



**INFORMATION AND COMMUNICATION TECHNOLOGIES MANAGEMENT
AND HEALTHCARE PERFORMANCE OF LEVEL IV PUBLIC HOSPITALS IN
MACHAKOS COUNTY IN KENYA**

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ABSTRACT

The main objective of this study is to establish the influence of ICT management on healthcare performance of Level IV public hospitals in Machakos County in Kenya. Specifically, the study sought to establish the effect of social media on healthcare performance of Level IV public hospitals in Machakos County in Kenya, to assess the effect of ICT systems on healthcare performance of Level IV public hospitals in Machakos County in Kenya. This study adopted a descriptive research design. This was conducted in Level IV public hospitals in Machakos County. According to the Ministry of Health Report (2022), Machakos County has 5 level 4 hospitals which are Ndithini Level 4 Hospital, Kalama Level 4, Mutituni Level 4 Hospital, Kimiti Level 4 Hospital and Mavoko Level 4 Hospital. The total target population was 150 respondents comprising of heads of departments and assistant heads. In this study, due to the small size of the study population, the census sampling approach was used. This research used a questionnaire to collect primary data. The study also conducted pilot test to test the validity and the reliability of the data collection instrument. The data collection instrument generated both qualitative and quantitative data. The study used both descriptive and inferential statistics for data analysis with the aid of Statistical Package for Social Sciences (SPSS version 25). Descriptive statistics such as mean, standard deviation, frequency and percentages were used in this study. In relation to inferential statistics, the study used correlation analysis. This was used to establish the relationship between the independent and the dependent variables. Data was then presented in tables, bar charts and pie charts for ease of interpretation. From the findings, the study concludes that social media has a positive and significant effect on healthcare performance of Level IV public hospitals in Machakos County in Kenya. In addition, the study concludes that ICT systems have a positive and significant effect on healthcare performance of Level IV public hospitals in Machakos County in Kenya. Based on the findings, the study recommends that the management of Level IV public hospitals in Kenya should implement a robust social media strategy. By actively engaging with the community on platforms such as Facebook, Twitter, and Instagram, these hospitals can improve public awareness about their services, provide timely health information, and facilitate direct communication with patients.

Key Words: ICT management, Healthcare Performance, Level IV public hospitals, social media, ICT systems

Background of the study

The performance of public hospitals is a critical issue in the healthcare sector, impacting the overall health outcomes of a population (Arslan & Zaman, 2020). Public hospitals are primarily funded by the government and are intended to provide accessible and affordable healthcare services to all citizens. However, these institutions often face numerous challenges that can hinder their performance. Public hospitals play a crucial role in ensuring healthcare accessibility and equity, especially for marginalized and low-income populations. Evaluating their performance helps identify gaps in service delivery and areas needing improvement to ensure equitable healthcare access. The performance of public hospitals is heavily influenced by government policies and the allocation of financial resources. Insufficient funding, mismanagement of resources, and bureaucratic inefficiencies can adversely affect the quality of care provided (Uwonkunda, Safari & Abuto, 2023).

ICT (Information and Communications Technology) management refers to the oversight, administration, and governance of technology resources and systems within an organization to support and enhance its operations and objectives. This encompasses a wide range of activities, including the planning, deployment, maintenance, and optimization of information technology (IT) and communication systems. Effective ICT management ensures that technology aligns with the organization's strategic goals, operates efficiently, and provides secure and reliable services. ICT management in the context of social media involves overseeing the platforms and tools that organizations use to engage with their audience, manage their online presence, and analyze social media metrics. Effective management ensures that social media strategies align with organizational goals, enhance brand visibility, and facilitate communication with stakeholders. This includes scheduling and publishing content, monitoring engagement, responding to customer inquiries, and analyzing data to inform future strategies. Moreover, it involves ensuring data privacy and security, particularly in managing user-generated content and interactions (Koori, Murithii & Mbebe, 2020).

ICT systems management encompasses the administration of an organization's core IT systems, including hardware, software, databases, and networks. This involves regular maintenance, updates, and troubleshooting to ensure these systems operate efficiently and without interruption. Effective ICT systems management supports critical business functions, improves productivity, and reduces downtime. Key activities include system monitoring, performance tuning, backup and recovery procedures, and implementing cybersecurity measures to protect against data breaches and other threats. Proper management ensures that systems are scalable, reliable, and meet the organization's evolving needs (Macharia & Namusonge, 2021).

