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Challenges of Information and Communication Technology Application in Executing Ward Executive Officers' Functions in Mbulu Town Council, Tanzania

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Abstract

The study investigated challenges to the effective application of Information and Communication Technologies in the execution of the functions of Ward Executive Officers in Mbulu Town Council, Manyara Region, Tanzania. Despite the installation of information and communication technology facilities in ward offices, their use in daily administrative and governance activities remains limited, prompting the need to understand the underlying barriers. A qualitative approach was adopted, using an exploratory case study design. Primary data were collected through semi-structured interviews with 17 purposively selected Ward Executive Officers. Secondary data were obtained by reviewing relevant institutional documents, including the council's information and communication technology policy, procurement reports, and operational records. The data were analyzed using thematic analysis. The findings show that the applicability of information and communication technology in ward-level governance is significantly constrained by multiple interrelated challenges. Major barriers include unreliable power supply, limited information and communication technology knowledge and skills, lack of preventive maintenance, low willingness to adopt technology, and severe budget constraints. Additional issues, such as resistance to change, inadequate infrastructure, and limited ICT literacy, further hinder effective implementation. Although information and communication technology have the potential to enhance efficiency, service delivery, and citizen engagement, these obstacles continue to undermine its benefits. The study concludes that overcoming these challenges requires collaborative, multi-stakeholder efforts among central and local government agencies, information and communication technology training institutions, development partners, non-government organizations, and the ward executive officers themselves. It recommends implementing comprehensive, continuous training programs, improving information and communication technology infrastructure (especially reliable power), establishing maintenance systems, and ensuring consistent budget allocation for digital initiatives. Addressing these barriers is essential to unlocking the full potential of information and communication technology and advancing effective, transparent, and inclusive local governance in Tanzania.

Keywords: Information Community Technology, WEO functions, Local Government Authorities

1.0 Introduction

Public organizations provide services to the public while improving performance through responsibilities such as supervision and coordination carried out by the local government authority (Olise & Nnamdi, 2018). High-income countries like the United State of America also consider local government officials through administrative data, which are, in most

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cases, maintained. The Ward executive officer (WEOs) is responsible for performing administrative work under supervision, inspection, and coordination of activities (Kinemo, 2016). A similar pattern of supervision, coordination, and inspection is evident in the performance of responsibilities, even in countries such as the United Kingdom and Germany (DeStefano et al., 2018). Administrative activities are well handled through the use of information and communication technology (ICT), which is intended to improve the efficiency and effectiveness of information. The Ward executive officers are responsible for supervising and implementing activities through the ICT tool.

Information and communication technology is a viable tool for facilitating the supervision of tasks entrusted to the WEO (Manoharan & Ingrams, 2018). The WEO is responsible for the entire supervisory, management, and administrative process at the ward level (Mshanga & Kimburu, 2021). It facilitates the organization of administrative information at the ward level, thereby supporting supervisory tasks (Sugianto, 2024). The use of ICT in the performance of supervisory duties within local government is expected to advance responsible service delivery, but in reality, ICT advancement has failed to meet supervisory obligations and deliver the expected results (Peter & Nnunduma, 2023).

Ward Executive Officers are integral figures within the local government administrative framework, overseeing and coordinating activities and programs at the ward level. As custodians of development, WEOs are tasked with ensuring the effective delivery of social services (Gharaibeh et al., 2017). In the implementation of daily tasks, ICT has emerged as a transformative force in modern society, influencing various aspects of governance, service delivery, and communication. In the context of local government administration, ICT plays a pivotal role in enhancing the efficiency, transparency, and effectiveness of various functions and services (Manoharan & Ingrams, 2018). In the USA, local governments offer various e-government services, implement open data initiatives, and employ smart city technologies to enhance urban infrastructure and emergency management (Malangalila, 2019). The UK follows a "digital by default" approach, encouraging citizens to interact with local authorities online, utilize geospatial data for urban planning, and embrace.

