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Examining the Effectiveness of e-Governance on Public Service Delivery: A Case Study of Lusaka City Council's Online Payment

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Abstract

Digital transformation is redefining government service delivery worldwide, and Lusaka City Council (LCC) has joined this shift through the Lusaka Integrated Management System (LIMS) and online permit portals aimed at addressing inefficiencies, delays, and corruption in paper-based systems. This study examined the effectiveness of these platforms in improving service delivery, gauging user satisfaction, and identifying challenges that affect implementation and sustainability. Guided by the Technology Acceptance Model (TAM), the research analyzed how perceived usefulness and ease of use influence adoption and outcomes among staff and citizens. A descriptive survey and case study design were used, combining quantitative and qualitative approaches with a sample of 50 respondents, including LCC officials, IT specialists, community leaders, and service users. Data collection methods included structured surveys, semi-structured interviews, and document reviews, while analysis was conducted using descriptive statistics in STATA and thematic interpretation of qualitative responses. Findings revealed that 68% of respondents believed the system significantly reduced the time taken to issue permits, citing better information access, application tracking, and reduced in-person interactions. Adoption levels were high, with only 4% of respondents not using the platform, though resistance was noted among some long-serving staff. Corroborating this, ZICTA (2023) found that 66% of Lusaka residents rated LIMS effective in reducing turnaround times and improving transparency. However, persistent constraints were identified, including unstable internet connectivity, system downtime, limited digital literacy, staff reluctance, and resource limitations. These challenges undermine ease of use, leading at times to partial adoption or fall-back to manual processes. The study concludes that while LIMS has improved transparency and efficiency, sustainable success requires addressing these systemic issues. Five priority actions were highlighted: strengthening infrastructure and system reliability, investing in digital literacy and staff training, embedding user feedback mechanisms, ensuring governance and sustainability through clear platform ownership and possible public–private partnerships, and enhancing transparency with automated audit trails. Overall, the study demonstrates that LCC's online permit systems are meaningfully improving public service delivery but require stronger investment in infrastructure, capacity building, and change management to maximize their potential. Strategic reforms can consolidate current gains, increase citizen trust, and position Lusaka as a model of effective e-governance in Zambia and beyond.

Keywords: E-Governance, Public Service Delivery, Online Permits, LIMS, Technology Acceptance Model, Lusaka City Council, Digital Transformation

1. Introduction

The adoption of Information and Communication Technology (ICT) has transformed public administration. This has enabled governments to enhance efficiency, transparency, and citizen engagement. A leading example comes from Estonia's comprehensive e-governance infrastructure. Another one comes from India's Digital India initiative. Both have illustrated how technology has reduced bureaucratic inefficiencies and promote accountability (World Bank, 2020). In Africa, countries such as Rwanda, Kenya, and South Africa have achieved notable progress through platforms like Irembo and eCitizen. This has expanded access to services while reducing corruption. Even though persistent challenges such as poor infrastructure, digital illiteracy, and unequal access, remain widespread (UNECA, 2019).

At a local level, Zambia, e-governance has evolved within a context of decentralization and reform. The National ICT Policy

of 2006 and the Smart Zambia initiative of 2018, laid the foundation for digital transformation through investments in ICT infrastructure and online public service platforms (Smart Zambia, 2018). The Lusaka City Council (LCC) has since implemented e-permit systems and online service portals (LIMS) aimed at improving accountability and efficiency. However, infrastructural limitations, low digital literacy, and inconsistent internet connectivity continue to hinder their full effectiveness (World Bank, 2020).

Despite policy efforts, inefficiencies, bureaucratic delays, resistance to change, and corruption persist in local governance. This weakens public trust. The gap between digital policy intentions and real-world outcomes highlights the need for a critical assessment of how effectively e-governance initiatives particularly LCC's online permit systems enhance public service delivery. This study therefore examines the effectiveness, user satisfaction, and challenges of e-governance in Lusaka. This will help to identify strategies for promoting inclusive, efficient, and transparent municipal service delivery.

1.2 Objective

1.2.1 General Objective

To examine the effectiveness of e-governance in public service delivery on Lusaka city council's online permit systems.

1.2.2 Specific Objectives

1. To examine the effectiveness of online permit systems on public service delivery by Lusaka city council.
2. To determine citizen satisfaction on the effectiveness of online permit systems on public service delivery by Lusaka city council.
3. To investigate limitations affecting the implementation and sustainability of the online permit systems by Lusaka city council.

1.3 Theoretical Framework

This research is grounded in the Technology Acceptance Model (TAM). Technology Acceptance Model (TAM), is a widely adopted framework for understanding how users accept and use new technologies. TAM is particularly relevant to the study of e-governance as it focuses on the factors that influence technology adoption, specifically Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). These two concepts are crucial for assessing the effectiveness of e-governance systems and understanding the factors that affect their adoption among citizens and government employees (United Nations, 2018).

According to TAM, perceived usefulness (PU) refers to the extent to which individuals believe that using a specific technology will improve their job performance or daily life. In the case of Lusaka City Council's e-governance initiatives, citizens are more likely to adopt online permit systems for public service delivery if they perceive them as offering tangible benefits. These benefits include; faster processing of permits and improved communication with local authorities (Davis, 1989).

Perceived Ease of Use (PEOU) refers to the ease with which users can interact with a technology. A critical factor in the successful adoption of e-governance in Lusaka is the usability of digital platforms. If platforms are complex or difficult to navigate, both citizens and council staff may face challenges in adopting them. If the systems are user-friendly, they will likely see higher adoption rates, particularly among lower-income or digitally marginalized groups.

TAM also recognizes that external factors such as socio-economic conditions, infrastructure, and organizational readiness can influence the adoption of technology. In Lusaka, challenges such as inconsistent internet connectivity, low levels of digital literacy, and limited access to modern devices may hinder the widespread adoption of e-governance. For example, areas with poor network coverage might struggle with online permit systems, affecting the system's overall effectiveness (World Bank, 2020).

Therefore, Technology Acceptance Model (TAM) provides a holistic framework for evaluating the effectiveness of e-governance on public service delivery at Lusaka City Council's online permit system. TAM, on the other hand, allows for a practical evaluation of how citizens and government employees interact with these technologies, focusing on the factors that influence their adoption and use.

By using this framework, this study examined how well Lusaka's e-governance platforms align with the principles of good governance while also examining the factors that influence their adoption and usability. Understanding the barriers and enablers of technology adoption through the lens of TAM allowed for a more coordinated assessment of the effectiveness of digital governance initiatives in improving public service delivery.