Statement of the Problem

The health sector is a critical component of any country's development and well-being. In Kenya, the health sector plays a vital role in improving the quality of life, reducing mortality rates, and promoting economic development by ensuring a healthy and productive population (Omondi, 2023). Effective healthcare services are essential for addressing the myriad health challenges faced by the population, including infectious diseases, maternal and child health issues, and non-communicable diseases. As such, the performance of healthcare institutions is of paramount importance to the overall health outcomes and development of the nation (Thuku, 2022).

In Machakos County, Level IV public hospitals, which are intended to provide comprehensive healthcare services, face significant challenges in their performance. Despite substantial investments, these hospitals often struggle with issues such as inadequate service delivery, long patient wait times, inefficient resource management, and suboptimal patient outcomes. According to the Machakos County Health Report (2023), over 40% of patients reported

dissatisfaction with the services provided by Level IV hospitals, citing long wait times and lack of essential medical supplies as primary concerns. Additionally, the report indicates that only 55% of healthcare targets were met in these hospitals, highlighting the need for improvements in healthcare performance (Odero, 2023).

ICT management has been identified as a critical factor influencing organizational performance across various sectors, including healthcare. Effective ICT management can lead to better data management, streamlined operations, improved communication, and enhanced decision-making processes. In the context of healthcare, ICT tools such as electronic health records (EHRs), telemedicine, and health information systems can significantly improve service delivery and patient care. For instance, a study by the World Health Organization (2022) found that hospitals with well-integrated ICT systems experienced a 30% reduction in patient wait times and a 25% increase in patient satisfaction. Therefore, understanding the influence of ICT management on the performance of Level IV public hospitals in Machakos County is crucial for developing strategies to enhance healthcare delivery and outcomes.

Various studies have been done on ICT management and organization performance. For instance; Arinaitwe and Kazaara (2024) in Kenya examined on ICT management on the performance of Sacco's. In Kenya, Mukangu and Ndugu (2020) conducted a study on the role of ICT management on organizational performance and King'oo, Kimencu and Kinyua (2020) in Kenya assessed on the empirical analysis of effect of ICT management on performance of private universities. However, none of these studies focused on social media, ICT systems, on healthcare performance of Level IV public hospitals in Machakos County in Kenya. To fill the highlighted gaps, the current study seeks to determine the influence of ICT management (social media, ICT systems) on healthcare performance of Level IV public hospitals in Machakos County in Kenya.

Objective of the Study

The main objective of this study is to establish the influence of ICT management on healthcare performance of Level IV public hospitals in Machakos County in Kenya. The study was guided by the following specific objectives;

- i. To establish the effect of social media on healthcare performance of Level IV public hospitals in Machakos County in Kenya
- ii. To assess the effect of ICT systems on healthcare performance of Level IV public hospitals in Machakos County in Kenya

LITERATURE REVIEW

Theoretical Review

Diffusion of Innovations Theory

The Diffusion of Innovation theory, developed by Everett Rogers in 1962, is a seminal framework that explains how new ideas, technologies, products, or services spread and are adopted within a society or market. At its core, the theory categorizes individuals into distinct adopter categories based on their willingness and propensity to adopt innovations at different stages of their lifecycle. These adopter categories include innovators, early adopters, early majority, late majority, and laggards. Innovators are the first to embrace new products, driven by a strong curiosity and willingness to take risks (Arslan & Zaman, 2020). They often serve as influencers and opinion leaders within their social circles, paving the way for early adopters who follow suit. Understanding the dynamics of adopter categories can help firms tailor their marketing strategies and product positioning to effectively target each group. For instance, targeting innovators and early adopters through product demonstrations, exclusive launches, or

influencer collaborations can generate initial buzz and create a ripple effect among the broader market segments (Arslan & Zaman, 2020).

