The Extent of Information Communication and Technology Use in Service Delivery among Civil Servants in Meru County

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Abstract

Information and communication technology (ICT) plays an important role in enhancing service delivery. For this reason, the Meru County Government has substantial ICT infrastructure in place, including telecommunications networks, computer systems, internet connectivity, and mobile phone service. However, county government customers cite dissatisfaction with the quality of public service delivery. The study aimed to assess the extent to which information and communication technology (ICT) is utilized to enhance service delivery among civil servants in Meru County, Kenya. It adopted the SERVQUAL model to underpin service delivery. The research also adopted a descriptive design. The target population included 307 employees, encompassing both top-level and middle-level managers across various county departments. The recommendation of 10-30% by Mugenda and Mugenda was used, and 30% adoption led to a sample size of 92. Stratified and simple random sampling techniques were used to obtain 92 employees, of whom 67 were staff members and 25 were administrators. Data collection was carried out using questionnaires. Piloting of the research instruments was done to ensure their reliability. The collected data were analyzed using SPSS version 23, and the results were presented descriptively, including tables and figures. The results indicated that the use of computers and communication media affects overall service delivery in county government departments. However, some members' infrequent use of ICT tools, gaps in data management practices, unreliable internet connectivity, outdated ICT equipment, inadequate ICT proficiency, and security practices were reported. The paper recommends that the Meru County Government, in conjunction with the ICT department, broaden integration, modernize the ICT infrastructure, address connectivity problems, create ICT professional development training programs, and strengthen security measures to optimize its use.

Keywords: ICT *Usage, Information and Communications Technology (ICT), Service delivery, civil service, Meru County*

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1.0 Introduction

Public service refers to activities and services performed in any government capacity in the public interest and for the benefit of the general public (Osborne, 2020). Service delivery in the public service refers to the extent to which services provided by the listed sectors meet or exceed beneficiaries' expectations, namely the general public (Osborne, 2020). It is often represented by timeliness, quality, efficiency, convenience, and customer satisfaction of specific needs through well-managed operations (Ruwanika & Maramura, 2024).

The implementation of information and communication systems has led to various transformations (Luvembe & Mutai, 2019). Across the world, and particularly within the public sector, there is growing pressure to provide high-quality services that are responsive to people's needs, preferences, and accessibility. This has necessitated adopting modern technologies to redesign work processes and improve communication mechanisms (Benard & Nzuki, 2018). The primary aim of this study is to examine the role of ICT in service delivery within the civil service, focusing on how technology can increase efficiency, promote accountability, and enhance transparency in the provision of public services.

Multiple studies have shown that ICT can be applied across sectors to enhance information flow, increase public service efficiency, and promote transparency and accountability (Luvembe & Mutai, 2019; Ngeno, 2020). A study conducted at the University of East London examined how computer use influences the efficiency of civil servants (Jordan & Griffin, 2025). The findings indicated that computer use significantly contributes to improved service delivery, owing to its ability to ensure high standards of performance and operational efficiency in areas requiring technological skills. Computers also play a vital role in supporting essential organizational functions, including planning, coordination, administration, budgeting, reporting, and staffing. Similarly, research by Ewuim et al. (2016) in Nigeria's Odofin Local Government Area found that ICT use greatly enhances service delivery. However, challenges such as high administrative costs—primarily resulting from corruption and poor governance—persist. It is therefore crucial for local authorities to adopt cost-effective technological solutions that enhance both transparency and operational efficiency.

Statement of the Problem

County government service delivery is enabled by substantial ICT infrastructure, including telecommunications networks, computer systems, internet connectivity, and a thriving mobile phone sector (Kimemia, 2022). Despite these investments, citizens across diverse demographic groups continue to express dissatisfaction with the quality of public service delivery (Kimemia, 2022). The implementation of devolution in Kenya assigned county governments the critical mandate of providing accessible, efficient, and high-quality services (Roba et al., 2024). However, this mandate remains inadequately fulfilled, often due to the underutilization of ICT tools, limited technical skills, and insufficient attention to ICT security and risk management. Several studies have examined

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ICT use in Kenya's public sector. For example, Komen and Senaji (2020) assessed ICT applications in revenue collection in Nairobi County, while Mohammed (2022) investigated the influence of e-government on public policy and technology adoption. Additionally, Maweu and Karani (2014) explored implementation frameworks, and Omariba and Okebiro (2015) addressed citizen participation in e-government initiatives. While these studies provide important insights, a significant gap remains regarding the specific role of ICT in enhancing quality service delivery in Meru County. This study sought to address that gap by applying the Unified Theory of Acceptance and Use of Technology (UTAUT) model to develop a context-specific framework for effective ICT implementation in public service delivery within county governments.

