

Strategic Management Drivers and Service Delivery: The Role of Functional Integration in Public National Teaching and Referral Hospitals in Nairobi City County, Kenya

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Abstract: This study reports findings of an investigation into functional integration as a strategic management driver of service delivery in public national teaching and referral hospitals in Nairobi City County, Kenya. Service delivery in these hospitals has deteriorated over the past five years despite considerable policy reform and financial investment, with patient satisfaction falling from 68 percent in 2019 to 56 percent in 2024, average outpatient waiting time rising from four to six hours, and institutional maternal mortality ratios remaining at 99 to 104 per 100,000 live births against a national target of 70. Grounded in the Technology Acceptance Model and the SERVQUAL model, the study conceptualized functional integration, disaggregated into process integration, teamwork and collaboration, and service coordination, as a strategic management driver, and service delivery as the outcome it was expected to explain. The study adopted a descriptive cross-sectional research design targeting 420 staff drawn from Kenyatta National Hospital, Mathari National Teaching and Referral Hospital and the National Spinal Injury Referral Hospital. Using a proportionate stratified random sampling technique and Yamane's formula, a sample of 205 respondents was selected, and 195 usable questionnaires were returned, representing a response rate of 95.6 percent. Primary data were collected using a semi-structured questionnaire anchored on a five-point Likert scale, and reliability for both functional integration and service delivery exceeded the 0.7 threshold. Data were analyzed using descriptive statistics and linear regression. The study finds that functional integration was deployed to a high level, with process integration and service coordination rated most strongly and the regularity of multidisciplinary teamwork the weakest-performing indicator. Service delivery was rated at a more moderate level. Functional integration has a significant positive effect on service delivery ($\beta = 0.623$; $p = 0.001$). The study concludes that functional integration is among the most consequential strategic management drivers of service delivery in tertiary public hospitals and calls on hospital managers to institutionalize structured cross-departmental coordination as a deliberate strategic asset. Future research is invited to extend the conceptual and methodological scope of the study to enhance the generalizability of the findings.

Keywords: Strategic management drivers, functional integration, service delivery, public national teaching and referral hospitals, Nairobi City County, Kenya.

1. INTRODUCTION

Provision of services in national teaching and referral hospitals is one of the key foundations of superior healthcare delivery globally, encompassing highly specialized tertiary care, medical education and clinical research that inform practice and health policy (WHO, 2024). These institutions receive referrals from lower-level facilities, set quality standards and drive innovation in healthcare provision (Probyn, Daneshvar & Price, 2024). A defining challenge for such institutions is coordinating the many clinical, administrative and support functions that a single patient's journey passes through; diagnostic services, surgical units, inpatient wards and outpatient departments must operate as one coherent system rather

than as disconnected silos (Latupeirissa *et al.*, 2024). Functional integration, the alignment of clinical operations, administrative workflows and interdisciplinary collaboration across hospital departments to deliver coordinated, patient-centered care, has therefore emerged as one of the most consequential strategic management drivers available to hospital administrators (Noah, 2022).

Existing scholarship has consolidated functional integration around three indicators: process integration, the alignment of clinical and administrative procedures across departments; teamwork and collaboration, the effectiveness of interdisciplinary engagement in managing complex cases; and service coordination, the ease with which patients move between hospital units without duplication or delay (Noah, 2022; Holden & Karsh, 2010). Globally, health systems that have invested deliberately in these dimensions report measurable gains in efficiency and patient outcomes. The United Kingdom's National Health Service has pursued integrated care models linking primary, secondary and social care, yielding improvements in coordination even as implementation complexity remains significant (NHS England, 2024). In Africa, the persistent service delivery crisis in national teaching and referral hospitals is closely tied to fragmented functional integration, disjointed clinical workflows, weak multidisciplinary collaboration and poor coordination across departments and levels of care undermine institutions otherwise well placed to deliver quality tertiary care (Agyepong *et al.*, 2018).

As hospital managers invest in strategic management drivers to navigate resource-constrained, high-volume operating environments, attention needs to shift to which of these drivers most reliably translates strategic intent into improved patient outcomes. This concern is heightened in Kenya's national teaching and referral hospitals, where patient satisfaction stands at 56 percent, well below the government's 80 percent target, and the doctor-to-patient ratio of 1:6,355 remains far worse than the World Health Organization's recommended 1:1,000 (Kenya Ministry of Health, 2024), despite reforms that reduced the rate of walk-in admissions at Kenyatta National Hospital (KNH) from 54.9 to 45.1 percent and demonstrated that improved coordination between referral levels can meaningfully enhance system efficiency (Kenya Ministry of Health, 2024). The present study takes the position that, among the strategic management drivers available to hospital administrators, functional integration deserves focused empirical attention because it directly governs how departments, staff and processes interact around the patient.