Moreover, the Diffusion of Innovation theory highlights key factors that influence the adoption of new products. These factors include the perceived relative advantage of the innovation over existing alternatives, its compatibility with consumer lifestyles and preferences, the complexity involved in adopting the innovation, trialability (the ability to test the innovation before committing), and observability (the visibility of its benefits). Firms in Nairobi can leverage these factors by emphasizing the unique benefits of their products, ensuring ease of use and integration into daily routines, offering trial opportunities, and showcasing tangible benefits that resonate with local consumers. Furthermore, the theory underscores the importance of timing and strategic planning in the product lifecycle. By recognizing where a product stands in terms of adoption and market saturation, firms can adjust their strategies to maximize adoption rates and sustain long-term success. This could involve adapting pricing strategies, expanding distribution. One key assumption of the Diffusion of Innovation theory is the idea of a homogeneous and rational population. It assumes that individuals within a social system are relatively uniform in their behavior and decision-making processes when adopting innovations (Mutua & Muthimi, 2020). However, in reality, human behavior is often diverse and influenced by a multitude of factors such as culture, socioeconomic status, and personal values. This assumption overlooks the complexity and variability in human responses to innovation, which can lead to an oversimplified view of adoption processes. Another assumption is the linear and predictable nature of diffusion. The theory suggests that innovations follow a predictable path from early adopters to laggards, characterized by distinct stages (innovation, early adoption, early majority, late majority, and laggards) (Abubakar, 2024). While this framework can provide a useful heuristic, it fails to account for the nonlinear and chaotic nature of diffusion in real-world contexts. Factors such as sudden shifts in public opinion, unexpected events, or changes in technology can disrupt this linear progression, making diffusion more complex and less predictable than the theory suggests (Uwonkunda, Safari & Abuto, 2023).

Critiques of the Diffusion of Innovation theory also highlight its focus on the adoption of discrete innovations rather than broader social processes. The theory tends to emphasize the characteristics of innovations themselves (such as relative advantage, compatibility, complexity, trialability, and observability) as determinants of adoption, often neglecting broader structural factors that shape diffusion patterns. Social and institutional contexts, power dynamics, and political influences can significantly impact how innovations spread, yet these factors are often marginalized within the theory's framework. Furthermore, the theory has been criticized for its static view of innovation adoption over time. It assumes that once an innovation reaches widespread adoption, its diffusion process ends. However, in today's rapidly changing world, innovations often evolve and adapt over time, leading to ongoing cycles of adoption, adaptation, and abandonment. The theory's focus on the initial adoption phase may thus overlook the dynamic and iterative nature of innovation diffusion in contemporary society (Koori, Murithii & Mbebe, 2020). This theory is relevant in establishing the effect of social media on healthcare performance of Level IV public hospitals in Machakos County in Kenya.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theoretical framework developed to understand and predict how users adopt and use new information technology. Initially proposed by Fred Davis (1986), TAM suggests that the adoption of technology is primarily driven by two main factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which a person believes that using a particular technology will enhance their job performance or productivity. This perception hinges on whether the technology is perceived as valuable and beneficial in achieving specific goals or tasks. For instance, if employees believe that adopting a new software system will streamline their workflow, increase efficiency, or

improve decision-making, they are more likely to view it as useful and consequently more inclined to adopt it (Faheem & Siddiqui, 2020).

Perceived ease of use, on the other hand, pertains to the extent to which a person believes that using the technology will be effortless and uncomplicated. It considers factors such as the simplicity of the interface, the ease of learning how to use the technology, and the clarity of its functions (Faheem & Siddiqui, 2020). If potential users perceive that the technology is easy to understand and integrate into their work routines without requiring significant effort or training, they are more likely to perceive it as easy to use and thus more likely to adopt it. According to TAM, these two perceptions—usefulness and ease of use—directly influence users' attitudes towards adopting technology. These attitudes, in turn, shape their behavioral intentions to adopt the technology. In other words, if individuals believe that a technology is both useful and easy to use, they are more likely to develop a positive attitude towards using it and subsequently intend to adopt it. This intention then leads to actual adoption behavior (Abubakar, 2024).

The Technology Acceptance Model (TAM) has several assumptions underlying its framework, which provide the basis for understanding user behavior towards adopting new technologies. One fundamental assumption of TAM is that perceived usefulness and perceived ease of use are the primary determinants of users' attitudes and intentions towards technology adoption. This assumption suggests that users are rational decision-makers who carefully weigh the benefits and ease of using a technology before deciding to adopt it (Arika & Moronge, 2020). By focusing on these two factors, TAM assumes that other potential influences, such as social norms, organizational factors, or emotional aspects, are secondary in shaping technology adoption behaviors. Another assumption of TAM is that users' attitudes and intentions towards technology adoption can be reliably measured and predicted based on their perceptions of usefulness and ease of use. This assumption implies those users' perceptions are stable and predictable, allowing researchers and practitioners to assess and forecast adoption behavior accurately. TAM also assumes that user behavior is driven by cognitive processes and rational evaluations, rather than emotional or contextual factors that may also play significant roles in shaping adoption decisions (Mutua & Muthimi, 2020).

