Beyond digitisation: How digital platforms reconfigure financial transparency in local government. evidence from Moshi Municipal Council, Tanzania

Brastus Lukinga

bartonbrastus@gmail.com

Mzumbe University, Tanzania

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ABSTRACT

Digital government reforms are often assumed to improve transparency once financial processes are moved online. This article shows why that assumption is incomplete. Principal-agent theory anchored this study. Using a qualitative case study of Moshi Municipal Council in Tanzania, the study examines how three digital mechanisms, digital audit systems, financial reporting portals, and citizen-facing platforms, shape transparency in municipal financial operations. The final analytic dataset comprised 43 participants drawn from municipal staff and citizens, with evidence generated through semi-structured interviews, focus group discussions, and documentary review, and analyzed thematically. The findings identify three complementary accountability pathways. Audit systems create traceability by linking transactions, approvals, and changes to identifiable users; reporting portals improve the timeliness, standardisation, accessibility, and audit readiness of financial information; and citizen platforms extend transparency outward by enabling public access, feedback, budget monitoring, and demands for explanation. Yet digitisation is not self-executing. Skills gaps, system downtime, incomplete disclosure, and unequal digital access weaken these gains. The article therefore advances a socio-technical extension of principal-agent reasoning: digital platforms reduce information asymmetry only when technical traceability is matched by institutional capacity and usable channels for public oversight. The findings imply that local-government digitalisation strategies should be evaluated not by platform adoption alone, but by whether systems produce traceable records, actionable disclosure, and responsive citizen oversight.

Keywords: Accountability; Citizen Engagement; Digital Government; E-Government; Financial Transparency; Local Government; Tanzania

I. INTRODUCTION

Across public administrations, digitalisation has become a central instrument for improving financial management. Electronic audit trails, integrated reporting portals, online payment records, dashboards, and citizen-facing interfaces promise to make public money easier to trace and government decisions easier to scrutinise. The attraction is straightforward: digital systems can lower the cost of producing, storing, retrieving, and disseminating information, while also creating records of who did what, when, and under whose authority. This makes digital government potentially important not only for administrative efficiency but also for transparency and accountability (Bertot et al., 2010; World Bank, 2016). This logic is consistent with broader research showing that digital technologies can reshape access to financial systems and economic participation, although their benefits depend on institutional and user capacity (Mwakalila & Kasongwa, 2024; Mwakalila, 2026).

However, the existence of a digital platform is not equivalent to transparency. Information can be technically available but difficult to understand; a transaction can be digitally recorded, yet system downtime limits access; a citizen portal can exist, while citizens lack the skills, connectivity, or institutional response needed to use it effectively. Research on transparency similarly cautions against treating disclosure as automatically trust-producing or accountability-enhancing. Transparency can have weak or context-dependent effects when information is incomplete, inaccessible, or disconnected from mechanisms that compel response (Grimmelikhuijsen et al., 2013; Fox, 2015).

This distinction is especially important for local governments in lower-resource settings. Municipal authorities manage budgets, revenues, procurement, expenditures, and service-delivery projects close to citizens, yet they often operate under constraints in ICT infrastructure, staff capacity, system integration, and public digital literacy. The central question is therefore not simply whether local governments have adopted digital platforms, but how different digital mechanisms alter the information and monitoring relationships through which financial accountability is produced. In Tanzania, the institutional environment is particularly relevant because governance quality, public resource constraints, and uneven technological capabilities can condition the returns to reform (Mwakalila, 2019; Mutalemwa et al., 2025).

This article examines that question through an in-depth case study of Moshi Municipal Council (MMC) in northern Tanzania. It focuses on three digital mechanisms that structure different parts of the accountability chain: audit systems, reporting portals, and citizen platforms. The original study was designed around these three dimensions and

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conceptualised transparency in terms of timely reporting, reduced irregularities, and public access. The case is analytically useful because it permits examination of both internal accountability, between municipal officials, managers, and auditors, and external or downward accountability between the council and citizens.

The article makes three contributions. First, it disaggregates 'digital platforms' into distinct accountability mechanisms rather than treating digitalisation as a single intervention. Second, it connects internal traceability and reporting to external citizen oversight, showing that transparency is strongest when these mechanisms reinforce one another. Third, it refines principal–agent reasoning by demonstrating that reductions in information asymmetry are conditional on socio-technical complements: user competence, system reliability, disclosure quality, and citizen accessibility. The resulting argument is that digital transparency is an institutional capability, not a software property.

1.1 Statement of the Problem

Despite the increasing adoption of digital financial management systems in Tanzania's local government authorities, financial transparency remains a concern because digitising financial transactions does not automatically guarantee effective accountability. Digital audit systems, financial reporting portals and citizen-facing platforms are intended to improve transaction traceability, timely financial reporting, public access to information and citizen oversight. However, inadequate staff digital competencies, system downtime, incomplete financial disclosure, limited citizen digital literacy and weak institutional responsiveness may prevent these platforms from delivering meaningful transparency (World Bank, 2016; Fox, 2015; Peixoto & Fox, 2016). Consequently, financial information may be electronically recorded and reported without being sufficiently accessible, understandable or actionable for effective public scrutiny.

Existing studies have examined digital government transformation, information accessibility and public accountability (Bertot et al., 2010; Mergel et al., 2019; Tangi et al., 2021). However, limited empirical evidence explains how digital audit systems, financial reporting portals and citizen-facing platforms jointly influence financial transparency within Tanzanian local government authorities. In particular, insufficient attention has been given to how internal transaction traceability, financial information disclosure and external citizen oversight interact, and how institutional, technological and user-related constraints affect their effectiveness. This creates an important knowledge gap because the adoption of digital platforms may be mistaken for improved financial accountability without establishing whether these systems actually support meaningful oversight.

This study therefore examined how digital platforms contribute to financial transparency at Moshi Municipal Council, Tanzania. Specifically, it investigated the roles of digital audit systems, financial reporting portals and citizen-facing platforms, alongside the institutional, technological and user-related factors influencing their effectiveness. By addressing these issues, the study provides context-specific evidence on the conditions under which digitalisation can strengthen financial transparency and accountability in local government administration.

