International Journal of
Project Management
(IJPM)

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International Journal of Project Management
ISSN 2520-4519 (Online)
Vol.6, Issue 3, pp 69 - 88, 2024

www.ajpojournals.org

Adoption of E-Health Records Management Systems as a Strategy to Improve Service Delivery in Public Hospitals in Kenya

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Article history

Submitted 09.05.2024 Revised Version Received 10.06.2024 Accepted 25.07.2024

Abstract

Purpose: To establish the extent to which the adoption of an electronic records management system influences service delivery in public hospitals in Kenya.

Materials and Methods: A descriptive research method, correlational research design, and mixed method of research were employed. The target population was all the 1207 professional staff working in Moi Teaching and Referral Hospital and Kenyatta National Hospital as well as 1841 outpatients treated in both hospitals between January and May. To select the 341 respondents of the research, a stratified random sampling technique was used. The researcher used secondary and primary data. Semi-structured questionnaires were distributed to the respondents to allow for the collection of primary data. Qualitative data was analyzed with the help of thematic analysis. Inferential and descriptive statistics were used in the analysis of quantitative data. Descriptive statistics that were used include mean, percentages, frequencies, and standard deviation. Inferential statistics that were used are multiple regression analysis, correlation analysis, and univariate regression analysis.

Findings: The correlation analysis results showed that there exists a positive correlation between the utilization of electronic records management and service delivery in public hospitals (r=0.733, p-value=0.000). In addition, regression analysis results showed that the utilization of electronic records management had a positive influence on service delivery in public hospitals in Kenya (β=0.715, p-value=0.000).

Implications to Theory, Practice and Policy: The study recommends that public hospitals in Kenya should fully adopt and utilize electronic record management as a way of improving efficiency in service delivery in terms of waiting time and loss of files.

Keywords: *I10: Electronic Records Management, L87: Service Delivery, L74: Public Hospitals*

1.0 INTRODUCTION

A decade ago, electronic health records (EHRs) were touted as key to increasing quality care. Today, providers are using data from patient records to improve quality outcomes through their care management programs. The utilization of electronic records management leads to: the automation of patient administrative functions like patient profile information, billing and scheduling of appointments, eliminates paper processes within a clinical setting and leads to the automation of clinical care functions like digital radiological imaging clinical notes, computerized prescriptions and online laboratory results [1]. This leads to cost-effectiveness, resource efficiency, and informed healthcare services that are available to all [2].

Both developed and developing countries are still adopting eHealth as a way of enhancing service delivery in public health facilities. In the United States, the Agency for Healthcare Research and Quality funded its first project in information technology in public health facilities in the year [3]. The agency since then has continually funded more than 150 projects with $250 million that make use of information technology to enhance healthcare provision by the year 2001 [4]. Information technology is often seen as the solution to many problems in Africa those in the health care included. Public hospitals in South Africa were facing various challenges, including poor systems of health care and poor provider networks, which led to poor health outcomes [1]. However, the utilization of eHealth in public healthcare facilities led to a reduction in transaction costs, improved human resource management as well as improved service delivery efficiency. Although only a few public hospitals have adopted information technology systems in Uganda, a study found that the use of information technology enhances the accuracy and timely provision of information compared to the manual systems in health facilities in Uganda [5].

Electronic health recording is the use of electronic means to come up with a digital version of the patient's record paper system. Compared to a paper-based system, an electronic records management system is real-time recording and comes up with records that are patient-centered making the information secure and available instantly to those who want to use them [6]. Managing health records electronically needs plans and the right decisions to be made throughout the entire cycle from the planning, processing, maintenance, distribution, storage, and retrieval processes of the records [7]. Currently, the healthcare industry, globally, is making significant progress in the utilization of electronic health management systems, which are expected to enhance the safety and quality of care and also be able to efficiently provide the best care. Healthcare facilities in both developed and developing countries have placed a lot of emphasis on the use of intelligent systems to enhance the provision of care and make the right clinical decisions [2]. In the United States, Electronic health record (EHR) systems can be used to change the healthcare recording system from a paper-based one to one that can use the clinical data and other available information to help the providers give their patients [3].

Statement of the Problem

The healthcare system in Kenya is characterized by poor provision of services although the Ministry of Health advocates for the provision of quality health services in Kenya ([2]. Currently, long queues of patients awaiting services and overcrowding are a common phenomenon in public hospitals. The average life expectancy in Kenya is 61.08 years, which is lower than the global life expectancy (68 years) [3]. In addition, maternal mortality in the year 2015 was 510 per 100,000

live births. Although this was a decrease from 605 per 100,000 live births, this is still high compared to developed countries average maternal mortality ratio of (239 per 100 000 live births).

The main causes of maternal mortality include inefficient healthcare systems, medical errors, and miscommunication of information [8]. One in every five Kenyans who walk into a hospital for treatment ends up dead or harmed due to medical errors [9]. Medical errors lengthen hospital stays and increase inpatient expenses and the total cost of treating a patient in a healthcare facility. Prescription errors in healthcare facilities in Kenya account for 70% of medication errors that can lead to serious effects on the patient's condition [8]. This indicates that maternal mortality, high cost of treatment, and increased length of stay in healthcare facilities, result from medical and prescription errors as well as inefficiencies in service delivery. Due to inefficiencies in the health sector in Kenya, many Kenyans have opted to travel out of the country to seek healthcare services. Kenyans spend an estimated $120 million every year seeking treatment outside the country which leads to a loss of revenue for the country [10].

