

Influence of Technology Adoption on Organizational Development of Public Hospitals. A Case of Riruta Level 4 Hospital, Kenya

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Abstract

The purpose of this study was to investigate the influence of technology adoption as a change management strategy on organizational performance of public hospitals in Kenya through Riruta Level 4 Hospital. Public hospitals in Kenya face numerous challenges, including resource constraints, inefficient service delivery, and increasing demand for quality healthcare. Effective change strategies such as adoption of modern technology are considered essential for enhancing efficiency, staff performance and patient satisfaction. The study was underpinned by Lewin's Change Management Model, Kotter's 8-Step Change Model, Rogers' Diffusion of Innovation Theory, and Organizational Development Theory. A descriptive research design was adopted by the study to allow an in-depth examination of the relationship among the variables. The target population comprised 47 medical and non-medical staff. The study adopted a census approach since the target population was small. Quantitative data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 28. employing descriptive statistics to summarize demographic information and perceptions of change management practices. Multiple linear regression analysis was used to examine the relationship between technology adoption and organizational development. Hypotheses were tested at a 0.05 level of significance. The findings show that technology adoption ($B = 0.020$, $p = 0.016$) including the use of digital systems for patient registration and medical records, also enhanced efficiency positively influence organizational development. The study concluded that technology adoption positively influenced organizational development had the greatest impact. It recommends that public hospitals strengthen technology adoption for sustainable growth and improved healthcare services.

Keywords: *Change management strategies, technology adoption & organizational development*

Background of the Study

Organizational Development (OD) refers to a deliberate, systematic process aimed at improving an organization's capacity to handle internal and external change and enhance its overall performance, effectiveness, and adaptability (Sadique *et al.*, 2025). Globally, public hospitals have adopted different technologies to improve efficiency and service delivery. In the United States, hospitals have implemented reforms to increase efficiency and improve patient care. Cleveland Clinic adopted a patient-centered approach, invested in staff training, and introduced digital health records to improve efficiency (Meyer *et al.*, 2020). In the United Kingdom, Leeds Teaching Hospitals NHS Trust used Lean Management strategies to reduce patient waiting times and optimize resources. Leadership commitment and staff involvement were key to its success (Jones & Mitchell, 2021). Technology adoption acts as a catalyst for OD. The introduction of digital health tools such as electronic health records (EHRs), telemedicine platforms, and mobile data systems can lead to more informed decision-making, improved care coordination, and enhanced data management (Merino-Barbancho & Fico, 2025). However, without proper change management, such innovations can fail due to resistance or lack of capacity. Successful integration of these tools requires training, stakeholder engagement, and alignment with institutional goals (Nair *et al.*, 2024). In India, Apollo Hospitals adopted telemedicine and digital records to improve access and reliability, contributing to stronger institutional development and patient trust (Jain & Agrawal, 2020).

Across Africa, many public hospitals face systemic barriers to OD, including financial constraints, governance issues, and labor union resistance (Rulashe & Jam, 2025). In South Africa, Groote Schuur Hospital's efforts to digitize patient records and streamline care delivery were slowed by opposition from labor unions and administrative inefficiencies (Mashiloane, 2024). In Kenya, the devolution of health services in 2010 aimed to improve healthcare governance and equity. While some hospitals embraced reforms, many such as Kenyatta National Hospital (KNH) struggled with limited resources, poor coordination, and resistance from staff (Kheir & Moussa, 2025).

The Universal Health Coverage (UHC) initiative introduced digital patient records, expanded medical services, and restructured hospital management. Kenyatta National Hospital (KNH) implemented these strategies to improve efficiency. However, inadequate funding, staff opposition, and bureaucratic delays slowed progress (Muinga *et al.*, 2018). Riruta Level 4 Hospital is a public healthcare facility in Nairobi. It provides medical services to the local population but faces challenges such as outdated systems, inefficiencies and resistance to change. This study examined the influence of technology adoption on organizational development. The findings will help improve healthcare service delivery and support long-term institutional growth.

Literature Review

Theoretical Review

The study was guided by four theories, organizational development theory, Kotter's 8-steps change model, Lewins theory and Diffusion theory. Organizational Development (OD) theory provides the primary theoretical foundation for this study, with the Action Research Model advanced by French and Bell (1999) standing out as the key model guiding the intervention process. The Action Research Model conceptualizes organizational change as a cyclical and participatory process involving systematic diagnosis, collaborative planning, action, and evaluation. It emphasizes evidence-based decision-making, stakeholder involvement, and continuous learning, making it particularly suitable for complex public sector institutions such as public hospitals.