1.2 Research Objective

i. Examine how digital audit systems contribute to financial transparency through transaction traceability, identification of responsible officers, detection of financial irregularities and strengthening of internal financial oversight at Moshi Municipal Council.
ii. Assess how digital financial reporting portals influence financial transparency through the timeliness, accuracy, standardisation, accessibility and retrieval of municipal financial information.
iii. Explore how citizen-facing digital platforms contribute to financial transparency and accountability by facilitating public access to budget and expenditure information, citizen participation in financial monitoring, submission of feedback and municipal responsiveness.
iv. Identify the institutional, technological and user-related factors influencing the effectiveness of digital platforms in promoting financial transparency, particularly staff digital competencies, system reliability, information disclosure quality, citizen digital literacy and accessibility.

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 Principal-Agent Theory

Principal-agent theory, developed through the foundational contributions of Ross (1973) and Jensen and Meckling (1976), explains accountability problems arising when one party (the principal) delegates responsibilities to another (the agent) but cannot fully observe or verify the agent's actions. Such relationships create information asymmetry, monitoring difficulties and opportunities for agents to pursue interests that differ from those of their principals. Jensen and Meckling (1976) argue that monitoring arrangements and reporting requirements can reduce agency-related problems, while Fama and Jensen (1983) emphasize the importance of separating decision-making responsibilities from oversight and control functions.

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In local government financial management, citizens and public oversight institutions represent important principals, while municipal officials act as agents entrusted with managing public revenues, expenditures, procurement and development resources. Financial transparency reduces information asymmetry by making financial transactions, administrative decisions and resource allocations more observable and subject to scrutiny. Digital platforms potentially strengthen these accountability relationships by improving the recording, verification, reporting and disclosure of financial information.

The theory explains the relevance of the three digital mechanisms examined in this study. Digital audit systems support internal accountability by recording financial transactions, identifying responsible officers and facilitating the detection of irregularities. Financial reporting portals reduce information gaps through timely, standardized and accessible financial reports. Citizen-facing platforms extend accountability beyond municipal administration by enabling citizens to access financial information, monitor expenditure and request explanations concerning public resource utilization.

Nevertheless, principal–agent theory has limitations when applied to digital financial transparency. It tends to emphasize information availability and monitoring arrangements without fully explaining whether users possess the technological skills, infrastructure and institutional support necessary to utilize available information. Shapiro (2005) further highlights the complexity of agency relationships, suggesting that accountability cannot be understood exclusively through formal monitoring arrangements. In digitally mediated municipal governance, the existence of financial records or public information portals does not necessarily ensure effective oversight when systems experience downtime, citizens lack digital literacy or officials fail to respond to public concerns.

Accordingly, this study applies principal–agent theory through a socio-technical perspective in which digital transparency depends on the interaction between technological mechanisms and institutional conditions. Financial accountability is therefore examined through three interconnected dimensions: transaction traceability, financial information disclosure and citizen oversight. The theory guides the examination of how digital platforms reduce information asymmetry while recognizing that staff competence, system reliability, information quality and citizen accessibility determine whether digital information becomes usable for accountability.

2.2 Empirical Review

2.2.1 Digital Audit Systems and Financial Transparency

Digital audit systems are increasingly recognized as mechanisms for strengthening financial accountability through transaction recording, electronic verification and continuous monitoring. Bertot et al. (2010) demonstrate that information and communication technologies can support government transparency by improving access to administrative information and creating opportunities to identify irregularities. Their analysis suggests that digital technologies can strengthen oversight by making institutional actions more visible. However, the authors also recognize that technological systems require supportive organizational arrangements to generate meaningful accountability.

Dunleavy et al. (2006) similarly argue that digital-era governance changes public administration through integrated information systems and the restructuring of administrative processes. Their contribution suggests that digital audit systems can improve the consistency and traceability of financial records by reducing fragmented documentation and facilitating information retrieval. Nevertheless, the broader digital-governance perspective does not establish that electronic audit records automatically prevent financial irregularities. In Tanzania, Mutalemwa et al. (2025) examine technological infrastructure and Industry 4.0 adoption in manufacturing organizations, highlighting the importance of technological readiness for effective digital-system adoption. Although their study does not investigate municipal audit systems, it provides contextual evidence that infrastructure constraints may limit the practical effectiveness of advanced technologies. This distinction is important because organizational technology adoption and demonstrated improvements in public financial transparency are different outcomes.

Taken together, the literature suggests that digital audit systems can strengthen financial transparency through transaction traceability, identification of responsible officers, automated verification and improved access to audit evidence. However, existing studies provide limited context-specific evidence on how these mechanisms operate within Tanzanian municipal councils, particularly where staff capabilities and system reliability vary. The present study addresses this gap by examining how digital audit systems support transaction traceability, irregularity detection and internal financial oversight at Moshi Municipal Council.

2.2.2 Digital Financial Reporting Portals and Financial Transparency

Financial reporting portals are intended to improve transparency by facilitating the timely preparation, standardization, validation and dissemination of financial information. Bertot et al. (2010) identify digital information systems as important instruments for expanding access to government information and strengthening administrative openness. Their findings suggest that electronic reporting can reduce barriers associated with manual documentation, although greater information availability does not necessarily guarantee meaningful accountability. Mergel et al. (2019), drawing on expert interviews, conceptualize digital transformation as an organizational change process involving

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technology, administrative practices and institutional adaptation. Their study indicates that effective digital reform requires more than introducing electronic platforms; it also depends on how organizations redesign information flows and working procedures. Applied to municipal financial reporting, this implies that reporting portals are more likely to improve transparency when they support accurate data entry, consistent reporting formats and timely access by authorized users.

Tangi et al. (2021) examine factors driving and impeding digital government transformation and demonstrate the importance of organizational and technological conditions in implementing digital reforms. Their findings reinforce the argument that financial reporting platforms may experience implementation difficulties where staff competencies, system integration or organizational readiness are inadequate. However, their analysis addresses digital government transformation more broadly rather than the specific transparency outcomes of municipal financial reporting portals.