Various studies in developed countries show that the utilization of eHealth in records management increases inefficiencies reduces cost and medical errors in healthcare service delivery. In the United States, the utilization of electronic health records management system lead to an increase in quality of healthcare service delivery in terms of efficiency and reduction of medical errors [8]. In the United Kingdom, utilization of electronic health records management system leads to reduction in hospital operating expenses and improvement in service delivery efficiency [4]. In Ghana, the utilization of electronic health management led to reduction in cost of service delivery [3]. In South Africa, found that the utilization of Information technology systems in public sector health facilities led to improvement in the efficiency of service delivery [1].

However, despite the slow utilization of eHealth in Kenya and poor healthcare service delivery, there is little empirical evidence showing the influence of the utilization of electronic health management system on service delivery in public hospitals. It is against this background that this study sought to assess the influence of the utilization of electronic health management system on service delivery in public hospitals in Kenya and the moderating influence of organizational monitoring and evaluation capacity.

The researcher sought to test the following alternate hypotheses:

H_{11}: Utilization of electronic records management has no significant influence on service delivery in public hospitals in Kenya.

2.0 LITERATURE REVIEW

Utilization of Electronic Records Management and Service Delivery in Public Hospitals

Delivering quality healthcare services has a significant influence on customer satisfaction costs and the recovery of patients. Medical healthcare services include services that are provided by physicians, hospitals, dentists, pharmacies, durable medical equipment, and vision. Medical healthcare services that are delivered in hospitals include emergency service, inpatient care, work-related medical services, medical rescue service, rehabilitative care, dispensary care, preventive care, and provision of medicines and medical devices [12]. Quality of health care services may take the form of interpersonal and technical quality, and amenities. Technical quality is how effective the care is in coming up with achievable quality services. Interpersonal quality is the

accommodation available for the patients and whether the facility can meet their preferences. Amenities are the features that the organizations that provide the needed services have such as comfort, physical surroundings, and the way the health facility provides its services [12]. The measures of health service delivery include maternal life expectancy, child mortality rate, mortality rate, and cost of health care [13].

The quality health measures of service delivery can assess care across the world and can fall into categories such as structure, process, outcome, and patient experience. Health expectancy is highest in Japan (82 years), Australia (82 years), and Canada (80 years). In Africa, the life expectancy in Tanzania, Uganda, and Ghana is 63 years, 59 years, and 63 years respectively. The average global life expectancy is 68 years, which is higher than life expectancy in Kenya (61.08) [12]. Medical errors are the third leading cause of death [14]. A medical error happens when an unintended medical act either of commission or omission happens or when an intended act fails to achieve its intended result. It could be due to failure to complete a planned action which is also called error of executions. It could also be due to errors of planning whereby the wrong plan is used to achieve a result or due to deviation from the recommended process which can lead to negative results on the patient. About 34% of adverse events among patients in developing countries were from therapeutic errors in relatively non-complex clinical situations [15].

In Kenya, there are over 4,700 health facilities and 51% of these are provided by the public sector [16]. The sector is made up of different levels of health facilities including national referral facilities, county referral facilities, district facilities, dispensaries, and health centers. There are only two national referral hospitals namely Moi Referral and Teaching Hospital in Eldoret and Kenyatta National Hospital in Nairobi. The poor state of health service delivery especially in public facilities has led to higher costs of care because of the inefficiencies which has led to patients seeking care from elsewhere including in private hospitals and abroad. Most public healthcare facilities are characterized by long queues, inefficiencies in service delivery, and high cost of service delivery [17].

The number of deaths for under five years children for the five years 2009-2014 was 52 deaths per 21,000 births [18]. This means that one in every 19 babies born in this period in Kenya died before attaining five years. The infant mortality rate was shown to be 39 deaths per 1,000 live births. The healthcare facilities in Kenya employed competent staff who were responsive to the needs of the patients [17]. The study also found that there was a high level of reliability of the services provided. It however found that communication was the dimension that had the greatest shortfall. This is because most of the facilities were still processing the patients manually. In addition, 80.4% of the pediatric patients on treatment for tuberculosis at Kenyatta National Hospital general pediatric wards received inappropriate dosage [16]. The next section presents a conceptual review of electronic health.

Records and information management (RIM) or as commonly known as records management is the process of managing an organization's records from their creation to their disposal in a professional manner [19]. This includes identifying, classifying, storing, securing, retrieving, tracking, and destroying or permanently preserving records. In a retrospective study, the comparison between paper-based and electronic-based health records in health facilities in Jordan was conducted in terms of content, documentation process, and structure [20]. A descriptive, comparative design was employed. Records from two public hospitals were audited. A total of 434

records from medical and surgical wards were analyzed, consisting of both paper-based and electronic health records. The results indicated that paper-based records had better quantity and quality of content compared to electronic health records. In addition, electronic health records performed better than paper-based records in terms of process and structure. Further, the study found that electronic health records were superior to paper-based records in terms of structure.