Nairobi City County is served by three public national teaching and referral hospitals, namely KNH, Mathari National Teaching and Referral Hospital and the National Spinal Injury Referral Hospital (NSIRH), which together anchor the provision of tertiary care to the county and the wider national population (Muriithi *et al.*, 2025). Growing patient volumes, limited resources and inefficient operations have placed mounting pressure on these institutions, with average outpatient waiting times exceeding six hours and institutional maternal mortality ratios of 99 to 104 per 100,000 live births, far above the national target of 70 per 100,000 (Muriithi *et al.*, 2025). Additionally, 42 percent of healthcare workers attribute poor service delivery to management failures and strategic incoherence (KMPDU, 2023), a pattern consistent with weak functional integration across diagnostic, surgical, inpatient and outpatient departments in these institutions (Abdi, 2024).

A review of extant literature reveals gaps that this study seeks to address. Studies on functional integration have largely treated it as a single undifferentiated construct or examined only one of its indicators in isolation, and have rarely been conducted within the distinctive operating conditions of national, as opposed to county or district, referral hospitals (Ogundaini, de la Harpe & McLean, 2021; Dorothy, 2025; Waithaka, Kyongo & Omagwa, 2025). Where evidence on functional integration in African referral hospitals exists, it is often qualitative or review-based, leaving a shortage of primary quantitative evidence linking specific functional integration indicators to measurable service delivery outcomes (Alege *et al.*, 2025; Correia de Matos, do Nascimento & Campos Fernandes, 2025). To address these concerns, the study sought to answer a question:

iii. What is the effect of functional integration, as a strategic management driver, on the service delivery of public national teaching and referral hospitals in Nairobi City County, Kenya?

2. LITERATURE REVIEW

Theoretical Review

The study is anchored on two theoretical frameworks: the Technology Acceptance Model and the SERVQUAL model. These were selected because, taken together, they explain the behavioural basis on which staff adopt integrated processes and collaborative practices, and the framework through which the resulting service outcomes are evaluated from the standpoint of the patient.

The Technology Acceptance Model (TAM), developed by Davis (1989) and extended by Venkatesh and Davis (2000), posits that perceived usefulness and perceived ease of use determine an individual's intention to adopt and use a system or process. Applied to functional integration, TAM explains why the coordination of interdisciplinary work, workflow harmonization and shared information systems depends on whether clinical and administrative staff perceive integrated care pathways and collaborative platforms as valuable and easy to use (Venkatesh *et al.*, 2003). In the national teaching and referral hospital context, functional integration requires employees in diagnostic services, surgical units, inpatient wards and outpatient departments to adopt standard operating procedures and use common platforms to minimize duplication and strengthen continuity of care (Holden & Karsh, 2010). The theory anchors the independent variable of the study and justifies the conceptualization of functional integration in terms of process integration, teamwork and collaboration, and service coordination. Its principal limitation, an narrow focus on perceived usefulness and usability at the expense of organizational culture, trust and external constraints (Legris, Ingham & Collette, 2003), is addressed in this study by complementing it with the SERVQUAL model in operationalizing the outcome variable.

The SERVQUAL model, developed by Parasuraman, Zeithaml and Berry (1985), measures gaps between customer expectations and perceptions of service quality across five dimensions: tangibles, reliability, responsiveness, assurance and empathy. In healthcare, the model reconceptualizes patients as service consumers whose expectations are shaped by prior experience while their perceptions are formed through direct interaction with clinical and administrative staff (Zeithaml, Parasuraman & Berry, 1990). The model has been criticized for assuming that expectations are stable and comparable across diverse patient populations (Buttle, 1996). Within this study the SERVQUAL model anchors the dependent variable, and provides the logic through which service delivery is operationalized as efficiency, quality of care, client satisfaction, accessibility of care and continuity of care, dimensions that functional integration, once deployed, is expected to improve.