The World Bank (2016) similarly emphasizes that the benefits of digital technologies depend on complementary institutional capacity, skills and accountability arrangements. This perspective suggests that electronic reporting systems can accelerate financial information processing without necessarily improving transparency when records are incomplete, reporting formats are difficult to interpret or access remains restricted.

The reviewed literature establishes the importance of digital reporting for information accessibility and administrative efficiency but provides limited evidence on how reporting portals simultaneously influence reporting timeliness, accuracy, standardization, retrieval and audit readiness within Tanzanian local government authorities. This study addresses that gap by examining these dimensions at Moshi Municipal Council.

2.2.3 Citizen-Facing Digital Platforms and Financial Transparency and Accountability

Citizen-facing digital platforms are designed to extend transparency beyond government institutions by facilitating public access to financial information, participation in budget monitoring and communication between citizens and public officials. Linders (2012) explains how digital technologies can transform conventional e-government arrangements into more participatory forms of governance through citizen involvement in information sharing, service monitoring and public decision-making. This perspective indicates that digital platforms may strengthen accountability when citizens can actively engage with government information rather than merely receive it.

Gaventa and McGee (2013) review transparency and accountability initiatives and demonstrate that their effectiveness depends on the institutional and political conditions within which citizens seek to influence public decisions. Their analysis challenges the assumption that information disclosure alone is sufficient to improve accountability. Similarly, Fox (2015) argues that transparency initiatives are more likely to generate meaningful accountability when citizen participation is connected to institutions capable of responding to concerns and enforcing corrective action. Peixoto and Fox (2016) specifically examine the relationship between ICT-enabled citizen voice and government responsiveness. They demonstrate that digital communication channels do not automatically produce institutional responses; rather, outcomes depend on how citizen feedback is connected to public authorities and whether government institutions have the capacity and willingness to act. Their findings are particularly relevant to municipal platforms that allow citizens to report expenditure concerns, question budget allocations or monitor development projects.

Grimmelikhuijsen et al. (2013), using a cross-national comparative experiment, show that the relationship between government transparency and public trust is complex and context-dependent. Their findings caution against assuming that publishing financial information automatically increases trust. The credibility, completeness and interpretation of disclosed information also matter. Collectively, these studies indicate that citizen-facing platforms can contribute to financial transparency through public information access, participatory monitoring, feedback and demands for explanation. However, the literature provides limited evidence on how these functions operate together within Tanzanian municipal financial management, particularly where citizens experience unequal internet access and digital literacy. The present study addresses this gap by examining how citizen-facing platforms facilitate budget and expenditure monitoring, feedback submission and municipal responsiveness at Moshi Municipal Council.

2.2.4 Institutional, Technological and User-Related Factors Influencing Digital Financial Transparency

The effectiveness of digital financial platforms depends not only on their technical functions but also on the institutional and user-related conditions supporting their operation. The World Bank (2016) argues that digital technologies generate stronger development outcomes when complemented by capable institutions, appropriate regulations and relevant human skills. This suggests that digital financial transparency requires organizational readiness and user competence alongside technological investment. Mergel et al. (2019) emphasize that public-sector digital transformation involves changes in organizational processes, employee competencies and institutional practices. Similarly, Tangi et al. (2021) identify organizational and technological factors that facilitate or impede digital government transformation. These studies suggest that inadequate training, limited technical support and weak coordination can restrict the practical benefits of digital financial systems.

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Evidence from Tanzania also highlights the relevance of institutional and technological conditions. Mwakalila (2019) examines governance and economic performance in Africa, emphasizing the importance of institutional quality, while Mutalemwa et al. (2025) investigate technological infrastructure and Industry 4.0 adoption in Tanzanian manufacturing. Although neither study directly evaluates municipal financial transparency, both provide contextual support for considering governance and infrastructure as conditions influencing the effectiveness of institutional reforms.

From the user perspective, Mwakalila and Kasongwa (2024) examine digital financial inclusion among marginalized groups, while Mwakalila (2026) considers whether digital sophistication influences the capacity of individuals to withstand income shocks. These studies concern financial inclusion and economic resilience rather than municipal accountability, but they highlight the broader importance of digital access and user capability. Their relevance to this study is therefore contextual rather than direct empirical evidence of improved government transparency.

Fox (2015) and Peixoto and Fox (2016) further demonstrate that information accessibility and citizen feedback require institutional responsiveness to generate accountability. Consequently, financial transparency may remain limited even when digital platforms are operational if users cannot interpret disclosed information or if public authorities do not address concerns raised through digital channels. The literature therefore identifies staff digital competencies, technological infrastructure, system reliability, disclosure quality, citizen digital literacy and institutional responsiveness as potentially important conditions influencing digital transparency. However, these factors are frequently examined separately from the specific functions of audit systems, reporting portals and citizen platforms. This study addresses that limitation by investigating how institutional, technological and user-related conditions shape the effectiveness of all three digital mechanisms within Moshi Municipal Council.

2.3 Research Gap

The reviewed literature establishes that digital technologies can improve information accessibility, administrative monitoring and opportunities for public participation. However, three gaps remain. First, much of the digital-government literature examines technological transformation and transparency broadly without distinguishing the accountability functions of digital audit systems, financial reporting portals and citizen-facing platforms. Second, existing studies provide limited integrated evidence on how internal transaction traceability, financial information disclosure and external citizen oversight operate as complementary mechanisms within municipal financial management. Third, the literature gives insufficient context-specific attention to how staff competencies, system reliability, disclosure quality, citizen digital literacy and institutional responsiveness influence the practical effectiveness of these mechanisms in Tanzanian local government authorities.