In Malaysia, the role of electronic records management on organizational performance was examined [21]. A quantitative approach was employed, integrating the Partial Least Squares (SEM-PLS) method. This approach encompasses various stages such as defining measurement items, collecting data from respondents, and conducting data analysis using SEM-PLS. The study used both measurement and structural model assessments to analyze the data. The study presents an empirically tested model that guides organizations in adopting ERMS, focusing on the influence of big data management. It identifies concerns regarding the integration of new technologies to support organizational performance. ERMS was found to significantly impact the organizational performance of firms.

In a systematic review of literature, the implementation of EMRs and their impact on service quality and patient satisfaction in Indonesia was examined [19]. A systematic review was conducted following the PRISMA guidelines. The literature search encompassed articles published between 2020 and 2023, sourced from reputable databases such as Scopus, Science Direct, and PubMed. Inclusion criteria consisted of national and international research articles written in English and published within the specified timeframe, relating to the effects of EMRs on service quality and patient satisfaction. The comparison between hospitals utilizing EMRs and those employing Paper Medical Records (PMR) revealed that the implementation of EMRs leads to more substantial improvements in service quality compared to PMRs. EMRs facilitate real-time access to patient information, allowing healthcare providers to update records promptly and accurately. This enhanced accessibility translates to increased patient comfort and reduced waiting times, ultimately contributing to greater healthcare efficiency.

Using a descriptive research design, the implementation of electronic medical records for service delivery in selected state hospitals in Southwest Nigeria was assessed [22]. The sample size of 397 participants, including strategic managers and operational staff, was determined to assess the current state of medical record systems in selected hospitals. Through a combination of purposive and stratified random sampling methods, the study collected data via questionnaires and employed descriptive statistical analysis to evaluate existing medical record systems. The findings revealed that most hospitals predominantly use paper-based systems, with only a few treatment areas utilizing fully electronic medical records. However, even in areas where EMR is implemented, there are issues with limited modules, staff readiness, and subpar performance.

In Nigeria, the effect of electronic health information system on medical records management in public healthcare institutions was examined [23]. The study employed both numerical and qualitative research philosophies, incorporating survey and case study research strategies, as well as cross-sectional and qualitative research designs. The findings indicated that despite heavy reliance on traditional paper-based record systems, respondents acknowledged the potential benefits of adopting eHIS, including reducing the risk of treatment errors, decreasing patient waiting times, enhancing timely communication among healthcare practitioners and improving overall healthcare service delivery.

In a case study design, impact of health records management on service delivery, focusing on a case study of Kisii Teaching and Referral Hospital (KTRH) was assessed [24]. The study focused on health record keeping and management at Kisii Teaching and Referral Hospital. Data collection involved the use of structured questionnaires and interview schedules to gather primary data from the respondents. By investigating the effects of health records management on service delivery at Kisii Teaching and Referral Hospital, this study aimed to shed light on the importance of efficient records management systems in healthcare settings. The findings indicated that health records management has a significant effect on service delivery in Kisii Teaching and Referral Hospital (KTRH).

The existing literature on electronic records management systems (ERMS) highlights significant improvements in service delivery across various regions, yet several research gaps remain. Future studies should expand geographical coverage to include more diverse contexts, particularly in Africa, and conduct sector-specific analyses to understand impacts in specialized medical fields. Longitudinal studies are needed to track long-term effects, while comparative research could evaluate the effectiveness of different ERMS platforms. The integration of ERMS with emerging technologies such as AI and IoT, and the exploration of patient and staff perspectives, remain underexplored. In addition, there is a need for detailed cost-benefit analyses, comprehensive policy implications, and focused studies on direct health outcomes. Understanding cultural and organizational factors influencing ERMS adoption will also provide valuable insights for optimizing implementation in public hospitals.

Theoretical Framework

The Unified Theory of Acceptance and Use of Technology (UTAUT) has four determinants of usage and intention and four moderators of important relationships. The model came up with four constructs that act as determinants of user acceptance and the behavior of the user, effort expectance, performance expectant, social influence, and facilitating conditions. The main moderators in the theory include experience, age, gender, and voluntariness. The model provides a clear explanation of how the behavior and intention determinants change with time [25]. In addition, it is important to make it clear that the key relationships in the theory are moderated.

Performance Expectancy refers to the degree to which an individual believes that using a particular system will help them to attain gains in job performance [26]. In the context of healthcare, studies have shown that healthcare professionals are more likely to adopt electronic records management systems if they believe these systems will improve their efficiency and effectiveness. For instance, performance expectancy is a strong predictor of technology adoption and usage intentions [14]. In the healthcare sector, the belief that electronic health records (EHRs) can streamline workflows, reduce errors, and enhance patient care quality is a significant motivator for adoption. A study corroborates this, indicating that perceived usefulness is a critical factor in the acceptance of health information technology [15].

Effort Expectancy is the degree of ease associated with the use of the system. This aspect is crucial in healthcare settings where medical professionals often have limited time to learn new systems [27]. Studies have highlighted that if electronic records management systems are perceived as user-friendly and easy to learn, they are more likely to be adopted. Venkatesh et al. (2003) emphasize that effort expectancy is particularly influential during the early stages of new technology adoption. In healthcare, studies show that ease of use significantly affects the acceptance and use

of electronic medical records among clinicians [16]. Simplifying the interface and providing adequate training can thus enhance the likelihood of successful implementation.