Empirical Review and Hypothesis Development

Ogundaini, de la Harpe and McLean (2021) investigated the integration of mobile health (mHealth) technologies into hospital healthcare professionals' work processes at the point of care in sub-Saharan Africa. The findings showed that mHealth tools supported patient consultations, referral management and report writing when they aligned with existing clinical workflows, though concerns were raised about disruption when devices were poorly integrated into patient contact, and the study concluded that the success of process integration depends heavily on the fit between technology and clinical routine. Correia de Matos, do Nascimento and Campos Fernandes (2025) conducted a narrative review of integrated care models across countries, finding that formalized process integration, standardized definitions, classifications and policy frameworks for coordinating care, was associated with improved patient outcomes and more efficient resource allocation, although implementation variations meant that vertical integration of processes was more consistently effective than horizontal approaches. To the extent that process integration embeds clinical and administrative procedures into standard operating routines, it is expected to explain a significant portion of the variation in service delivery.

Alege *et al.* (2025) conducted an exploratory qualitative study in the Koboko District of Uganda to identify the barriers and facilitators of integrated hepatitis B, C and HIV screening among pregnant women and newborns, finding that a high level of collaboration among the healthcare workforce, alongside reliable supplies and shared health information systems, was central to the success of integrated screening, while a shortage of human resources and limited structured engagement undermined teamwork. Correia de Matos *et al.* (2025) similarly observed that collaboration between health and social care systems was a recurring determinant of successful integrated care models internationally, though the intensity of collaboration required varied by context. These findings suggest that teamwork and collaboration are not automatic outcomes of co-located services but require deliberate investment in shared platforms and regular interdisciplinary engagement.

Dorothy (2025) examined the relationship between strategic implementation practices and service delivery at Kenyatta National Hospital using a sample of 125 management staff, finding that organizational structure, a key determinant of how well services are coordinated across departments, improved service delivery performance by a factor of 0.791, the strongest of the four components examined in that study. Waithaka, Kyongo and Omagwa (2025) reviewed literature on strategic alignment and service delivery in Level Six hospitals in Kenya, finding that institutions with consistent coordination between strategy and day-to-day operations achieved more seamless referral pathways and better patient experience,

although rural hospitals lagged behind urban counterparts due to infrastructural gaps that hindered coordination across the referral chain. These findings indicate that service coordination, particularly around referral pathways and structural clarity, is consistently linked to stronger service delivery outcomes. The study therefore hypothesized that:

H0₁: Functional integration, as a strategic management driver, has no significant effect on the service delivery of public national teaching and referral hospitals in Nairobi City County, Kenya.

A conceptual gap nonetheless persists because most prior studies examine functional integration as a single undifferentiated construct or focus on only one of its indicators in isolation, without establishing which of process integration, teamwork and collaboration, or service coordination contributes most strongly to service delivery within a single institutional setting (Noah, 2022; Correia de Matos *et al.*, 2025). A methodological gap also exists because much of the available evidence on functional integration in African referral hospitals is qualitative or review-based (Alege *et al.*, 2025; Waitthaka *et al.*, 2025). Finally, a contextual gap exists because evidence specific to Nairobi's public national teaching and referral hospitals, whose scale, specialization and referral dynamics differ markedly from county or district facilities, remains scarce (Muriithi *et al.*, 2025). This study addressed these gaps by empirically testing the hypotheses developed above among healthcare administrators, ICT officers, clinical staff and finance personnel in Nairobi's public national teaching and referral hospitals.

3. RESEARCH METHODOLOGY

Study Context and Population

The study was conducted among the three public national teaching and referral hospitals operating in Nairobi City County, Kenya, namely Kenyatta National Hospital (KNH), Mathari National Teaching and Referral Hospital and the National Spinal Injury Referral Hospital (NSIRH). The unit of analysis was the hospital, while the unit of observation comprised the healthcare administrators, ICT officers, clinical staff, and finance and operations staff responsible for, or directly affected by, the coordination of clinical and administrative functions across departments. The target population comprised 420 staff distributed across the three hospitals and four cadres, from which a sample of 205 respondents was determined using Yamane's (1967) formula, $n = N / (1 + N.e^2)$, at a 5 percent margin of error, and distributed across the strata through proportionate stratified and simple random sampling.

Research Design

The study adopted a descriptive research design that was cross-sectional in nature, enabling data to be gathered from healthcare administrators, ICT officers, clinical staff and finance and operations personnel at a single point in time while permitting comparison across hospital departments and cadres (Thapa *et al.*, 2013). The descriptive design provided a systematic representation of the level of functional integration and service delivery as they existed in the study hospitals, while the accompanying inferential analysis enabled determination of the relationship between the two constructs.