This study addresses these gaps through a qualitative case study of Moshi Municipal Council. By examining digital audit systems, financial reporting portals, citizen-facing platforms and their implementation conditions, the study develops a three-layer interpretation of digital financial transparency comprising traceability, disclosure and public oversight. Grounded in principal–agent theory, the analysis extends conventional information-asymmetry reasoning by emphasizing that effective financial accountability depends not merely on the availability of digital information but also on the institutional and user capacities required to utilize that information.

III. METHODOLOGY

3.1 Research Design

The study employed a qualitative research approach guided by a constructivist perspective and a single-case study design. This approach was appropriate because the research sought to understand how digital platforms influence financial transparency and accountability through the experiences and interpretations of municipal employees and citizens. Rather than estimating statistical relationships, the study examined the processes through which digital audit systems, financial reporting portals and citizen-facing platforms support transaction traceability, financial information disclosure and public oversight.

The single-case study design enabled an in-depth examination of digital financial management within its institutional and operational context. It also facilitated the identification of organizational, technological and user-related factors influencing the effectiveness of digital platforms. Evidence from interviews, focus group discussions and institutional documents was integrated to provide a comprehensive understanding of the relationship between digital platforms and financial transparency at Moshi Municipal Council.

3.2 Study Area

The study was conducted at Moshi Municipal Council (MMC), located in Kilimanjaro Region, Tanzania. The council was selected as the institutional setting for examining digital financial transparency in local government administration. Its responsibilities include municipal planning, budgeting, revenue collection, expenditure management, financial reporting and public-service delivery.

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Moshi Municipal Council provided a relevant setting because these functions involve financial transactions, administrative approvals, reporting requirements and interactions between municipal authorities and citizens. The study specifically examined digital audit systems, financial reporting portals and citizen-facing platforms associated with municipal financial operations. The study area therefore enabled examination of two complementary accountability relationships: internal financial accountability involving municipal officials, managers and auditors, and external accountability involving citizens' access to financial information, participation in monitoring and communication with municipal authorities.

3.3 Target Population

The target population comprised municipal personnel and citizens with direct experience of digital platforms used in financial management, information disclosure and public accountability at Moshi Municipal Council. The municipal personnel included managers, finance officers, audit staff, planning officers and administrative employees involved in financial transactions, reporting, oversight and the operation of digital systems. These participants were relevant for understanding transaction traceability, financial reporting practices, institutional controls and technological implementation challenges.

The citizen population consisted of individuals who had interacted with digital platforms to access municipal information, monitor public expenditure, submit feedback or engage with municipal accountability processes. Their inclusion enabled the study to examine financial transparency from the perspective of public information users rather than relying exclusively on municipal officials. Together, the two participant groups provided perspectives on internal financial oversight and external citizen accountability, consistent with the study's four research objectives.

3.4 Sampling and Sample Size

The study employed purposive sampling to select participants with direct knowledge of, or experience using, the digital systems under investigation. This non-probability sampling technique was appropriate for the qualitative case study because the research prioritized participants' relevant experiences and institutional knowledge rather than statistical representativeness. Municipal participants were selected based on their involvement in financial management, auditing, planning, administration and digital reporting processes. Citizen participants were selected based on their experience accessing municipal information or interacting with digital platforms for feedback and public monitoring.

The study initially targeted 45 participants, of whom 43 participated, representing an achieved participation rate of approximately 95.6%. The final sample comprised 28 municipal employees and 15 citizens. Municipal employees provided evidence concerning the operation of digital audit systems, financial reporting portals and internal oversight, while citizens contributed perspectives on information accessibility, usability, participation and institutional responsiveness. The achieved sample was considered appropriate for the study's qualitative analytical purpose, which was to develop an in-depth understanding of digital financial transparency mechanisms within a single municipal authority rather than to generalize statistically to all Tanzanian local governments.

Table 1

Demographic Characteristics of Study Participants (N = 43)

Participant characteristic	Category	Frequency (n)	Percentage (%)
Gender	Male	26	60.5
	Female	17	39.5
Age	18–29 years	8	18.6
	30–39 years	15	34.9
	40–49 years	13	30.2
	50 years and above	7	16.3
Education	Certificate/Diploma	9	20.9
	Bachelor's degree	20	46.5
	Master's degree or above	14	32.6
Digital-platform experience	Less than 2 years	9	20.9
	2–5 years	18	41.9
	More than 5 years	16	37.2

Source: Field data reported in the original study.

3.5 Data Collection Instruments

Data were collected using three complementary instruments: semi-structured interview guides, focus group discussion guides and documentary review. Semi-structured interviews**:** Semi-structured interviews were conducted with municipal personnel involved in financial management and digital-system operations. The interview guide covered

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the operation of digital audit systems, transaction traceability, financial reporting processes, internal controls, information accessibility and institutional challenges affecting digital financial transparency. Open-ended questions enabled participants to explain how digital systems were used in their respective functions and identify challenges related to technical reliability, staff competencies and administrative procedures.

Focus group discussions: Focus group discussions were used to obtain citizens' experiences of municipal digital platforms. The discussion guide addressed access to financial and budget information, usability of digital platforms, participation in expenditure and development-project monitoring, submission of complaints or suggestions, and perceptions of municipal responsiveness. The discussions enabled participants to describe how digital information and feedback mechanisms influenced their ability to scrutinize municipal financial activities. Documentary review: Documentary review provided additional evidence concerning municipal financial reporting and accountability processes. The documents examined included financial reports, audit reports, budget statements, digital ledgers, system logs, public disclosure statements, citizen feedback records, system access logs and training materials. Documentary evidence was used to complement interview and focus group findings and assess consistency between participants' accounts and institutional records. The use of these three sources facilitated triangulation by bringing together the perspectives of municipal officials, citizens and institutional documentation. This strengthened the study's ability to examine digital financial transparency across internal financial management and external public oversight.

3.6 Data Analysis

The study employed thematic analysis to examine qualitative evidence generated through semi-structured interviews, focus group discussions and documentary review. Interview and focus group materials were transcribed, read repeatedly and coded to identify recurring patterns concerning digital platforms and financial transparency. NVivo software was used to support the organization of qualitative data, coding and the development of themes and subthemes.