Consequently, the framework helped identify both the strengths and weaknesses of Lusaka's e-governance systems, allowing for actionable recommendations on improving service delivery. It also informed strategies for ensuring that e-governance platforms are accessible to all demographic groups, including those with low digital literacy or limited internet access.

2. Literature Review

2.1 Effectiveness of E-Governance Systems on Public Service Delivery by Local Government's Online Permit Systems

All over the world, online permit systems have become essential tools for enhancing efficiency, transparency, and accessibility in public service delivery. Countries such as Singapore, Estonia, and India demonstrate that digitized permitting significantly reduces bureaucracy and approval times, promotes accountability, and curbs corruption through automation and real-time tracking (World Bank, 2021). These systems allow citizens and businesses to apply for permits remotely, expanding access even in rural areas.

At regional level, Southern African nations such as South Africa, Botswana, and Namibia, have also adopted digital permit platforms to streamline administrative processes and improve transparency. Systems like BizPortal of South Africa and Zambia's e-Government Procurement (e-GP) platform have shortened approval times and minimized human interference. This has reduced corruption risks (ZICTA, 2023). However, challenges such as limited digital literacy, cybersecurity concerns, and uneven internet connectivity still constrain their full potential.

While at the local level, the Lusaka City Council (LCC) has implemented the e-Permit System, the Lusaka Integrated Management System (LIMS), and the Smart Lusaka initiative to modernize service delivery. These platforms have reduced permit waiting times from weeks to days. In turn, this has enhanced transparency by enabling real-time

application tracking, and improved business registration compliance, especially among small enterprises (Lusaka City Council, 2023). While notable progress has been achieved, sustaining these benefits requires continued investment in ICT infrastructure, user training, and inclusive digital access to ensure equitable and efficient service delivery across Lusaka.

2.2 Citizens' Satisfaction on the effectiveness of Online Permit Systems on Public Service Delivery by Lusaka City Council

Citizen satisfaction with online permit systems is largely influenced by ease of access, user-friendliness, timeliness, and transparency. At global level, successful implementations, such as Estonia's e-Estonia, Singapore's CORENET, Rwanda's Irembo, and Canada's Toronto system, have improved service efficiency, reduced processing times, and increased public trust (European Commission, 2022; World Bank, 2021; UNDP, 2023; City of Toronto, 2021). In Africa, platforms like Kenya's eCitizen and South Africa's municipal portals have enhanced transparency and accessibility. Even though challenges such as system downtime, digital literacy gaps, and interface complexity affect satisfaction (ICT Authority, 2022; SALGA, 2022).

In Zambia, the Lusaka Integrated Management System (LIMS) has digitized business, construction, and land permits. This has reduced bureaucratic delays and corruption. The study indicates that 66% of users find the system effective. They cited faster approvals and improved transparency. Nevertheless, 34% report difficulties with connectivity, digital literacy, and customer support (ZICTA, 2023; LCC, 2023). Continuous improvements, including chatbots, mobile payment integration, and digital literacy programs, are enhancing user perception and adoption. Generally, citizen satisfaction is highest where systems are inclusive, reliable, and responsive. This underscores the importance of infrastructure investment, user-centred design, and ongoing capacity-building for effective online permit service delivery.

2.3 Challenges Faced By Lusaka City Council in Implementing and Sustaining Online Permit Systems

Local governments, particularly in Southern Africa, face multiple challenges in implementing and sustaining these systems. Key obstacles include inadequate technological infrastructure, low digital literacy, system reliability issues, resistance to change among staff, cybersecurity threats, financial constraints, and limited public awareness and trust. In Zambia, Lusaka City Council's Lusaka Integrated Management System (LIMS) illustrates these challenges, with connectivity issues, server downtime, and low digital literacy affecting adoption, while staff resistance and limited budgets slow implementation. Cybersecurity incidents and public scepticism further complicate the transition. Despite these hurdles, LIMS has improved permit processing times, reduced face-to-face interactions, and enhanced transparency, with 66% of users reporting effectiveness. Initiatives such as digital literacy programs and infrastructure upgrades, along with sustained investment and public engagement, are essential for overcoming challenges and achieving the full potential of online permit systems in enhancing public service delivery.

2.4 Literature Gap

The review of literature highlights several critical research gaps that warrant further investigation. Firstly, there is a lack of comprehensive studies assessing the effectiveness of e-permit systems on public service delivery in Lusaka. While existing research explores general trends, it often fails to provide detailed analyses of how e-permit initiatives influence key sectors such as licensing and permit issuance (Heeks, 2019). For example, Smart Zambia (2018) notes general improvements in municipal efficiency but does not provide data on sector-specific outcomes. This limitation hinders the ability to measure the effectiveness of these initiatives and identify best practices.

Secondly, insufficient exploration of institutional and socio-technical challenges unique to the Lusaka City Council is evident. For instance, while digital literacy and infrastructure issues are widely acknowledged, the interplay between these challenges and the organizational culture of municipal staff remains underexplored (Chikulo, 2019).

Thirdly, the literature reveals a significant gap in understanding the inclusivity of e-permit systems. While many studies highlight the importance of equitable access, few research into the specific barriers faced by marginalized groups in Lusaka, such as women, peri-urban populations, and individuals with limited digital literacy. ZICTA (2021) points to a digital divide in Zambia, but the lack of localized studies means that the unique challenges of these groups remain inadequately addressed.

Additionally, there is limited empirical research on the long-term sustainability of e-permit initiatives in Lusaka. While short-term benefits such as improved transparency and efficiency are often reported, the question of how these systems can be maintained and scaled in the face of financial and technical constraints remains unanswered. Research from Kenya's Huduma Centres demonstrates the importance of continuous funding and stakeholder engagement for sustainable e-governance, but comparable insights for Lusaka are missing (Mwangi & Otieno, 2020).

Fourthly, there is a lack of studies examining the role of public-private partnerships (PPPs) in advancing e-permit systems in Lusaka. PPPs have been pivotal in addressing infrastructural and technical challenges in other contexts, such as India's Aadhaar initiative, which leveraged private sector expertise to achieve widespread adoption (Kumar, 2018). In Lusaka, however, the potential for similar collaborations remains underexplored. Research into how PPPs can be effectively utilized to overcome resource constraints and drive innovation is necessary to unlock their full potential.

Lastly but not the least, the literature does not sufficiently address the policy and regulatory environment required to support e-permit initiatives. While studies acknowledge the need for legal frameworks to ensure data security and interoperability, there is little discussion on the specific reforms needed in Lusaka's context. For example, Smart Zambia (2018) calls for standardized protocols, but there is no detailed roadmap on how these can be implemented within existing bureaucratic structures.

