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Examining the Effectiveness of Electronic Revenue Collection System on Municipal Revenue Transparence: A Case Study of Lusaka City Council

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Abstract

This study examines the effectiveness of the Electronic Revenue Collection System (ERCS) on municipal revenue transparency, focusing on Lusaka City Council as a case study. The research was guided by three specific objectives: (1) to determine the effects of the Electronic Revenue Collection System on the accuracy and accessibility of municipal revenue data, (2) to examine the relationship between the implementation of the system and the reduction of informal revenue collection practices within the Council, and (3) to identify the effectiveness of the system on timeliness and transparency of financial reporting to the public and oversight institutions. A mixed-methods design was adopted, utilizing questionnaires administered to 120 respondents, online open-ended surveys, and key informant interviews with senior officials.

Findings reveal that the ERCS has significantly improved data accuracy and accessibility by reducing duplication, errors, and delays associated with manual processes. Informal practices such as unreceipted collections and under-reporting have declined, though persistent corruption through collusion and weak enforcement was still reported. The system enhanced timeliness of financial reporting and improved internal transparency, but public access to reports remained limited. Challenges such as system downtime, insufficient ICT training, and resistance to change were identified as barriers to full effectiveness.

The study concludes that while the ERCS has transformed revenue management practices at Lusaka City Council, its effectiveness depends heavily on infrastructural support, capacity-building, strong oversight, and broader public access. Recommendations include improving ICT infrastructure, providing regular staff training, strengthening audit and supervisory mechanisms, and expanding dissemination of financial reports. Future research should focus on comparative municipal studies, cost-effectiveness analyses, the impact on citizen trust and compliance, and longitudinal assessments of system performance.

Keywords: Electronic Revenue Collection System, Municipal Revenue, Transparency, Accountability, Lusaka City Council, ICT Reforms

1. Introduction

1.1 Background

Effective financial management characterized by transparency and accountability is essential for good governance in public institutions around the world. Considering growing demands for fiscal transparency, numerous local authorities have adopted digital solutions like Electronic Revenue Collection Systems (ERCS) to enhance their revenue generation and reporting capabilities. The theoretical framework supporting these advancements is rooted in Principle-Agent Theory, which emphasizes minimizing information asymmetry and discouraging opportunistic actions by public officials (Aslam *et al*., 2022).

At a global scale, countries with advanced e-governance frameworks, such as Estonia, South Korea, and Singapore, have successfully improved transparency in municipal revenue through ERCS (Kim & Lee, 2019). Their achievements stem from strong institutional frameworks, advanced ICT infrastructure, political commitment, and thorough user training programs, which collectively promote trust and compliance. Conversely, many low and middle-income countries struggle with challenges such as weak infrastructure, fragmented digital systems, insufficient staff capacity, and socio-political resistance, often leading to inadequate or ineffective ERCS implementation (World Bank, 2018) [68].

While many countries face similar issues, there are Countries like Kenya, Rwanda, and Ghana have effectively used ERCS along with institutional reforms to enhance revenue data accuracy, reporting transparency, and public accountability (McCluskey *et al*., 2018; Nkurunziza, 2019). Systems like Kenya's Huduma Namba and Rwanda's Integrated Financial Management Information System (IFMIS) have succeeded due to their incorporation of user training, strong policy frameworks, and enforcement mechanisms that promote compliance and deter corruption (Njuguna & Muturi, 2021) [55].

In Southern Africa, the implementation of ERCS has yielded mixed results. Larger metropolitan councils in South Africa have experienced improvements in revenue collection and customer satisfaction due to better infrastructure and institutional capacity (SADC Public Sector Report, 2019). In contrast, smaller municipalities struggle with limited funding, ICT capacity, and policy enforcement, leading to uneven adoption and minimal gains in transparency (Mmopi & Ncube, 2021) [44]. These regional differences highlight the significance of context-specific strategies and the readiness of institutions in determining the effectiveness of ERCS.

The Lusaka City Council (LCC) plays a vital role in managing Zambia's capital, Lusaka, which had over three million residents in 2022. The city possesses significant socio-economic importance, offering vital services amid rapid urbanization. However, the LCC struggles with issues in revenue collection efficiency and financial transparency. It has historically depended on outdated billing systems, incomplete property records, and a manual collection process that suffers from inefficiencies and corruption (Chilambwe, 2023) [18]. The council's reliance on central government funding restricts its financial autonomy, hindering its ability to effectively address local service delivery needs (Ministry of Local Government, 2021) [43].

Administrative inefficiencies, bureaucratic obstacles, and poor coordination among departments further delay decision-making and implementation of projects. Corruption and mismanagement have resulted in substantial revenue losses and diminished public confidence in the council's service delivery capabilities (Kunda & Phiri, 2022). Furthermore, limited enforcement of local regulations allows unregulated businesses to proliferate, perpetuating revenue losses. External economic factors such as inflation and downturns have adversely affected vital revenue streams, while donor funding, although beneficial, often comes with restrictions that may not align with local needs (Chitangala, 2024).

As Lusaka undergoes rapid urban expansion, establishing effective and transparent municipal revenue systems is becoming increasingly crucial. Developing comprehensive strategies that modernize revenue collection, streamline administration, enhance transparency, and involve community participation is essential for the council to sustainably manage its resources and meet the growing demands for urban services.

