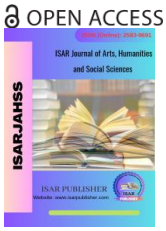
OPEN ACCESS



ISAR Journal of Arts, Humanities and Social Sciences

Volume 3, Issue 10, 2025 | pp: 78-82

Abbriviate Title- ISAR J Arts Humanit Soc Sci

ISSN *(Online)*- 2583-9691

https://isarpublisher.com/journal/isarjahss

THE INFLUENCE OF HEALTH INFORMATION TECHNOLOGY IMPLEMENTATION ON THE PERFORMANCE OF PUBLIC HEALTH HOSPITALS IN KENYA

Kelvin Munene Kimathi[1*], Gladys Kituku[2], Wilson Muema[3]

KEMU University, Kenya.

***Corresponding Author**
Kelvin Munene Kimathi

KEMU University, Kenya.

Article History
Received: 02.08.2025
Accepted: 25.09.2025
Published: 18.10.2025

Abstract: Public health hospitals in Kenya face significant performance challenges amidst pressures from population growth, lifestyle diseases, and resource constraints. While technology offers potential solutions, gaps exist in understanding the effects of specific implementations. This study aimed to assess the influence of Health Information Technology (HIT) implementation on the performance of Level IV and V public health hospitals in Meru County, Kenya. Grounded in Strategic Choice Theory, the study employed a descriptive research design, collecting primary data via questionnaires from 32 middle-level managers across 14 hospitals. Data analysis utilized descriptive statistics and binary logistic regression. Findings revealed a strong positive perception of HIT's impact. Regression analysis confirmed that HIT implementation significantly predicts higher hospital performance ($p < 0.01$). Specifically, digitalized health records reduced service time (OR=3.340), telemedicine improved accessibility (OR=2.321), and HIT streamlined processes (OR=2.605) were significant positive predictors. The study concludes that HIT is a critical driver of performance, enhancing operational effectiveness and care delivery. It is recommended that public hospitals prioritize strategic investments in robust HIT systems, including electronic health records and telemedicine, to improve service delivery and overall performance.

Keywords: *Health Information Technology (HIT), Hospital Performance, Strategy Implementation, Public Hospitals, Telemedicine, Digital Records.*

Cite this article:

Kimathi, K. M., Kituku, G., Muema, W., (2025). THE INFLUENCE OF HEALTH INFORMATION TECHNOLOGY IMPLEMENTATION ON THE PERFORMANCE OF PUBLIC HEALTH HOSPITALS IN KENYA. *ISAR Journal of Arts, Humanities and Social Sciences*, *3*(10), 78-82.

Introduction

Organizations employ strategic management techniques to gain a competitive advantage and enhance performance, as the business environment in the corporate world is rapidly evolving (Gure & Karugu, 2018). According to Karimi & Kavindah (2021), having a robust strategic management capacity is essential to building an association because it ensures having a combination of short- and long-term abilities to navigate its dynamic internal and external conditions. Globally, managers in the public and private sectors are interested in an organization's performance. According to Daudi and Mbugua (2018), firm performance is an intentional, deliberate, and integrated approach to communicate ongoing success to the organization by enhancing employee engagement and developing team and individual capacity.

In many African countries, health indices are still below estimates, morbidity and mortality rates for mothers and children are high, and life expectancy is poor relative to other areas. The life expectancy and child mortality rates of twenty countries, including both low-income and high-income countries, indicate tremendous inequalities (Gile et al., 2018). Several interrelated factors, including a lack of adequate health policy research, a gap between health policy and implementation, poor health care and budget management, poor service quality, inequality, and disparities in the accessibility of funding and services, are blamed for these ostensibly intractable low health indices (Mukiira, 2020).

