

Continuous Improvement Practices And Service Delivery Of Selected Public Hospitals In Machakos County, Kenya

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Abstract

The fundamental right for all citizens is to be able to access health care needs in a timely manner that meets the quality standards recommended by World Health Organization. Machakos County has put in place infrastructural needs, resource allocation, recruitment of competent staff, partnership and collaboration with relevant stakeholders to enhance service delivery within its public hospitals. However, there is inefficiencies and ineffectiveness evidenced in prolonged waiting time, absence of essential medical supplies, overcrowding and shortage of qualified personnel that has reduced service delivery. The research aimed to establish the effect continuous process improvement on service delivery of public hospitals in Machakos County. The research was steered by Deming's quality theory and the SERVEQUAL model. Descriptive research design was used with a target population of 35 public hospitals and 800 healthcare workers in Machakos County. Specific location will be Machakos Sub-County. The study utilized Yamane's formula to derive a sample of 267 medical practitioners. Stratified random sampling was employed to categorize participants based on common traits, followed by systematic random sampling to select individuals from these categories. Semi-structured questionnaire enabled the generation of primary data. Pilot study was done in Athi River with all six public hospitals. Content validity, expert opinion and face validity maintained the instruments validity. Internal consistency enabled the determination of reliability of the instrument. Descriptive statistics, inferential and predictive modelling with multiple linear regression assisted in primary data analysis using SPSS version 23. The research study was conducted under the guidance of all necessary permissions from pertinent bodies and universities, adherence to data privacy regulations, and voluntary involvement and respect for all involved parties. Diagnostic evaluations including normality, multicollinearity, and autocorrelation were performed. The results indicated a direct, positive correlation between continuous improvement and service delivery. Continuous improvement had positive and significant effect on service delivery. It was concluded that ongoing continuous improvement had effect on service delivery. It suggested that these hospitals should consistently perform product assessments to enhance service delivery. Subsequent research in the county may focus on private healthcare for comparison with the study results, include moderating and mediating factors, and consider patient feedback in comprehensive quality control and hospital service delivery.

Keywords: Continuous Improvement, Service Delivery, Public Hospitals, SERVEQUAL

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I. Introduction

Globally, public hospitals are crucial to healthcare systems, providing essential medical services to the community. However, maintaining high-quality service delivery can be difficult due to constraints such as limited resources and high patient influx (WHO, 2019). The 2019 report from the Agency for Health Research and Quality suggests that high patient volumes in public hospitals often lead to increased waiting times, treatment delays, and patient turnover, which can adversely affect patient results. In the current global competition, the success and efficiency of public hospitals hinge on the delivery of high-quality healthcare services. Total quality management practices have been considered as effective strategies that public hospitals may use to enhance service delivery to meet patients' needs (Chege *et al.*, 2020).

According to Hussain *et al.*, (2019), there is poor service delivery in Pakistan public hospitals where patients experience frustrations evidenced in long waiting time before being attended to, inadequate cooling systems with uncomfortable seats in the waiting rooms and lack of online appointment platforms that affects registration. The same situation is witnessed in Africa where patients experience inadequate service delivery as a result of shortages of medicine, lack of resources and reduced health providers compared to the population (Mayanja & Akunda, 2023).

The World Bank's 2019 survey on Kenya's health services indicates that, despite improvements in public hospital care quality, there's a skill and knowledge deficit in the healthcare workforce, which hampers patient care quality. Machakos County introduction of Free Maternity Health Policy (FMHP) has resulted to increased service to the mothers evidenced in high number of deliveries from 15 to 30. However, there is inadequate infrastructural resources that have reduced the quality-of-service delivered as a result of high population of mothers in the hospitals. There is also reduced number of staff, reduced bed capacities in maternity wards, lack of drugs and essential supplies to meet the needs of patients and lack of equipment in the laboratories hence inability of the health facility in carrying out required tests and delays with no reliability (Gichihi & Lusambili, 2019). Continuous improvement (CI) is a philosophy of consistency that ensures progress thereby enabling simplification of flow in organizational operations which helps in conserving time and reducing overhead costs. Continuous improvement is also aimed at continuously searching for new ways of doing things to improve service delivery.

Statement of the Problem

All citizens have a fundamental right to access timely and quality health affordably which should be delivered according to standards that meet patient requirements as well as incorporating efficiency, effectiveness and patient safety (World Health Organization, 2019). Service delivery enables the provision of services to patient wholesomely incorporating welfare needs of families, communities and the people (Wandie & Muathe, 2022) thereby supporting the government's health objectives.