Data-driven decision-making. Smart city projects focus on sustainability and quality-of-life improvements (Gharaibeh et al., 2017). Overall, these developed countries prioritize ICT to deliver better services, engage citizens, and promote efficient and sustainable local governance. In developing countries like India, the most challenging factors for local government authorities are infrastructure, security systems, and data and information protection. The installation of ICT facilities is often viewed as inefficient for managing supervision, coordination, and inspection responsibilities (Goloshchapova et al., 2023). In most instances, the aligned duties of supervision, inspection, and coordination tend to meet standards and goals, although they fail to meet the requirement, despite ICT being readily accessible. The most specific concern is the performance of duties and functions assigned to local government authorities through the WEOs. The experience is recorded in India, where local government authorities are facing service delays due to ICT implementation (Payowela, 2024). The delay is specifically in the ICT application for organizing responsibilities, which is time-consuming and subject to the relevant process. Specific processes and information challenges create barriers to exercising administrative authority in performing duties.

In Kenya, the ICT administration system, such as local government authorities, receives less emphasis, with extensive infrastructure limitations, a lack of staff training and relevant coordination experience, and limited progressive ICT application (Karimi et al., 2017). ICT in Uganda has experienced notable growth and development over the past few decades. Recognizing ICT as a key driver for socio-economic development, the Ugandan government has implemented various policies and initiatives to foster its adoption and integration across different sectors (Guha & Chakrabarti, 2019). Despite challenges such as infrastructure deficits and limited access in rural areas, the ICT sector continues to expand, contributing significantly to improvements in education, healthcare, business, and governance (Shekaoneka & Arthur, 2024).

Legal and Institutional Framework of Local Government Authorities (LGAs) in Tanzania LGAs in Tanzania operate within a constitutional and legal framework established under the Constitution of the United Republic of Tanzania. This framework provides the basis for decentralized governance and promotes citizen participation in development planning and decision-making at the local level. Article 145 (1) of the Constitution provides for the establishment of local government authorities in both urban and rural areas. The main objective is to transfer authority to the people and enable them to participate fully in the planning and implementation of development programs in their respective localities.

Article 146(1) outlines the functions and powers of LGAs. It mandates these authorities to promote social and economic development, maintain law and order, and ensure the effective delivery of public services, including education, health services, water supply, and local infrastructure. District councils are an important component of the rural local government system and are responsible for implementing national policies and development initiatives at the district level. In this context, Mbulu District Council, the unit of analysis for this study, operates within the constitutional and institutional framework governing LGAs in Tanzania.

In Tanzania, the development of ICT dates back to 1965, when the first computer was installed in the Ministry of Finance (Sausi et al., 2021). The ICT initiative began in 1989, when Muhimbili University College of Health Sciences (MUCHS) partnered with FidoNet. In 1995, Star Telecoms Ltd attempted to build the Tanzania Internet. The network, in this manner, has different

Users and servers within Tanzania, without connectivity to the global Internet (McCluskey et al., 2018). In 1996, Cyber Twiga pioneered the first live internet connection to the global network. During this period, SITA and Telecoms Systems Ltd were the only licensed providers of international data connections (Furuholt & Sæbø, 2018). These were later followed by an extensive increase in ICT use and facilities, which the Ward Executive Officer within the local government authority is responsible for addressing. The ICT running costs remain high, which is a concern for the applicability of ICT to supervision, coordination, and inspection activities that the local government aims to accomplish (Sun et al., 2018). Meanwhile, the government has announced regulations and policies to guide the ICT development. For example, in 1999, the government introduced a zero percent (0%) import duty on computers and computer accessories, with the purpose of promoting ICT and improving the performance of the local government, although little emphasis was placed on

supervision, coordination, and inspection (Mwantimwa, 2019). These are common roles that ICT aims to fulfill in electronic processes and duties, while the actual performance of duties is gradually increased.

In 2003, the government enacted the National Information and Communication Technology Policy (McCluskey & Huang, 2019). The purpose was mainly to advance the applicability of ICT in supervision, coordination, and inspection, where ICT use has failed to solve (Eligi & Mwantimwa, 2017). Despite these, the ICT strategy failed to effectively support local government initiatives; consequently, the demands for managerial and administrative functions have become overwhelming for the authorities (Mwantimwa, 2019). The result is that the local government, specifically the ward, is limited in its ability to supervise, coordinate, and inspect tasks. Thus, the study sought to address this gap by exploring ICT's contribution to the implementation of WEO functions in Tanzania.

In Mbulu District, computers have been distributed exclusively to WEOs to perform various administrative tasks. Some wards have also been provided with printers, and WEOs have been trained to use computers for various tasks. However, VEOs have not been equipped with computers, highlighting an uneven distribution of ICT resources and coordination between wards and villages in ICT functions. Despite these developments, existing studies have largely overlooked the challenges associated with the applicability of ICTs in executing functions, particularly in rural areas. Therefore, this study aimed to determine the challenges to the application of ICTs in carrying out the functions of WEOs in Mbulu Town Council.