The organizational performance of the public healthcare sector in Kenya is critical, given that the country has a population structure comprising 60% of the population living in absolute poverty, 20% living in relative poverty, and 20% who are rich and powerful. The sector also promotes socio-economic growth and eradicates

poverty by ensuring that all populations receive high-quality, cost-effective healthcare (Karisa & Wainaina, 2020). However, Kenya is ranked among the lower fifty percent (50%) underperforming healthcare sectors globally, with a high mortality rate, low life expectancy, and poor-quality service. Kenya Demographic Health Survey (KDHS) on healthcare statistics in Kenya shows a long-term decline in the performance of Kenyan public hospitals (Ngure, 2018). The mortality rate currently averages 147 deaths per 1,000 people (Muthoka, 2017).

Technology can be used to enhance the delivery of services and make primary care more accessible, thereby reducing pressure. Implementing strategic turnaround in the hospital to enhance service delivery technology should be one of the factors that hospital management should consider (Vaishnavi & Suresh, 2020). The application of technology in strategy implementation in hospitals can range from artificial intelligence to blockchain, record digitization, and telemedicine solutions. Technology is an enabler in the successful implementation of strategies in hospitals.

Adopting healthcare technologies has been a significant driver of improved patient outcomes and operational efficiencies. For instance, implementing electronic health records has enabled seamless access to patient information, reducing errors and facilitating coordinated care. Telemedicine has broken down geographical barriers, enabling patients in remote areas to access specialized care without the need for travel. AI-powered systems aid in predicting patient outcomes, optimizing hospital resource allocation, and delivering personalized treatment plans (Ramalingam, 2022). These advancements have set a benchmark for healthcare systems worldwide, showcasing the potential benefits of strategic technology implementation.

Hospital performance is a multidimensional concept encompassing various aspects of healthcare delivery, ranging from clinical outcomes to operational efficiency (Amer et al., 2022). It involves assessing how well a hospital meets its goals regarding patient care, resource utilization, and overall service quality. High-performing hospitals are characterized by their ability to provide timely, safe, and effective medical services, maintain patient satisfaction, and operate within budgetary constraints (Weeks, 2021; Lyu, 2021). The metrics used to evaluate hospital performance often include patient outcomes, such as mortality and readmission rates, as well as operational indicators, such as bed occupancy rates, length of stay, and financial health (Shirin Alsadat Hadian et al., 2024)

The increasing elderly population and prevalence of lifestyle diseases are straining healthcare resources in Meru County and Kenya. To address this, implementing technology to improve service efficiency is crucial (Kelly et al., 2020). A significant shortage of specialized medical professionals, such as the low dentist-to-patient ratio of 1:14 (Ministry of Health, 2021), further complicates the delivery of healthcare. Previous research has explored strategic management practices, such as board oversight and hospital capabilities, on mission hospital performance (Gaturu, 2018), as well as the impact of management structure on service quality in Meru County's mission hospitals (Mugure et al., 2021). However, these studies do not specifically examine the role of strategic technology implementation. Therefore, this study investigates how strategic technology implementation affects the performance of public health hospitals in Meru County, Kenya."

Past Studies

Hossain et al. (2019) focused on implementing the Electronic Health Record (EHR) system in Bangladesh's healthcare system. The EHR system is linked with clinical Decision Support Systems and facilitates quick and proper decision-making for healthcare providers. The study aims to identify the critical factors influencing physicians' acceptance and adoption of the EHR system in Bangladesh (Hossain et al., 2019). The sample size for the study was 300, which was considered suitable for statistical analysis. The study found that Social Influence, Facilitating Conditions, and Personal Innovativeness in Information Technology significantly influenced physicians' Behavioral Intention to adopt the EHR system in Bangladesh (Hossain et al., 2019).

The study conducted by Awad et al. (2021) aimed to examine and review promising healthcare technologies, their strengths and weaknesses for adoption in clinical practice, and their impact on improving patient care. The study concluded that digital health technologies have the potential to revolutionize the healthcare sector by improving patient care and empowering individuals to take control of their health.

According to Ebenso et al. (2021), their study employed a quantitative research design to identify the contextual enablers and the impact of adopting technology on extending maternal and child health services in rural Nigeria. The study found that a supportive policy environment and private-public partnerships facilitated the adoption of digital interventions for extending maternal and child health services in rural Nigeria.