3. Research Methods

3.1 Research Design

This study adopted a descriptive survey design which accompanied use of a case study. (Rowley, 2013). This

design was particularly suitable for investigating how e-permit systems influence service delivery in local government, providing a comprehensive overview of the subject and highlighting key patterns and correlations.

To strengthen the study's findings and provide a multidimensional perspective, mixed methods were employed. This combination enhanced the richness of the data and increased the validity and reliability of the findings through triangulation (Zambia Statistics Agency, 2022).

3.2 Target Population

The study area focused on the Lusaka City Council (LCC), which governs Lusaka City, the capital of Zambia. According to the 2022 Census of Population and Housing, Lusaka City's population is approximately 2.8 million people, making it the most populous city in the country (Zambia Statistics Agency, 2022). Hence, this becomes the targeted population. This population includes residents across urban and peri-urban areas, many of whom are stakeholders in the city's e-permit initiatives, either as implementers or beneficiaries (Smart Zambia, 2018).

3.3 Sampling Design

The study used mixed sampling design in collecting samples. For instance, systematic sampling method was used in selecting service area respondents. Further, convenience sampling was used to select Heads of department, and employees at Lusaka city council. Respondents were selected based on their proximity and availability to the study, targeting staff at Lusaka city council (Creswell & Creswell, 2018).

3.4 Sample Size Determination

The sample size was 50 respondents from the Lusaka City Council (LCC) and its stakeholders. The selection of participants involved key stakeholders such as government officials like the Lusaka city council Directors, Heads of department and sections, IT specialists, community leaders, and end-users of e-permit systems. These participants provided critical insights into the implementation, functionality, and impact of e-permit systems on service delivery (Creswell & Creswell, 2018).

3.5 Data Presentation

Data will be collected using primary and secondary data collection methods. Primary Data was collected using structured surveys and semi-structured interviews to capture both quantitative and qualitative insights. Structured surveys were used to gather quantitative data on performance metrics, such as service efficiency, user satisfaction, cost-effectiveness, and transparency (Bryman, 2016). These surveys targeted key stakeholders, including administrators, IT specialists, and service beneficiaries, ensuring a comprehensive analysis of the impact of e-governance systems.

Secondary data was obtained through a review of existing documents, reports, and databases from Lusaka City Council and relevant government institutions. This includes policy documents such as the National ICT Policy (2006), the e-Government Master Plan (2013), and reports from the Smart Zambia initiative. Academic articles and case studies on e-governance in Zambia and globally were also analyzed to provide a comparative context (Heeks, 2019).

3.6 Data Analysis

3.6.1 Qualitative Data

The researcher used thematic analysis to look at patterns of meaning in a data set. Thematic analysis took bodies of data and grouped them according to similarities in other words, themes. These themes help in making sense of the content and derive meaning from them.

3.6.2 Quantitative analysis

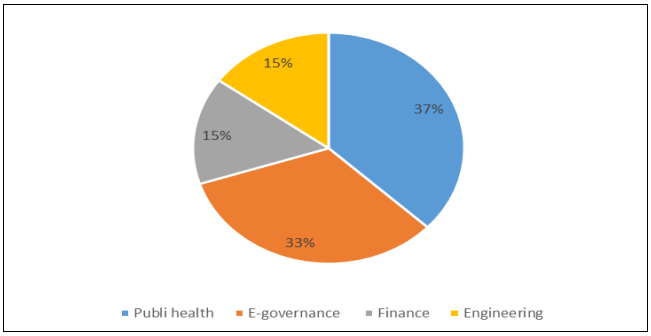
Quantitative data was presented using simple descriptive statistic methods. These include tables, percentages, pie charts, and linear regression analysis. The data collected was computerized, sorted, edited, classified and coded. The resultant data was entered using statistical package STATA for analysis. The relationship between the study variables was established using regression analysis.

4. Findings and Results

4.1 Characteristics of Respondents (Bio Data)

The background information of the respondents included their department, role, years of service, as well as whether they have worked with the online permit system. Majority of respondents were drawn from the Planning, Engineering, and Licensing departments. Most of them had served between 1 to 6 years and had direct experience with the online permit system. This composition was crucial for obtaining informed perspectives on the system's effectiveness.

The chart below shows a variety of departments that took part in the study. They include; planning, engineering, health, and licensing. A broad departmental adoption indicates cross-functional utility.



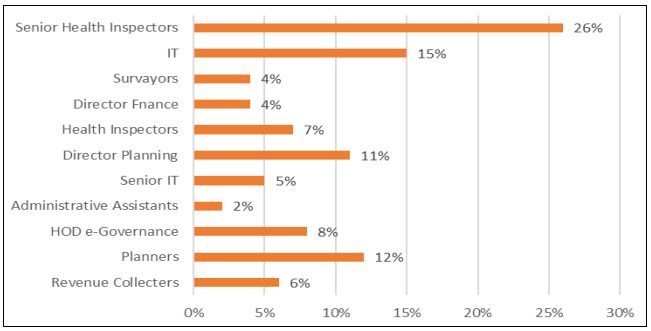
Source: Primary data

Fig 1: Departments of respondents at Lusaka City Council that took part in the study

Respondents from the departments mentioned above occupy a range of positions within the Lusaka City Council. These include clerks, supervisors, IT officers, and Heads of department. The data collected reveals that the majority of participants were junior staff members who are directly involved in the daily operational activities of the Council. Their higher participation levels suggest that they are the primary users and implementers of the online permit system in their respective departments.

Conversely, the relatively low engagement from senior officers indicates limited top-down involvement, which may reflect weak managerial support or insufficient prioritization of digital transformation at the leadership level. This imbalance in participation highlights a potential gap in strategic oversight and policy direction. Without active commitment and engagement from top management, the full

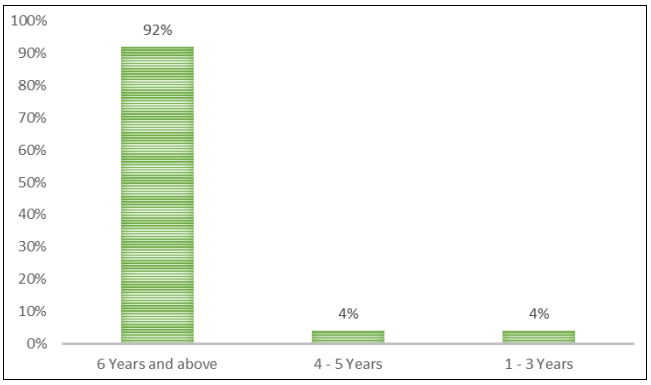
institutionalization and long-term sustainability of the e-governance system may be undermined. The various departments are shown in the chart below.