Despite the growing adoption of ICT in administrative and governance activities, several studies have reported persistent challenges that limit its effective application, particularly in rural government institutions. Studies conducted in Tanzania have highlighted issues such as inadequate ICT infrastructure, limited technical skills among staff, unreliable internet connectivity, and insufficient institutional support, which hinder the effective use of ICT in executing official functions (Babeiya & Masabo, 2017; Babeiya & Magoti, 2018; Kagoya & Mbamba, 2020; Holden & Mwakyusa, 2022). Similarly, other scholars have noted that although ICT has the potential to improve efficiency, transparency, and service delivery in local government operations, its practical implementation remains constrained by financial, technical, and organizational barriers (Lubuva, 2023; Morris et al., 2023; Mbamba, 2023; Mauki et al., 2021). However, most of these studies have focused on ICT adoption in general public administration and service delivery, with limited attention to the challenges that affect the applicability of ICT in the execution of the functions of WEOs, particularly in rural local government authorities. Therefore, this study aimed to determine the challenges to the applicability of ICT in the execution of WEOs' functions in Mbulu Town Council, thereby helping to fill the existing knowledge gap.

2.0. Literature Review

2.1. Theoretical Literature Review

Human Capital Theory (HCT), developed in the 1960s by Gary Becker and Theodore Shultz, views education, training, and experience as investments that enhance individuals' knowledge, skills, and competencies. These qualities, considered human capital, increase productivity and the ability to perform tasks effectively. The theory assumes that human capital is a renewable

resource that grows through continuous learning and professional development, and that investments in it yield returns in the form of improved performance and economic outcomes (Fleming, 2017).

The theory is guided by several key propositions: education and training improve productivity; skills and knowledge enhance individual and organizational performance; and human capital is embodied in individuals, though employers are responsible for supporting its development through training and resources (Nadezhina & Avduevskaia, 2021). Human motives, decisions, and goals shape the use and development of human capital, as individuals invest in education and skills based on expected benefits such as career advancement and improved performance (Marginson, 2019).

Human Capital Theory differs from Human Capability Theory, developed by Amartya Sen and Martha Nussbaum, which emphasizes freedom, opportunities, and well-being rather than economic productivity. This theory is relevant to the study because WEOs' skills and ICT competencies are viewed as human capital that influences their performance. By applying Human Capital Theory, the study explains how improving ICT skills among WEOs enhances their ability to perform administrative functions effectively and supports the integration of ICT in local government operations.

2.2. Empirical Literature Review

Masegenya & Mwila (2023) examined the use of ICT for record-keeping in public secondary schools in Ilemela Municipality, Tanzania. The findings revealed that ICT application in record management was inadequate due to limited ICT infrastructure, a lack of ICT-trained personnel, and insufficient financial resources to maintain ICT-related systems. These findings suggest that institutional capacity plays a critical role in the effective adoption of ICT in organizational processes. While the study provides useful insights into the structural barriers affecting ICT utilization, its scope is limited to educational institutions and to record-keeping functions. Consequently, the study does not address how similar challenges may affect the applicability of ICT within local government administrative structures, where ICT could support broader governance functions such as communication, data management, and the coordination of development activities. This limitation creates a contextual gap that the current study seeks to address by examining the applicability of ICT within ward-level administrative offices.

Njoka et al. (2020) examined the challenges to ICT integration in the management of public secondary schools in the South Rift Region of Kenya. Using a descriptive survey design, the study found that insufficient ICT training and outdated ICT software were major barriers to effective ICT integration in school management systems. The authors recommended strengthening in-service ICT training and upgrading ICT software to improve the effectiveness of ICT integration. While the study contributes to understanding the role of training and technological capacity in promoting ICT use, it primarily focuses on the educational management context, particularly the roles of teachers and school administrators. As a result, the study does not explore ICT challenges within local government institutions, where administrative officers perform governance and public service delivery functions. This indicates a sectoral bias in the existing empirical literature, in which ICT integration is widely examined within the education sector while neglecting local governance structures such as ward administration.

