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STRATEGIC MANAGEMENT

INFLUENCE OF STRATEGIC INNOVATION PRACTICES ON OPERATIONAL PERFORMANCE OF NATIONAL REFERRAL HOSPITALS IN KENYA

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ABSTRACT

Purpose of the study: The study examined the influence of strategic innovation practices on the operational performance of national referral hospitals in Kenya.

Problem statement: National referral hospitals in Kenya experience persistent operational inefficiencies, including long patient waiting times, overcrowding, and inconsistent service quality, despite ongoing health sector reforms and technological advancements.

Methodology: The study adopted a descriptive research design using stratified random sampling of 384 healthcare professionals, with data collected through structured questionnaires and interviews and analyzed using descriptive statistics, Pearson correlation, and multiple regression.

Findings: The findings revealed that technological, process, organizational, and service innovations had strong positive and significant effects on operational performance, with organizational innovation exerting the strongest influence.

Conclusion: The study concluded that strategic innovation significantly improves hospital operational performance.

Recommendations: The study recommends that national referral hospitals should intensify investment in digital health infrastructure, strengthen and update standard operating procedures, expand lean management and triage systems, institutionalize organizational innovations through decentralized decision-making and staff empowerment and establish reward systems that promote innovative practices.

Keywords: *Strategic innovation, operational performance, national referral hospitals, technological innovation, service innovation*

INTRODUCTION

National referral hospitals in Kenya play a critical role in delivering specialized healthcare services; however, they continue to face persistent operational challenges characterized by prolonged patient waiting times, overcrowded wards, inefficient workflows, and inconsistent service quality (MoH, 2023; KNBS, 2022). Globally, strategic innovation practices such as electronic medical records (EMRs), telemedicine, workflow automation, and lean healthcare processes have significantly improved operational performance by reducing errors, shortening delays, and enhancing patient flow (Topol, 2020; Fujita et al., 2022). Health systems in countries such as Germany, Singapore, and Canada demonstrate that technological maturity and process integration are key drivers of hospital efficiency (OECD, 2021; Lee & Tan, 2022). Despite this evidence, many low- and middle-income countries experience fragmented adoption of these innovations due to infrastructural and capacity constraints.

In Kenya, national referral hospitals continue to experience high patient volumes, strained infrastructure, centralized decision-making, and limited digital integration (Ng'ang'a & Otieno, 2021; Wekesa & Atambo, 2022). While pilot initiatives such as EMRs, telemedicine, and automated systems have demonstrated potential, implementation remains inconsistent and poorly institutionalized (Omondi et al., 2023). The lack of structured integration of technological, process, organizational, and service innovations has weakened operational efficiency, resource utilization, and patient satisfaction. Consequently, empirical evidence is required to establish how strategic innovation practices influence operational performance in order to inform policy decisions, improve institutional responsiveness, and strengthen healthcare service delivery in Kenya's national referral hospitals.

STATEMENT OF THE PROBLEM

Despite global advancements in healthcare innovation, national referral hospitals in Kenya continue to experience significant operational inefficiencies, including long patient waiting times, overcrowded facilities, low bed turnover rates, and inconsistent service quality (KNBS, 2022; MoH, 2023). Hospitals in developed health systems have successfully reduced waiting times by over 40% through the adoption of EMRs, telemedicine, and lean healthcare processes (Topol, 2020; Tan & Koh, 2021). In Africa, countries such as Rwanda and South Africa have demonstrated the benefits of AI-driven diagnostics and workflow automation, achieving notable improvements in patient flow and service coordination (Mutabazi et al., 2021). However, Kenyan referral hospitals continue to lag due to fragmented innovation efforts.

Despite pockets of innovation such as EMR piloting and teleconsultations exist, these initiatives lack institutional anchoring and comprehensive policy support (Omondi et al., 2023). Existing research has largely focused on county hospitals or non-health sectors, creating a significant empirical gap at the national referral level (Mugambi et al., 2022). As a result, hospital managers and policymakers lack evidence-based guidance on which dimensions of innovation most effectively improve operational outcomes such as bed utilization, staff efficiency, and service quality. Without this study, inefficiencies are likely to persist, undermining Kenya's efforts toward Universal Health Coverage and quality healthcare delivery.

RESEARCH OBJECTIVES

i. To examine the influence of technological innovation on the operational performance of national referral hospitals in Kenya.

ii. To assess the effect of process innovation on the operational performance of national referral hospitals in Kenya.

iii. To evaluate the influence of organizational innovation on the operational performance of national referral hospitals in Kenya.

iv. To determine the influence of service innovation on the operational performance of national referral hospitals in Kenya.