Kamal et al. (2020) investigated the factors influencing the acceptance of telemedicine services among the rural population of Pakistan. Telemedicine services are a significant form of healthcare delivery in developing countries, including Pakistan (Kamal et al.,2020). The Technology Acceptance Model (TAM) served as the theoretical framework for the research, incorporating additional variables. The study employed a face-to-face survey method to collect data from 275 participants in Pakistan (Kamal et al., 2020). The research findings indicate that the usage intention of telemedicine services is influenced by several factors, including perceived ease of use, technological anxiety, social influence, perceived usefulness, trust, facilitating conditions, perceived risk, and resistance to technology (Kamal et al., 2020).

Data and Methods

The study employed a descriptive research design to investigate the impact of Health Information Technology (HIT) implementation on the performance of public health hospitals in Meru County, Kenya. The choice of this design was informed by its suitability for examining current conditions and practices within an institutional setting, especially where the goal is to establish associations between variables without manipulating them (Kumar & Praveenakumar, 2025).. Descriptive designs enable both qualitative insights and quantitative data analysis, which is particularly valuable when addressing strategic implementation practices and performance metrics (Hendren et al., 2023).

The target population comprised middle-level managers in Level IV and V public hospitals in Meru County, including department heads from Human Resources, Finance, Operations, and Quality Assurance. These professionals were selected purposively as they are directly involved in the planning, execution, and oversight of

strategic technological interventions. There are 13 Level IV hospitals and one Level V hospital in Meru County. A total of 42 respondents (three from each hospital) participated in the study.

Primary data was collected using structured questionnaires designed to capture the respondents' perspectives on HIT implementation and its impact on hospital performance. The questionnaire was divided into sections covering demographic information and Likert-scale items measuring the effectiveness of electronic health records, telemedicine systems, and administrative technologies.

Prior to full deployment, a pilot study was conducted involving 10% of the population (three hospitals) to test the reliability and validity of the instrument. The Cronbach's alpha for the variable exceeded the acceptable threshold of 0.7, indicating high internal consistency. (Izah et al., 2023)

The results were presented in Tables. A binary logistic regression model was employed to assess the predictive influence of HIT implementation on hospital performance, with high and low performance coded as binary outcomes.

Results and Discussions

Response Rate

The research sample size was 42. Thus, the researcher sent out 42 questionnaires, and 32 were returned. Thus representing a response rate of 76%. According to Mugenda & Mugenda (2003), an analysis and reporting can be considered adequate at a 50% response rate, good at 60%, and excellent when it surpasses 70%.

Descriptive Analysis Implementation of Health Information Technology

ITEM	N	Mode
Digitalizing health records has reduced the average time required to serve patients in the hospital.	32	5.00
Telemedicine has made healthcare more accessible for patients.	32	4.00
Health information technology has streamlined hospital administrative processes	32	4.00
Online treatment consultations have improved service delivery in the hospital	32	5.00

Participants perceived HIT positively. Digitalizing records was seen to reduce patient service time (Mode=5). Telemedicine was perceived to improve accessibility (Mode=4). HIT was seen to streamline administrative processes (Mode=4). Online consultations were perceived to improve service delivery (Mode = 5). The overall mode was positive, ranging from 4 to 5, indicating agreement and strong agreement.

Inferential Statistics

The study utilized inferential statistics to examine the relationship between the study variables and test the study hypothesis. Specifically, the researcher carried out a binary linear regression.

Binary Linear Regression

Model Fitness Tests

Table 1: HIT Ominubus Test

Test	χ^2	df	p-value
Omnibus	35.42	3	<0.001

Source: Researcher 2025

Note: A **significant p-value (p < 0.001)** confirms that the model with predictors performs significantly better than a null model (no predictors).

The test yielded a chi-square ($\chi 2$) value of 35.42 with 3 degrees of freedom (df) and a p-value of <0.001. The p-value, which is less than the significance level of 0.05, indicates that the overall model is statistically significant.

