based planning and citizen feedback integration.

Additionally, digital communication is concluded to strengthen citizen engagement and institutional responsiveness through online platforms and mobile applications. It improves service transparency, real-time information dissemination, and supports external collaboration and resource mobilization for development initiatives.

In terms of recommendations, the study suggests that Nairobi City County should strengthen ICT infrastructure through partnerships with private sector providers and expand digital access, particularly in underserved areas. The County should also adopt smart city technologies such as intelligent traffic systems and smart waste management to enhance urban efficiency.

Further, the County should invest in continuous staff development through structured training in technical, leadership, and communication skills, supported by mentorship, engagement surveys, and performance recognition systems to improve motivation and productivity.

On data management, the study recommends adoption of cloud-based storage systems to enhance scalability, real-time access, and inter-agency collaboration. This should be supported by improved data governance frameworks, staff capacity building, and strengthened cybersecurity measures to protect sensitive information.

Finally, the study recommends expanding public digital literacy programs through workshops and awareness campaigns in collaboration with educational institutions and NGOs. The County should also improve its digital platforms to ensure accessibility, usability, and timely dissemination of public information.

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