Social Influence refers to the degree to which individuals perceive that important others (such as peers, supervisors, or patients) believe they should use the new system. In healthcare, the endorsement and use of electronic records management systems by senior staff and respected colleagues can greatly influence other professionals to adopt the system. Social influence plays a crucial role in the adoption of new technologies, especially in environments where peer opinions are highly valued [14]. Studies suggest that in healthcare settings, the support and encouragement from colleagues and supervisors are significant predictors of technology adoption [17].

Facilitating Conditions refer to the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system [28]. For electronic records management systems in healthcare, this includes the availability of technical support, training programs, and the necessary hardware and software. Facilitating conditions are significant determinants of system usage [14]. In the healthcare sector, studies highlight that the availability of adequate resources and support systems is essential for the successful adoption of electronic health records [16]. Ensuring that healthcare providers have access to necessary tools and support can alleviate potential barriers to adoption.

Behavioral Intention to Use is a measure of the strength of one's intention to perform a specified behavior. In the context of electronic records management systems, it reflects the willingness of healthcare professionals to use these systems in their daily routines. Venkatesh et al. (2003) assert that behavioral intention is a strong predictor of actual system use. A research in healthcare settings confirms that when healthcare providers intend to use a system, they are more likely to integrate it into their practice [14]. Factors influencing this intention include perceived usefulness, ease of use, and social influences.

Actual Use refers to the degree to which the system is employed in real-world settings. In healthcare, the actual use of electronic records management systems can be measured by the frequency and extent of system usage by healthcare professionals. While behavioral intention is a strong predictor, actual use is influenced by practical factors such as system accessibility and reliability [14]. Studies show that even with high intention levels, issues like system downtime and user interface problems can affect the actual use of electronic health records [19]. Ensuring reliable and user-friendly systems is therefore crucial for sustained use.

User Satisfaction is an additional aspect that, while not explicitly part of UTAUT, plays a crucial role in the continued use of technology [26]. In the healthcare sector, user satisfaction with electronic records management systems can impact both the quality of patient care and the efficiency of healthcare delivery. The Information Systems Success Model highlights that user satisfaction is essential for the long-term success of information systems [30]. In healthcare, studies emphasize that satisfied users are more likely to continue using and fully leveraging electronic health records, leading to better service delivery and patient outcomes [18].

Conceptual Framework

Figure 1 is a diagrammatic presentation of the hypothesized relationships between the independent variables and the dependent variable. The dependent variable was service delivery in public hospitals and the independent variable was electronic records management. In Health care

facilities, the utilization of electronic records management enables systematic control of the creation, distribution, disposition, maintenance, and use of the information that is recorded and maintained and acts as evidence of business transactions. The use of electronic health records management improves efficiency and effectiveness in service delivery.

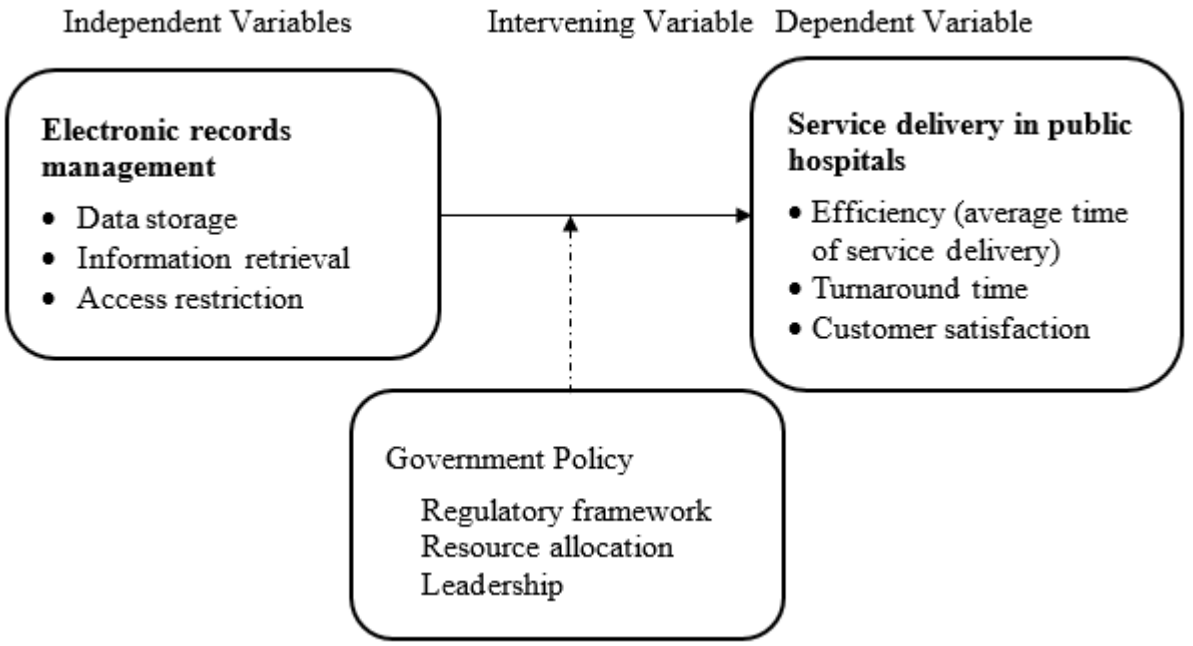

Figure 1: Conceptual Framework

3.0 MATERIALS AND METHODS

The pragmatism paradigm was adopted for this study and hence the study combined both qualitative and quantitative research methods. In addition, the study used a mixed-method research design, descriptive research design, and correlational research design. The target population was made up of all the professional employees working at Moi Teaching and Referral Hospital and Kenyatta National Hospital. The employees included medical specialists/consultants, medical doctors, nurses, pharmacists, clinical officers, medical physicists, laboratory technicians, public health officers, nutritionists, accountants, dentists, and registrars. There were 760 staff working in the hospital in various departments [31]. Moi Teaching and Referral Hospital has 438 staff working in various departments [32]. The target population included 1381 outpatients treated in KNH per day and 460 outpatients treated in MTRH per day. The target population was therefore 3048.