Table 2: **Hosmer-Lemeshow Test**

Test	χ^2	df	p-value
Hosmer-Lemeshow	6.84	8	0.554

Source: Researcher 2025
Notes:

A **non-significant p-value (p > 0.05)** indicates that the model fits the data well.

The model had a χ^2 of 6.84 with 8 degrees of freedom and a p-value of 0.554. Because the p-value is greater than the significance level of 0.05, we do not reject the null hypothesis, indicating that the model is a good fit for the data. Therefore, the results indicated that the model's predictions are not significantly different from the observed outcomes; thus, the logistic regression model is a good fit.

Table 3: Model Summary

Cox & Snell	Nagelkerke
0.482	0.643

Source: Researcher 2025

Notes:

a. **Nagelkerke R^2 = 0.643**: The model explains **64%** of the variance in hospital performance.
b. **-2 Log Likelihood = 0.482**: Lower values indicate better model fit

The Cox & Snell (R^2) and Nagelkerke (R^2) values are pseudo-R^2 measures used to evaluate the goodness-of-fit of logistic regression models. These statistics indicate the proportion of variance in the dependent variable explained by the predictors. The model's predictive capability was assessed using the Cox & Snell R-squared value, which was 0.482, and the Nagelkerke R-squared value, which was 0.643. The Nagelkerke R-squared has a maximum value of 1, which indicates that approximately 64.3% of the variation in the dependent variable is explained by the

independent variables. Thus, we established that the model has a significant ability to account for and predict.

Table 4: Logistic Regression Analysis of Health Information Technology and Performance of Public Hospitals in Meru

Factors	B	S.E.	Wald	df	p-value	Odds Ratio
HIT Implementation						
HIT Not Implemented (Reference)	-	-	-	-	-	1
Digital health records have reduced service time	1.205	0.320	14.21	1	<0.001	3.340
Telemedicine System						
No telemedicine (Reference)	-	-	-	-	-	1
Telemedicine improves accessibility	0.842	0.285	8.732	1	0.003	2.321
Administrative Processes						
Non-digital processes (Reference)	-	-	-	-	-	1
IT streamlined processes	0.957	0.301	10.12	1	0.001	2.605
Constant	2.890	0.810	12.74	1	<0.001	0.055

Notes:

a) **B**: Unstandardized regression coefficient (log-odds).

b) **S.E.**: Standard error of the coefficient.

c) **Wald**: Wald statistic (tests the significance of individual coefficients).

d) **Df**: Degrees of freedom (1 for all variables in logistic regression).

e) **Sig.**: p-value (significance level).

The results for digital health records are substantial and statistically significant ($p < 0.001$). The odds ratio (OR) of 3.340 indicates that hospitals with digital health records are over three times more likely to have reduced service times compared to those without. The positive B coefficient of 1.205 further confirms this positive association. Thus, it is established that the adoption of digital record-keeping has been highly effective in improving efficiency in Meru hospitals.

Telemedicine also shows a significant positive impact ($p = 0.003$). The odds ratio (OR) is 2.321, meaning that hospitals with a telemedicine system are more than twice as likely to have improved accessibility to healthcare services. The B coefficient of 0.842 supports this finding. The results indicate that telemedicine is a successful strategy for expanding healthcare access in the region.

Streamlining administrative processes with IT has also proven to be highly effective and statistically significant ($p < 0.001$). With an odds ratio (OR) of 2.605, hospitals using IT for administration are more than two and a half times more likely to experience streamlined processes compared to those that do not. The positive B coefficient of 0.957 reinforces this conclusion, suggesting that IT plays a crucial role in improving hospital management and operations.