Assistant & Kumareshwar (2022) examined the key challenges affecting ICT integration in higher education institutions. The study identified several barriers, including limited availability of ICT facilities, lack of technical knowledge among users, language barriers, insufficient funding, inadequate training, and poor maintenance of ICT infrastructure. These findings reinforce the broader understanding that ICT adoption is influenced by institutional capacity, financial resources, and user competencies. However, the study primarily focuses on the integration of ICT in teaching and learning processes within higher education institutions. As such, it does not investigate how ICT can be utilized to improve administrative efficiency, coordination, and decision-making processes within local government authorities.

A synthesis of the reviewed empirical studies reveals several important patterns. First, most studies on ICT integration focus on the education sector, particularly teaching, learning, and school management systems. Second, common challenges to ICT adoption across these studies include inadequate ICT infrastructure, a lack of trained personnel, insufficient funding, and limited technical knowledge among users. Third, while these studies provide valuable insights into institutional barriers to ICT implementation, they largely overlook ICT's role in facilitating governance and administrative functions within local government institutions.

Despite growing recognition of ICT as a critical tool for improving administrative efficiency, transparency, and service delivery in public institutions, empirical evidence on its application within ward-level administrative structures remains limited. In Tanzania's local government system, Ward Executive Officers play a significant role in coordinating development activities, managing records, facilitating communication between citizens and government authorities, and implementing government policies at the grassroots level. However, little empirical research has examined the challenges that affect the applicability of ICT in carrying out these functions.

Therefore, the current study seeks to fill this gap by examining the challenges to the applicability of ICT in the execution of the functions of Ward Executive Officers in Mbulu Town Council, Tanzania. By focusing on the local government administrative context, the study broadens the scope of existing literature beyond the education sector and deepens understanding of how ICT-related challenges affect governance and service delivery at the grassroots level.

2.3. Theoretical Literature Review

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3.0. Methods

3.1. Study Area

The study was conducted in Mbulu Town Council, located in the Manyara Region of northern Tanzania. Mbulu Town Council was purposively selected because it is representative of many local government authorities (LGAs) in Tanzania. These councils share similar organizational structures and functions across the country's 139 districts and 185 councils (Lufunyo, 2013). This structural similarity enhances the transferability of the study's findings to other councils facing comparable ICT challenges. Although Mbulu Town Council has ICT facilities installed in its ward offices, it continues to face persistent difficulties in adopting and effectively using these technologies. This situation makes it an ideal case for examining the gap between the availability of ICT infrastructure and its actual application in local governance and service delivery.

The choice of Mbulu is further supported by national ICT trends. According to the Tanzania Communications Regulatory Authority (TCRA, 2025), internet subscriptions in Tanzania have surpassed 56 million, with a penetration rate exceeding 80% of the population. Mobile devices remain the dominant means of internet access. Despite widespread connectivity, many local councils, including Mbulu, still struggle to fully harness ICT for administrative functions, service delivery, and citizen engagement. Therefore, studying ICT utilization in Mbulu offers valuable insights applicable to other councils across Tanzania that have digital infrastructure but limited effective use of it.

3.2. Research Design

The study adopted a qualitative approach using an exploratory case study design. This design was considered appropriate because it enables in-depth exploration and understanding of the contextual factors influencing ICT's contribution to the functions of Ward Executive Officers (WEOs) (Hancock & Algozzine, 2016). The exploratory nature allowed the researcher to gain rich, detailed insights into the attitudes, experiences, and challenges WEOs face when using ICT tools.

3.3. Sampling Procedure

The study population comprised all wards with access to ICT facilities in Mbulu Town Council. A total of 17 Ward Executive Officers were purposively selected to participate in the study. Purposive sampling was employed because the study specifically targeted WEOs at the ward level, who are directly responsible for using ICT in day-to-day administrative and governance

functions. This sampling technique ensured that only participants with relevant experience and insights were included.

3.4. Data Collection Methods

Semi-structured interviews served as the primary data collection instrument. This method was chosen because it facilitates in-depth exploration of participants' experiences and allows flexibility to probe for detailed information on the challenges affecting ICT utilization by WEOs. Each interview lasted between 30 and 45 minutes. Interviews were conducted primarily face-to-face in participants' offices to create a comfortable environment and enable immediate clarification of responses. When face-to-face interviews were not possible, telephone interviews were conducted. With participants' prior consent, all interviews were audio-recorded to ensure accurate capture of responses. Detailed field notes were also taken during the sessions. Before each interview, participants were fully informed about the purpose of the study, assured of confidentiality, and reminded that their participation was voluntary. Written or verbal informed consent was obtained from all participants in accordance with ethical research standards.