The analysis was guided by the four specific research objectives. The first analytical theme examined digital audit systems, focusing on transaction traceability, identification of responsible officers, irregularity detection and internal financial oversight. The second examined financial reporting portals, focusing on reporting timeliness, accuracy, standardization, information accessibility and retrieval. The third addressed citizen-facing platforms, emphasizing public access to financial information, budget monitoring, citizen feedback and municipal responsiveness. The fourth examined institutional, technological and user-related conditions, including staff digital competencies, system reliability, disclosure quality, digital literacy and accessibility.

The analytical process also allowed additional implementation issues to emerge from participants' accounts and documentary evidence. Related codes were organized into themes and interpreted in relation to principal–agent theory, particularly information asymmetry, monitoring capacity and accountability relationships. Trustworthiness was strengthened through triangulation of interviews, focus group discussions and documentary evidence. The study also employed pre-testing of interview and focus group guides, member checking, consistent coding procedures and maintenance of an audit trail to support credibility and analytical transparency. The findings were presented as qualitative themes supported by participant accounts and relevant documentary evidence. Interpretation emphasized the mechanisms and conditions associated with digital financial transparency rather than statistical estimation or causal effects.

3.7 Ethical Considerations

The study followed ethical principles governing research involving human participants and institutional information. Institutional permission was obtained to conduct interviews, focus group discussions and documentary review at Moshi Municipal Council. Participants provided informed consent before participating in the research, and participation was voluntary. Confidentiality was maintained by anonymizing identifying information in the research records and reporting of findings. Participant statements were presented using identification codes rather than personal names to protect individual identities.

Access to raw research data was restricted to protect participant information and potentially sensitive municipal financial records. These measures were particularly important because the study involved municipal financial operations, internal audit processes and citizens' experiences of government accountability. The ethical procedures were intended to protect participants' privacy, encourage open discussion of institutional practices and ensure that the findings were reported without unnecessarily disclosing personal or sensitive administrative information.

IV. FINDINGS & DISCUSSIONS

4.1 Findings

This section presents and discusses findings from the qualitative case study of Moshi Municipal Council (MMC), Tanzania, based on evidence from 43 participants comprising 28 municipal employees and 15 citizens, together with documentary review. The analysis is organized according to the four specific research objectives and examines

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three principal digital mechanisms: digital audit systems, financial reporting portals and citizen-facing platforms. The first three subsections examine how these mechanisms relate to financial transparency and accountability, while the fourth examines the institutional, technological and user-related conditions influencing their effectiveness. The discussion integrates the empirical findings with the literature reviewed in Section II and principal–agent theory. Given the qualitative research design, the findings explain reported experiences and accountability mechanisms rather than statistically estimated or causal effects.

4.1.1 Digital Audit Systems and Financial Transparency

The first research objective examined how digital audit systems contribute to financial transparency through transaction traceability, identification of responsible officers, detection of financial irregularities and internal financial oversight. The findings indicate that digital audit systems supported internal accountability by making financial transactions and administrative actions more traceable and attributable to identifiable users. Municipal participants described how electronic audit trails enabled transactions, approvals and system modifications to be followed from initiation to completion. Unlike manual documentation, which may require extensive retrieval of physical records, the digital systems provided accessible transaction histories showing the sequence of financial actions. One interviewee explained:

> "*The audit system records every transaction from initiation to approval, making financial actions easy to trace during audits."* (R5, 04/05/2026)

This finding demonstrates the importance of transaction traceability as a dimension of financial transparency. By recording the history of financial activities and linking approvals or modifications to identifiable officers, digital audit systems reduced ambiguity concerning administrative responsibility. Participants perceived that these features made it more difficult for officers to deny involvement in financial transactions and facilitated the examination of financial decisions by managers and auditors.

The findings further indicate that automated controls and alerts supported the identification of unusual transactions, inconsistencies and potential irregularities. Participants described how system-generated notifications enabled management to examine questionable financial activities before problems escalated. System-enforced verification requirements also supported compliance by restricting the progression of transactions when necessary conditions had not been satisfied. However, these accounts demonstrate improved opportunities for identifying irregularities rather than independently verified reductions in financial misconduct. Another important finding concerned the efficiency of internal financial oversight. Participants reported that auditors could retrieve financial records and supporting documentation electronically, reducing delays associated with missing files and manual searches. Digital records therefore supported a shift from periodic document retrieval toward more continuous financial monitoring. Nevertheless, participants also identified inadequate technical skills and system downtime as constraints affecting the reliability of these functions.

These findings are consistent with Bertot et al. (2010), who argue that information and communication technologies can strengthen public-sector transparency by increasing the visibility and accessibility of administrative information. They also support the broader digital-era governance argument of Dunleavy et al. (2006), which emphasizes the integration of information systems and administrative processes. However, the present study extends these contributions by identifying transaction histories, user-linked approvals, automated controls and electronic retrieval as specific mechanisms through which digital systems support municipal financial oversight.

The findings also reinforce principal–agent theory (Jensen & Meckling, 1976), which identifies information asymmetry and limited monitoring as important accountability problems. At MMC, electronic audit trails increased the observability of financial actions undertaken by municipal officers. However, the reported skills gaps and system interruptions demonstrate that information recording alone is insufficient. Effective oversight also requires staff capable of interpreting digital records and systems that remain operational. This qualification is consistent with Mutalemwa et al. (2025), whose Tanzanian study emphasizes technological infrastructure as an important condition for digital-system adoption, although their evidence concerns manufacturing rather than municipal financial management. Overall, the first objective establishes that digital audit systems support financial transparency primarily through transaction traceability, attribution of responsibility, identification of irregularities and improved internal oversight, with their effectiveness conditioned by user competence and system reliability.