Objective

To determine the extent of ICT, use in service delivery among civil servants in Meru County.

Research question

To what extent is ICT used in service delivery within the civil service in Meru County?

Empirical Literature on the Extent of ICT Usage

Kenya has made significant strides in ICT adoption, transitioning from mainframe systems to mobile and wireless technologies. The development of a national ICT policy and implementation strategy has benefited from input from knowledgeable stakeholders (Luvembe & Mutai, 2019). However, universal adoption, particularly in rural areas, is hindered by infrastructure limitations, such as unreliable electricity and limited resources (Muriithi et al., 2016; Nasser, 2020). Gichoya and Cecci (2021) identified persistent challenges, including financial unsustainability due to donor dependence, a lack of capital project evaluation, and the absence of clear ICT implementation guidelines.

> *"The research sought to determine the extent of ICT use in service delivery among civil servants in Meru County's public service and ICT's pivotal role in Meru County's civil service operations"*

The Huduma initiative exemplifies the positive impact of ICT on service delivery. Through SMS, email, and internet platforms, citizens access essential services such as health, education, and land registration (Danida, 2012). In one notable case, public complaints about surgeries conducted without anesthesia prompted prompt action by civil society partners and government agencies, resulting in the delivery of essential medical supplies. Despite such successes, Huduma services face challenges in meeting rising expectations and diverse service needs. Egessa and Musau (2016) found a strong positive relationship between ICT use and customer service, underscoring the need for political will and enhanced ICT integration at the county level.

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Literature Gap

Despite the widespread use of ICT to improve service delivery to people, including communication systems, computer networks, internet services, and the mobile phone industry, there are constant complaints from all population groups (Atoke & Emmanuel, 2022). There has been little or no focus on the effective use of ICT in service delivery, and infrastructure is often poor or outdated (Gichoya & Cecci, 2021). These gaps led the research to examine the extent of ICT use in service delivery and to identify what is preventing Meru County agency officials from using ICTs fully in the delivery of their services.

Theoretical Framework

This paper adopts the Unified Theory of Acceptance and Use of Technology (UTAUT). The UTAUT, developed by Venkatesh et al. (2003), explains how users accept and use information technology. It helps assess the likelihood of successful technology adoption and supports decisions to enhance user engagement. The model identifies four key constructs that influence user behavior: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). These constructs influence behavioral intention and actual use, with gender, age, experience, and voluntariness serving as moderating variables. Behavioral intention is viewed as a strong predictor of technology use.

Performance expectancy is the degree to which an individual believes that using a system will improve their job performance (Venkatesh et al., 2003), while effort expectancy is the extent to which using the system is perceived as simple. The third construct is social influence, the degree to which an individual perceives that significant others believe they need to use new systems. Social influence is thought to moderate the effects of volunteer gender, age, system experience, and behavioral intentions. Lastly, facilitating conditions refer to the extent to which an individual believes the organizational and technical infrastructure is in place to support the use of a system. The UTAUT survey was developed by Venkatesh et al. The R2 is 70%, indicating that the model explains 70% of the variance in users' intentions to use information technology (Venkatesh et al., 2003). The UTAUT model was deemed relevant to this study, as ICT performance/effort expectancy, social influence, and other conditions may affect the adoption and use of ICT by public servants in Meru County.

2.0 Materials and Methods

The study adopted a descriptive survey design to collect statistical information on staff and managers' knowledge and attitudes toward the use of ICT in public service delivery. It targeted 307 public service employees in Meru County (Standard Newspaper, 2018). The study sampled 92 respondents, guided by Mugenda and Mugenda's (2003) recommendation of a 30% threshold. Stratified sampling was used to obtain employees from different departments at the county government level, ensuring proportional representation across both top and middle management categories. Within each stratum, simple random sampling was used to select respondents proportionate to

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the stratum size. Data for this study were collected using a structured questionnaire administered to all sampled staff and administrators drawn from the target population. The questionnaire primarily comprised closed-ended items to facilitate analysis and consistency in responses, while a few open-ended questions were included to allow respondents to elaborate or provide additional insights beyond the structured items. To complement the questionnaire data and gain a more nuanced understanding of client experiences, interview sessions were conducted with selected service users.