Source: Primary data

Fig 2: Roles or positions of respondents at Lusaka City Council

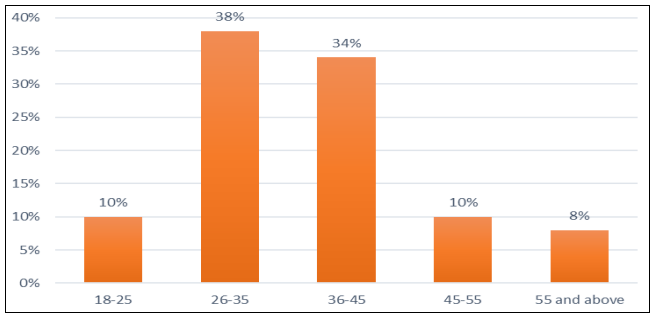
Like mentioned in an overview, the years of service for LCC employees ranges from less than 1 year to more than 6 years. This mix of tenures shows diverse experiences. The chart below shows that long-serving employees were the majority representing 92% while those who have served between 1 to 3 years and 4 to 6 years signify 4%, respectively. As reported in the preceding findings, the long serving employees may be more resistant to change, while newer ones might be more adaptable to digital tools.



Source: Primary data

Fig 3: Years of service for Lusaka City Council employees who took part in the study

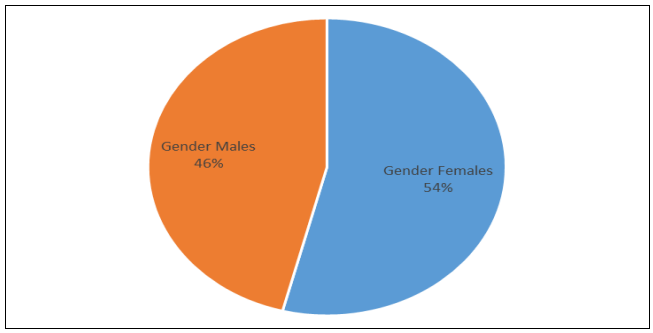
Fig 4 categorizes respondents into five distinct age groups: 18–25 years, 26–35 years, 36–45 years, 46–55 years, and 56 years and above. The findings reveal that a significant concentration of respondents falls within the younger age brackets, particularly between 18 and 35 years. This indicates that a large portion of the workforce at Lusaka City Council consists of relatively young employees who are generally more digitally literate, adaptable, and open to adopting new technologies such as e-governance systems.
Their familiarity with digital tools positions them as key drivers in the implementation and utilization of the online permit system. However, the lower representation of older employees, like those aged 46 years and above suggests a segment of the workforce that may face challenges in adapting to digital processes. This group may require targeted support, refresher training, and continuous capacity building initiatives to enhance their confidence and participation in the use of e-system.



Source: Primary data

Fig 4: Age groups of respondents

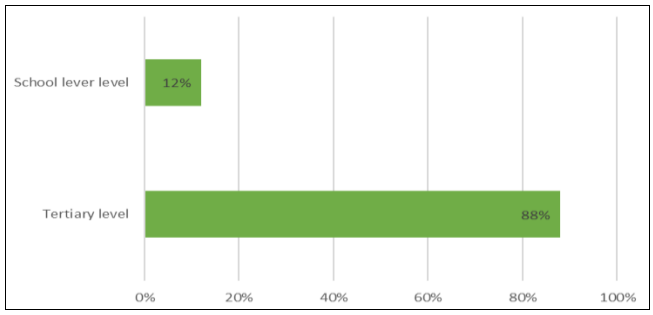
Fig 5 illustrates the gender distribution of respondents within the Lusaka City Council, highlighted the ratio between male and female participants. A fairly balanced gender representation was important as it promoted inclusivity and ensured that both perspectives are reflected in assessing the effectiveness of the online permit system. Balanced participation also helped generate diverse user feedback, which can inform system improvements that cater to all users equitably.



Source: Primary data

Fig 5: Gender representation of participants from Lusaka City council and users

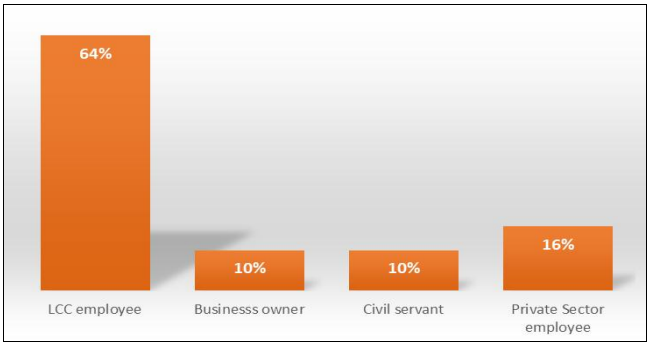
Most respondents have attained either secondary or tertiary education, indicating a relatively well-educated workforce. The high proportion of diploma and degree holders demonstrates strong foundational knowledge and adaptability to modern work environments. This educational background suggests that employees possess the capacity to understand and utilize digital systems effectively. However, despite this advantage, continuous professional development remains essential to keep pace with evolving technologies. Ongoing training programs would therefore enhance digital proficiency and ensure sustained organizational efficiency. The gender distribution is explained below.



Source: Primary data

Fig 6: Level of education for participants who took part in the study

Fig 7 illustrates the diverse occupational distribution of respondents, including private sector employees, business owners, civil servants, and Lusaka City Council (LCC) staff assigned to various departments. Among the LCC respondents, a significant proportion occupy positions in operations and administrative units. This composition highlighted their close involvement in the council's day-to-day activities and direct engagement with digital systems. Their operational roles provide them with firsthand experience in using, managing, and troubleshooting the system. Thus, their feedback offered valuable and credible insights into the system's strengths, limitations, and overall functionality. Such diversity in occupational backgrounds enhanced the reliability of the study findings. It ensured that the perspectives captured reflect both managerial and practical user experiences within the organizational setting.