4.1.2 Digital Financial Reporting Portals and Financial Transparency

The second research objective assessed how digital financial reporting portals influence financial transparency through reporting timeliness, accuracy, standardization, accessibility and retrieval of municipal financial information. The findings indicate that reporting portals supported transparency by improving the preparation, validation and circulation of financial records within Moshi Municipal Council. Municipal participants reported that electronic reporting reduced delays associated with manual compilation, physical movement of documents and consolidation of

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information from different administrative units. Reporting portals enabled financial information to be entered, processed and retrieved electronically, supporting more timely preparation and submission of reports. A participant explained:

> "*The portal checks entries automatically, reducing reporting errors significantly*." (R9, interview, 04/05/2026)

This statement illustrates the role of automated validation in improving the perceived accuracy and consistency of financial reporting. Participants described how system-based checks helped identify incomplete or inconsistent entries, while standardized reporting templates promoted uniformity across departments. These features were important because financial transparency depends not only on the availability of information but also on whether the information is sufficiently consistent and reliable for review. The findings further indicate that reporting portals improved information accessibility for authorized municipal officials, managers and auditors. Participants reported that electronic retrieval reduced dependence on physical records and facilitated access to financial information for planning, budgeting, auditing and administrative decision-making. Standardized reporting formats and completeness checks also supported audit readiness by making relevant records easier to locate and examine.

Nevertheless, the benefits were not uniform. Participants identified technical disruptions and uneven ICT competencies as barriers to consistent reporting. Where systems were unavailable or employees lacked adequate skills, the speed and reliability of information processing were weakened. Furthermore, improved accessibility for authorized municipal users did not necessarily mean that the same information was publicly available to citizens. Internal information accessibility and external public disclosure therefore represent related but distinct dimensions of financial transparency. The findings correspond with Bertot et al. (2010), who associate digital information systems with improved government openness and information accessibility. They also support Mergel et al. (2019), who conceptualize digital transformation as an organizational process involving changes in information flows, administrative practices and employee competencies. The MMC evidence illustrates this relationship through automated validation, standardized templates and electronic retrieval, which connect technological functions with financial reporting procedures.

Similarly, Tangi et al. (2021) identify organizational and technological conditions as important drivers and constraints of digital government transformation. The technical interruptions and skills limitations reported at MMC provide case-specific evidence of these implementation challenges. The World Bank (2016) likewise emphasizes that digital technologies require complementary institutional capabilities to generate meaningful benefits. From a principal–agent perspective, financial reporting portals can reduce information asymmetry by making financial records more timely, consistent and accessible to authorized oversight actors. However, the findings demonstrate that transparency depends on the quality and usability of disclosed information rather than electronic reporting alone. A system may accelerate report preparation without necessarily ensuring that the information is complete, understandable or available to the wider public. Overall, the second objective indicates that digital financial reporting portals support financial transparency through timely reporting, automated validation, standardized financial records, electronic information retrieval and improved audit readiness, while technical reliability and staff competencies remain important conditions.

4.1.3 Citizen-Facing Digital Platforms and Financial Transparency and Accountability

The third research objective explored how citizen-facing digital platforms contribute to financial transparency and accountability through public access to financial information, citizen participation in monitoring, submission of feedback and municipal responsiveness. The findings indicate that these platforms extended financial transparency beyond internal municipal administration by creating opportunities for citizens to access information and scrutinize the use of public resources. Citizen participants reported improved access to information concerning municipal budgets, expenditures and development projects. They also described opportunities to submit complaints, questions and suggestions through digital communication channels. These functions were important because they connected financial information disclosure with public participation in accountability processes. One participant stated:

> "*Citizens can now follow how public funds are used through online platforms*." (R7, interview, 04/05/2026)

This finding illustrates the perceived contribution of digital platforms to public expenditure monitoring. Access to budget and project information enabled citizens to follow municipal activities and raise questions concerning resource allocation and project implementation. The findings therefore suggest that digital platforms can strengthen external accountability by creating additional channels through which citizens monitor municipal financial decisions. Participants also described the importance of feedback mechanisms. Digital channels enabled citizens to raise concerns about stalled projects, questionable expenditure decisions and implementation problems. Where municipal officials acknowledged and addressed these concerns, participants associated the platforms with greater responsiveness and improved perceptions of institutional accountability.

However, the findings also revealed substantial limitations. Unequal access to internet-enabled devices, limited digital literacy and difficulties interpreting technical financial information restricted effective participation. Some participants reported that information was incomplete, inconsistently updated or presented in formats that were difficult for non-specialists to understand. These limitations indicate that publishing information electronically does not

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automatically provide citizens with the practical capacity to scrutinize financial decisions. The findings support Linders (2012), who explains how digital government can facilitate more participatory relationships between citizens and public institutions. They are also consistent with Gaventa and McGee (2013), who argue that transparency and accountability initiatives depend on the institutional conditions supporting citizen engagement.

More importantly, the MMC evidence reinforces Fox (2015), who distinguishes information disclosure and citizen voice from accountability mechanisms capable of producing institutional responses. Peixoto and Fox (2016) similarly demonstrate that ICT-enabled citizen voice does not necessarily result in government responsiveness. The present study reflects this distinction: digital platforms created opportunities for citizens to communicate concerns, but meaningful accountability depended on whether municipal officials responded and whether citizens could access and understand the relevant information.

The findings also align with Grimmelikhuijsen et al. (2013), who show that the relationship between transparency and public trust is context-dependent. At MMC, participants associated greater trust with accessible information and visible responses rather than the mere existence of digital platforms. Thus, the findings do not establish that digitization independently increased public trust; instead, they identify disclosure quality and responsiveness as conditions shaping participants' perceptions. In terms of principal–agent theory, citizen-facing platforms potentially strengthen the monitoring capacity of citizens by reducing information gaps between municipal authorities and the public. Nevertheless, this capacity remains limited where citizens cannot access information, interpret financial records or obtain responses to complaints. Overall, the third objective establishes that citizen-facing digital platforms support financial transparency and accountability through public access to budget information, expenditure monitoring, feedback submission and opportunities for institutional response, but their effectiveness depends on digital inclusion, understandable disclosure and municipal responsiveness.