A pre-test was conducted in the Meru County Department of Education. The purpose of the pre-test was to assess the effectiveness, clarity, and reliability of the data collection tools in capturing relevant information on public service delivery within the education sector. Feedback from the pre-test informed revisions to the tools, ensuring improved validity, reliability, and contextual appropriateness for the actual data collection phase. The study ascertained the research instruments' content, construct, and face validity. Reliability was assessed using Cronbach's alpha in SPSS. An introductory letter was obtained from Kenya Methodist University (KeMU), followed by a research permit from the National Commission for Science, Technology, and Innovation (NACOSTI). Each sampled respondent received a cover letter explaining the purpose and significance of the research, and appointments for data collection were jointly agreed upon. The questionnaires were self-administered to improve response rates. Visits were made to individual departments to distribute and oversee completion of the questionnaires. Respondents were given ample time to complete the instruments, given the relatively flexible departmental schedules. Quantitative data were analyzed descriptively to obtain means, frequencies, and correlation analysis. Thematic analysis was applied to present and describe qualitative data.

Table 1

Sample Size Distribution by Management Level

Department	Target population	Sample size (30%)
Public service	13	5
Agriculture	36	11
Trade	22	6
Transport and roads	24	7
Water and irrigation	28	8
Health	46	14
Decentralized units	20	6
Education	32	9
Tourism and culture	27	8
Lands and urban development	25	8
Finance and revenue	34	10
Total	**307**	**92**

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3.0 Results and Discussion

The comprehensive analysis of ICT equipment usage and availability in Meru County's civil service provided valuable insights into the county's technological needs and challenges. By aligning the ICT strategy with the workforce's actual requirements, Meru County could improve service delivery, enhance productivity, and ensure that its civil servants are equipped with the tools needed to perform their duties effectively. The findings (see Table 1) also suggest that while the county is largely well-equipped, there is room to optimize how resources are allocated and used, particularly for less critical equipment.

Extent of ICT usage

Table 1

Computer usage

	Frequency	Percentage %
Yes	67	100

Data collected from 25 administrative staff and 67 other employees provided valuable insights into ICT (Information and Communication Technology) use and job performance. The findings revealed high computer literacy and a strong reliance on ICT tools across both groups. All respondents reported prior computer use, highlighting the prevalence of basic digital skills in their work environments. The study also examined the duration of use, as indicated in Figure 1.

Figure 1

Duration of computer usage (Staff members)
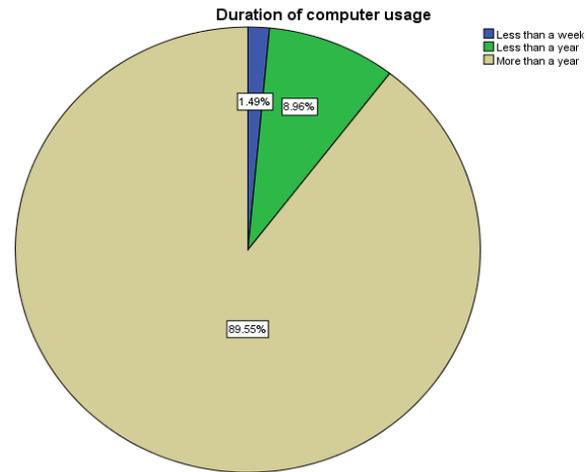
Notably, 89.6% of staff had used computers for over a year, indicating consistent ICT use. Among administrative staff, 60% used computers daily and 36% used them weekly.

Table 2

Frequency of computer usage

Frequency (N = 67)	Percentage
Daily	59(88.1)
Weekly	7(10.4)
Yearly	1(1.5)
Total	67(100.0)

Among other staff, 88.1% reported daily use—underscoring ICT's essential role in routine tasks. The study aimed to assess ICT use among Meru County civil servants and its impact on service delivery. Based on staff responses, ICT tools were used regularly, indicating widespread adoption. However, the few who did not frequently use ICT highlight a gap in the county's efforts to integrate technology across all service areas fully. The research also examined how ICT improves service delivery, and the results are presented in Table 3.

Table 3

How ICT equipment increases service delivery

ICT use/Tools	Percentages
ICT improved productivity	64
ICT improved overall service delivery efficacy	58
Staff using ICT for communication (emailing and reporting)	65
Staff using ICT for data management/analysis	48
Desktop computer	98.5
Printers and Photocopier	74.6
Scanners	55.2
Tablets	37.3
Modems	35.8
Cameras	26.9
Projectors	25.4
Fax machines	22.4

The study's goals were to determine the extent to which ICT is used to improve the efficacy and productivity of service delivery. Results show that 64 percent of participants believe ICT has improved their productivity, enabling them to work faster and more accurately. Additionally, 58 percent of respondents report that ICT has improved Meru County's overall service delivery. The data indicate that although ICT generally improves service delivery, there is still room for improvement. This is especially true when it comes to raising the adoption rate among the 28 percent of the workforce that is still not fully using these technologies.