1.2 Statement of the Problem

Lusaka City Council (LCC) relies heavily on manual revenue collection systems, associated with inefficiencies, corruption, and inadequate transparency. Manual systems contribute to revenue leakages and weak financial accountability in Zambia (RSIS International, 2023). LCC faces challenges like fraud, administrative inefficiencies, and revenue gaps (UNZA DSpace, 2022), undermining public service delivery. Similar trends occur across African local governments, with poor documentation and mismanagement of public funds (EPUBS Africa, 2021). Systemic weaknesses erode citizen trust due to limited transparency (IISTE, 2019).

To address these challenges many municipalities has adopted electronic revenue collection systems (ERCS). Lusaka City Council's has also gone digital by adopting electronic revenue collection systems (ERCS) in order to improve efficiency and accountability in revenue collections. However, the impact of Electronic Revenue Collection Systems (ERCS) on revenue transparency and financial reporting remains unclear, therefore, it was necessary to assess its effectiveness. The results of the study will contribute to evidence-based insights to guide policy and strengthen local government financial governance, addressing a critical gap in understanding ERCS's role in Zambian municipal contexts.

1.3 Objectives

1.3.1 General Objectives

To assess the effectiveness of NGO entrepreneurship training on business innovation and profitability in Kafue District.

1.3.2 Specific Objectives

1. To determine the effects of the Electronic Revenue Collection System on the accuracy and accessibility of municipal revenue data.
2. To examine the relationship between the implementation of the Electronic Revenue Collection System and the reduction of informal revenue collection practices within the Council.
3. To identify the effectiveness of the Electronic Revenue Collection System on timeliness and transparency of financial reporting to the public and oversight institutions.

1.4 Research Questions

1. How has ERCS affected the accuracy and accessibility of municipal revenue data at Lusaka City Council?
2. What is the relationship between ERCS implementation and the reduction of informal revenue collection practices?
3. In what ways has ERCS influenced the timeliness and transparency of financial reporting?

1.5 Theratical Frame-Work

This research was based on Modernization Theory, which explained how societies transitioned from traditional to modern systems through technological advancements and systemic improvements. According to McGrath and Martin (2024), modernization involved significant social change, transforming societies through various forces, including technological advancements and globalization. This study applied Modernization Theory to explain how the adoption of the Electronic Revenue Collection System (ERCS) at Lusaka City Council represented a shift from traditional manual methods toward modern, technology-driven processes in municipal revenue management. According to the theory, modernization involved the adoption of new technologies and practices that improved institutional efficiency, accountability, and transparency.

Modernization Theory provided a useful framework for examining the effectiveness of ERCS in enhancing the accuracy and accessibility of municipal revenue data. By digitizing revenue collection, the system reduced errors and made financial information more readily available to relevant stakeholders. The theory also helped explain how modernization could reduce informal and corrupt revenue collection practices by introducing formal, automated procedures that limited human interference.

Furthermore, the theory supported the investigation into how ERCS affected the timeliness and transparency of financial reporting. Modern systems facilitated faster, clearer, and more reliable communication of financial information to the public and oversight bodies, thereby strengthening fiscal accountability.

In applying this theory, the study sought to determine whether Lusaka City Council's implementation of ERCS aligned with the principles of modernization by improving institutional performance, enhancing public trust, and fostering good governance. It also considered the challenges of modernization, such as resistance to change and infrastructural limitations, which affected the full realization of the system's benefits.

Thus, Modernization Theory guided the research in assessing the extent to which ERCS contributed to the modernization of revenue collection practices and, consequently, to improved transparency and accountability in municipal financial management.

2. Literature Review

2.1 Effects of the electronic revenue collection system on the accuracy and accessibility of municipal revenue data

The research established that transparent and accurate financial data was essential for effective municipal governance and public trust. Globally, studies had shown that Electronic Revenue Collection Systems (ERCS) generally improved the accuracy and accessibility of municipal revenue data, particularly where strong ICT infrastructure, user training, and institutional support were present. Evidence from Singapore, South Korea, the United States, the United Kingdom, and Australia demonstrated that ERCS improved real-time data access, reduced human error, enhanced interdepartmental data sharing, and strengthened financial reporting. However, these outcomes depended on digital literacy, cybersecurity safeguards, and consistent system maintenance.

Research conducted across Asia had revealed similar benefits alongside region-specific challenges. Municipalities in China, India, Japan, Malaysia, and Indonesia reported that ERCS improved data accuracy, reporting speed, and transparency. However, resistance to digital tools, inadequate training, limited technical capacity, and weak infrastructure often hindered full system adoption. Staff reluctance to abandon manual methods and issues of poor connectivity limited the intended impact.

African studies had shown that ERCS contributed to better data accuracy, improved accessibility, and reduced revenue leakages in countries such as Kenya, Nigeria, Uganda, Tanzania, Rwanda, and South Africa. Still, many municipalities struggled with unreliable infrastructure, low ICT literacy, limited funding, and institutional resistance to change. While systems were implemented successfully in some settings, they were frequently bypassed or used alongside informal manual processes, reducing their effectiveness. Sub-Saharan case studies in Ghana, Botswana, Namibia, Malawi, and Zambia confirmed that ERCS could strengthen data management, but only when supported by capacity-building, inclusive planning, and consistent technical support.

Zambian research, particularly in Lusaka, showed that ERCS improved data accuracy, reduced manipulation, and facilitated faster retrieval of financial information. However, gaps in ICT infrastructure, staff reluctance to fully transition from manual methods, and continued discretionary practices restricted system performance. Some revenue officers bypassed digital platforms, leading to incomplete or inconsistent data entries. Weak enforcement mechanisms and insufficient training further undermined data reliability, indicating that digitization alone did not guarantee improved revenue management.