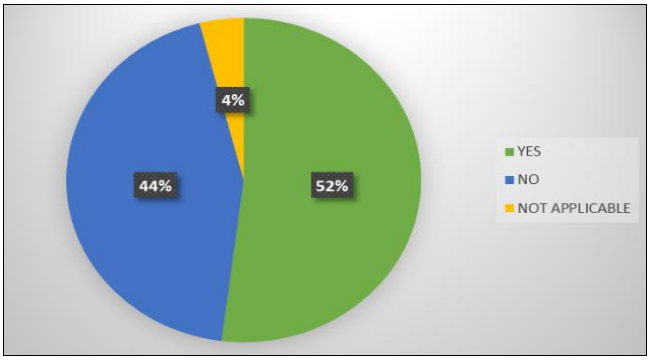
Source: Primary data

Fig 7: Occupations of respondents

4.2 To determine citizen satisfaction on the effectiveness of online permit systems on public service delivery by Lusaka city council

According to ZICTA (2023), 66% of respondents in Lusaka indicated improved efficiency due to LIMS. However, challenges such as slow internet and limited staff capacity persisted.

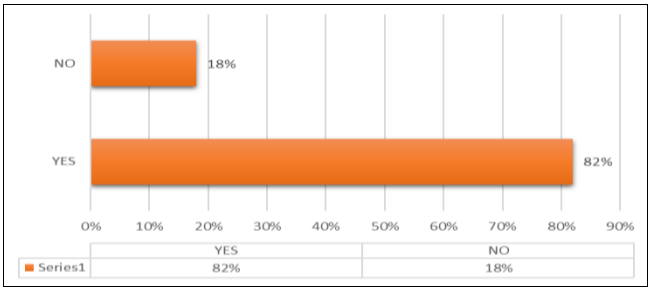
Fig 8 below shows that a significant number of direct users have directly used the system. This lends credibility to the feedback. However, since only 4% of them have not used the system yet, this reflects wide system penetration or implementation.



Source: Primary data

Fig 8: Participants who have worked directly under the e-permit system

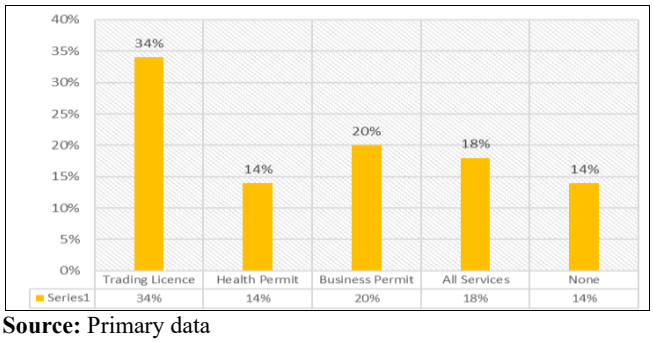
On the other hand, external usage by beneficiaries as end-users underscores the system's accessibility and user-friendliness. The high number of users outside the council indicates growing trust and acceptance of the e-permit platform. This reflects the system's ability to meet user needs efficiently, reducing the reliance on manual processes. Interestingly, even among staff members, there was a noticeable preference for using the e-permit system over traditional methods. This demonstrated both internal and external confidence in the system's effectiveness and convenience.



Source: Primary data

Fig 9: Participants who have used the Lusaka City Council's online permit system as a user

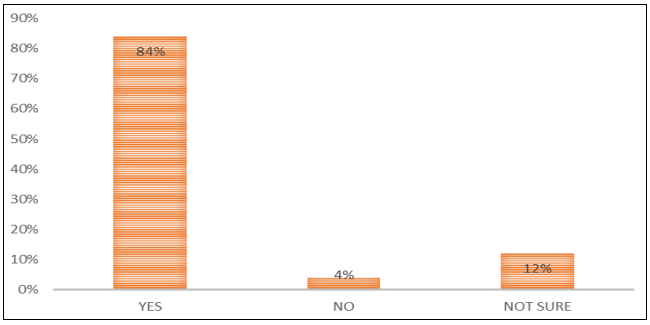
Fig 10 illustrates the range of services that users have applied for through the system, which include building permits, trading licenses, and health permits. The presence of multiple permit types demonstrated the system's flexibility in accommodating different administrative functions. This diversity indicated that the platform is capable of supporting a wide spectrum of service needs across departments. However, the concentration of applications on a few permit categories may suggest limited user awareness of the full range of available services. It could also reflect operational priorities or higher demand in certain sectors. Enhancing awareness and communication about all available permit options could therefore promote broader system utilization. Such efforts would strengthen the system's overall impact and efficiency in service delivery.



Source: Primary data

Fig 10: Type of services on e-permit system

In addition, the study reveals that a majority of respondents reported noticeable improvements, suggesting perceived gains in efficiency and service delivery. These improvements are largely attributed to faster processing times, reduced human interaction, and enhanced transparency in operations. Such feedback reflects the positive impact of digital transformation within the council's systems. Conversely, if a significant number of respondents had indicated "No" or "Not sure," it would have implied usability challenges or infrastructural shortcomings. Therefore, the prevailing positive responses highlight user satisfaction and confidence in the system's performance.

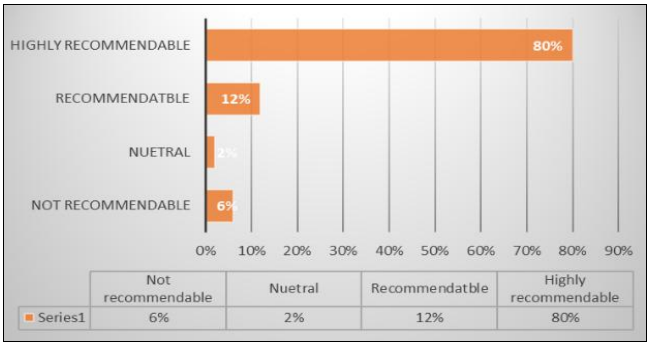


Source: Primary data

Fig 11: How online permit system has improved public service delivery

4.3 To determine citizen satisfaction on the effectiveness of online permit systems on public service delivery by Lusaka city council

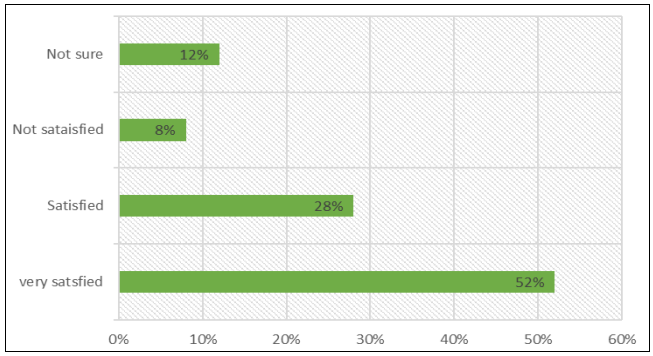
To this effect, the study reveals that 80% of respondents reported noticeable improvements, indicating perceived gains in efficiency, accuracy, and overall service delivery. These improvements are mainly attributed to faster processing times, reduced human contact, and increased transparency in handling applications and approvals. Such results demonstrate the successful integration of digital systems within the council's operational framework. Respondents' experiences suggest that automation has minimized delays and reduced opportunities for administrative errors or bias. Moreover, enhanced accessibility and accountability have strengthened public confidence in council services. Conversely, if many had reported "No" or "Not sure," it would have signified possible usability challenges, limited digital literacy, or infrastructural constraints. Overall, the dominant positive responses reflect satisfaction, acceptance, and growing trust in the efficiency of the e-permit system.