RESEARCH HYPOTHESES

i. **H_{01}:** Technological innovation has no significant influence on the operational performance of national referral hospitals in Kenya.

ii. **H_{02}:** Process innovation has no significant effect on the operational performance of national referral hospitals in Kenya.

iii. **H_{03}:** Organizational innovation has no significant influence on the operational performance of national referral hospitals in Kenya.

iv. **H_{04}:** Service innovation has no significant influence on the operational performance of national referral hospitals in Kenya.

THEORETICAL REVIEW

The study was anchored on Resource-Based View (RBV) and Diffusion of Innovations Theory. RBV argues that organizations attain sustained superior performance by leveraging resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). In national referral hospitals, such resources include advanced digital infrastructure, skilled personnel, efficient processes, and adaptive organizational structures that enhance service delivery and operational efficiency (Wade & Hulland, 2004; Nguyen et al., 2019). RBV aligns closely with the study's variables-technological, process, organizational, and service innovations-because these innovations function as strategic assets that improve patient flow, bed utilization, and staff productivity. Nonetheless, scholars critique RBV for offering limited direction on how resource-constrained public institutions can develop or acquire these capabilities, making it necessary to integrate supportive theories that explain adoption and system-wide change.

To strengthen the theoretical grounding, the study incorporated Diffusion of Innovations Theory, which explains how innovations are adopted over time based on perceived relative advantage, compatibility, and complexity (Rogers, 2003; Greenhalgh et al., 2004; Khoja et al., 2015). Systems Theory complements this view by conceptualizing hospitals as interconnected systems where technological or organizational changes in one unit create ripple effects throughout the institution (Bertalanffy, 1949; Leischow & Milstein, 2006). Additionally, Innovation Diffusion–Decision Theory (IDDT) emphasizes leadership influence, rational evaluation, and institutional readiness in organizational decision-making regarding new

technologies or service models (Zaltman et al., 1973; Kimberly & Evanisko, 1981; Nutley et al., 2002). Collectively, these theories provide a comprehensive lens for understanding how strategic innovation practices are evaluated, adopted, and integrated, ultimately shaping operational performance in Kenya's national referral hospitals.

EMPIRICAL REVIEW

Empirical evidence from developed and developing contexts consistently shows that technological and process innovations significantly enhance hospital operational performance. Studies in the United States, Japan, Germany, Canada, Singapore, and the United Kingdom demonstrated that technologies such as AI diagnostics, electronic medical records (EMRs), telemedicine, automated scheduling, and digital dashboards reduce patient waiting times, improve bed utilization, and increase staff coordination (Topol, 2020; Fujita et al., 2022; Lee & Tan, 2022; Porter & Lee, 2021). African studies from Rwanda, Ghana, Ethiopia, Uganda, and Kenya also report substantial performance improvements from digital triage systems, automated registration, and EMR adoption, though constrained by infrastructural limitations, staff capacity gaps, and inconsistent policy support (Mutabazi et al., 2021; Asamoah et al., 2022; Ng'ang'a & Otieno, 2021). However, most international studies originate from resource-rich health systems, limiting their direct applicability to Kenya's unique institutional and fiscal realities.

Evidence on organizational innovation demonstrates that decentralized governance, participative leadership, cross-functional teams, and flatter organizational structures significantly improve hospital efficiency, decision-making speed, staff morale, and patient throughput (Anderson et al., 2021; Matsumoto & Yamamoto, 2020; Li & Wang, 2023). African studies from Ghana, Zimbabwe, Nigeria, Kenya, and Uganda affirmed that rigid bureaucratic cultures hinder innovation, while flexible leadership models and collaborative structures enhance operational responsiveness (Amponsah & Boateng, 2022; Ndebele & Moyo, 2021; Ogundipe et al., 2023; Wanjala, 2020; Mwangi et al., 2023). Kenyan studies, however, are largely concentrated on county hospitals or single-site case studies, leading to limited generalizability for national referral hospitals. These gaps justify the need for a focused, multi-site assessment of organizational innovation within Kenya's highest-level public hospitals.

Studies on service innovation, mostly from private and non-health sectors, show that redesigned service delivery models, customer engagement platforms, digital interfaces, and

collaborative external partnerships are strongly associated with improved organizational performance and customer satisfaction (Schuster et al., 2023; Vincenzi & da Cunha, 2021; Ibrahim, 2023; Makgopa, 2020). African and Kenyan research in banking, hospitality, SMEs, and public service institutions demonstrates that service innovation improves responsiveness, efficiency, and stakeholder satisfaction (Mutwota, 2023; Kula & Kavale, 2022; Mwas, 2021; Omerikwa, 2022). However, empirical studies specifically linking service innovation to operational performance in national referral hospitals are scarce. Most literature lacks healthcare-specific performance indicators and relies heavily on descriptive or sector-mismatched methodologies, thus highlighting a significant contextual and methodological gap that the current study seeks to address.