The Sample size was chosen with the help of Krejcie and Morgan's sample size determination formula.

The formula used for these calculations was:

$$n = \frac{x^2 NP(1-P)}{\left(ME^2(N-1)\right) + (x^2 P(1-P))}$$

Where:

n=sample size

x^2=Chi-square for the specified confidence level at 1 degree of freedom

N=Population size (0.5)

Desired margin of Error (Expressed as a proportion)

$$n = \frac{1.96^2 3048 * 0.5 * 0.5}{(0.05^2 * 3047) + (1.96^2 * 0.5 * 0.5)}$$

$$n = 341$$

The study used consecutive sampling to select the outpatients. In addition, a stratified random sampling method was used to select a sample of 341 staff from the target population. Proportionate sampling was used to select the number of staff per category (strata). Table 1 presents the distribution of the sample size.

Table 1: Sample Size

	Target population			Sample Size		
	KNH	**MTRH**	**Total**	**KNH**	**MTRH**	**Total**
Medical Specialist/Consultants	65	45	**110**	7	5	**12**
Medical Doctors	123	54	**177**	14	6	**20**
Nurses	208	56	**264**	23	6	**30**
Pharmacists	21	18	**39**	2	2	**4**
Clinical Officers	43	32	**75**	5	4	**8**
Medical Physicists	12	11	**23**	1	1	**3**
Laboratory Technicians	87	76	**163**	10	9	**18**
Public Health Officers	16	15	**31**	2	2	**3**
Nutritionists	65	45	**110**	7	5	**12**
Accountants	19	16	**35**	2	2	**4**
Dentists	54	32	**86**	6	4	**10**
Registrars	43	38	**81**	5	4	**9**
IT Staff	7	6	**13**	1	1	**1**
Outpatients	1381	460	**1841**	155	51	**206**
Total	**2144**	**904**	**3048**	**240**	**101**	**341**

The study used primary data, which was collected by use of key informant interview guides and semi-structured questionnaires. A pilot test was done to test the research instrument's validity and reliability. In this study pretesting involved 34 staff (10% of the sample size) in Mbagathi District Hospital. The improvement of validity was achieved by the use of expertise from 3 professionals in the field of study who gave recommendations to improve the questionnaire, particularly the supervisors. The reliability of the questionnaire was quantified using Cronbach's alpha. This measures internal consistency and was used to test the instruments' internal reliability.

The research instruments generated both qualitative and quantitative data. Qualitative data from the open-ended questions and interview guide was analyzed using thematic analysis. The findings were presented in a narrative form. Quantitative data analysis involved inferential and descriptive statistics and was conducted with the assistance of the Statistical Package for Social Sciences (SPSS version 22). Descriptive statistics included mean, standard deviation, percentages, and

frequencies. Multivariate regression analysis and Pearson's Product Moment Correlation analysis(r) were used to test the relationship between the study variables.

The regression model used was as follows;

H11: Utilization of electronic records management has a significant influence on service delivery in public hospitals in Kenya.

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Whereby:

Y = Service delivery in public hospitals

B0 = Constant

β1 =Coefficients of determination

X1 = Electronic records management

ε = Error term

4.0 FINDINGS

The sample size of the study comprised 206 outpatients and 135 personnel working in Moi Teaching and Referral Hospital and Kenyatta National Hospital. Out of 341 questionnaires that were distributed, 125 questionnaires were received from the personnel and 195 questionnaires were received from outpatients. The drop-off and pick-up-later method yielded a high response rate of 93.84%. A response rate of 50% should be considered average, 60% to 70% considered adequate while a response rate of above 70% should be regarded as excellent [33]. This implies that the response rate of 95.65% was adequate for analysis, conclusions, and reporting.

Service Delivery in Public Hospitals

Service delivery in public hospitals was the dependent variable and was measured by the use of efficiency (average time of service delivery), turnaround time, and customer satisfaction. The outpatients in Moi Teaching and Referral Hospital and Kenyatta National Hospital were requested to indicate their agreement level on various aspects of service delivery in public hospitals. The results were as presented in Table 2. With a mean of 4.041 (Std. dv = 2.292), the outpatients agreed that the hospital ensured proper services were provided to the patients. They also agreed that the hospital has well-trained and experienced doctors and nurses who provide health services as shown by a mean of 4.030 (Std. dv = 0.896). These findings are in line with previous findings that health facilities employed competent staff who were responsive to the needs of the patients [19].