Source: Primary data

Fig 12: System recommendations

Because of the high level of satisfaction reported earlier, the study recorded strong recommendations from respondents, reflecting growing confidence in the e-permit system. Many users expressed willingness to continue using and endorsing the platform, signaling trust in its reliability and efficiency. However, a degree of reluctance among some participants suggests underlying usability or trust-related concerns that require attention. Addressing these issues through user support, system refinement, and awareness campaigns would enhance overall adoption. This balance of enthusiasm and caution is clearly reflected in the figure below, illustrating varying levels of user confidence.



Source: Primary data

Fig 13: Satisfaction levels after using the e-permit system

4.4 To identify challenges affecting the implementation and sustainability of the online permit systems by Lusaka city council

One of the major challenges reported in implementing and sustaining online permit systems in Lusaka was inadequate technological infrastructure. In many underserved communities such as **Chibolya, Kanyama, and George Compound**, poor internet connectivity significantly affected access to online platforms. For instance, business owners in these areas have struggled to submit permit applications due to erratic network coverage and frequent system downtimes, forcing some to revert to manual submissions despite the digital migration (ZICTA, 2023). Additionally, many government offices, especially sub-offices or ward-level service centres, still use **outdated computers and lack uninterrupted power supply**, which undermines the system's performance and reliability.

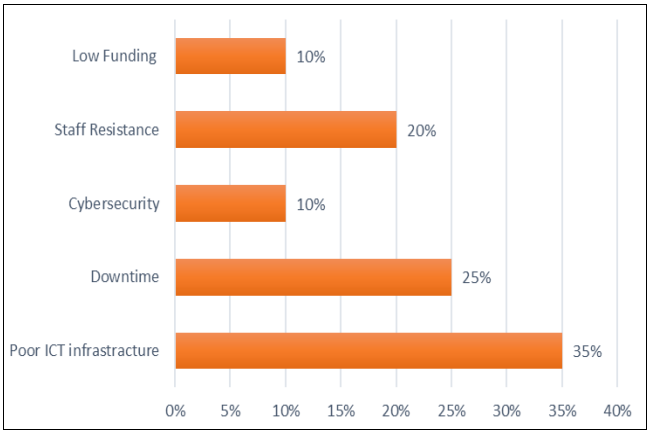
Another setback to effective use of the online permit system has been the **lack of digital skills among both users and staff**. Many citizens, particularly small-scale traders operating in areas like **Chelston Market or City Market**, are not conversant with online application processes. As a result, they often depend on intermediaries or "agents" to help them navigate the system, which sometimes leads to exploitation or incorrect submissions. On the government side, some LCC officers lacked training in using the system effectively delaying service delivery or generating errors in data entry. This aligns with findings by SALGA (2022), which underscored the impact of digital illiteracy on e-service adoption across Southern African municipalities.

Resistance among Lusaka City Council staff has also emerged as a barrier. Around **20% of LCC employees**, particularly those who had worked in the council for more than a decade, expressed concerns that the digital system would **render their positions obsolete** or reduce the relevance of their roles (Lusaka City Council, 2022). Some staff members, previously engaged in manual processing of permits, were reluctant to transition to digital platforms due to a preference for traditional workflows and the comfort of known routines. This was particularly evident in departments like **Engineering and Licensing**, where digital transformation threatened established hierarchies and workflows.

Cybersecurity threats have also hindered confidence in the online permit system. In 2021, LCC experienced a **ransomware attack** that temporarily crippled its online services, leading to a suspension of permit processing for over a week (ZICTA, 2023). Sensitive data, including

applicant personal information and internal correspondence, was potentially exposed. This breach exposed critical gaps in the council's cybersecurity infrastructure, such as lack of **firewalls, data encryption, and routine system audits**. The incident served as a wake-up call for the need to bolster digital defences, yet progress has been slow due to budget constraints and limited technical expertise.

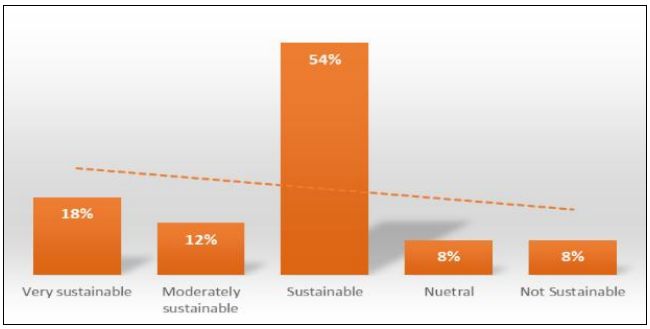
Another setback is funding limitations, which have significantly affected the rollout and sustainability of the online permit system. According to UNDP (2020), the lack of adequate financial resources has restricted the council's ability to **procure modern servers, expand system coverage, and conduct regular maintenance**. For instance, attempts to scale the system to **peri-urban areas like Chilenje and George compound** have stalled due to insufficient budgetary allocations. Furthermore, training programs for both staff and end-users have been inconsistently implemented due to the same financial shortfalls, leading to uneven levels of service delivery and system uptake across Lusaka.