Machakos County is focused on the improvement of service delivery evidenced in infrastructural developments, equipment availability, staffing and accessibility. The County government is also collaborating with healthcare institutions to enhance service delivery within its public hospitals. However, Machakos County service delivery in public hospital has faced challenges evidenced in overcrowding, prolonged waiting time, inadequate medical supplies, absence of medical equipment and shortage of qualified personnel which has deteriorated service delivery within the county (Mutisya, 2019).

Hussain et al., (2019) assessed patient contentment in Pakistan's public hospitals by examining elements like registration, waiting time, and service. Meanwhile, Kegoro and Ochieng (2021) conducted a meta-analysis to explore the impact of automated queue management on enhancing service delivery in Kenyan public hospitals. Khan et al. (2018) conducted a study to examine how continuous improvement influences organizational performance. This study had a different geographical location as well as focused on organizational performance while others considered patient satisfaction and queue management in the determination of service delivery in public hospitals. There is scanty information on existing study in Machakos County that incorporated continuous improvement and service delivery which was the focus of the current study hence the study investigated how continuous improvement affected service delivery of selected public hospitals in Machakos County, Kenya.

II. Literature Review

Theoretical Literature Review

Deming's Theory of Quality

Murenga and Njuguna (2020) refer to Deming's quality theory as a tool to help individual improve their organizations' quality through increased efforts (Deming, 1982). The theory assumes the idea of managing people and organizational systems where the philosopher believed that every piece impacts the other and views interdependent parts as comprehensive of a whole. The theory, considering four aspects, encompasses system appreciation, variation understanding, knowledge theory, and psychology comprehension (Wong & Headrick, 2020).

The theory suggests that every organizational problem has a solution and advocates for system and process improvement, ensuring collective efforts towards a shared objective (Connor, 2019). The current study adopted this theory to measure continuous improvement practices in public hospital having been applied in small businesses. The theory also guided the construction of the conceptual framework where continuous improvement principles were incorporated. The theory was used in the determination of research instrument where quality aspects consisted of the questions to the respondents.

SERVQUAL Model

The SERVQUAL model is a framework that has been widely used in the service industry to evaluate and measure the quality of services. The model was proposed by Zeithaml, Parasuraman and Berry (1985) to measure the existing gap in the levels of customer satisfaction in the business environment. The model states that the perception of customers on quality of service are determined by their service expectations and their perceived experience (Kar, 2018). SERVQUAL models are conceptualized across five aspects: reliability, responsiveness, assurance, empathy, and tangibility. Reliability refers to the service's capacity to deliver on its promises accurately and dependably. Responsiveness is the readiness of the service provider to assist customers

promptly and provide service in a timely manner. Assurance is the service provider building of trust through employee knowledge, confidence and courtesy. Empathy refers to the care and individual attention provided to the customer by the organization or the service provider while tangibility refers to the physical equipment, facilities and personal appearance (Shabin, 2019).

Chang et al., (2022), applied the SERVQUAL model in their study on indicators for improvement of agricultural products exhibitions service delivery. The current study applied the SERVQUAL model to analyze the dependent variable- service delivery where competency of staff, quality consultation, medicine variety, and availability of needed equipment and waiting time were used to analyze the five dimensions of the model

Empirical Literature Review

Continuous Improvement and Service Delivery

Mutambi's (2022) analysis utilized a cross-sectional approach, focusing on a descriptive cohort of 7047 staff from ISO-certified hospitals in Nairobi City County, Kenya using Yamane's 1967 formula to derive a sample of 379 employees. The findings revealed that ongoing enhancements were supervised to avoid flaws, and the feedback given to employees was favorable. The study found that the greatest impact on delivery of services was due to continuous improvement. These were both private and public hospitals in Nairobi City County that were ISO certified for the study. Several public hospitals in Machakos County were included in the current study.

Using data obtained from 32,723 hospitals, Wills-Gallagher et al. (2022) examined how malnutrition-related quality improvement can improve nutrition healthcare delivery for hospitalized patients. Data was scrutinized using descriptive statistics via SAS 9.4. The study focused on doctors, nurses, and specialists. It was found that a considerable portion of patients were malnourished. Patients in the ICU were most vulnerable, both before and after quality enhancement efforts. The study made a conclusion that quality improvement of nutrition may enhance attendance to patients with nutrition risk. This study provided the target population but failed to indicate the sample, sampling design and data collection instruments which was improved in the current study.