CONCEPTUAL FRAMEWORK

The conceptual framework is presented in Table 1

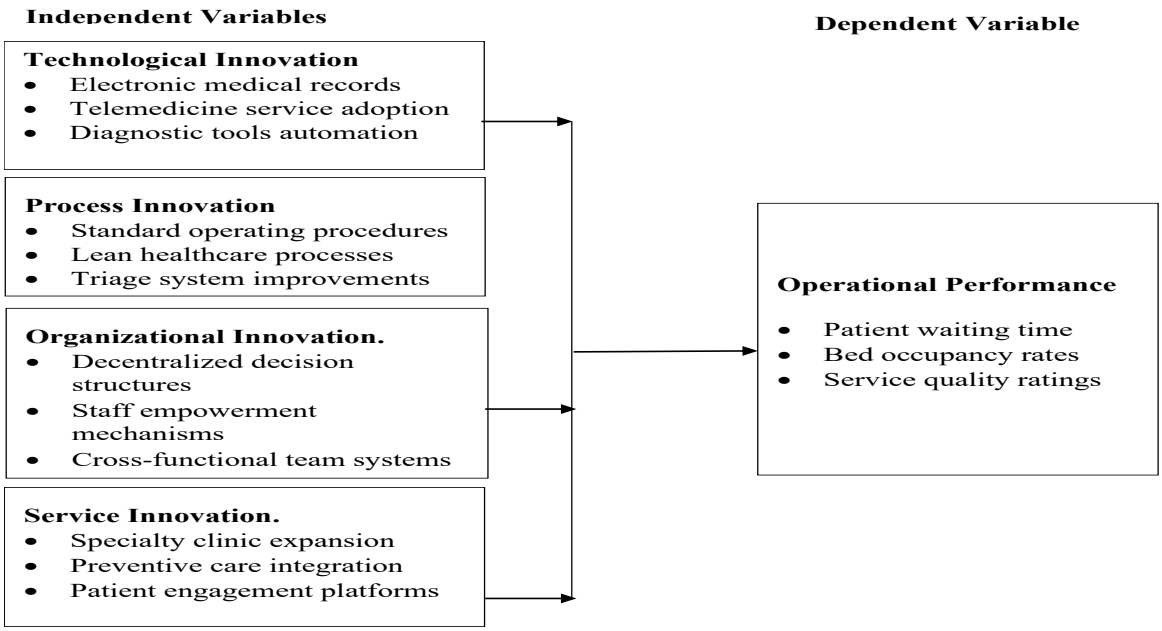

Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

The study employed a mixed-methods approach using a convergent parallel research design to investigate the influence of strategic innovation practices on the operational performance of national referral hospitals in Kenya. The study was conducted in major referral hospitals including Kenyatta National Hospital, Moi Teaching and Referral Hospital, and Kenyatta

University Teaching, Referral and Research Hospital, targeting a population of 9,500 healthcare professionals comprising hospital administrators, department heads, doctors, nurses, and innovation officers (MoH, 2024). A stratified random sampling technique was used, and the Yamane (1967) formula determined a sample of 384 respondents, proportionately allocated across staff categories. Data were collected using structured Likert-scale questionnaires and semi-structured interview guides, with instruments validated through expert review and pilot testing (10% of the sample) and reliability confirmed using Cronbach's Alpha ($\alpha \geq 0.70$). Quantitative data was analyzed using SPSS Version 25 through descriptive statistics, Pearson correlation, and regression analysis, while qualitative data were processed using thematic content analysis. Ethical approval was obtained from relevant ethics boards and NACOSTI, with strict adherence to informed consent, anonymity, confidentiality, and voluntary participation, ensuring the study was conducted rigorously, systematically, and ethically.

RESULTS AND DISCUSSIONS

The results and discussions are presented in sections to provide a clear, structured interpretation of the findings. This organization allows each dimension of strategic innovation to be examined in relation to operational performance, supported by both descriptive and inferential evidence.