3.5. Document Review

In addition to interviews, relevant official documents from Mbulu Town Council were reviewed. These included the ICT policy, revenue reports, procurement reports, and other operational documents. Document analysis helped triangulate the interview data and provided a broader understanding of the institutional context of ICT utilization.

3.6. Data Analysis

The collected data were analyzed using thematic analysis guided by the Thematic Coding Approach (TCA) proposed by Robson (2011). This involved systematically coding the data, identifying recurring patterns, and organizing them into key themes related to challenges in ICT adoption and use at the ward level. The analysis focused on both structural barriers and practical difficulties experienced by WEOs.

3.7. Trustworthiness and Ethical Considerations

The study's trustworthiness was ensured through the four established criteria: credibility, dependability, confirmability, and transferability. Data triangulation (interviews and documents), member checking, and peer review were used to enhance the credibility and reliability of the findings. To minimize bias, a semi-structured interview guide was used to maintain consistency while allowing participants freedom of expression. The researcher-maintained neutrality, avoided leading questions, and applied thematic coding systematically. Audio recordings and detailed note-taking further reduced the risk of misinterpreting the data.

All ethical considerations were strictly observed. Participants' rights to confidentiality, anonymity, and voluntary participation were upheld throughout the study. The researcher established a good rapport with participants by clearly explaining the study's purpose and obtaining their consent before data collection began.

4.0. Results

4.1. Unreliable Power Supply

Interviews with WEOs and the District Executive Director (DED) indicate that an unreliable power supply is a major barrier to the effective use of Information and Communication Technologies (ICT) in carrying out WEO functions. Participants reported that electricity is often available for only a few hours each day, at unpredictable times, making it difficult to rely on ICT tools for critical tasks such as data entry and report submission. Several WEOs noted that their offices lack electricity entirely, forcing them to charge devices at home or in neighboring wards. Power interruptions were also reported to disrupt workflows, leading to lost time and occasional data loss when systems shut down unexpectedly. The DED acknowledged that these power challenges hinder timely data submission, community notifications, and overall service delivery.

One WEO described the situation as follows:

> *"In our ward, electricity is available for only a few hours a day, usually at unpredictable times. This makes it nearly impossible to rely on ICT tools for essential tasks such as entering data or sending reports..." (WEO 1, December 2025).*

Another WEO highlighted the additional difficulties posed by the complete absence of electricity in the office:

> *"Our office has no electricity, so I have to charge the devices at home or in a neighboring ward with power. This causes unnecessary delays..." (WEO 2, December 2025).*

A third WEO emphasized the disruptive effects of inconsistent supply:

> *"Even when we do have electricity, it's inconsistent... This disrupts the workflow and means I lose valuable time, sometimes even data..." (WEO 3, December 2025).*

These experiences demonstrate that an unreliable power supply not only causes immediate operational delays but also creates a cycle of inefficiency that undermines the quality of governance at the ward level. The constant disruption forces WEOs to operate reactively rather than proactively, limiting their ability to provide timely services to citizens and to respond effectively to emerging community needs.

4.2. Knowledge and Skills

The findings indicate that limited ICT knowledge and skills among WEOs significantly impede the effective fulfillment of their responsibilities. Participants described difficulties adapting to ICT tools due to insufficient technological proficiency and a lack of role-specific training. These gaps slow task completion, increase errors, and limit the use of ICT for data management and community engagement. The DED noted that although some training had been conducted, progress remains slow due to irregular access to capacity-building programs. The ICT operator observed that many WEOs struggle with basic functions and often require external assistance.

One WEO explained:

> *"I often find it difficult to apply ICT tools effectively because my knowledge of technology is limited..." (WEO 1, December 2025).*

Another stated:

> *"The main obstacle in using ICT tools is the lack of advanced training. This knowledge gap limits the full potential of ICT..." (WEO 2, December 2025).*

The persistence of these skills gaps highlights a broader systemic issue in preparing local government officers for digital-era responsibilities. Without adequate ICT competencies, even the available technology remains underutilized, resulting in missed opportunities to improve administrative efficiency and citizen engagement at the grassroots level.