Research Data and Analysis

Primary data were collected using a semi-structured questionnaire that was piloted prior to administration in the field. Functional integration was measured through seven items spanning its three indicators: process integration (clarity and adherence of cross-departmental care pathways, reduction of medical errors through service integration, and improvement of patient management through integration of functions), teamwork and collaboration (effectiveness of team collaboration on complex cases and the regularity of multidisciplinary meetings), and service coordination (seamlessness of internal patient referrals and effectiveness of communication among clinical and support staff). Service delivery was measured using ten items covering efficiency, quality of care, client satisfaction, accessibility of care and continuity of care. Responses were scored on a five-point Likert scale ranging from strongly disagree to strongly agree.

Face and content validity were ensured through expert review and exploratory factor analysis during a pilot study involving 21 respondents (10 percent of the sample) conducted at Kenyatta University Teaching, Referral and Research Hospital, while reliability was assessed using Cronbach's Alpha, with a threshold of 0.7 considered acceptable. Both constructs recorded coefficients above this threshold, as summarized in Table 1.

Table 1: Reliability of the Research Instrument

Variable	No. of Items	Cronbach's Alpha
Functional integration	7	0.785
Service delivery	10	0.700

Source: Research Data (2026)

Responses were first summarized using descriptive statistics, namely frequencies, percentages, means and standard deviations, after which inferential analysis was carried out using linear regression to test the hypothesized effect of functional integration on service delivery. Hypothesis H₀₁ was tested through linear regression of the composite functional integration score on service delivery. Ethical clearance was obtained from Kenyatta University and a research permit was secured from the National Commission for Science, Technology and Innovation (NACOSTI) prior to data collection, and informed consent, confidentiality and voluntary participation were assured throughout the study.

4. RESEARCH FINDINGS

Characteristics of the Respondents

Of the 205 questionnaires administered, 195 were returned fully completed, representing a response rate of 95.6 percent, while ten, or 4.4 percent, were unreturned or incomplete, a rate well above the threshold considered adequate for analysis and dissemination. In terms of gender, male respondents constituted 52.3 percent and female respondents 47.7 percent, reflecting a reasonably balanced distribution. The age distribution was spread across the brackets, with the largest group, 38.5 percent, falling between 36 and 44 years, indicating that mature and experienced staff participated in the study. Clinical staff constituted the largest cadre at 67.2 percent, consistent with their central role in the coordination of day-to-day patient care, and 76.9 percent of respondents had six or more years of professional experience, suggesting that the findings reflect informed perspectives on functional integration and service delivery within the study hospitals.

Level of Functional Integration Deployed

The three indicators of functional integration were assessed in terms of the extent to which related practices had been observed in the study hospitals. As summarized in Table 2, the indicators were rated at a generally high level, with an aggregate mean of approximately 4.01. Process integration and service coordination were the most highly rated indicators, while teamwork and collaboration, though still favourable, was the least emphasized, driven principally by the irregularity of structured multidisciplinary meetings. The results indicate that the study hospitals have deployed functional integration to a considerable extent, setting a reasonable stage for coordinated, patient-centered care, albeit with room to strengthen structured interdisciplinary forums.

Table 2: Extent of Functional Integration Deployed

Indicator	Mean Score	Std. Deviation
Process integration	4.12	0.88
Teamwork and collaboration	3.78	1.22
Service coordination	4.12	0.88
Aggregate	4.01	0.99

Source: Research Data (2026)

Level of Service Delivery Achieved

Service delivery was assessed using the five SERVQUAL-based dimensions of efficiency, quality of care, client satisfaction, accessibility of care and continuity of care. As presented in Table 3, the dimensions recorded a more moderate overall mean of 3.27, with a standard deviation of 1.73, indicating considerable variability in respondents' perceptions. Efficiency was the most favourably rated dimension, while quality of care and accessibility of care recorded the lowest and most variable ratings. The level of service delivery achieved was therefore moderate, indicating that while functional integration was perceived favourably in the hospitals, this had not yet fully translated into consistently strong patient-facing outcomes.