4.1.4 Institutional, Technological and User-Related Factors Influencing Digital Financial Transparency

The fourth research objective identified the institutional, technological and user-related factors influencing the effectiveness of digital platforms in promoting financial transparency at Moshi Municipal Council. Across the three digital mechanisms, the findings revealed four interconnected constraints: staff digital competencies, system reliability, information disclosure quality and citizen accessibility. Staff digital competencies. Municipal participants reported differences in employees' ability to operate digital audit and financial reporting systems. Some officers were unable to use all available system functions effectively, limiting the practical benefits of electronic transaction tracking, validation and reporting. These findings suggest that digital platforms require continuing technical capacity development rather than assuming that system installation automatically produces competent use.

System reliability. Participants identified system downtime and technical disruptions as obstacles to financial monitoring and reporting. Interruptions affected access to transaction histories, delayed financial processes and weakened the continuity of oversight. Consequently, reliable system operation emerged as a necessary condition for converting digital records into timely and usable accountability information. Information disclosure quality. Citizen participants reported that some municipal financial information was incomplete, inconsistently updated or difficult to interpret. These problems limited the value of online disclosure even when information was technically available. The findings therefore distinguish formal information availability from meaningful financial transparency, which requires sufficiently complete, timely and understandable information.

Citizen digital literacy and accessibility**.** Unequal digital skills and access to technology constrained participation in municipal financial monitoring. Citizens without adequate connectivity, suitable devices or the ability to interpret digital financial information faced difficulties using available platforms. This created differences in the practical capacity to benefit from public information disclosure and participate in accountability processes. These findings are consistent with the World Bank (2016), which emphasizes the importance of complementary skills and institutions in realizing the benefits of digital technologies. They also correspond with Mergel et al. (2019) and Tangi et al. (2021), who identify organizational adaptation, employee competencies and technological conditions as central to digital government transformation. The findings further reinforce Fox (2015) and Peixoto and Fox (2016), who emphasize that citizen participation must be linked to institutional responsiveness to produce meaningful accountability. In the MMC case, citizen access and feedback opportunities were insufficient where disclosed information was difficult to understand or public concerns did not receive an effective response.

The relevance of infrastructure and digital capability also resonates with Mutalemwa et al. (2025), whose study examines technological readiness in Tanzanian manufacturing, and Mwakalila and Kasongwa (2024), who investigate digital financial inclusion. These studies provide broader contextual support for the importance of infrastructure and access, although neither directly measures municipal financial transparency. The MMC findings therefore contribute more directly to understanding how such constraints operate within local-government financial accountability. The fourth objective demonstrates that digital financial transparency depends on the interaction between technological functionality, institutional capacity, disclosure quality and citizens' ability to use information. These factors do not represent separate digital platforms; rather, they condition whether the three platforms can support effective oversight.

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4.2 Synthesis of Findings and Theoretical Implications

Taken together, the findings reveal three complementary accountability mechanisms through which digital platforms support financial transparency at Moshi Municipal Council. Digital audit systems make financial transactions traceable and administrative responsibility more identifiable. Financial reporting portals organize financial records into more timely, standardized and retrievable information. Citizen-facing platforms extend access and create opportunities for public monitoring, feedback and demands for explanation.

Table 2

Digital Platforms, Financial Transparency Dimensions and Implementation Constraints at Moshi Municipal Council

Digital mechanism	Financial transparency/accountability dimensions	Evidence from the study	Main implementation constraints
Digital audit systems	Transaction traceability, responsibility attribution, irregularity identification and internal oversight	Electronic transaction histories, user-linked approvals, automated checks and easier audit retrieval	Staff skills gaps and system downtime
Financial reporting portals	Reporting timeliness, accuracy, standardization, information accessibility and audit readiness	Faster electronic reporting, automated validation, standardized templates and electronic retrieval	Uneven ICT competencies and technical disruptions
Citizen-facing platforms	Public information access, expenditure monitoring, feedback and municipal responsiveness	Access to budget and project information, complaint channels and opportunities for public scrutiny	Digital literacy, unequal access, incomplete disclosure and technical presentation
Cross-cutting implementation conditions	Effective use of digital information for financial accountability	The usability of information and continuity of monitoring depend on institutional and user capacities	System reliability, staff competence, disclosure quality and citizen accessibility

Source: Authors' synthesis of the qualitative findings.

The findings indicate that financial transparency is better understood as a connected accountability process than as the simple presence or absence of digital technology. Audit systems establish the traceability of financial actions, reporting portals facilitate the organization and circulation of financial information, and citizen-facing platforms create opportunities for public scrutiny. However, the study does not independently establish that information flows automatically or seamlessly between these systems. Their complementarity is an analytical interpretation of the distinct functions identified in the qualitative evidence.

This interpretation extends principal–agent theory by emphasizing the difference between information availability and effective monitoring capacity. Conventional principal–agent reasoning suggests that improved information and monitoring can reduce information asymmetry between principals and agents (Jensen & Meckling, 1976; Shapiro, 2005). The MMC findings support this argument but also reveal that effective monitoring requires additional conditions: competent system users, reliable technological infrastructure, understandable disclosure and institutions capable of responding to scrutiny.

This contribution is consistent with the broader literature on digital government and social accountability. Bertot et al. (2010) identify the transparency potential of ICT, while Mergel et al. (2019) emphasize the organizational dimensions of digital transformation. Fox (2015) and Peixoto and Fox (2016) further establish that public information and citizen voice require institutional response mechanisms to generate accountability.

The central contribution of the present study is therefore a three-layer understanding of municipal digital financial transparency comprising transaction traceability, financial information disclosure and citizen oversight, supported by institutional and technological capabilities. Digital platforms can strengthen financial accountability, but their practical value depends on whether recorded information becomes accessible, understandable and usable for internal and external oversight. This study is an in-depth analysis of one municipal council and does not claim statistical generalisability to all Tanzanian local governments. Its value lies in identifying mechanisms and conditions that can be examined comparatively. The evidence also relies in part on participant accounts, which may be affected by recall or social desirability bias, although documentary review and triangulation reduced exclusive reliance on self-report.