4.3. Lack of Progressive Maintenance

The study found that the lack of systematic maintenance for ICT equipment poses a substantial challenge to sustained ICT use at the ward level. WEOs reported that malfunctioning devices often remain unrepaired for extended periods due to a lack of routine maintenance schedules and technical support. This leads to prolonged disruptions in essential activities. The DED attributed frequent breakdowns to limited resources, while the ICT operator highlighted a lack of technical expertise and funding at ward offices.

One WEO noted:

> *"I consistently encounter challenges due to the absence of routine maintenance for ICT equipment..." (WEO 1, December 2025).*

Another explained:

> *"The absence of a clear plan for maintaining ICT equipment is a major challenge..." (WEO 2, December 2025).*

This lack of proactive maintenance not only causes frequent equipment failures but also leads to frustration and demotivation among WEOs. When the tools initially provided become nonfunctional, officers gradually lose confidence in ICT solutions and revert to traditional manual methods, further undermining digitalization efforts at the ward level.

4.4. Willingness to Use ICT

The findings suggest that a reluctance to adopt ICT tools among some WEOs further constrains operational effectiveness. Key informants attributed this reluctance to low confidence, fear of making errors, and a preference for traditional methods. Even after training, the motivation to fully integrate ICT into daily tasks remains limited. The DED and ICT operator linked this to insufficient organizational support and the absence of a culture of digital transformation. One WEO observed:

> *"Many of my colleagues... are hesitant to fully embrace ICT tools..." (WEO 1, December 2025).*

Another commented:

> *"Some of us perceive ICT as an additional burden rather than a tool for efficiency..." (WEO 2, December 2025).*

The observed reluctance reflects deeper psychological and cultural barriers within the local government workforce. Many WEOs appear to view ICT as an added burden rather than a

facilitator of their work, suggesting that technical provision alone is insufficient unless attitudinal and behavioral factors influencing technology acceptance are addressed.

4.5. Budget Constraints

Budgetary constraints emerged as a critical barrier to ICT adoption and sustainability in Mbulu Town Council. Ward Executive Officers (WEOs) consistently reported that scarce financial resources severely limit investment in essential areas, including modern equipment, reliable infrastructure, regular maintenance, and staff capacity building. With limited fiscal space, community priorities, particularly in education, healthcare, water supply, and basic infrastructure, often take precedence over technological advancement. The District Executive Director (DED) acknowledged these constraints, noting the inherent difficulty of allocating sufficient funds for ICT development amid competing development demands and fluctuating local revenue streams. One WEO captured the situation succinctly*:*

> *"Our budgets are often stretched to cover basic operational needs, leaving little room to invest in ICT tools..." (WEO 1, December 2025).*

These financial constraints create a self-reinforcing cycle that perpetuates other challenges identified in the study. Insufficient funding leaves wards struggling not only to acquire new technologies but also to maintain existing equipment, leading to frequent system downtime and underutilization of limited ICT resources. Inadequate training resources further compound the problem, resulting in low digital literacy among staff and missed opportunities to leverage technology to improve service delivery. Consequently, the council's digital transformation remains slow, undermining efforts to enhance the efficiency, transparency, and responsiveness of local governance to citizens' needs.

Moreover, reliance on unpredictable external funding sources, such as sporadic grants from the central government or development partners, makes long-term ICT planning nearly impossible. This financial fragility threatens the sustainability of ICT initiatives, as projects risk becoming obsolete once initial donor support ends. Addressing budget constraints will therefore require not only increased domestic resource mobilization but also innovative financing models, such as public-private partnerships and targeted ICT budgeting frameworks, to break the cycle and support meaningful digital transformation in Mbulu Town Council.

5.0. Discussion

5.1. Unreliable Power Supply

The findings reveal that an unreliable electricity supply is a fundamental infrastructure barrier to effective ICT use by WEOs. The intermittent and unpredictable nature of power availability disrupts essential administrative processes and undermines ICT's potential to improve efficiency and service delivery. These results align with the existing literature, which identifies unreliable electricity as one of the most significant obstacles to ICT adoption in developing countries. Studies by Kweka and Ndibalema (2018), Mwinyi (2024), and Olaniyi (2019) similarly found that an unstable power supply causes inefficiencies in governance and public service delivery in sub-Saharan Africa. In contrast, Oreku (2021) reported higher ICT adoption rates in areas with stable power infrastructure. Within the Technology Acceptance Model (TAM) framework (Davis, 1989), unreliable power significantly reduces the perceived ease of use of ICT tools, thereby lowering adoption and effectiveness. Reliable electricity is therefore a prerequisite for

successful digital transformation at the ward level.