These results have substantial implications for healthcare strategy in the county, underscoring the transformative role of HIT in enhancing hospital performance. The statistically significant negative constant ($B = -2.890$, $p < 0.001$), which represents the baseline odds of success without these HIT implementations, suggests that hospitals lacking this technology have a very low probability of achieving positive outcomes. The findings highlight that these HIT solutions are not only beneficial but also critical drivers of improvement across multiple domains, including clinical efficiency, patient accessibility, and administrative effectiveness. Thus, for public health systems in Meru, prioritizing the adoption and integration of these technologies is a key strategy for enhancing overall hospital performance. These results align with those of Tortorella et al. (2020), who demonstrated that digital health technology has a positive impact on hospital performance.

Conclusions and Implications for Policy

The study concluded that implementing Health Information Technology is a critical driver of performance for public hospitals in Meru County. Utilizing digital tools, such as electronic health records for efficiency, telemedicine for accessibility, and integrated systems for streamlining processes, significantly enhances operational effectiveness and improves care delivery. The evidence demonstrates a clear, positive, and statistically significant relationship between strategic HIT adoption and improved overall hospital performance outcomes.

The study recommended that public hospitals in Meru County, with the support of the National and County governments, should prioritize strategic investment in Health Information Technology to boost performance. Hospitals should focus on implementing and optimizing robust electronic health record systems to improve data handling and service speed, expanding telemedicine services to

increase patient access and convenience, and leveraging IT to streamline administrative and clinical workflows effectively.