Source: Field data, 2025

Fig 14: Challenges in implementation of e-permit system

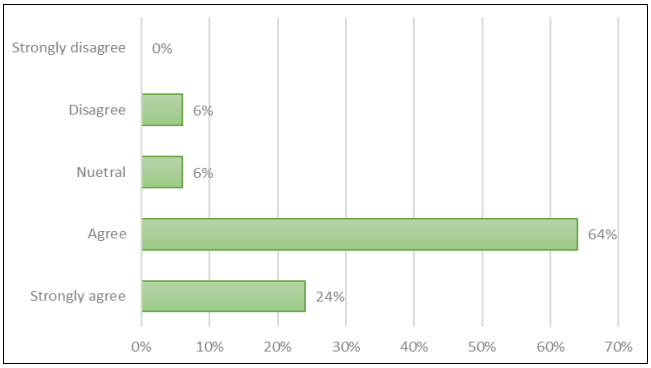
Despite the challenges noted above, figure 14 and 15 shows the sustainability of e-permit system systems currently and a long run. 84% of respondents believe in current and in long-term sustainability of e-permit systems while only 8% do not think so. This shows faith in government digitization, even though doubts reflect concerns around funding, infrastructure, and staff capacity.



Source: Primary data

Fig 14: System implementation and sustainability

In addition, the findings reveal that 88% of respondents agreed that the e-permit system is currently sustainable, demonstrating strong confidence in its long-term viability. This majority view highlights the system's ability to operate effectively with existing resources and infrastructure. Only 6% of respondents disagreed, expressing doubts about its consistency or technical stability. A further 5% remained neutral, possibly reflecting limited experience or uncertainty about the system's future performance. Overall, the results emphasize a generally positive perception of sustainability and continued functionality of the e-permit platform.

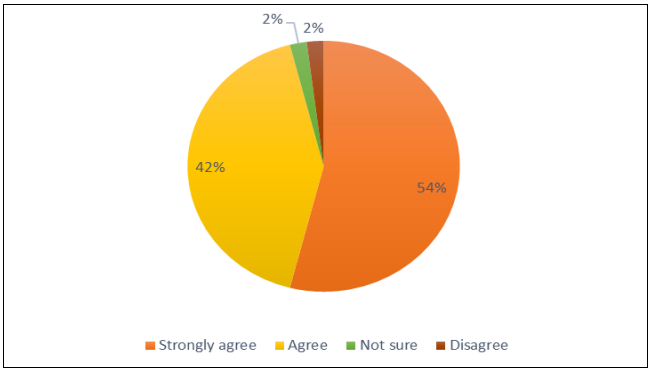


Source: Primary data

Fig 15: user beliefs on the sustainability of e-permit system in a long run

Furthermore, despite a few reservations expressed by some respondents, an overwhelming 96% agreed that e-governance systems significantly improve public service delivery. This strong level of agreement underscores the growing recognition of technology's role in enhancing efficiency, transparency, and accountability within government operations. The findings align with Zambia's broader national agenda to promote digital transformation across public institutions. Such positive perceptions suggest that users are beginning to appreciate the convenience and responsiveness enabled by online systems.

However, the small proportion of skeptical respondents points to persistent challenges such as intermittent system failures, unreliable internet connectivity, and limited technical support. These issues may hinder the full realization of e-governance benefits if not adequately addressed. Therefore, continuous investment in ICT infrastructure and user training remains crucial for sustaining progress and public confidence. This is summarized below.



Source: Primary data

Fig 16: User beliefs on whether E-Governance enhances public service delivery in Zambia or not

Despite these hurdles, positive developments such as chatbot integration, digital skills training, and stakeholder

feedback loops have been initiated by LCC to address the concerns (LCC, 2024).

4.5 Discussion of Results

The study aimed to examine the effectiveness of the Lusaka City Council's (LCC) online permit systems in enhancing public service delivery. The discussion integrates key findings with existing literature and the Technology Acceptance Model (TAM) as the theoretical foundation. The Technology Acceptance Model provides a robust framework for understanding user perceptions and behaviours towards digital systems. It emphasizes two primary constructs, namely; Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). These factors influence the acceptance and utilization of technology within institutional and citizen contexts (Muller, 2015).

Firstly, findings revealed that 84% of respondents perceived the implementation of online permit systems has significantly enhanced the efficiency, transparency and accessibility of public service delivery. These outcomes resonate strongly with the theoretical and empirical foundations established in the literature review. The results show that the digital transformation of permit systems has simplified administrative processes, reduced service delays. This has strengthened accountability within the Council's operations.

In line with the Technology Acceptance Model (TAM), the study demonstrates that both the perceived usefulness and perceived ease of use of online permit system (LIMS) play a crucial role in determining staff and citizen acceptance of the system. This confirms earlier conclusions by scholars such as Heeks (2019) who argue that e-governance enhances operational efficiency when digital systems are well-aligned with user capabilities and institutional goals. In the case of Lusaka City Council, respondents overwhelmingly indicated that the online permit system had reduced the time and cost of accessing services from 68% to 32%. This has made government procedures more predictable and transparent.

Apart from that, they align with the global literature that highlights how digitization transforms bureaucratic processes into citizen-centric models. For example, in Singapore, the introduction of the CORENET system for online permits reduced turnaround times by over 30 percent and enhanced coordination among departments (World Bank, 2021). Likewise, in Estonia, the e-Estonia platform achieved near-complete integration of municipal services. This provides an international benchmark for digital efficiency (European Commission, 2021). The LCC experience mirrors these global trends, suggesting that Zambia's local governance structures are capable of adopting advanced ICT-driven solutions when institutional commitment and user readiness are present.

In addition, at the regional level, the results are consistent with findings from Rwanda's Irembo platform, where e-permit systems significantly improved transparency and public trust in government services (UNDP, 2023). Rwanda's approach to simplifying citizen interactions with government institutions demonstrates that accessibility and design simplicity encourage high adoption rates. Even in South Africa, the Batho Pele digital service framework recorded comparable outcomes, showing that when citizens can access public services electronically, satisfaction levels and government responsiveness increase (SALGA, 2022). The findings from Lusaka therefore reinforce a broader continental trend toward technology-enabled governance that improves institutional responsiveness while simultaneously deepening public confidence in local authorities.

Coming to Zambia, this study validates observations made in Zambia's Smart Zambia Initiative (2018) and the e-Government Procurement (e-GP) platform. Both of which aimed to promote efficiency, transparency and accountability in public service delivery. This improvement can be seen in how the LCC's e-permit system through the Lusaka Integration Management System (LIMS) operates. For instance, individuals applying for business licenses can now track their application status online and receive notifications once approvals are completed. According to ZICTA (2023), 66% of users experienced improved access through LIMS, signifying that the system has bridged several accessibility gaps that existed under the manual regime. This confirms that the Perceived Usefulness (PU) component of TAM was fulfilled, as users recognized tangible improvements in public service efficiency.