Table 3: Level of Service Delivery Achieved

Dimension	Mean Score	Std. Deviation
Efficiency	3.81	1.20
Quality of care	3.09	1.91
Client satisfaction	3.18	1.82
Accessibility of care	3.09	1.91
Continuity of care	3.18	1.83
Overall aggregate	3.27	1.73

Source: Research Data (2026)

Role of Functional Integration in Service Delivery

In determining the empirical role of functional integration, the study tested Hypothesis H0₁ through linear regression of the composite functional integration score on service delivery. The result is summarized in Table 4.

Table 4: Test of Hypothesis H04 through Linear Regression

Variable	B	Std. Error	Beta	t	Sig.
Functional integration	0.799	0.322	0.623	2.170	0.001

Source: Research Data (2026).

The regression coefficient for functional integration is positive and significant ($\beta = 0.623$; $p = 0.001$), indicating that a unit improvement in functional integration is associated with a substantial corresponding improvement in service delivery, holding other institutional factors constant. Hypothesis H0₁ is therefore rejected, and the study concludes that functional integration, as a strategic management driver, has a significant positive effect on the service delivery of public national teaching and referral hospitals in Nairobi City County, the strongest effect recorded among the strategic management drivers assessed in the wider study from which this analysis is drawn.

5. DISCUSSIONS AND IMPLICATIONS

The first concern of the study touched on establishing the level of functional integration deployed in public national teaching and referral hospitals in Nairobi City County. The descriptive results indicate that process integration and service coordination were rated at a high level, while teamwork and collaboration, though still favourable, lagged behind due to the irregularity of structured multidisciplinary meetings. This suggests that the study hospitals have embedded integration more successfully into their formal procedures and referral pathways than into scheduled interdisciplinary forums, a pattern consistent with Alege *et al.* (2025), who found that collaboration requires sustained staffing and scheduling investment that is more easily neglected under resource pressure than embedded process rules.

The second concern addressed the level of service delivery achieved. The findings show a more moderate level of service delivery, with efficiency rated most favourably and quality of care and accessibility of care rated lowest and with the greatest variability among respondents. Read alongside the high ratings for functional integration, this gap indicates that internal coordination gains have not yet been fully converted into consistently strong outcomes on the dimensions patients experience most directly, namely the quality, affordability and reach of care.

The last concern addressed the empirical role of functional integration in service delivery. The regression analysis established that functional integration has a significant positive effect on service delivery, the strongest effect among the strategic management drivers examined in the wider study from which this analysis is drawn. Practically, this implies that hospital managers who prioritize functional integration, by standardizing care pathways, institutionalizing multidisciplinary review and strengthening referral coordination, are likely to see a disproportionately large improvement in service delivery relative to investment in other strategic management drivers. These findings carry implications for hospital administrators: functional integration should be managed not as an informal by-product of day-to-day operations but as a deliberate strategic asset, monitored and resourced with the same rigour applied to financial or technological investments.

6. CONCLUSION

The study addressed three concerns touching on the level of functional integration deployed in public national teaching and referral hospitals in Nairobi City County, Kenya, the level of service delivery achieved, and the empirical role of functional integration as a strategic management driver of that service delivery. The findings lead to several conclusions. First, the study hospitals have deployed functional integration to a generally high level, with process integration and service coordination well embedded, while structured teamwork and collaboration, particularly the regularity of multidisciplinary meetings, remains comparatively underdeveloped. Second, service delivery was achieved at a more moderate level, with efficiency performing best and quality of care and accessibility of care lagging behind, indicating that internal coordination gains have not yet been fully realized in patient-facing outcomes. Third, functional integration has a significant positive effect on service delivery ($\beta = 0.623$; $p = 0.001$), such that Hypothesis H04 is rejected and functional integration is confirmed as one of the most consequential strategic management drivers available to hospital administrators in this context.

Organizations in the sector are therefore called upon to treat functional integration as a deliberate strategic asset, standardizing cross-departmental care pathways, institutionalizing regular multidisciplinary meetings and strengthening referral coordination systems, rather than allowing integration to emerge informally from day-to-day operations.

The findings are nonetheless subject to limitations. The study relied on the opinions of respondents on their observations and experiences within three hospitals in a single county, and a cross-sectional, predominantly quantitative design, which limited its capacity to capture the behaviour of the variables over time and the qualitative texture of the context. Future research is therefore invited to investigate the role of functional integration using longitudinal and mixed-method approaches, to extend the inquiry to county and other national referral hospitals in Kenya, and to examine functional integration alongside other strategic management drivers so as to enhance the generalizability of the findings.

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