The results also indicated that 65% of the staff use ICT for communication, such as emailing and reporting, which are essential for coordinating activities within the county. This level of usage reflects the growing reliance on digital communication tools to facilitate faster, more efficient information sharing. However, only 48% of respondents indicated that they use ICT for data management and analysis, suggesting a potential area for improvement. The county needs to focus on training and encouraging more staff to use ICT for data-driven decision-making, which is critical for improving the quality of services provided to the public.

According to the analysis, desktop computers are the most important ICT tools in Meru County's civil service, as indicated by 98.5% of respondents who said they were necessary for their day-to-day work. This strong demand demonstrates how essential desktop computers are for carrying out a wide range of operations, from administrative responsibilities to highly specialized jobs involving multiple departments. Desktop computer use is commonplace, consistent with the previous finding that a sizable portion of the workforce is educated, with many employees holding degrees and postgraduate qualifications. This suggests that workers can use this technology efficiently, underscoring the need to ensure

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that every office in Meru County has sufficient desktop PCs.

Printers and photocopiers were also cited by 74.6% of respondents as extremely important pieces of equipment. These technologies are essential to day-to-day operations, especially in areas where communication and document management are central to service delivery. These tools are consistently important for various operational and administrative tasks, making them essential for keeping the county's civil service productive and efficient.

While scanners (55.2%), tablets (37.3%), and modems (35.8%) were considered essential,

their relatively lower demand suggests more specialized use across departments. For instance, modems are vital for internet access in remote offices, while tablets support fieldwork and mobile tasks. Equipment such as cameras (26.9%), projectors (25.4%), and fax machines (22.4%) was the least used, reflecting a shift toward digital communication and reduced reliance on traditional presentation and data-sharing tools.

The study further identified the type of ICT equipment according to preference and need, as presented in Table 4.

Table 4

ICT equipment is required for daily performance

		Responses		Percent of Cases
		N	Percent	
ICT equipment required for daily work	Desktop computers	66	21.9%	98.5%
	Photocopier	50	16.6%	74.6%
	Projector	17	5.6%	25.4%
	Printers	50	16.6%	74.6%
	Scanners	37	12.3%	55.2%
	Tablet	25	8.3%	37.3%
	Fax machine	15	5.0%	22.4%
	Cameras	18	6.0%	26.9%
	Modem	24	7.9%	35.8%
Total		302	100.0%	450.7%

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4.0 Conclusion

The researcher sought to determine the extent of ICT use in service delivery among civil servants in Meru County's public service. The study underscored ICT's pivotal role in Meru County's civil service operations. High levels of computer literacy and regular use of ICT tools among staff highlighted the technology's integral role in productivity, communication, and efficiency. Most respondents acknowledged ICT's positive impact; however, some employees still

underutilized available tools, signaling a need for enhanced training and capacity-building.

Widely adopted devices included desktop computers, printers, and photocopiers, while tools such as scanners, modems, and tablets saw limited use—suggesting untapped potential for data management and decision-making. Minimal reliance on fax machines and projectors reflected a shift toward digital communication and paperless processes. To fully leverage ICT in service delivery, gaps in adoption must be addressed through improved infrastructure, ongoing training, and promotion of a digital-first work culture. Strategic investment in digital transformation remains essential for sustainable, efficient, and citizen-centered public services.

5.0 Recommendations

Based on the findings of the research project, several recommendations are made to enhance ICT use and improve service delivery within Meru County's civil service. The study recommends that the county government's ICT heads consider implementing a comprehensive training program to help staff fully utilize ICT tools. This should include mandatory, role-tailored training. Training should cover not only basic ICT skills but also advanced applications relevant to various departments. Regular workshops and online training modules should be integrated to accommodate diverse learning preferences. The county government's senior administrative staff should reward employees who use ICT tools effectively in their daily work. These could include opportunities for job promotion, performance bonuses, or recognition

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initiatives. Encouraging employees to incorporate ICT into their work procedures fully can improve overall output and service quality. The county government should invest in modern technology and allocate funds for the acquisition and ongoing maintenance of ICT equipment to resolve

disparities in access to contemporary ICT tools. This includes not only desktop computers but also modems, printers, and scanners. To preserve efficiency and effectiveness, ensure that every department has access to the latest technologies.

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