John Kotter created the 8-Step Change Model in 1996, outlining a methodical strategy for organizational change. As healthcare facilities constantly adjust to new technology, changing regulations, and growing patient needs, change management is essential. For instance, hospitals that use electronic health record (EHR) systems effectively convey the dangers of old paper-based records in order to generate a sense of urgency. This is achieved by adoption of technology to spearhead transition. This included digitized services and technology in terms of soft and hardware. Patient satisfaction and staff competency are better in hospitals that spend in training staff on new medical technologies.

Kurt Lewin (1947) introduced a three-stage model Unfreeze, Change, and Refreeze to explain how organizations transition from their current state to a desired future state for Lewin's change management model. The first stage of Lewin's model involves breaking down existing structures and creating awareness of the need for change. Studies highlight that hospitals often use internal audits, patient feedback, and performance evaluations to identify inefficiencies and create a sense of urgency (Burke, 2018). Fernandez and Rainey (2020) found that hospitals preparing to implement electronic health record (EHR) systems engaged staff in discussions about the risks of paper-based records and the benefits of digital transformation. Hospitals that communicate the rationale for change clearly and involve employees in decision-making experience less resistance and greater acceptance (Anderson et al., 2019).

In addition, Everett Rogers (2003) proposed the Diffusion of Innovation Theory, which explains how new ideas, technologies, or practices spread within an organization. The Diffusion of Innovation (DOI) Theory developed by Rogers offers a paradigm for comprehending the introduction, adoption, and maintenance of innovations in healthcare environments. According to Rogers (2003), five essential characteristics relative advantage, compatibility, complexity, trialability, and observability determine the likelihood of innovation uptake in hospitals. According to Greenhalgh et al. (2020), hospitals are more likely to embrace innovations that offer a definite advantage over current procedures, are consistent with organizational principles, and are simple to execute. Gagnon et al. (2019) discovered that hospitals using electronic health record (EHR) systems had better workflow efficiency and patient data management, which resulted in increased

adoption rates among the institutions. This indicates that adoption of technology plays an important role organizational development through increased efficiency and satisfaction.

According to Ross et al. (2022), early telemedicine service adopters were able to respond to the COVID-19 pandemic with effectiveness, however late adopters found it difficult to execute because of resistance and a lack of readiness. The way innovations spread at a hospital is influenced by its social structure, which includes collaboration, leadership, and staff culture. Hospitals using robotic surgery technology had greater success rates when senior management actively supported the program and supplied the required training materials, according to Kaplan et al. (2021).

Empirical Review

The integration of technology in public hospitals has been pivotal in enhancing operational efficiency across various countries. The adoption of technology in public hospitals has revolutionized healthcare delivery, improving efficiency, reducing costs, and enhancing patient outcomes.

Globally, public hospitals have embraced technologies in their service delivery. For instance, Nottingham University Hospitals have implemented voice-controlled patient systems, allowing patients to adjust lighting, entertainment, and communication tools, thereby enhancing patient autonomy and reducing the workload on nursing staff (Cookson, 2025). Also, Hull University Teaching Hospital adopted radio-frequency identification (RFID) technology to track medical equipment, ensuring availability and reducing time spent locating devices (Cookson, 2025).

The healthcare system excels in community-based care, technology integration and preventative measures. The use of technology includes remote surgeries and paperless hospitals with electronic health records, contributing to improved patient outcomes and operational efficiency in Denmark (Sylvester, 2025). Seha Virtual Hospital, the world's largest virtual hospital, provides remote medical care through video consultations and monitoring devices. This approach addresses challenges related to geographical access and healthcare costs, demonstrating the efficacy of virtual healthcare models in public health systems (Cookson, 2025). The Hospital das Clínicas in São Paulo implemented AI-driven diagnostic tools for radiology, which reduced image-processing time by 50% and improved diagnostic accuracy for conditions such as pneumonia and tuberculosis (Martins & Costa, 2023).

The Aga Khan University Hospital in Nairobi has implemented AI-powered triage tools to control the flow of patients through the emergency department. This method improves overall hospital efficiency by prioritizing important cases and cutting wait times by 35% (Wambui & Karanja, 2023). A telemedicine and mobile health (mHealth) platform called E-Health Kenya was introduced by the Ministry of Health. It links professionals in urban areas with distant facilities. Access to specialist consultations has increased and referral delays have been cut in half thanks to this program (Mutunga et al., 2024). According to Ndung'u and Omondi (2023), Moi Teaching and Referral Hospital (MTRH) has also used smart bed management systems that use RFID tracking to minimize patient overcrowding and maximize hospital space utilization. Wangari et al.