Critiques of TAM primarily focus on its oversimplification of the complex factors influencing technology adoption. Critics argue that TAM may overlook other critical factors, such as organizational policies, social influences, cultural norms, and individual differences, which can significantly impact users' adoption decisions. For instance, while perceived usefulness and ease of use are important, users may also be influenced by peer pressure, resistance to change, compatibility with existing systems, and perceived risks associated with adopting new technologies. Moreover, TAM has been criticized for its static nature in capturing user behavior over time (Faheem & Siddiqui, 2020). Technologies and user perceptions can evolve rapidly, making it challenging to rely solely on initial perceptions of usefulness and ease of use to predict long-term adoption and sustained use. Critics suggest that incorporating dynamic and contextual factors into TAM could enhance its predictive power and relevance in understanding technology adoption in diverse settings (Kipkemei & Mose, 2024). This theory is relevant in assessing the effect of ICT systems on healthcare performance of Level IV public hospitals in Machakos County in Kenya.

Conceptual Framework

A conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under scrutiny and to communicate this. When clearly articulated, a conceptual framework has potential usefulness as a tool to assist a researcher to make meaning of subsequent findings (Tromp & Kombo, 2019). The conceptualization of variables in academic study is important because it forms the basis of testing hypothesis and

coming up with generalization in the findings of the study. The operationalization of the variables is shown in Figure 2.1.

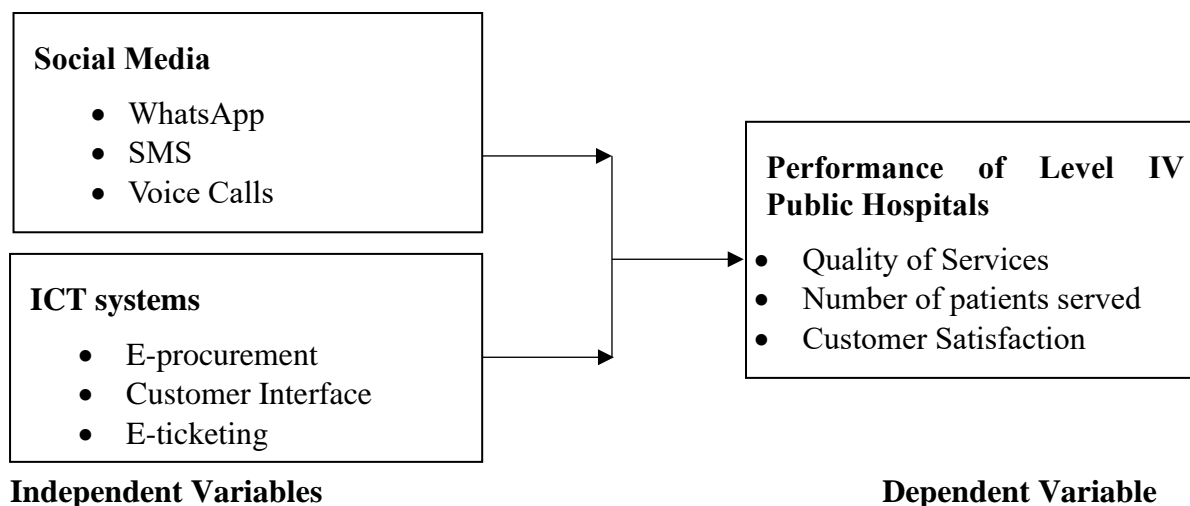


Figure 2. 1: Conceptual Framework

Social Media

Social media refers to digital platforms and technologies that enable individuals and communities to create, share, and exchange information, ideas, and content in virtual networks and communities (Macharia & Namusonge, 2021). These platforms typically allow users to create profiles, connect with others, and interact through various forms of communication such as text, images, videos, and links. Social media facilitates real-time interaction and engagement among users, regardless of geographical location, fostering virtual communities and networks based on shared interests, relationships, or professional affiliations (Arika & Moronge, 2020).

WhatsApp, a messaging application owned by Facebook, has revolutionized instant messaging by enabling users to send text messages, images, videos, and documents over the internet rather than traditional SMS networks. It operates through an internet connection, making it cost-effective for users to communicate globally without incurring SMS charges. WhatsApp also supports group chats, voice messages, and video calls, fostering real-time, multimedia-rich interactions among individuals, groups, and businesses (Arslan & Zaman, 2020).