Moreover, they agreed that the hospital provided a clean and conducive environment for the patients as shown by a mean of 3.953 (Std. dv = 0.915). Besides that, they agreed that the hospital provided high-quality services to the patients as shown by a mean of 3.933 (Std. dv = 0.963). In addition, they agreed that the hospital provided all the key health services required by patients as shown by a mean of 3.800 (Std. dv = 0.997). With a mean of 3.764 (Std. dv = 1.018) they agreed that the hospital ensured customers were satisfied with its services. Further, they agreed that the hospital provided timely service delivery to the patients as shown by a mean of 3.594 (Std. dv = 1.159). They also agreed that the waiting time in the hospital is low as shown by a mean of 3.549 (Std. dv = 1.189). However, they moderately agreed that there was a queuing of patients in the

hospital as shown by a mean of 3.333 (Std. dv = 1.338).

Table 21: Service Delivery in Public Hospitals (Outpatients)

	Mean	Std. Deviation
The hospital ensures customers are satisfied with its services	3.764	1.018
The hospital provides timely service delivery to the patients	3.594	1.159
There is queuing of patients in our hospital	3.333	1.338
The waiting time in the hospital is low	3.549	1.189
The hospital provides all the key health services required by patients	3.800	0.997
The hospital has well-trained and experienced doctors and nurses who provide health services	4.030	0.896
The hospital provides a clean and conducive environment for the patients	3.953	0.915
The hospital ensures proper services are provided to the patients.	4.041	2.292
The hospital provides high-quality services to the patients.	3.933	0.963
Composite Mean	**3.777**	**1.196**

The personnel in Moi Teaching and Referral Hospital and Kenyatta National Hospital were requested to indicate their agreement level on various aspects of service delivery in public hospitals. The results were as presented in Table 3. From the findings, the health personnel agreed with a mean of 4.360 (SD =0.901) that the hospitals ensure proper services are provided to the patients. They also agreed with a mean of 4.312 (SD=.874) that the hospitals have well-trained and experienced doctors and nurses who provide health services. In addition, the health personnel agreed with a mean of 4.232 (SD=0.951) that the hospitals provide a clean and conducive environment for the customers. Further, they agreed with a mean of 4.224 (SD=0.998) that the hospital staff is well dressed, clean, and neat portraying the image of the hospital. Also, the health personnel agreed with a mean of 4.224 (SD=1.014) that their hospitals ensure the patients get value for their money.

With a mean of 4.168 (SD=1.068), the health personnel agreed that their hospitals provide timely service delivery to the patients. They also agreed with a mean of 4.144 (SD=0.973) that the revenue in the hospitals has been increasing over the years. In addition, the personnel agreed with a mean of 4.120 (SD=0.955) that the hospital provides all the key health services required by patients. Further, they agreed with a mean of 4.088 (SD=1.164) that the hospitals ensure customer satisfaction. Also, they moderately agreed with a mean of 3.192 (SD=1.248) that there is no queuing of patients in their hospitals. The findings are contrary to previous findings indicating that public healthcare facilities in Kenya are characterized by long queues, inefficiencies in service delivery, and high cost of service delivery [23].

Table 3: Aspects of Service Delivery (Personnel)

	Mean	Std. Deviation
Our hospital ensures customer satisfaction	4.088	1.164
Our hospital provides timely service delivery to patients	4.168	1.068
Our hospital ensures the patients get value for money	4.224	1.014
The revenue in the hospitals has been increasing over the years	4.144	.973
There is no queuing of patients in our hospital	3.192	1.248
The hospital provides all the key health services required by patients	4.120	.955
The hospital has well-trained and experienced doctors and nurses who provide health services.	4.312	.874
The hospital staff are well dressed, clean, and neat portraying the image of the hospital.	4.224	.998
The hospital provides a clean and conducive environment for the customers	4.232	.951
The hospital ensures proper services are provided to the patients.	4.360	.901
Composite Mean	**4.106**	**1.014**

Utilization of Electronic Records Management

Utilization of electronic records management was measured in terms of data storage, information retrieval, and access restriction. The outpatients and the personnel were also requested to indicate the information technology used in the health facilities in records management. They indicated that they included cell phones (mobile phones), computers, electronic mail, landlines, tablets, and telephones. The health personnel indicated that information technology was also used in data sharing, regular auditing of patients' records for compliance, data filling, data storage, data retrieval, and assessment of customer satisfaction. These findings agree with previous findings indicating that an electronic records management system is real-time recording and comes up with records that are patient-centered making the information secure and available instantly to those who want to use them [20].

The outpatients in Moi Teaching and Referral Hospital and Kenyatta National Hospital were requested to indicate their agreement level on various aspects of electronic record management in public hospitals. The results were as presented in Table 4. With a mean of 4.174 (Std. dv = 0.725), the outpatients agreed that the use of electronic records enhanced efficiency in the management of records. Moreover, they also agreed that the use of electronic records enhances the accessibility of patients' information as shown by a mean of 4.148 (Std. dv = 0.748). They also agreed that the use of electronic records management enhanced information retrieval as shown by a mean of 4.133 (Std. dv =0.719). They also agreed that the use of electronic records facilitated regular auditing for the authenticity of patients' records as shown by a mean of 4.123 (Std. dv = 0.763). In addition, they agreed that the use of electronic records management reduced rampant cases of missing files for patients as shown by a mean of 4.123 (Std. dv = 0.840).