Descriptive Statistics

Descriptive findings showed high levels of adoption of technological and process innovations. Respondents strongly agreed that EMRs improved data accuracy and access speed (M = 4.59) and that telemedicine enhanced specialist consultations (M = 4.70), indicating strong technological integration. Similarly, SOPs were found to be regularly updated (M = 4.45) and triage improvements were reported to significantly reduce waiting times (M = 4.39), reflecting effective process innovative practices. These findings are consistent with Ng'ang'a and Otieno (2021) and Asamoah et al. (2022), who reported that EMRs, telemedicine, and lean process systems significantly enhance efficiency and patient flow. The results also align with Topol (2020) and Omondi et al. (2023), who found that automation and digital technologies reduce turnaround time and improve service coordination in hospital settings.

Correlation Analysis

Correlation analysis revealed strong positive and statistically significant relationships between innovation practices and operational performance. Technological innovation showed a strong

positive correlation with operational performance, consistent with findings by Lee and Tan (2022) and Mutabazi et al. (2021), who demonstrated that digital systems improve coordination and service efficiency. Process innovation also showed a significant positive relationship with performance, supporting the work of Fujita et al. (2022) and Asamoah et al. (2022), who found that lean practices and standardized workflows reduce delays and operational inefficiencies. These strong correlations confirm that hospitals that invest more in innovation practices tend to achieve better operational outcomes, including reduced waiting times and improved resource utilization.

Table 1: Correlation Analysis

		Operational Performance
Operational Performance	Pearson Correlation	1
	Sig. (2-tailed)	
	N	309
Technological Innovation	Pearson Correlation	.816**
	Sig. (2-tailed)	.000
	N	309
Process Innovation	Pearson Correlation	.690**
	Sig. (2-tailed)	.000
	N	309
Organizational Innovation	Pearson Correlation	.821**
	Sig. (2-tailed)	.000
	N	309
Service Innovation	Pearson Correlation	.811**
	Sig. (2-tailed)	.000
	N	309

Regression Analysis

Regression analysis demonstrated that strategic innovation practices significantly predicted operational performance, with organizational and technological innovations showing the strongest effects. These findings are consistent with Anderson et al. (2021) and Ogundipe et al. (2023), who reported that decentralized structures, empowered staff, and digital systems have the largest impact on hospital efficiency and patient throughput. Process and service innovations also had significant positive effects, supporting the findings of Fujita et al. (2022) and Ibrahim (2023) that workflow redesign and patient-centered service models improve service quality and responsiveness. However, compared to developed health systems, the magnitude of impact in Kenyan hospitals suggests that infrastructural and capacity constraints may still limit the full potential of innovation, as also observed by Omondi et al. (2023) and

Mugambi et al. (2022). Overall, the findings confirm that strategic innovation practices are critical drivers of operational performance in national referral hospitals in Kenya.

Table 2: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.433	.112		3.873	.000
	Technological Innovation	.231	.047	.217	4.927	.000
	Process Innovation	.186	.024	.233	7.806	.000
	Organizational Innovation	.396	.056	.448	7.085	.000
	Service Innovation	.095	.042	.121	2.255	.025

CONCLUSIONS

The study concludes that strategic innovation practices significantly enhance the operational performance of national referral hospitals in Kenya. Technological innovations such as EMRs, telemedicine, and automation improved service speed, data accuracy, and coordination, while process innovations strengthened workflow efficiency through standardized procedures and effective triage systems. Organizational innovation emerged as the strongest driver of performance by fostering decentralized decision-making, staff empowerment, and collaborative cultures that enabled faster and more effective responses to operational challenges. Service innovation complemented these efforts by improving patient experience, access to care, and congestion management. Overall, the findings confirm that an integrated approach to technological, process, organizational, and service innovation is critical for achieving sustainable improvements in efficiency, service quality, and patient outcomes in Kenya's national referral hospitals.

RECOMMENDATIONS

The study recommends that the Ministry of Health and hospital management intensify investment in digital health infrastructure to strengthen operational capacity in national referral hospitals. This includes full-scale EMR integration, expansion of telemedicine, modernization

of diagnostic technologies, and continuous staff upskilling to ensure effective utilization of these tools. Strengthening and routinely updating standard operating procedures, expanding lean management practices, and enhancing triage systems are also essential for improving workflow efficiency and reducing delays during service delivery. In addition, the study recommends that hospital leadership institutionalize organizational innovations by decentralizing decision-making, empowering staff, and promoting cross-functional collaboration to sustain a culture that supports innovation-driven performance. Reward systems that recognize innovative practices should also be established to reinforce positive organizational behavior. The study further advises hospitals to broaden service innovation through the creation of specialty clinics, preventive care programs, and digital patient engagement platforms. Such initiatives would improve patient-centered care, ease congestion in high-demand units, and enhance overall service responsiveness within national referral hospitals.

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