Mulletta et al. (2021) examined the application of a quality management system in health center labs in Ethiopia's Oromia region. The questionnaire included documentation, professional quality assurance and health facility safety. Laboratory quality management was rated in different categories with star ratings; zero star; 0-105, star one; 106-124, start two; 125-143 while start three had 144-162 points. The findings also indicated that 88.8% of facilities had turnaround time while 60% had quality manuals updated. On quality management implementation status, it was found that 79.8% of laboratories were given zero stars 0-105 while only 3.4% scored 144-162 point. This means laboratories that had more than star one rating had improved quality service (Mulletta, et al., 2021). The study was conducted in Oromia involving 21 zones while the current study worked with one county in Kenya. The study also targeted laboratories while this study worked with selected public hospitals with multiple services.

Conceptual Framework

The study provided an illustration of independent variable and the dependent variable. Continuous improvement was the independent variable while the dependent variable was service delivery.

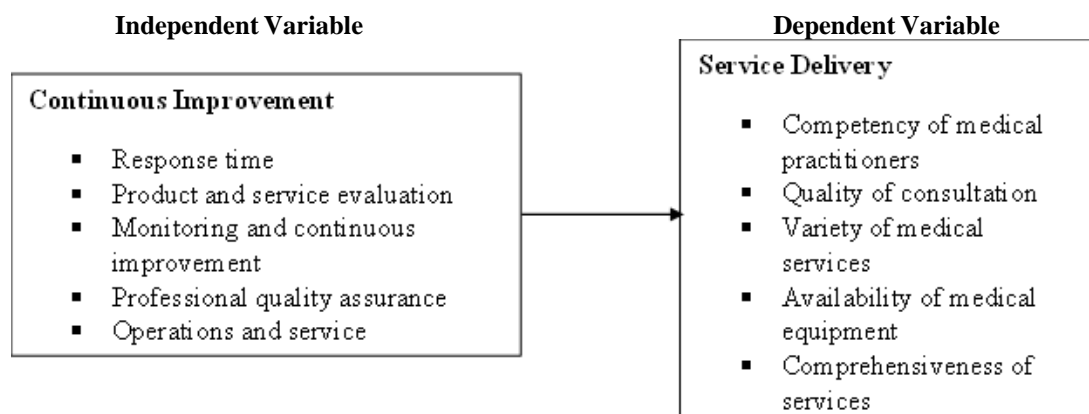


Figure 1. Conceptual Framework

Research Methodology

The study employed a descriptive design to thoroughly depict the subject matter in its current state (Abosede & Onanuga, 2016). The study focused on 800 health professionals across 35 public hospitals in Machakos Town Sub-County to derive a sample of 267 respondents using Yamane (1967). The study adopted stratified proportionate random sampling to group respondents according to their similarities. Systematic random

sampling was used to identify respondents (Sharma, 2017). Primary data was gathered using a semi-structured questionnaire (Abawi, 2017).

The study incorporated expert’s opinion to help improve content validity (Taherdoost, 2016). Face validity was used in the study to clarify wording, eliminate ambiguity, and simplify the instrument (Kubai, 2019). Internal consistency determined reliability where Cronbach alpha coefficient was used with values ranging between zero and one (0,1). A preliminary study was carried out in Athi River using 10% of the sample to refine the research tool using gathered feedback.

The use of descriptive statistics facilitated the study and illustration of data trends through frequency distribution tables, maximum, minimum, mean, and standard deviation. Inferential statistics were used to analyze the correlation. The study recognized materials from other researchers by providing citations and references in the entire work (European University Institute, 2019).

Findings and Discussions

Response Rate

The study distributed questionnaires to a total of 267 healthcare professionals where 228 were dully filled and returned while 39 questionnaires were not received. This resulted to 85% response rate as indicated in Table 1.

Table 1: Response Rate.

Category	Total Issued	Tools returned	Return Rate
Specialists	12	10	83
Medical Officers	25	21	84
Clinical Officers	47	40	85
Nurses	87	77	89
Pharmacists	23	18	78
Lab technologists	35	29	83
Administrative Officers	38	33	87
Total	267	228	85

As per Table 1, the response rate for all sampled groups exceeded 75%, with the study's overall response rate at 85%. According to previous research, a 50% response rate is satisfactory, 60% is good, and 70% is excellent. Thus, the 85% response rate in this study was highly beneficial for the analysis. The importance of the response rate in producing the study's results was highlighted by previous observations. Therefore, the response rate played a crucial role in establishing the study's conclusions.