Theoretical perspectives used in prior studies emphasized that ERCS effectiveness depended on institutional and behavioral factors. Principal–Agent Theory suggested that ERCS reduced information asymmetry and enhanced accountability, but only when institutions were capable of enforcing compliance. The Technology Acceptance Model highlighted the importance of perceived usefulness and ease of use, although it did not fully explain challenges stemming from inadequate infrastructure. Institutional Theory stressed that organizational culture, norms, and readiness shaped system adoption outcomes more than technology itself.

Studies from Moshi Municipal Council further illustrated the mixed realities of ERCS adoption. Many respondents had felt uncomfortable using digital systems due to computer illiteracy and poor internet connectivity. A significant number operated without strategic business plans, which contributed to tax evasion and reduced revenue collection. Nonetheless, findings also showed that the system improved accuracy, reduced queues, increased online registrations, minimized corruption loopholes, enhanced revenue collection, and made municipal services more accessible. However, many taxpayers struggled due to limited electricity access, poor digital skills, and inadequate civic education from the council.

Comparative evidence across developing countries suggested that while ERCS improved compliance and reduced revenue leakages, infrastructural deficits, hybrid manual–digital practices, and institutional weaknesses continued to limit outcomes. In many municipalities, digital systems were introduced but not fully used, resulting in symbolic rather than substantive reforms.

The research concluded that ERCS had clear potential to enhance the accuracy and accessibility of municipal revenue data, but their impact was heavily dependent on supportive institutional frameworks, staff capacity, and adequate infrastructure. The introduction of digital tools alone had not guaranteed improved governance outcomes. Sustainable effectiveness required complementary reforms, including upgrades to ICT infrastructure, continuous user training, organizational change management, strong enforcement mechanisms, and active stakeholder engagement. For Zambia specifically, improvements were evident, but they were uneven and constrained by institutional and human-capacity gaps. The findings overall showed that ERCS could significantly strengthen municipal transparency and accountability only when embedded within broader governance and capacity-building initiatives.

2.2 Relationship between the implementation of the electronic revenue collection system and the reduction of informal revenue collection practices within the council

Informal revenue collection practices such as unreceipted payments, bribes, and unauthorized discounts continue to undermine municipal revenue mobilisation, transparency, and public trust. These practices flourish in environments with weak oversight and high discretion among revenue officers. Many councils respond by implementing Electronic Revenue Collection Systems (ERCS) to automate transactions, create audit trails, and reduce opportunities for informal dealings. Principal–Agent Theory explains the rationale for ERCS: by making officers' actions more visible, the system reduces information asymmetry and limits opportunistic behaviour. However, literature also shows that ERCS alone cannot eliminate informal practices unless supported by enforcement and institutional accountability. Staff may still bypass electronic systems through parallel manual routes when enforcement is weak.

Global experience indicates that ERCS improves revenue accuracy, reporting speed, and data accessibility when supported by strong infrastructure, training, and institutional reforms. Countries like Singapore, South Korea, Rwanda, and Kenya have achieved reductions in informal practices due to comprehensive digital platforms, legal reforms, and real-time monitoring. However, in many developing countries, informal revenue collection persists because ERCS implementation is partial, infrastructure is weak, and informal cultures remain deeply entrenched. Studies from Asia and Africa consistently show that human and organisational factors—such as training, incentives, leadership support, and cultural norms—determine whether ERCS is used effectively or circumvented.

The Technology Acceptance Model (TAM) further highlights that officers must perceive ERCS as useful and easy to use for successful adoption. Resistance arises when informal practices offer financial benefits or when system reliability is poor. Institutional Theory adds that technology adoption depends on organisational norms and enforcement. Where management tolerates informal behaviour, even advanced ERCS systems have limited impact.

African and Southern African studies between 2015 and 2025 provide mixed findings. Some municipalities report improved compliance, auditability, and reductions in revenue leakages after ERCS rollouts. Others continue to struggle with device failures, intermittent connectivity, poor digital literacy, and hybrid systems where manual and digital processes coexist. These hybrid systems often recreate opportunities for manipulation. Research also highlights risks associated with cyber security, inadequate system maintenance, and limited technical support, which reduce overall system reliability and public confidence.

Zambian literature similarly shows both progress and persistent challenges. The Lusaka City Council experiences improvements in transaction tracking and reporting after adopting ERCS, but informal practices continue due to staff bypassing devices, using unofficial receipts, exploiting power outages, and relying on parallel manual processes. Studies note that low digital literacy, insufficient training, and weak sanctions for non-compliance undermine ERCS effectiveness. Although ERCS improves convenience and reduces some manual errors, informal cultures, institutional weaknesses, and infrastructure gaps limit its ability to meaningfully reduce informal revenue collection.

A recurring gap across the literature is the limited availability of rigorous empirical studies that directly measure changes in informal practices before and after ERCS implementation. Most studies rely on administrative reports rather than independent audit-level verification, and citizen perspectives remain underexplored.

Overall, the reviewed literature indicates that while ERCS has strong potential to reduce informal revenue collection, its effectiveness depends on broader governance reforms, continuous capacity building, strong enforcement, reliable infrastructure, and cultural change within revenue departments. Technology provides transparency only when institutions are willing and able to use it to enforce accountability.

2.3 Identifying the Effectiveness of Electronic Revenue Collection Systems on Timeliness and Transparency of Financial Reporting

The literature shows that Electronic Revenue Collection Systems (ERCS) are widely promoted as tools for improving the timeliness and transparency of public financial reporting by automating revenue processes and reducing manual errors. Scholars such as Ojo *et al*. (2019) [59] and Kim and Lee (2019) argue that ERCS enhance real-time data accessibility, speed up reporting cycles, and strengthen public accountability, particularly in countries with advanced digital infrastructure. However, contrasting views highlight that technology alone does not guarantee improved reporting. Alsharari (2021) [8] stresses that the effectiveness of ERCS depends on institutional maturity, political will, and proper implementation, while Mokwena (2020) notes that even within the same country, larger municipalities benefit more from ERCS than smaller, resource-limited councils.