These findings collaborate with previous findings indicating that paper record management system led to the loss of time clerks and managers that were spent looking for misplaced and lost files, which was solved by the adoption of electronic records management [21]. Besides that, they agreed that the use of electronic records enhanced efficiency in the management of records as shown by

a mean of 4.056 (Std. dv = 0.914). With a mean of 4.030 (Std. dv = 0.818), they agreed that the use of electronic records management enhanced information sharing. Further, they agreed that accessing information systems is restricted to specific individuals as shown by a mean of 4.010 (Std. dv = 1.005). Furthermore, they agreed that the hospital has reduced the use of paper-based systems as shown by a mean of 3.969 (Std. dv = 0.842). Further, the implementation of EHR led to a reduction in missing records and reduced errors [19].

Table 4: Aspects of Electronic Record Management (Outpatients)

	Mean	Std. Deviation
The hospital has reduced the use of paper-based systems	3.969	.842
The use of electronic records management enhances information retrieval	4.133	.719
Accessing information systems is restricted to specific individuals	4.010	1.005
The use of electronic records management enhances information sharing	4.030	0.818
The use of electronic records enhances the accessibility of patients' information	4.148	0.748
The hospital uses electronic data storage of patients' information	4.071	0.809
The use of electronic records enhances efficiency in the management of records	4.174	0.725
The use of electronic records enhances efficiency in the management of records	4.056	0.914
The use of electronic records facilitates regular auditing for the authenticity of patients' records	4.123	0.763
The use of electronic records management reduces rampant cases of missing files for patients	4.123	0.840
Composite Mean	**4.0837**	**0.8183**

The health personnel in Moi Teaching and Referral Hospital and Kenyatta National Hospital were requested to indicate their agreement level on various aspects of electronic record management in public hospitals. The results were as presented in Table 5. The health personnel agreed with a mean of 4.328 (SD=0.830) that the use of electronic records management reduces rampant cases of missing files of patients in hospitals. They also agreed with a mean of 4.248(SD=0.867) that the use of electronic records enhances efficiency in the management of records in the hospitals. These findings agree with previous findings indicating that efficient management of records has enormous gains as it could make work easier, improve the corporate image, and enhance relations [22]. They further agreed with a mean of 4.264 (SD=0.899) that the use of electronic records management enhances information sharing. In addition, they agreed with a mean of 4.232 (SD=0.925) that the use of electronic records leads to easy accessibility to patients' information in the hospitals. These findings agree with previous findings indicating that Electronic health record systems enable health providers to provide better care to patients in an efficient manner [23]. Also, they agreed with a mean of 4.192 (SD=0.947) that there is awareness of the existence of the records management policy and procedure in the hospitals.

With a mean of 4.160 (SD=0.962) agreed that the use of electronic records facilitates regular auditing of patients' records for compliance. They also agreed with a mean of 4.104 (SD=0.974) that information access in information systems is restricted to specific individuals. Also, they

agreed with a mean of 4.096 (SD=0.987) that the use of electronic records management enhances information retrieval. In addition, the health personnel agreed with a mean of 4.088 (SD=0.942) that the hospital has reduced paper-based systems. Further, they agreed with a mean of 3.944 (SD=1.193) that their hospitals use electronic data storage.

Table 5: Utilization of Electronic Records Management (Personnel)

	Mean	Std. Deviation
Our hospital uses electronic data storage	3.944	1.193
The hospital has reduced paper-based systems	4.088	.942
The use of electronic records management enhances information retrieval	4.096	.987
Information access in information systems is restricted to specific individuals	4.104	.974
The use of electronic records management enhances information sharing	4.264	.899
There is awareness of existence of the records management policies and procedures in hospitals	4.192	.947
The use of electronic records enhances efficiency in the management of records in hospitals	4.248	.867
The use of electronic records management reduces rampant cases of missing files of patients in hospitals	4.328	.830
The use of electronic records leads to easy accessibility to patients' information in the hospitals	4.232	.925
The use of electronic records facilitates regular auditing of patients' records for compliance	4.160	.962
Composite Mean	**4.165**	**0.9526**

The health personnel were asked to indicate whether the utilization of electronic record management influences service delivery in public hospitals in Kenya. From the findings, they indicated that electronic record management leads to a fast admission process, fast service delivery, faster communication, passing the information from one person to another, reduced paperwork, reduction of missing files and queues in the admission, and use of electronic recording facilitates regular auditing of patients. In addition, it improved service delivery since it had reduced paper-based systems. In addition, electronic record management helps in quicker facilitation of patients and quick flow of patients from one point to another. Also, it was found to be faster and very effective, especially for busy hospitals that can store large information. It also led to a reduction in rampant cases of missing files of patients in hospitals.

Correlation Analysis

Correlation analysis was used in assessing the influence of electronic records management on service delivery in public hospitals in Kenya. The results were as presented in Table 6. The results indicate that there exists a positive correlation between the utilization of electronic records management and service delivery in public hospitals (r=0.733, p-value=0.000). These findings agree with pervious findings that electronic records management has a positive and significant effect on service delivery in public hospitals [23].