References

1. Amer, F., Hammoud, S., Khatatbeh, H., Lohner, S., Boncz, I., & Endrei, D. (2022). A systematic review: the dimensions to evaluate health care performance and its implications during the pandemic. *BMC Health Services Research*, *22*(1). https://doi.org/10.1186/s12913-022-07863-0
2. Awad, A., Trenfield, S. J., Pollard, T. D., Ong, J. J., Elbadawi, M., McCoubrey, L. E., Goyanes, A., Gaisford, S., & Basit, A. W. (2021). Connected healthcare: Improving patient care using digital health technologies. Advanced Drug Delivery Reviews, 178, 113958. https://doi.org/10.1016/j.addr.2021.113958
3. Daudi & Mbugua. (2018). *Daudi, A. & Mbugua, D. (2018). Effect of strategic management practices on performance of transport SACCOs in Nairobi City County, Kenya. International Journal of Social Sciences and Information Technology, 6(9). - Google Search*.
4. Ebenso, B., Okusanya, B., Okunade, K., Akeju, D., Ajepe, A., Akaba, G. O., Yalma, R. M., Dirisu, O., Tukur, J., Abdullahi, M. K., Okuzu, O., & Allsop, M. J. (2021). What Are the Contextual Enablers and Impacts of Using Digital Technology to Extend Maternal and Child Health Services to Rural Areas? Findings of a Qualitative Study From Nigeria. Frontiers in Global Women's Health, 2. https://www.frontiersin.org/articles/10.3389/fgwh.2021.670494
5. Gaturu, P. M. (2018). *Influence of strategic management practices on organizational performance of mission hospitals in Kenya*. Doctoral dissertation, JKUAT-COHRED
6. Gile, P. P., Buljac-Samardzic, M., & Klundert, J. V. D. (2018). The effect of human resource management on performance in hospitals in Sub-Saharan Africa: A systematic literature review. *Human Resources for Health*, *16*(1), 1–21.
7. Gure, A. K. & Karugu. (2018). *STRATEGIC MANAGEMENT PRACTICES AND PERFORMANCE OF SMALL AND MICRO ENTERPRISES IN NAIROBI CITY COUNTY, KENYA*. *3*(1).
8. Hendren, K., Newcomer, K., Pandey, S. K., Smith, M., & Sumner, N. (2023). How Qualitative Research Methods Can Be Leveraged to Strengthen Mixed Methods Research in Public Policy and Public Administration. *Public Administration Review*, *83*(3), 468–485.
9. Hossain, A., Quaresma, R., & Rahman, H. (2019). Investigating factors influencing the physicians' adoption of electronic health record (EHR) in the healthcare system of Bangladesh: An empirical study. *International Journal of Information Management*, *44*, 76–87. https://doi.org/10.1016/j.ijinfomgt.2018.09.016
10. Izah, S. C., Sylva, L., & Hait, M. (2023). Cronbach's Alpha: A Cornerstone in Ensuring Reliability and Validity in Environmental Health Assessment. *ES Energy & Environment*, *23*. https://doi.org/10.30919/esee1057
11. Kamal, S. A., Shafiq, M., & Kakria, P. (2020). Investigating acceptance of telemedicine services through an extended technology acceptance model (TAM). *Technology in Society*, *60*(1), 101212.
12. Karimi & Kavindah. (2021). *Karimi, C. K., & Kavindah, L. (2021). Strategic Management Practices and Performance of the National Hospital Insurance Fund in Nairobi City County, Kenya. -*
13. Karisa, J. Y., & Wainaina, L. (2020). Balanced Scorecard Perspectives and Organizational Performance: Case of Kenyatta National Hospital, Kenya. *International Journal of Business Management, Entrepreneurship and Innovation*, *2*(3), 102–113.
14. Kelly, J. T., Campbell, K. L., Gong, E., & Scuffham, P. (2020). The Internet of Things: Impact and implications for health care delivery. *Journal of Medical Internet Research*, *22*(11), e20135.
15. Kumar, A., & Praveenakumar, S. G. (2025). Research methodology. Authors Click Publishing.
16. Lyu, B. (2021). Performance evaluation of Public Hospitals in China: A case-based account (Master's thesis, ISCTE-Instituto Universitario de Lisboa (Portugal)).
17. Mugenda, O. M., & Mugenda, A. G. (2003). Research methods: Quantitative & qualitative approaches (Vol. 2). Acts Press, Nairobi.
18. Mugure, M., Rintari, N., & Laititi, S. (2021). Effect of management structure on quality service delivery of mission hospitals in Meru County, Kenya. Journal of Business and Strategic Management, 6(3), 1-20.
19. Mukiira, E. K. (2020). *Relationship between employee voice strategies and performance of public health facilities in Imenti North Sub-County, Meru County, Kenya* [PhD Thesis]. KeMU.
20. Muthoka, M. K. (2017). *Influence of employee relations practices on organizational performance of the public healthcare sector in Kenya* [PhD Thesis]. COHRED, JKUAT.
21. Ngure, K. P. (2018). *Factors influencing retention of health workers in the public health sector in Kenya: A case study of Kenyatta National Hospital* [PhD Thesis]. JKUAT-COHRED.
22. Ramalingam, M. (2022). Role of ICT in Telemedicine. *Disruptive Technologies and Digital Transformations for Society 5.0*, 227–272. https://doi.org/10.1007/978-981-16-9476-9_12
23. Sekiguchi, T. (2005). The strategic choice model and industrial relations in Japan. Osaka Keidai Ronshu, 56(4), 91–102.
24. Shirin Alsadat Hadian, Reza Rezayatmand, Nasrin Shaarbafchizadeh, Saeedeh Ketabi, & Ahmad Reza Pourghaderi. (2024). Hospital performance evaluation indicators: a scoping review. *BMC Health Services Research*, *24*(1). https://doi.org/10.1186/s12913-024-10940-1
25. Tortorella, G. L., Fogliatto, F. S., Espôsto, K. F., Mac Cawley Vergara, A., Vassolo, R., Tlapa Mendoza, D., & Narayanamurthy, G. (2020). Measuring the effect of Healthcare 4.0 implementation on hospitals' performance. *Production Planning & Control*, 1–16. https://doi.org/10.1080/09537287.2020.1824283
26. Vaishnavi, V., & Suresh, M. (2020). Modelling of readiness factors for the implementation of Lean Six Sigma in healthcare organizations. *International Journal of Lean Six Sigma*, *11*(4), 597–633. https://doi.org/10.1108/IJLSS-12-2017-0146
27. Weeks, K. R. (2021). Exploring the nexus of patient safety and patient-centered care: a study of high performing hospitals (Doctoral dissertation, Johns Hopkins University