SMS (Short Message Service), commonly known as text messaging, remains a ubiquitous form of communication despite the rise of internet-based messaging apps like WhatsApp. SMS operates through cellular networks and is limited to text-based messages up to 160 characters in length. It is widely used for its simplicity, reliability, and universal compatibility across mobile devices, making it a preferred method for quick, concise communications such as notifications, alerts, and personal messages (Uwonkunda, Safari & Abuto, 2023).

Voice calls, whether traditional phone calls or VoIP (Voice over Internet Protocol) calls, provide a direct and personal means of communication that transcends written text. While SMS and messaging apps like WhatsApp offer convenience and asynchronous communication, voice calls enable real-time conversations that convey nuances, emotions, and tone of voice. Traditional phone calls use cellular networks for connectivity, while VoIP calls utilize the internet, offering cost-effective or even free calling options, especially for international communications (Koori, Murithii & Mbebe, 2020).

ICT Systems

ICT (Information and Communications Technology) systems refer to the technologies, infrastructure, and components that enable the processing, storage, and communication of information electronically (Chebet & Kihara, 2022). These systems encompass a wide range of hardware, software, networks, and services that work together to manage and deliver digital data and communications within organizations, communities, and across the globe (Faheem & Siddiqui, 2020).

E-procurement refers to the use of electronic systems and technologies to automate and streamline the procurement process within organizations. Traditionally, procurement involved manual processes such as paper-based requests, approvals, and purchasing. E-procurement systems digitize these processes, allowing businesses to manage procurement activities online. Benefits include reduced paperwork, faster processing times, better transparency in procurement activities, improved vendor management, and potential cost savings through better negotiation and sourcing strategies. These systems also integrate with inventory management and financial systems, providing a comprehensive solution for procurement departments (Abubakar, 2024).

Customer interface refers to the various touch points through which customers interact with a company or organization. In the digital age, customer interfaces have expanded beyond physical locations to include websites, mobile apps, social media platforms, and other digital channels. A seamless customer interface is crucial for businesses to provide a positive user experience, facilitate transactions, offer customer support, and build brand loyalty. Companies invest in user-friendly interfaces that are responsive, intuitive, and personalized, catering to the preferences and behaviors of their customers. Effective customer interfaces enhance engagement, enable efficient communication, and empower customers to access products, services, and information conveniently (Mutua & Muthimi, 2020).

E-ticketing refers to the electronic issuance and management of tickets for various services such as transportation, events, and attractions. E-ticketing systems have replaced traditional paper tickets with digital equivalents, offering several advantages. For travelers, e-ticketing simplifies booking processes, enables self-service options, and provides instant confirmation and access to tickets via email or mobile devices. It reduces administrative overhead for service providers, improves ticket distribution efficiency, minimizes fraud through secure digital transactions, and enhances customer satisfaction with smoother check-in processes. E-ticketing also supports real-time updates and notifications, facilitating better customer communication and service delivery (Kipkemei & Mose, 2024).

Empirical Review

Social Media and Healthcare Performance

Arslan and Zaman (2020) assessed on the impact of social media on organizational culture: evidence from Pakistan. A self-administered survey is used to collect responses from employees working at different organizations through e-mail and various social media tools. The study found that organizational culture is affected by development and application of social media for business related activities in organizations. The study concluded that social media has a positive impact on organizational overall culture. Uwonkunda, Safari and Abuto (2023) investigated on the contribution of social media usage on performance of selected upmarket hotels based in Kigali-Rwanda. The study used a descriptive research design. The target population was Seven upmarket hotels with 4-5-stars which were used for collection of data. The study found that social media networks have significantly contributed to the performance of the selected upmarket hotels in Kigali and have been used for marketing purposes to attract

customers. The study concluded that social media has had a positive impact on the performance of upmarket hotels.

Koori, Murithii and Mbebe (2020) conducted a study on the impact of social media usage on organizational performance of SACCOS in Kenya (a case study of KUSCCO SACCO affiliates). This study was based on descriptive research design. The target population was 100 Saccos affiliated with Kuscco within Nairobi region and a sample of 132 respondents was selected using simple random sampling technique. The study found that social media communication usage, knowledge sharing, information search and social media advertisement are positively and significantly related with organizational performance of Saccos. The study concluded that social media communication usage affects organizational performance of Saccos in Kenya.