(2024) discovered that KNH has implemented AI-assisted prescription systems, which have improved pharmaceutical inventory management and reduced medication errors by 55%.

Public hospital technology adoption is a worldwide phenomenon, with many nations introducing different digital technologies to improve operational effectiveness. Advanced communication networks, CPOE systems, EHRs, and virtual hospital among the technologies that are revolutionizing healthcare delivery, enhancing patient outcomes, and making the best use of available resources. As hospitals continue to embrace digital transformation, they will be better prepared to handle the challenges and expectations of healthcare in the future.

Conceptual Framework

Figure 1 presents the conceptual framework illustrating the presumed relationship between technology adoption and organizational development. It shows how the study variables are conceptualized highlighting the link between the independent variables and the dependent variable.

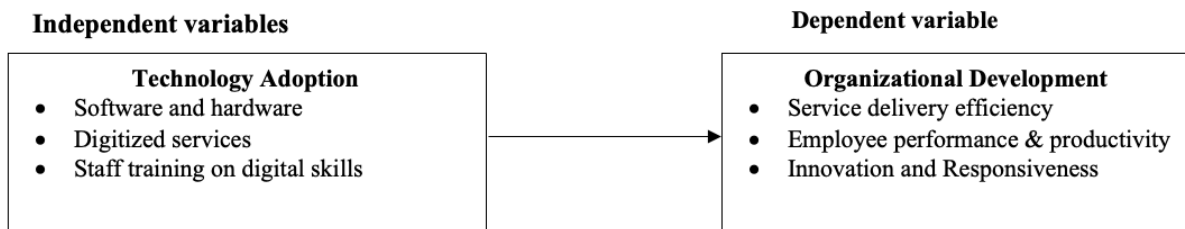


Fig 1: Conceptual Framework

Figure 1 shows how adopting technology through better software and hardware, digital services, and staff training helps organizations grow by making service delivery more efficient, boosting employee productivity, and encouraging innovation and responsiveness.

Research Methodology

This study adopted a descriptive research design. A descriptive component was incorporated to provide a comprehensive understanding of the existing change management practices and organizational development indicators at Riruta Level IV Hospital. The target population included all 47 medical practitioners and non - medical staff at Riruta Level 4 Hospital. The decision to include 44 medical and 3 non-medical staff was based on their integral roles in the implementation and management of organizational change. Given the manageable size of the target population, a census approach was adopted whereby all 47 medical and non-medical members were included in the study. Employing a census approach strengthened the reliability of the findings, as it eliminated the potential biases that could arise from sampling a subset of participants in a small population setting. The structured questionnaire was designed to gather quantitative data on respondents' perceptions of change management practices and organizational development at Riruta Level IV

Hospital. Key informant interviews were conducted with the Medical Superintendent and the Health Records Officers to gain qualitative insights that complemented and deepened the understanding obtained from the questionnaires. The study used regression to determine how these variables influence each other. The identified regression model is stated as follows;

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

Where;

Y = Organizational Development

X₁ = Technology adoption

β₀ = Intercept

β₁ = Regression coefficients

ε = Error term

Results and Discussions

The study aimed to evaluate the influence of technology adoption on organizational development of Riruta Level 4 Hospital, Kenya. The results are presented in the table below.

Technology adoption on organizational development of Riruta Level IV Hospital, Kenya

| Technology Adoption | SA | A | N | D | SD |
|---|-------|-------|-------|------|------|
| The hospital provides modern and up-to-date hardware (e.g., computers). | 21.3% | 57.4% | 19.1% | 0% | 2.1% |
| The software systems used (e.g., Electronic Health Records, billing systems) are user-friendly. | 17% | 36.2% | 46.8% | 0% | 0% |
| Software and Hardware systems are reliable and experience minimal downtime. | 25.5% | 55.3% | 17% | 2.1% | 0% |
| The Hospital has effectively adopted digital systems for patient registration. | 12.8% | 51.1% | 34.0% | 2.1% | 0% |
| Medical records at the hospital are stored and accessed digitally. | 23.4% | 51.1% | 25.5% | 0% | 0% |

Source: (Fieldwork, 2025)