Theoretical perspectives provide further insight. Principal–Agent Theory supports the idea that ERCS reduce information asymmetry by creating digital audit trails, but assumes strong institutional constraints that may not exist in weaker governance settings. Meanwhile, TAM and UTAUT explain that user perceptions of usefulness and ease of use determine adoption, and studies such as Alharbi and Drew (2019) and Mumba and Zulu (2023) show that perceived complexity, resistance to change, and lack of IT support hinder effective system use. The literature rarely integrates these theoretical perspectives, revealing a conceptual gap.

Empirical evidence from global and regional contexts between 2015 and 2025 shows mixed outcomes. In well-resourced municipalities, ERCS integration leads to faster reconciliations, reduced reporting delays, and richer audit trails. Yet in areas with weak infrastructure or unreliable power and connectivity, ERCS often operate in hybrid offline modes that reintroduce manual record-keeping, thereby undermining timeliness and increasing reconciliation burdens. Transparency also varies: while ERCS generate detailed logs with timestamps and payer information, limited public access, restricted system permissions, and the publication of only aggregated financial data often prevent meaningful transparency. The literature stresses that transparency requires not just digital logs but also legal mandates, open access policies, and clear reporting standards.

Studies from East Africa and South Asia confirm that ERCS improve traceability and reporting speed when supported by reliable infrastructure, capacity building, and sustained

technical maintenance. Tanzanian municipal case studies show measurable improvements in reporting timelines but also expose vulnerabilities such as device failures, network gaps, and inconsistent training. Kenya and Rwanda demonstrate stronger gains because ERCS are embedded within national systems and legal frameworks that enforce electronic reporting and empower oversight institutions.

In the Zambian context, the findings are similarly mixed. Some studies report improved reporting speed and accuracy at Lusaka City Council, while others cite persistent system downtimes, limited interoperability, underutilised features, and weak institutional commitment. The Auditor General's reports highlight gaps in system use and transparency, indicating that the existence of ERCS does not automatically translate into improved reporting. Local studies also show that revenue officers sometimes maintain parallel paper trails, undermining the completeness and visibility of electronic records.

Methodologically, many studies rely on cross-sectional designs, lack baseline data, or use aggregated revenue figures as proxies for timeliness and transparency. Few studies conduct transaction-level audits or longitudinal analyses. Research combining quantitative measurements of reporting delays with qualitative insights from staff highlights that timeliness and transparency depend heavily on training, leadership, system reliability, and user acceptance. Infrastructure, cybersecurity, and system maintenance also play central roles; weak technical support or limited redundancy mechanisms can quickly erode the benefits of ERCS.

The literature consistently suggests that for ERCS to effectively improve timeliness and transparency, they must be supported by legal reforms, mandatory electronic submission standards, empowered oversight institutions, sustained user training, and investments in infrastructure and cybersecurity.

3. Research Methodology

3.1 Research Design

The study used a descriptive case study design to examine the operation and impact of the Electronic Revenue Collection System (ERCS) at Lusaka City Council (LCC). This approach enabled in-depth exploration of system effects on accuracy, accessibility, informal revenue practices, and transparency without manipulating variables. Data collection methods included questionnaires, interviews, and document reviews, allowing comprehensive contextual analysis.

3.2 Target Population

The population comprised 1,200 individuals, including 200 municipal employees (finance officers, ICT staff, revenue collectors, and council members) and 1,000 public users (taxpayers and business owners). A sample of 120 respondents was selected 50 municipal officials and 70 public users to capture both internal and external perspectives on ERCS implementation and performance.

3.3 Sampling Design

Purposive sampling identified key informants within LCC directly involved with ERCS, while stratified random sampling selected taxpayers and business owners across different economic sectors and locations. This combination ensured both relevance and representativeness, capturing diverse experiences and operational insights.

3.4 Sample Size Determination

Using the Taro Yamane formula with a 9% margin of error, the minimum required sample was 112 respondents. To improve reliability and account for potential non-responses, the sample was increased to 120. Simple random and convenience sampling methods were employed to balance methodological rigor with practical constraints.

3.5 Data Collection Methods

Primary data were collected via questionnaires, key informant interviews, and online surveys, while secondary data were obtained from academic literature and official reports. Qualitative methods provided rich, context-specific insights into participant experiences and perceptions.

3.6 Data Analysis

Data were organized in Microsoft Excel and analyzed using SPSS, with responses coded for statistical interpretation and pattern identification. SPSS facilitated both quantitative and qualitative analysis, enhancing reliability and visualization of results.

3.7 Triangulation

Multiple triangulation was employed, combining interviews, questionnaires, surveys, and observations to validate findings. Thematic analysis identified patterns across data sources, increasing the credibility and depth of results.

3.8 Limitations of the Study

Challenges included limited access to complete financial records, potential response bias, restricted generalizability to other municipalities, and time constraints preventing full assessment of long-term ERCS impacts. Triangulation mitigated some of these limitations.