Macharia and Namusonge (2021) researched on the role of social media on the performance of small and medium enterprises: a review of literature. The purpose of this study was to review the literature on the role of social media on SMEs performance. The study found that social media plays a positive role in enhancing SME's performance. The study concluded that the effectiveness of using social media to enhance SMEs ' performance is dependent on the role played by the SMEs management and the government.

Arika and Moronge (2020) examined on the influence of social media usage on performance in hospitality industry in Kenya: a case of Kenyatta International Convention Centre. The study adopted a descriptive survey and the targeted population was 70 employees drawn from different departments. A census survey design was carried out. The study found that there exist a strong positive relationship between the social media usage and performance in hospitality industry. The study concluded that performance in hospitality industry in Kenya was affected by social media usage.

ICT Systems and Healthcare Performance

Faheem and Siddiqui (2020) conducted a study on the impact of e-procurement practices on supply chain performance: a case of b2b procurement in Pakistani Industry. Data was collected from 239 respondents doing jobs related to supply chain management using questionnaire. The study found that electronic design and electronic evaluation has a positive and significant impact on supply chain performance whereas, electronic negotiation and electronic sourcing has no significant impact on supply chain performance. The study concluded that electronic design and electronic evaluation has more effect on supply chain performance.

Abubakar (2024) examined on the impact of e-procurement implementation on supply chain performance: a case study of Nigeria. This study adopted a desk methodology. The study found that e-procurement adoption contributes to improved efficiency, transparency, and cost effectiveness within supply chains. The study concluded that the implementation of e-procurement systems has a significant impact on supply chain performance in Nigeria.

Mutua and Muthimi (2020) researched on information and communication technology systems and processes strategy and performance of Kenya railways corporation, Kenya. The study adopted a descriptive research design. The target population consisted of 250 employees of Kenya Railways based at the Headquarters in Nairobi. Stratified random sampling technique was used to select a sample of 75 respondents. The study found that ICT had improved the efficiency in operations of KRC. The study concluded that ICT systems influenced the performance of KRC to a great extent.

Chebet and Kihara (2022) assessed on the influence of e-procurement on procurement performance in manufacturing firms in Nairobi County. This study used of a descriptive

explanatory research design. The study population was 1,142 employees in the procurement and IT departments in the manufacturing firms. The study used the Yamane formula to calculate the study sample size. The study sample size was 296 respondents. The study found that e-procurement had a positive influence on procurement performance in manufacturing firms. The study concluded that e-procurement positively influences procurement performance in manufacturing firms in Nairobi City County.

RESEARCH METHODOLOGY

This study adopted a descriptive research design. This was conducted in Level IV public hospitals in Machakos County. According to the Ministry of Health Report (2022), Machakos County has 10 level 4 hospitals. These were the units of analysis in the study. The total target population was 150 respondents comprising of heads of departments and assistant heads. In this study, due to the small size of the study population, the census sampling approach was used. Census sampling is a technique of statistical sampling that involves collecting data from every member of a population (Särndal, Swensson & Wretman, 2019). Therefore, census approach was appropriate for selecting the sample for this study, and the sample size for the study was 150 respondents.

This research used a questionnaire to collect primary data. Fifteen questionnaires were piloted that represents 10% of the target population. The pilot group was selected from Makueni County because they share similar characteristics with its neighbor, Machakos County. Quantitative and qualitative data was generated from the closed-ended and open-ended questions, respectively. Qualitative data was analysed on thematic basis and the findings provided in a narrative form. Inferential and descriptive statistics were employed for analysis of quantitative data with the assistance of Statistical Package for Social Sciences (SPSS version 25). Inferential data analysis was conducted by use of Pearson correlation coefficient, and multiple regression analysis.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

The researcher sampled 150 respondents who were each administered with the questionnaires. From the 150 questionnaires 130 were completely filled and returned hence a response rate of 86.7%. The response rate was considered as suitable for making inferences from the data collected. As indicated by Metsamuuronen (2019), a response rate that is above fifty percent is considered adequate for data analysis and reporting while a response rate that is above 70% is classified as excellent. Hence, the response rate of this study was within the acceptable limits for drawing conclusions and making recommendations.

Descriptive Statistics

Social Media and Healthcare Performance

The first specific objective of the study was to establish the effect of social media on healthcare performance of Level IV public hospitals in Machakos County in Kenya. The respondents were requested to indicate their level of agreement on statements relating to social media and healthcare performance of Level IV public hospitals in Machakos County in Kenya. The results were as presented in Table 1.