Another reason for effectiveness is attributed to the integration of mobile payment options through platforms like Airtel Money and MTN Mobile Money which has resulted in improved convenience. The initiative reduced the need for physical cash payments and opportunities for corruption. These developments mirror broader digital governance reforms under the Smart Zambia initiative, which emphasizes digitization as a means of enhancing transparency, timeliness, and citizen trust in government systems. This mirrors the literature's assertion that e-governance mechanisms improve fiscal transparency and traceability of transactions (OECD, 2020). Hence, the e-permit is contributing to the realization of Sustainable Development Goal 16, which emphasizes building effective, accountable and inclusive institutions.

Moreover, the LCC's online permit system has also contributed to better record-keeping and inter-departmental coordination. Departments such as engineering, health, and planning can now access shared databases, which reduces duplication and facilitates faster verification. This efficiency gain echoes the experience of global models such as Singapore's CORENET (World Bank, 2021). This illustrates that Lusaka's approach, though still evolving, aligns with international standards in smart governance. Practical evidence from the Council's planning department indicates that project approvals that previously took four weeks can now be processed within one week, provided all documentation is in order. This too demonstrates the transformative potential of e-governance on local administrative systems.

Secondly, concerning citizen satisfaction, the study revealed mixed outcomes. While 66% of users appreciated the transparency and reduced corruption enabled by the system, concerns such as system downtime, lack of user support, and limited digital literacy were prevalent among 34% of respondents. This contrast between satisfaction and frustration highlights the transitional challenges inherent in digital transformation. For example, in underserved areas such as Chawama, and Kanyama, inconsistent internet access limits citizens' ability to utilize the system effectively. Some citizens still rely on physical intermediaries or cybercafés to submit applications. This leads to additional costs and potential misinformation. These patterns are consistent with findings from Rwanda and

South Africa, where digital inclusion and system accessibility influenced user satisfaction (UNDP, 2023).

Furthermore, the study highlights a nuanced understanding of citizen satisfaction in relation to digital service delivery. The majority of respondents expressed contentment with the LIMS, citing efficiency, fairness and ease of use as key strengths. These findings support the arguments advanced by Mtingwi (2021) and Heeks (2018) that the success of e-governance lies not only in the availability of technology but in its ability to meet citizen expectations and reduce transaction costs.

When citizens perceive tangible improvements in service delivery, trust in public institutions is reinforced. This is consistent with the results of the Eurobarometer Survey (2022) in Estonia, where over 80% of citizens reported satisfaction with online services, attributing this to the system's speed and convenience. The same principle applies in the Lusaka context. The more predictable and user-friendly the permit system becomes, the greater the level of public trust and satisfaction.

From a theoretical standpoint, the findings affirm that the Technology Acceptance Model (TAM) remains a powerful framework for understanding technology adoption within public sector contexts. The respondents' high ratings of system usefulness of 68% and satisfaction of 66% demonstrate that when users perceive a technology as beneficial and easy to use, they are more inclined to adopt and sustain it. This conclusion aligns with the extensions of TAM proposed by Muller, (2015), who emphasize the role of institutional support and system reliability in reinforcing user acceptance. In LCC's case, the Council's commitment to providing digital training and integrating mobile payment systems further strengthens the relationship between technological innovation and user confidence.

Thirdly, challenges in implementation and sustainability were substantial. These included unreliable internet connectivity in informal areas, resistance from some municipal staff, cybersecurity threats, and financial constraints. Within Lusaka, system outages and slow upload speeds were frequently reported, particularly during high-demand periods. These technical constraints not only affect user confidence but also hinder the continuity of digital service delivery. In addition, some municipal staff members expressed scepticism toward the system, for fear of redundancy or job loss. The study found that 20% of LCC staff expressed reluctance toward adopting the system due to fear of redundancy, aligning with resistance-to-change literature (Muller, 2015). These issues mirror broader regional concerns, as documented in Botswana, Malawi, and Namibia as reported by SALGA, (2022) and NALA, (2022).

This internal resistance can be attributed to limited sensitization and training among employees who were accustomed to manual administrative procedures. For instance, some planning officers initially continued processing paper-based applications in parallel with digital submissions. This led to duplication and confusion among clients. Over time, however, continued exposure and training helped reduce this resistance, reinforcing Muller's (2015) assertion that employee acceptance grows when they perceive the system as a tool for empowerment rather than displacement.

Despite the challenges highlighted above, the Lusaka City Council has initiated promising reforms. These include public awareness campaigns, digital literacy workshops, and chatbot integration for real-time support. Early indications show these interventions have improved user experiences, reinforcing the importance of institutional responsiveness in e-governance success (Smart Zambia, 2018). The Council has also introduced localized help desks at civic centres and partnered with Smart Zambia to establish digital service points, which assist citizens in navigating online platforms. These developments demonstrate a commitment to continuous improvement, reflecting lessons from regional peers such as Rwanda's Irembo platform, where institutional adaptability has been central to digital transformation.

Nevertheless, as the World Bank (2022) notes, e-governance systems in developing nations are most successful when backed by long-term funding, policy consistency and human capital development. The study thus contributes to the literature by showing that Zambia's digital transformation, though promising, remains at an intermediate stage characterized by partial efficiency gains and ongoing structural limitations. Addressing these barriers will require integrated strategies that combine technological innovation with institutional reform, public awareness campaigns and partnerships with the private sector.

To this effect, while the online permit system has encountered technical, financial, and human challenges, it has undeniably improved efficiency, transparency, and accessibility in public service delivery at the Lusaka City Council (Smart Zambia, 2018). The study's findings, anchored in the Technology Acceptance Model, confirm that perceived usefulness and ease of use are central to user adoption and satisfaction.

Practical evidence from Zambia shows that when citizens perceive tangible benefits, such as reduced waiting times, they are more likely to embrace digital public services. However, for sustained success, LCC must continue investing in user support, infrastructure upgrades, and staff capacity-building. Doing so will ensure that the online permit system serves as a model for other local authorities in Zambia striving for digital efficiency and citizen-cantered service delivery (Smart Zambia, 2018).

5. Conclusion

The study concludes that the Lusaka City Council's e-permit system has made notable strides in improving public service delivery. It has reduced permit processing time, enhanced transparency, and minimized physical interactions, thereby curbing opportunities for corruption. These improvements validate the relevance of the Technology Acceptance Model in guiding e-governance adoption.

Nevertheless, persistent challenges such as limited infrastructure, digital illiteracy, system unreliability, and staff resistance hinder the system's full potential. The Lusaka City Council must continue to invest in technological infrastructure, staff training, and user engagement to overcome these limitations. The importance of public trust, inclusivity, and continuous system improvement cannot be overstated.

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