3.9 Ethical Considerations

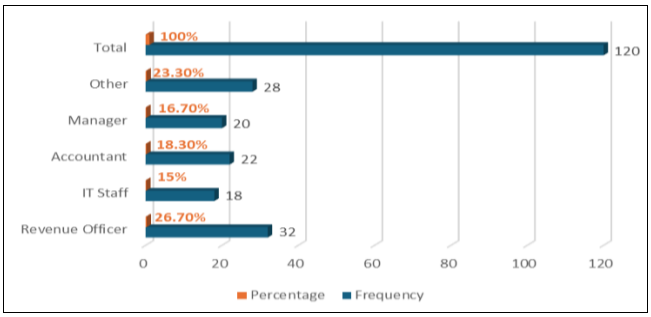
The study ensured confidentiality, informed consent, and voluntary participation. High standards of integrity and honesty were maintained throughout data collection, analysis, and reporting, avoiding fabrication or misrepresentation of findings.

4. Results/Findings

4.1 Presentation of Research Findings

Presentation of Results on Background Characteristics of Respondents

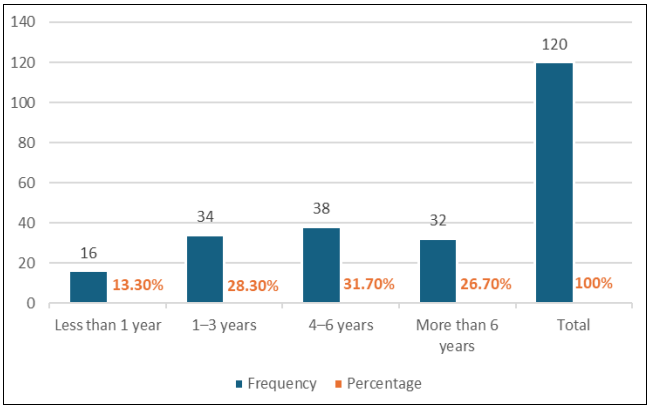
Distribution of Respondents by Position in the Organization



Source: Primary data, 2025

The figure shows that 26.70% of respondents were revenue officers, 15% of were IT staff, 1.30% of were accountants, 16.70% were managers, and 23.30% respondents were categorized under other roles within the organization or related departments.

Distribution of Respondents by Length of Service

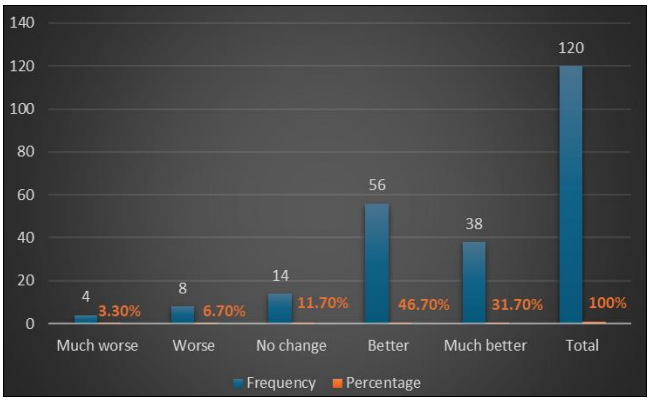


Source: Primary data, 2025

The figure shows that 13.30% of respondents had worked for less than one year, 28.30% of respondents had between one and three years of work experience, 31.70% of respondents had between four and six years, and 26.70% of respondents had more than six years of work experience. The data represent the respondents' length of employment within the Council or related organizations.

4.1.2 Presentation of results based on effects of the electronic revenue collection system on the accuracy and accessibility of municipal revenue data.

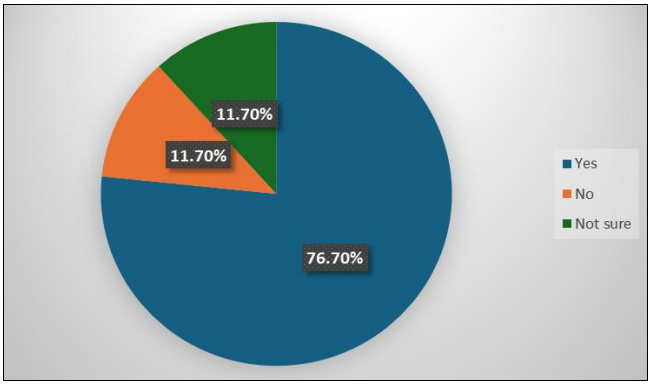
Rating of Revenue Data Accuracy Before and After System Implementation



Source: Primary data, 2025

The figure shows that 3.30% of respondents rated the accuracy of revenue data as much worse after implementation, 6.70% of respondents rated it worse, 11.70% respondents reported no change, 46.70% of respondents rated it better, and 31.70% of respondents rated it much better. The data represent respondents' perceptions of revenue data accuracy before and after the introduction of the Electronic Revenue Collection System.

Ease of Access to Municipal Revenue Data After Implementation

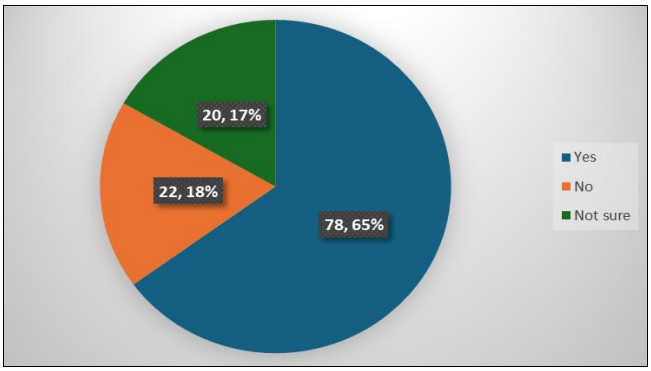


Source: Primary data, 2025.