From the results, the respondents agreed that WhatsApp facilitates instant messaging and multimedia sharing for personal communication and group chats ($M=3.957$, $SD= 0.875$). In addition, the respondents agreed that WhatsApp enhances connectivity and convenience through real-time interactions and communication ($M=3.948$, $SD= 0.823$). Further, the respondents agreed that SMS is used for quick and direct text messaging, providing instant communication and updates ($M=3.909$, $SD= 0.635$).

The respondents also agreed that SMS remains a reliable method for sending concise messages and notifications efficiently ($M=3.804$, $SD=0.671$). Further, the respondents agreed that Voice calls enable real-time conversations and clear communication for personal and business interactions ($M=3.801$, $SD=0.793$). The respondents also agreed that Voice calls support interactive communication, fostering connections and effective information exchange ($M=3.787$, $SD=0.776$).

Table 1: Social Media and Healthcare Performance

	Mean	Std. Deviation
WhatsApp facilitates instant messaging and multimedia sharing for personal communication and group chats.	3.957	0.875
WhatsApp enhances connectivity and convenience through real-time interactions and communication	3.948	0.823
SMS is used for quick and direct text messaging, providing instant communication and updates.	3.909	0.635
SMS remains a reliable method for sending concise messages and notifications efficiently.	3.804	0.671
Voice calls enable real-time conversations and clear communication for personal and business interactions.	3.801	0.793
Voice calls support interactive communication, fostering connections and effective information exchange	3.787	0.776
Aggregate	3.868	0.762

ICT Systems and Healthcare Performance

The second specific objective of the study was to assess the effect of ICT systems on healthcare performance of Level IV public hospitals in Machakos County in Kenya. The respondents were requested to indicate their level of agreement on the statements relating to ICT systems and healthcare performance of Level IV public hospitals in Machakos County in Kenya. The results were as shown in Table 2

From the results, the respondents agreed that e-procurement systems streamline purchasing, reducing costs and enhancing procurement efficiency ($M=3.902$, $SD=0.897$). In addition, the respondents agreed that e-procurement ensures transparency and improves vendor management through automated processes ($M=3.884$, $SD=0.731$). Further, the respondents agreed that a user-friendly customer interface enhances satisfaction and engagement with intuitive design and easy navigation ($M=3.843$, $SD=0.763$).

The respondents also agreed that effective customer interfaces foster loyalty by providing seamless interactions and personalized experiences ($M=3.816$, $SD=0.641$). In addition, the respondents agreed that e-ticketing simplifies booking processes, offering convenience and flexibility to users ($M=3.736$, $SD=0.675$). The respondents agreed that the adopting e-ticketing systems improves operational efficiency and customer service through automation ($M=3.721$, $SD=0.866$).

Table 2: ICT Systems and Healthcare Performance

	Mean	Std. Deviation
E-procurement systems streamline purchasing, reducing costs and enhancing procurement efficiency.	3.902	0.897
E-procurement ensures transparency and improves vendor management through automated processes	3.884	0.731
A user-friendly customer interface enhances satisfaction and engagement with intuitive design and easy navigation.	3.843	0.763
Effective customer interfaces foster loyalty by providing seamless interactions and personalized experiences	3.816	0.641
E-ticketing simplifies booking processes, offering convenience and flexibility to users.	3.736	0.675
Adopting E-ticketing systems improves operational efficiency and customer service through automation.	3.721	0.866
Aggregate	3.817	0.762

Healthcare Performance

The respondents were requested to indicate their level of agreement on various statements relating to healthcare performance of Level IV public hospitals in Machakos County in Kenya. The results were as presented in 2.

From the results, the respondents agreed that the hospital provides timely and effective treatment for patients (M=3.885, SD= 0.887). In addition, the respondents agreed that medical staff at the hospital demonstrates a high level of professional competence (M=3.808, SD= 0.745). The respondents also agreed that the hospital is capable of handling a high volume of patients effectively (M=3.787, SD= 0.623).

Further, the respondents agreed that there are adequate resources and staff available to manage patient load during peak times (M=3.720, SD= 0.768). The respondents agreed that operational patients are satisfied with the overall quality of care provided by the hospital (M=3.719, SD=0.756). The respondents also agreed that patients feel that their concerns and needs are addressed promptly by the hospital staff (M=3.704, SD=0.567).