Future research should test the three-layer model across multiple local authorities and combine qualitative evidence with administrative indicators. Particularly useful outcomes would include reporting delays, audit queries, frequency of corrected transactions, system uptime, citizen-platform usage, complaint-resolution rates, and changes in audit findings before and after system upgrades. Comparative work should also examine whether digital transparency effects differ by municipal fiscal capacity, urbanisation, connectivity, and citizen digital literacy. Comparative research

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should also examine whether governance quality conditions the transparency returns to digitalization, an issue consistent with Tanzanian and African evidence on the importance of governance for economic and institutional outcomes (Mwakalila, 2019).

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

This study examined how digital platforms contribute to financial transparency and accountability at Moshi Municipal Council, Tanzania, focusing on digital audit systems, financial reporting portals, citizen-facing platforms and the conditions influencing their effectiveness. The findings demonstrate that these platforms support distinct but complementary dimensions of municipal financial transparency. First, digital audit systems strengthened internal financial oversight by improving transaction traceability, linking financial approvals and modifications to identifiable officers, facilitating the identification of potential irregularities and enabling easier retrieval of audit records. Second, digital financial reporting portals supported more timely, accurate and standardized reporting through electronic submission, automated validation and improved access to financial information by authorized municipal personnel. Third, citizen-facing platforms expanded opportunities for public accountability by improving access to budget and expenditure information, facilitating citizen monitoring and providing channels for complaints, questions and feedback.

However, the fourth objective revealed that these benefits were constrained by uneven staff digital competencies, system downtime, incomplete or difficult-to-interpret financial disclosures, unequal citizen access to digital technologies and limitations in institutional responsiveness. Consequently, the presence of digital platforms did not necessarily guarantee effective financial transparency or accountability. Overall, the study concludes that digital financial transparency at Moshi Municipal Council operates through three interconnected mechanisms: transaction traceability, financial information disclosure and citizen oversight. Consistent with principal–agent theory, digital platforms can reduce information asymmetry and strengthen monitoring opportunities, but their effectiveness depends on reliable systems, competent users, accessible information and responsive institutions. These conclusions are based on qualitative evidence from one municipal council and should not be interpreted as establishing causal effects or statistical generalizability across Tanzanian local government authorities.

5.2 Recommendations

Based on the findings, the study recommends that Moshi Municipal Council implement the following measures to strengthen the effectiveness of its existing digital financial management and accountability platforms. First, strengthen the use of digital audit trails for routine financial oversight. The Council's Internal Audit Unit, working with the Finance Department and ICT personnel, should regularly review electronic transaction histories, user-linked approvals, system modifications and automated exception alerts. Transactions flagged as unusual or incomplete should be examined and documented through existing internal audit procedures. This recommendation follows the finding that digital audit systems improve transaction traceability and the identification of potential irregularities, but these functions require active use by responsible officers.

Second, improve the completeness, accuracy and timeliness of electronic financial reporting. The Finance Department should conduct routine checks of entries submitted through financial reporting portals, including verification of missing fields, inconsistent records and supporting documentation before report submission. It should also use standardized reporting templates and maintain clear procedures for retrieving financial reports and related records for management and audit purposes. These measures directly address the findings concerning automated validation, reporting consistency, electronic retrieval and the importance of reliable financial information.

Third, make publicly disclosed financial information easier for citizens to understand and use. The Council's Finance and Planning Departments, in collaboration with personnel responsible for public communication, should publish concise, regularly updated summaries of municipal budgets, expenditures and development-project implementation alongside the relevant technical documents. The summaries should use clear headings, explain financial terms in accessible language and distinguish approved budgets from actual expenditure. This recommendation responds to participants' concerns that some digital financial information was incomplete, inconsistently updated or too technical for effective public scrutiny.

Fourth, establish a clear procedure for responding to citizen feedback submitted through digital platforms. The municipal unit responsible for public communication and complaints should record incoming financial queries and complaints, assign them to the relevant departments, acknowledge receipt and document the response provided. The Council should periodically review unresolved issues and recurring complaints concerning budgets, expenditure and project implementation. This measure is directly supported by the finding that citizen-facing platforms contribute more meaningfully to accountability when public concerns receive an institutional response rather than merely being submitted electronically.

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Fifth, provide practical, role-specific training for municipal employees using digital financial systems. The Council's Human Resource and ICT functions should coordinate training for finance officers, internal auditors, planning officers and other staff who operate the relevant platforms. Training should concentrate on the functions identified in the study, including transaction tracking, interpretation of audit alerts, electronic reporting, data validation, information retrieval and basic troubleshooting. Refresher sessions should prioritize users experiencing difficulties with these functions. This recommendation addresses the documented variation in staff digital competencies that limited the effective use of audit and reporting systems.

Sixth, improve system reliability and continuity of access to financial information. The ICT Unit should maintain a register of system interruptions affecting digital audit and reporting functions, document recurring technical problems and coordinate timely maintenance and support. The Council should also establish clear procedures for recording and reconciling financial activities affected by temporary system outages, consistent with applicable financial management and information-security requirements. These actions address participants' reports that system downtime delayed reporting, restricted access to transaction records and disrupted financial monitoring.

Seventh, reduce barriers to citizen participation in digital financial monitoring. The Council should complement online financial disclosures with accessible information channels for citizens who have limited internet connectivity, digital devices or digital literacy. Practical measures may include making simplified budget and expenditure summaries available through municipal offices and existing public information channels, alongside mobile-accessible online formats. Public communication personnel should also provide clear guidance on how citizens can access financial information and submit questions or complaints. This recommendation directly responds to the finding that unequal digital access and limited digital literacy restricted participation in municipal accountability processes.

Finally, the Council should periodically assess whether these measures improve the practical use of digital financial information. Existing audit, finance, ICT and public communication records can be used to review transaction-record completeness, reporting delays, recurring system interruptions, availability of updated public financial information and the handling of citizen complaints. Such monitoring would help the Council identify persistent implementation weaknesses without treating the mere installation or availability of digital platforms as sufficient evidence of financial transparency.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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