The figure shows that 76.70% of respondents indicated that accessing municipal revenue data became easier following the introduction of the Electronic Revenue Collection System, 11.70% of respondents indicated that it did not become easier, and another 11.70% respondents stated that they were not sure. The data represent accessibility levels following system implementation.

4.1.3 Presentation of results based on relationship between the implementation of the electronic revenue collection system and the reduction of informal revenue collection practices within the council

Reduction in Informal Revenue Collection Practices



Source: Primary data, 2025

The figure shows that 65% of respondents indicated that informal revenue collection practices had reduced since the introduction of the Electronic Revenue Collection System, 18% of respondents indicated that there was no reduction, and 17% of respondents stated that they were not sure.

Informal Practices That Have Decreased

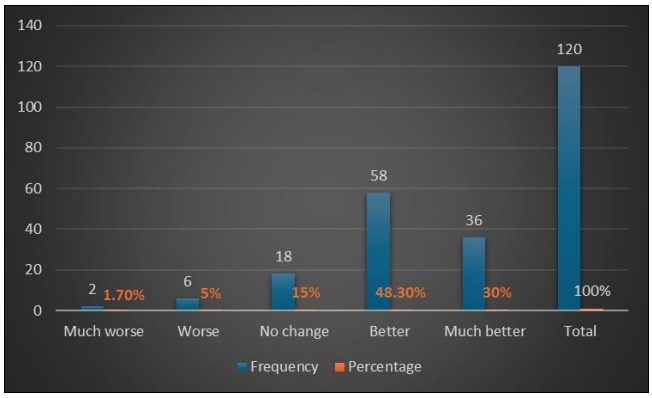
Informal Practice in categories	Number of Respondents
Manual receipting and undocumented payments	45
Unofficial collection of cash revenues	35
Delayed deposit of collected funds	25
Double reporting or manipulation of figures	15

Source: Primary data, 2025.

The table shows that 45 respondents reported a decrease in manual receipting and undocumented payments, 35 respondents mentioned reduced unofficial cash collections, 25 respondents cited fewer delays in depositing funds, and 15 respondents noted a decline in double reporting or manipulation of financial figures.

4.1.4 Presentations of results based on identifying the effectiveness of the electronic revenue collection system on timeliness and transparency of financial reporting to the public and oversight institutions

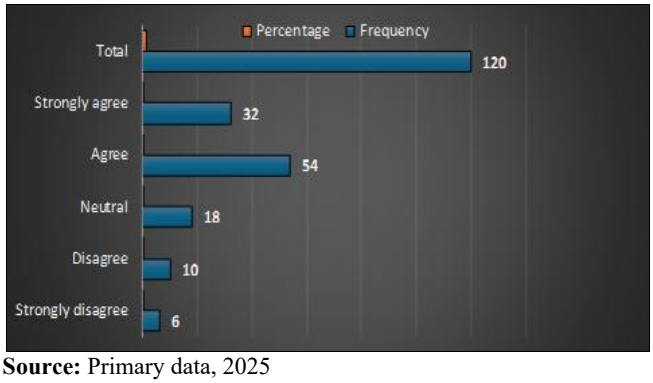
Timeliness of Financial Reporting Since System Introduction



Source: Primary data, 2025

The figure shows that 1.7% of respondents reported that financial reporting had become much worse after the introduction of the system, 5% of respondents stated that it was worse, 15% of respondents noted no change, 48.3% of respondents said it was better, and 36% of respondents indicated it was much better.

Transparency of Council's Financial Activities



Source: Primary data, 2025

The figure shows that 6 respondents strongly disagreed that the Electronic Revenue Collection System improved transparency, 10 respondents disagreed, 18 respondents were neutral, 54 respondents agreed, and 32 respondents strongly agreed. The data represent levels of agreement concerning transparency enhancement.

4.2 Discussions of Research Findings

Background Characteristics of Respondents

The background characteristics of respondents provided insight into the demographic composition of participants and the institutional environment within which the ERCS operates. Figure 4.1.1 showed that out of 120 respondents, 18 were below 25 years, 44 were aged between 25 and 34 years, 32 between 35 and 44 years, 16 between 45 and 54 years, and 10 were 55 years and above. This age distribution suggests that the majority of respondents are within the productive and technologically adaptive age range of 25–44 years. This demographic factor is important because younger employees often exhibit a higher capacity to engage with digital technologies, as found in the study by Arshad and Khurram (2020) [11], which linked digital adaptability with age and educational background.

Gender distribution (Figure 4.1.2) revealed that 72 respondents were male and 48 were female. The near gender balance reflects inclusivity within the Council's workforce and suggests that both genders actively participate in digital revenue processes. In the interviews, a female revenue officer remarked, "The system doesn't discriminate; once you are trained, both men and women handle transactions effectively." This perspective supports findings by Coetzer (2022) [21], who emphasized the growing role of gender inclusivity in enhancing ICT-based governance efficiency in Southern Africa.

The educational qualifications chart (Figure 4.1.3) indicated that most respondents held at least a diploma (36) or a bachelor's degree (46), while others held master's (18), doctorate (2), or secondary qualifications (14). This high educational attainment implies that the staff handling ERCS-related operations possess the academic foundation necessary for system comprehension and utilization. Bwalya and Healy (2018) [16] highlighted that the success of electronic revenue systems in Zambia depends largely on the technical literacy of personnel involved, a finding consistent with the present study.