Beyond immediate operational disruptions, persistent power unreliability has broader implications for the legitimacy of governance. Citizens in rural wards expect timely responses and transparent service delivery; when ICT tools fail due to power outages, WEOs are forced to revert to slower, error-prone manual processes, eroding public trust in local government institutions. Furthermore, in an era of increasing climate variability, unreliable, hydropower-dependent grids in Tanzania exacerbate these challenges, suggesting that renewable energy solutions, such as solar-powered systems, could offer a context-appropriate mitigation strategy for ward offices.

The policy implications are clear. National and local government authorities must prioritize rural electrification programs for public service facilities. Without deliberate integration of energy infrastructure planning and digital governance strategies, ICT investments will continue to deliver suboptimal returns. Future research should assess the comparative effectiveness of alternative energy solutions, such as solar hybrids, in sustaining ICT use in similar rural administrative settings.

5.2. Knowledge and Skills

Limited ICT knowledge and skills among WEOs constitute a critical barrier to human capacity. The lack of adequate, role-specific, and continuous training leads to low proficiency, errors, and slow adoption of digital tools. These findings align with the National Information and Communications Technologies Policy (2003), which acknowledged the shortage of qualified ICT professionals and the absence of standardized training and certification in Tanzania. The results support TAM (Davis, 1989), as insufficient skills negatively affect perceived ease of use. They are consistent with the findings of Grgurevic et al. (2022), Oladimeji et al. (2024), Eyieyien et al. (2024), and Kweka and Ndibalema (2018). While some scholars argue that skills alone are insufficient without supportive infrastructure (Thangiah et al., 2022), the present study underscores the urgent need for systematic, tailored ICT training programs for local government officers.

The skills deficit also perpetuates a cycle of dependency and inefficiency. When WEOs must constantly seek external technical assistance, it not only delays service delivery but also diminishes their professional autonomy and confidence. In decentralized governance systems like Tanzania's, where WEOs serve as the primary interface between citizens and government, such capacity gaps at the grassroots level weaken the entire local government structure. Moreover, the rapid evolution of digital technologies means that one-time training sessions are inadequate. Continuous professional development programs, possibly delivered through blended learning approaches that combine online modules with practical workshops, are necessary.

5.3. Lack of Progressive Maintenance

The lack of structured maintenance mechanisms results in frequent, prolonged ICT equipment breakdowns, rendering tools unreliable and underutilized. This finding supports TAM's assertion that poor system reliability diminishes perceived usefulness and ease of use (Davis, 1989). It aligns with research by Abdulkareem (2015), Sutan et al. (2015), and Kabura and Nyauma (2021), which identified inadequate maintenance as a major barrier to sustainable ICT use in

public administration. The study underscores the need to establish dedicated maintenance policies, budgets, and local technical capacity.

Without proactive maintenance, initial investments in ICT hardware quickly become wasted resources, reinforcing the perception that technology is costly yet ineffective. This perception discourages further investment and entrenches reliance on traditional paper-based systems. In resource-constrained environments like Mbulu District, the lack of maintenance also raises equity concerns, as wealthier or urban wards are better positioned to sustain digital tools than their rural counterparts. Establishing a decentralized yet coordinated maintenance framework, possibly involving regional ICT hubs that serve multiple wards, could provide a practical solution. Such an approach would combine economies of scale with localized responsiveness. Future research should explore cost-effective maintenance models suitable for rural local governments in East Africa and assess their impact on the longevity and return on investment of ICT initiatives.

5.4. Willingness to Use ICT

Reluctance to adopt ICT stems from low confidence, fear of errors, and insufficient organizational support. These behavioral barriers hinder the integration of technology into daily operations. The findings align with TAM (Davis, 1989), which holds that low perceived ease of use and perceived usefulness reduce technology acceptance. They are consistent with studies by Enaifoghe and Ndebele (2023) and Malodia et al. (2021) in the African context. However, research by Hossen et al. (2025) and Khasawneh (2023) suggests that user engagement, demonstrating benefits, and institutional incentives can effectively overcome this resistance. This unwillingness reflects deeper change-management challenges within public-sector institutions. Many WEOs, particularly those with long service in pre-digital eras, may view ICT as a threat to established routines rather than as an empowering tool. An organizational culture that neither rewards innovation nor tolerates initial mistakes further entrenches this resistance. To address these issues, change-management strategies that combine technical training with attitude change are essential. Mentoring programs, peer learning networks, and recognition systems for digital champions at the ward level could help shift mindsets. Longitudinal studies examining how willingness to use ICT evolves after targeted interventions would provide valuable insights for scaling successful digital transformation efforts across Tanzanian local government authorities.