Table 3: Healthcare Performance

	Mean	Std. Deviation
The hospital provides timely and effective treatment for patients.	3.885	0.887
Medical staff at the hospital demonstrates a high level of professional competence.	3.808	0.745
The hospital is capable of handling a high volume of patients effectively.	3.787	0.623
There are adequate resources and staff available to manage patient load during peak times.	3.720	0.768
Patients are satisfied with the overall quality of care provided by the hospital.	3.719	0.756
Patients feel that their concerns and needs are addressed promptly by the hospital staff.	3.704	0.567
Aggregate	3.771	0.724

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (social media, ICT systems) and the dependent variable

(healthcare performance of Level IV public hospitals in Machakos County in Kenya). Pearson correlation coefficient range between zero and one, where by the strength of association increase with increase in the value of the correlation coefficients.

Table 4: Correlation Coefficients

		Healthcare Performance	Social Media	ICT Systems
Healthcare Performance	Pearson Correlation			
	Sig. (2-tailed)			
	N	130		
Social Media	Pearson Correlation	.805**	1	
	Sig. (2-tailed)	.003		
	N	130	130	
ICT Systems	Pearson Correlation	.815**	.297	1
	Sig. (2-tailed)	.000	.060	
	N	130	130	130

From the results, there was a very strong relationship between social media and healthcare performance of Level IV public hospitals in Machakos County in Kenya ($r = 0.805$, p value = 0.003). The relationship was significant since the p value 0.003 was less than 0.05 (significant level). The findings are in line with the findings of Arslan and Zaman (2020) who indicated that there is a very strong relationship between social media and healthcare performance.

Moreover, there was a very strong relationship between ICT systems and healthcare performance of Level IV public hospitals in Machakos County in Kenya ($r = 0.815$, p value = 0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the findings of Faheem and Siddiqui (2020) who indicated that there is a very strong relationship between ICT systems and healthcare performance.

Regression Analysis

Table 5: Regression Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.335	0.085		3.941	0.000
social media	0.345	0.089	0.344	3.876	0.002
ICT systems	0.361	0.093	0.362	3.882	0.001

The regression model was as follows:

$$Y = 0.335 + 0.345X_1 + 0.361X_2$$

According to the results, social media has a significant effect on healthcare performance of Level IV public hospitals in Machakos County in Kenya ($\beta_1=0.345$, p value= 0.002). The relationship was considered significant since the p value 0.002 was less than the significant level of 0.05. The findings are in line with the findings of Arslan and Zaman (2020) who indicated that there is a very strong relationship between social media and healthcare performance.

The results also revealed that ICT systems has a significant effect on healthcare performance of Level IV public hospitals in Machakos County in Kenya, ($\beta_1=0.361$, p value= 0.001). The relationship was considered significant since the p value 0.001 was less than the significant level of 0.05. The findings are in line with the findings of Faheem and Siddiqui (2020) who indicated that there is a very strong relationship between ICT systems and healthcare performance.

Conclusions

The study concludes that social media has a positive and significant effect on healthcare performance of Level IV public hospitals in Machakos County in Kenya. Findings revealed that WhatsApp, SMS and Voice Calls influences healthcare performance of Level IV public hospitals in Machakos County in Kenya.

In addition, the study concludes that ICT systems have a positive and significant effect on healthcare performance of Level IV public hospitals in Machakos County in Kenya. Findings revealed that e-procurement, customer interface and e-ticketing influences healthcare performance of Level IV public hospitals in Machakos County in Kenya.

Recommendations

The study recommends that the management of Level IV public hospitals in Kenya should implement a robust social media strategy. By actively engaging with the community on platforms such as Facebook, Twitter, and Instagram, these hospitals can improve public awareness about their services, provide timely health information, and facilitate direct communication with patients.

In addition, the study recommends that the management of Level IV public hospitals in Kenya should implement advanced ICT systems. Integrating electronic health records (EHRs) and digital management systems enable efficient data handling, reduces administrative errors, and provides healthcare professionals with immediate access to patient information.

Suggestions for Further Studies

This study was limited to the influence of ICT management on healthcare performance of Level IV public hospitals in Machakos County in Kenya hence the study findings cannot be generalized to healthcare performance in private hospitals in Kenya. The study therefore suggests further studies on the influence of ICT management on healthcare performance in private hospitals in Kenya.

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