Regarding job positions (Figure 4.1.4), 32 respondents were revenue officers, 18 IT staff, 22 accountants, 20 managers, and 28 were in other positions. The representation of multiple departments indicates a cross-functional perspective of the system's effectiveness. One manager explained, "Revenue officers handle the front-end, IT supports the system, and accountants verify the records so the results reflect our combined efforts." Similarly, the experience distribution (Figure 4.1.5) showed that 16 respondents had less than one year of experience, 34 had 1–3 years, 38 had 4–6 years, and 32 had worked for more than six years. This mixture of experience levels suggests that perspectives were informed by both seasoned and newly employed staff, ensuring a balanced understanding of the system's performance over time.

The diversity in age, gender, qualification, and experience thus provided a strong foundation for reliable and informed responses about the ERCS's effectiveness.

Effects of the ERCS on the Accuracy and Accessibility of Municipal Revenue Data

The quantitative results revealed a clear improvement in data accuracy following the introduction of the ERCS. According to the chart in Figure 4.2.1, 56 respondents reported that revenue data became "better," and 38 indicated it was "much better." Interview insights reinforced this pattern. One revenue officer explained, "Before we went digital, figures sometimes didn't balance because of manual errors; now every payment is traceable, so we hardly argue about mismatched totals." Another respondent added, "The

system reduces duplication because entries are validated automatically."

This improvement aligns with the findings of Bwalya and Healy (2018) [16], who observed that digital revenue systems in Zambia significantly reduce manual inconsistencies and data entry errors. Similar conclusions were reached by Amado (2020) [10] and Cao (2024) [17], who reported that automation enhances data precision and accountability. The pattern suggests that technological adoption has directly contributed to the Council's ability to maintain more reliable revenue records.

Accessibility of data also improved. Figure 4.2.2 shows that 92 respondents more than two-thirds of the sample found it easier to access municipal revenue data after ERCS implementation. Interview participants attributed this to centralized databases and role-based user permissions. One IT staff member stated, "We no longer wait for paper files from departments; the data is available in the system in real time." However, some challenges persisted, notably network interruptions, limited training, and occasional system downtime, as shown in Table 4.2.1. These issues echo observations by Azeez and Olanrewaju (2021) [12] and Meru and Kinoti (2022) [40], who emphasized that inadequate ICT infrastructure and user capacity constrain e-governance efficiency in African municipalities.

Furthermore, Figure 4.2.4 showed that data consistency across departments improved considerably, with 48 respondents rating it "significant" and 28 "very significant." Interview feedback confirmed this. One manager explained, "Before ERCS, each department had its own version of figures; now, everyone reads from the same platform." This outcome supports Matheus, Janssen, and Janowski's (2021) [37] design principles for digital transparency, which highlight centralized systems as enablers of consistency and information alignment across organizational units. Collectively, these findings suggest that the ERCS not only enhanced the technical accuracy of financial data but also improved operational coherence across departments. However, the remaining technical and human constraints indicate that further investment in infrastructure and capacity building remains necessary to sustain these improvements.

Overall, the results under Objective One confirm that the ERCS improved both accuracy and accessibility of municipal revenue data, but that sustainability depends on continuous technical support, staff training, and infrastructural investment.

Relationship between ERCS Implementation and Reduction of Informal Revenue Collection Practices

The findings demonstrated a measurable decline in informal revenue collection after the ERCS was implemented. Figure 4.3.1 shows that 78 respondents observed such a reduction, while only 22 did not and 20 were not sure. Qualitative responses in Table 4.3.1 indicated that manual receipting and undocumented cash payments had decreased most markedly. Several interviewees confirmed that electronic receipting replaced handwritten slips that once enabled fund diversion. One accountant remarked, "The system leaves an electronic trail, so it's risky for anyone to pocket money."

These observations are consistent with Mwangi and Obwona (2018) [52] and Meyer and Meijer (2020) [41], who found that electronic revenue platforms strengthen auditability and discourage informal cash handling. The present findings therefore substantiate the argument that digital reforms can close avenues for revenue leakage. However, the persistence of informal behavior among a minority of respondents suggests that technology alone cannot eradicate misconduct. As one manager observed, "Even with automation, people still find loopholes if supervision is weak." This comment aligns with Kunda and Phiri (2022), who stressed the importance of robust internal controls and ethics training within Zambian local authorities.

Perceptions of anti-corruption effectiveness were also positive: as Figure 4.3.3 shows, 54 respondents rated the system "effective" and 40 rated it "very effective" in minimizing opportunities for bribery. Respondents linked this to the system's monitoring features, shown in Figure 4.3.4, where 90 confirmed the presence of automated alerts for suspicious or unrecorded transactions. One IT officer explained, "Whenever there's a mismatch between receipted and deposited amounts, the dashboard flashes red." These findings reinforce Bertot *et al*. (2019)'s [15] notion that digital tools cultivate a culture of transparency and deterrence through traceability and data visibility.

Effectiveness of the ERCS on Timeliness and Transparency of Financial Reporting

Findings under Objective Three revealed that the ERCS enhanced both timeliness and transparency of financial reporting. According to Figure 4.4.1, 58 respondents rated timeliness as "better" and 36 rated it "much better." During interviews, finance staff noted that electronic posting shortened reporting cycles. One participant stated, "We can close monthly accounts faster because revenue figures are updated automatically." Another added, "We used to compile spreadsheets manually; now it takes hours instead of days." This evidence corresponds with Doran *et al*. (2023) [23], who highlighted automation as a catalyst for efficient public-sector reporting in the European Union.