Table 6: Correlations for Utilization of Electronic Records Management and Service Delivery

		Service delivery in public hospitals	Utilization of electronic records management
Service delivery in public hospitals	Pearson Correlation	1	.733**
	Sig. (2-tailed)		.000
	N	125	125
Utilization of electronic records management	Pearson Correlation	.733**	1
	Sig. (2-tailed)	.000	
	N	125	125

**. Correlation is significant at the 0.01 level (2-tailed).

Regression Analysis

A univariate analysis was conducted to investigate the influence of utilization of electronic records management on service delivery in public hospitals in Kenya. The alternative hypothesis was:

H_{01}: Utilization of electronic records management has a significant influence on service delivery in public hospitals in Kenya.

As indicated in Table 7, the r-squared shows the variation in the service delivery in public hospitals in Kenya that can be explained by the utilization of electronic records management. The R-squared for the relationship between the utilization of electronic records management and service delivery in public hospitals study was 0.537. This implies that the utilization of electronic records management can be 53.7% of the service delivery in public hospitals in Kenya.

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.733a	.537	.533	.50426

a. Predictors: (Constant), Utilization of electronic records management

The analysis of variance shows whether or not a model is a good fit for the data. A shown in Table 8, the F-calculated (142.512) is greater than the F-critical (3.8415), which shows that the model can be used in predicting the influence of utilization of electronic records management on service delivery in public hospitals in Kenya. In addition, the p-value (0.000) is less than the significance level (0.05), which shows that the model is a good fit for the data.

Table 8: Analysis of Variance

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	36.238	1	36.238	142.512	.000b
	Residual	31.277	123	.254		
	Total	**67.515**	**124**			

a. Dependent Variable: Service delivery in public hospitals
b. Predictors: (Constant), Utilization of electronic records management

From the results, the regression equation can be presented as:

Y= 1.130 + 0.715 (Utilization of electronic records management)

From the findings, as shown in Table 9, the utilization of electronic records management had a positive influence on service delivery in public hospitals in Kenya as indicated by the regression coefficient of 0.715 (p-value=0.000). This implies that a unit improvement in the utilization of electronic records management would lead to a 0.715 improvement in service delivery in public hospitals in Kenya. Since the p-value (0.000) is less than the significance level (0.05), the null hypothesis was rejected and hence utilization of electronic records management has a significant influence on service delivery in public hospitals in Kenya. These findings are in line with previous findings indicating that the healthcare industry is making significant progress in the utilization of electronic health management systems, which are expected to enhance the safety and quality of care and also be able to efficiently provide the best care [34].

Table 9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.130	.253		4.460	.000
	Utilization of electronic records management	.715	.060	.733	11.938	.000

a. Dependent Variable: Service delivery in public hospitals

5.0 CONCLUSIONS AND RECOMMENDATIONS

The objective of the study was to establish how the utilization of electronic records management influences service delivery in public hospitals in Kenya. The inferential statistics (correlation analysis and regression analysis) showed that electronic records management influences service delivery in public hospitals in Kenya. The researcher revealed that electronic records management influences service delivery in public hospitals in Kenya. The researcher indicated that the adoption of electronic record management has the potential to improve information sharing and minimize the loss of files. This researcher therefore recommends that public hospitals in Kenya should fully adopt and utilize electronic record management as a way of improving efficiency in service delivery in terms of waiting time and loss of files.

The study contributes to the theoretical understanding of the impact of electronic records management systems (ERMS) on healthcare service delivery. By demonstrating a positive correlation and regression between ERMS utilization and service delivery efficiency in public hospitals in Kenya, it supports the theory that technology adoption in healthcare can lead to significant improvements in operational efficiency. This finding aligns with the Technology Acceptance Model (TAM), which posits that perceived usefulness and ease of use influence the adoption of technology. The study extends this theory by providing empirical evidence specific to the healthcare sector in a developing country context.

The practical implications of this study are substantial for healthcare management in public hospitals. The findings suggest that the adoption of ERMS can lead to better information sharing and reduced instances of lost files, which directly impacts patient care by reducing waiting times and improving overall service delivery. For healthcare practitioners and hospital administrators, this study highlights the critical importance of investing in and fully utilizing ERMS. The

recommendation to fully adopt electronic record management systems underscores the need for training and capacity building among hospital staff to ensure the successful implementation and use of these systems.

On a policy level, this study provides valuable insights for healthcare policymakers in Kenya and other similar contexts. The positive impact of ERMS on service delivery efficiency suggests that policymakers should prioritize the integration of electronic records systems in public healthcare facilities. This could involve developing national standards for ERMS implementation, allocating budgetary resources to support the transition from paper-based to electronic systems, and establishing regulations to ensure data security and patient privacy. Additionally, the study's findings could inform policies aimed at fostering technological innovation in healthcare, thereby improving overall health outcomes and operational efficiency in public hospitals.

Suggestions for Further Research

The study was delimited to the national referral hospitals in Kenya. Different levels of hospitals in Kenya have varying resources and their level of adoption and utilization of e electronic records management is different. Therefore, similar studies should be conducted on the influence of the utilization of electronic records management on service delivery in public hospitals in Kenya. The study found that electronic records management could explain 53.7% of the service delivery in public hospitals in Kenya. Therefore, further studies should be conducted on other factors influencing service delivery in public hospitals in Kenya. In addition, the study recommends further studies on the impact of Kenya National E-health Policy 2016-2030 on service delivery in public hospitals in Kenya.

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