From the findings, 78.7% of the respondents agreed that Riruta hospital provided modern and up-to-date hardware (e.g., computers), 19.1% of the respondents were undecided whether the hospital provided modern and up-to-date hardware (e.g., computers) lastly 2.1% of the respondents strongly disagreed that Riruta hospital provided modern and up-to-date hardware. The results showed that 53.2% of the respondents agreed that the software systems used (e.g., Electronic Health Records, billing systems) are user-friendly, 46.8% of the respondents were undecided that the software systems used such as Electronic Health Records, billing systems are user-friendly. More than half the population thus supported that the software systems used in the hospital are user friendly. Based on the findings, 80.8 % of the respondents agreed that software and hardware systems are reliable and experience minimal downtime, 17% of the respondents were undecided

that software and hardware systems are reliable and experience minimal downtime while 2.1% of the respondents disagreed that Software and Hardware systems are reliable and experience minimal downtime.

The findings also showed that 63.9%% of the respondents agreed that the hospital has effectively adopted digital systems for patient registration ,34% of the respondents were undecided that the hospital has effectively adopted digital systems for patient registration., and 2.1% of the respondents disagreed that the hospital has effectively adopted digital systems for patient registration. The results also showed that 74.5% of the respondents agreed that medical records at the hospital are stored and accessed digitally while 25.5% of the respondents were undecided that medical records at the hospital are stored and accessed digitally. A top official at Riruta Level IV Hospital *said that...*

“The hospital’s digital infrastructure has improved in recent years, with basic hardware such as computers and networking equipment in place, although upgrades are still needed in some departments. He explained that several systems have already been digitized, including patient registration, pharmacy records, and billing, which has reduced paperwork and improved efficiency in service delivery. However, he noted that the adoption of hospital management software faces challenges such as limited financial resources, occasional system downtimes, and resistance to change among some staff. On training, he stated that staff are introduced to new systems through short workshops and on-the-job coaching, but the training is not always sufficient to build long-term confidence. He added that the hospital relies on its ICT department and contracted service providers to handle technical support, though delays sometimes occur due to limited personnel and funding”.

The study aligns with Jones et al. (2023) who found that the adoption of Electronic Health Records (EHRs) improved efficiency in data retrieval and patient tracking. The presence of digital medical records at Riruta Hospital reflects this transition towards improved efficiency through digitization. Similarly, the study aligns with Smith and Patel (2022), who reported that integrated EHR systems in the U.S. reduced medication errors and enhanced healthcare coordination. The reliability of software and hardware systems at Riruta mirrors these findings, suggesting that robust digital platforms support safe and coordinated patient care.

Inferential Statistics

The study conducted correlation analysis between technology adoption and organizational development, from the results there exist a weak positive and significant relationship ($r = 0.326$, $P = 0.013$) between technology adoption and organizational development as presented in Table 4.11.

Correlation between Technology adoption and organizational development at Riruta Level IV Hospital, Kenya

| | | Organizational development at Riruta |
|----------------------------|---------------------|--------------------------------------|
| Technology Adoption | Pearson Correlation | .326** |
| | Sig. (2-tailed) | .013 |
| | N | 47 |

** . Correlation is significant at the 0.05 level (2-tailed).

The study tested a hypothesis on how technology adoption significantly influences organizational development at Riruta Level IV Hospital. For technology adoption, the p-value is 0.016, which is also below 0.05. This means that technology adoption is statistically significant. The findings indicate that increased adoption of technology leads to improved organizational development in the hospital. Based on this evidence, the null hypothesis is rejected at $\alpha = 0.05$, and the alternative hypothesis is adopted.

Conclusion

From the findings, it is clear that technology adoption played a significant role in shaping the development of the hospital. Technology adoption was found to be a strong driver of efficiency. The use of digital systems improved the accuracy of hospital records, reduced delays in services, and enhanced coordination among departments. When properly embraced, technology simplified both administrative and clinical tasks, making it easier for staff to serve patients effectively. However, it also required continuous training and support to help staff adjust to new systems. The findings show that when staff were adequately prepared, technology adoption reduced errors, improved workflow, and strengthened the hospital’s ability to respond to increasing demands.

Recommendations

The study recommends that the hospital should strengthen technology adoption to improve efficiency and service delivery. Regular training to ensure staff are confident and capable of using digital systems should support this. Management should also provide reliable infrastructure and technical support to minimize disruptions. By doing so, technology can reduce delays, improve accuracy of records, and enhance communication across different hospital departments.

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