Figure 4.4.2 showed that most reports are now generated monthly or quarterly, indicating improved reporting frequency. Respondents credited this to automatic data aggregation features within the ERCS. Transparency outcomes were also positive: Figure 4.4.3 shows that 54 respondents agreed and 32 strongly agreed that the system improved transparency. One stakeholder explained, "When the figures are online, the public can question discrepancies. That pushes us to be accountable."

In figure 4.4.4: The most common improvement suggested is wider public access through online platforms, with 28.3 percent of respondents highlighting the need for greater transparency by making reports more available to the public. This shows a recognition that transparency is not only about producing reports but also ensuring they are accessible to those who need them.

Another significant suggestion, at 23.3 percent, is for more frequent reporting intervals. This indicates that stakeholders are keen on more up-to-date financial data to strengthen accountability and decision-making. Other suggestions include simplified report formats and strengthen audits, both of which emphasize the importance of clarity and verification in ensuring trustworthiness of financial information.

The findings point to strong demand for openness, accessibility, and frequency, reinforcing the role of the electronic system as a foundation that still needs complementary measures to maximize transparency.

Nevertheless, accessibility of reports to the public, as shown in Table 4.4.5, remained uneven 42 respondents confirmed public access, 28 said reports were inaccessible, and 32 reported partial access. These disparities may stem from limited dissemination channels and awareness among citizens. Similar patterns were documented by Coetzer (2022) [21] and Farayi (2022) [25], who found that digital reforms in Southern Africa often outpace corresponding efforts in public communication and transparency outreach. The persistence of partial access suggests that while technology has improved internal accountability, external visibility still requires deliberate policy attention.

Collectively, these findings demonstrate that the ERCS has fostered timely reporting and greater openness within LCC's financial management, echoing international experiences in digital governance yet revealing contextual challenges in public dissemination and digital literacy.

4.5.5 When the three objectives are considered together, a coherent picture emerges: the Electronic Revenue Collection System has enhanced operational accuracy, curtailed informal practices, and expedited transparent reporting processes. Interview evidence gave texture to the quantitative trends, showing that while technological infrastructure has driven improvement, organizational culture, staff capacity, and internet reliability remain decisive factors. The findings resonate with Malodia *et al*. (2021)'s [35] integrated e-government framework, which emphasizes the interplay between digital tools, institutional culture, and governance outcomes.

In the context of Lusaka City Council, the ERCS represents a significant administrative innovation that has strengthened financial governance but also exposed the need for sustained investment in system maintenance, training, and civic engagement. This multidimensional insight sets the foundation for the conclusions and recommendations presented in Chapter Five.

4.3 Conclusion

This study set out to examine the effectiveness of the Electronic Revenue Collection System (ERCS) on municipal revenue transparency, using the Lusaka City Council as a case study. Guided by three objectives to determine the effects of the ERCS on the accuracy and accessibility of municipal revenue data, to examine the relationship between the ERCS and the reduction of informal revenue collection practices, and to identify the system's effectiveness on the timeliness and transparency of financial reporting—the study sought to understand how digitalization has transformed financial governance within the Council.

The findings revealed that the implementation of the ERCS has significantly enhanced the accuracy and accessibility of municipal revenue data. The majority of respondents reported noticeable improvements in record precision and ease of data retrieval. Automated reconciliation and centralized databases minimized human errors that previously plagued manual systems, while standardized data entry across departments fostered consistency. Interview evidence supported these trends, as staff emphasized that electronic processing eliminated duplication and made revenue records more reliable. Nonetheless, challenges such as network interruptions, inadequate training, and occasional system downtimes persisted, highlighting the need for continuous technical and infrastructural improvement.

In relation to the reduction of informal revenue collection practices, the study established that the ERCS has played a pivotal role in minimizing cash leakages and curbing corruption. Respondents confirmed that undocumented payments, manual receipting, and unauthorized collections have declined significantly since the system's introduction. The presence of automated monitoring features has strengthened internal control, as every transaction is now traceable to a user account and timestamp. The qualitative data revealed a strong perception of enhanced accountability and reduced opportunities for bribery, as the system generates digital footprints that deter misconduct. However, residual informal practices were occasionally observed in situations involving network downtime or insufficient supervision, indicating that human oversight and ethical enforcement remain critical to sustaining integrity.

The study further concluded that the ERCS has positively influenced the timeliness and transparency of financial reporting. Respondents and interviewees consistently reported that report generation is now more frequent and faster than under the manual system. Automated data aggregation has shortened reporting cycles, enabling the Council to produce monthly and quarterly financial statements with ease. The system also improved internal transparency, as data are accessible across departments, allowing for immediate verification and cross-checking of revenue flows. However, the findings revealed inconsistencies in the public accessibility of financial reports, as not all documents are published or shared externally. This limitation suggests that while the ERCS has strengthened internal accountability, external transparency still requires deliberate institutional policy and investment in public communication.

Overall, the study concludes that the introduction of the Electronic Revenue Collection System has had a transformative effect on revenue management within Lusaka City Council. The system has enhanced operational efficiency, reduced revenue losses, and fostered greater accountability and transparency. Yet, the full realization of these benefits depends on continued infrastructure maintenance, staff training, and integration of the system into a broader culture of transparency and good governance. The Lusaka City Council experience illustrates that technological innovation alone is not sufficient; rather, its success lies in the synergy between robust ICT systems, institutional commitment, ethical practices, and capacity development.

The findings thus affirm the central argument that electronic revenue systems can serve as powerful tools for promoting municipal revenue transparency and accountability when supported by strong governance frameworks. The ERCS has positioned the Council toward modern, efficient, and transparent fiscal management, but sustaining this momentum requires ongoing organizational learning, system optimization, and consistent stakeholder engagement.

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