5.5. Budget Constraints

Severe budgetary constraints limit the acquisition, maintenance, and training needed for effective ICT deployment. Competing community priorities further marginalize ICT investment. These findings align with studies by Bariu (2020), the African Union Commission (2019), and Paul and Manda (2017). Within the TAM framework, inadequate funding undermines both key constructs of technology acceptance (Davis, 1989). Innovative financing mechanisms, such as public-private partnerships, may offer viable solutions (Ogbomo, 2011).

Budget constraints create a vicious cycle in which limited resources produce poor ICT outcomes, which in turn justify even lower future allocations. This underfunding is especially harmful in rural districts, where the digital divide is already pronounced. Without deliberate fiscal prioritization, the goal of achieving "digital local governance" will remain largely aspirational. A multi-pronged financing strategy is therefore recommended. This could include ring-fencing a share of district budgets for ICT, seeking support from development partners, and exploring

revenue-generating digital services. Further research should examine the political economy of ICT budgeting in local governments and identify successful models of sustainable financing that balance immediate service needs with long-term digital transformation objectives.

6.0. Conclusion and Recommendations

The findings of this study highlight the complex, multifaceted challenges that hinder the effective use of ICT by WEOs at Mbulu Town Council. The key barriers identified include an unreliable power supply, limited ICT knowledge and skills, insufficient proactive maintenance, low willingness to adopt ICT, and severe budget constraints. These challenges collectively undermine the potential of ICT to enhance administrative efficiency, improve service delivery, and strengthen local governance.

Addressing these barriers requires a comprehensive, integrated, and sustained approach encompassing infrastructure development, ongoing capacity building, policy reforms, and increased financial investment. By prioritizing these areas, Mbulu Town Council can create a more enabling environment for meaningful ICT integration. Furthermore, cultivating a culture of technological innovation and adaptability among WEOs is crucial to realizing the full benefits of digital tools in meeting the evolving needs of local communities.

In conclusion, while Mbulu Town Council has made notable progress in providing ICT facilities at the ward level, the effective utilisation of these technologies remains significantly constrained. Overcoming the identified challenges is not only essential for improving governance outcomes in Mbulu but also holds important lessons for other local government authorities across Tanzania facing similar digital transformation hurdles. With deliberate, coordinated efforts, Mbulu Town Council has the potential to transform these challenges into opportunities and position itself as a model of effective, technology-driven local governance. This study recommends that Mbulu Town Council, in collaboration with the central government and development partners, should prioritize a reliable power supply as a foundational step. This can be achieved by installing solar power systems and backup generators in all ward offices. Such infrastructural improvements will reduce dependency on the unstable national grid and create a more stable environment for ICT utilization.

The council should also invest significantly in capacity building. Regular, role-specific ICT training programs should be designed and implemented for all Ward Executive Officers to ensure long-term effectiveness, and continuous professional development opportunities, including refresher courses and peer mentoring systems, should be institutionalized. This will help bridge existing knowledge and skills gaps and improve WEOs' confidence in using ICT tools. A structured ICT maintenance framework is also urgently needed. The council should develop and implement a comprehensive maintenance policy that includes dedicated budgetary provisions for routine servicing and the establishment of a rapid response technical support team. This will minimize equipment downtime and ensure the sustained functionality of ICT tools at the ward level.

Furthermore, deliberate efforts should be made to encourage WEOs to adopt ICT. Change management initiatives, such as awareness campaigns and the sharing of success stories that demonstrate the benefits of ICT, should be implemented. These efforts will help shift negative

perceptions, reduce fear of technology, and foster a more positive attitude toward digital tools. Finally, the council should address budget constraints by allocating a specific, consistent percentage of its annual budget to ICT development, maintenance, and training. In addition, alternative funding sources, such as public-private partnerships and support from development partners, should be actively explored to supplement internal resources.

7.0. References

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