Descriptive Statistics on Continuous Improvement and Service Delivery

The researcher provided a Likert scale questionnaire to respondents where a rating scale was used to establish respondent’s opinion; 1= strongly disagree, 2= agree, 3= neutral, 4= agree, 5= strongly agree. The findings were presented in Table 2.

Table 2: Continuous Improvement and Service Delivery

Statements on Continuous improvement	Mean	S. D
Is there speed in response time to patient issues?	3.69	1.03
Does your hospital regularly undertake products and service evaluation?	3.91	0.96
Is there continuous monitoring and improvement of products, services and processes?	3.84	1.01
Does the hospital have high professional quality assurance based on employee expertise?	3.96	1.05
Have all the hospital’s operations and services been improved?	3.61	1.15
Is there consistency in feedback to employees for improvement purposes?	3.61	1.15
Aggregate Scores	3.77	1.06

Table 2 reveals that participants gave a mean score of 3.69 (standard deviation 1.03) to the prompt "Has my hospital's response time to patient issues improved?" Regular evaluations of products and services were confirmed with a mean score of 3.91 (standard deviation 0.96). The continuous enhancement of products, services, and processes in public hospitals was reflected in a mean score of 3.84 (standard deviation 1.01). The hospital's high-quality assurance, based on staff expertise, received a mean score of 3.96 (standard deviation 1.04). All hospital operations and services were found to have improved, with a mean score of 3.61 (standard deviation 1.14). Consistent feedback for improvement purposes was noted with a mean score of 3.61 (standard deviation

1.15). The overall mean score for continuous improvement was 3.77 (standard deviation 1.06), indicating agreement among respondents that continuous improvement positively impacts service delivery in Machakos County's public hospitals, Kenya.

The current findings demonstrate that when public hospitals adopt continuous improvement, there is the possibility of managing high number of patients by reducing waiting time thereby meeting customer satisfaction. The findings disagree with Hussain et al (2019) study who found that there was delayed service in Pakistani public hospitals which also had uncomfortable waiting environment. The results align with Shittu's 2020 research, which recommended implementing strategies like evaluation and monitoring to enhance service quality. The data indicated that consistent assessment of services and products, coupled with ongoing supervision, is enhancing healthcare delivery. Mutambi (2022) also reported that ISO certified hospitals in Nairobi City County were engaged in monitoring and product evaluation that helped in reducing defects hence enhanced service delivery. The findings in the study demonstrates that public hospitals undertake consistent product evaluation that helps in the identification of gaps and defects thereby making adjustments for purposes of enhancing service delivery hence agreeing with Mutambi (2022).

The findings showed that continuous improvement was done in public hospitals through replacement of equipment that were outdated, incorporating checklists and safety devices and using methods that were reducing time taken to serve patients. Mulleta et al (2021) indicated that hospital facilities had attained 60% turnaround time where they updated their quality manual, systems and laboratories to enhance service delivery in Ethiopian laboratories. The current findings demonstrate improvement in total quality management through continuous improvement through the application of different techniques and employee expertise to enhance service delivery.

The results showed how communication between employees and patient was important in supporting feedback collection that was essential in the improvement of quality. The findings also show that public hospitals are focused in implementation continuous improvement techniques to enhance service delivery. Deming (1982) theory encouraged the management to put in place systems that are aimed at moving the organization towards a common objective. The recent data shows that public hospitals in Machakos County, Kenya, have implemented measures such as modernizing systems, integrating expert knowledge, using checklists to minimize wait times, and collecting feedback. They also monitor and evaluate their services and products to improve healthcare delivery.

Correlation Analysis

The study analyzed the relationship between total quality management and service delivery where Karl Pearson correlation was used as indicated in Table 3.

Table 3 Relationship between Continuous Improvement and Service Delivery

		Continuous Improvement	Service Delivery
Continuous Improvement	Pearson Correlation	1	.777**
	Sig. (2-tailed)		0.000
	N	228	228

From the results in Table 2, it was found that continuous improvement had positive and significant relationship with service delivery where correlation value was 0.777, p value 0.000. Schober and Boer (2022) highlight the role of correlation in identifying the strength and direction of the relationship between two variables, where a change in one variable influences the other in the same or opposite direction. They provide a scale for interpreting the correlation coefficient, which ranges from -1 to +1. Coefficients between 0.10 and 0.39 indicate weak correlations, 0.40 to 0.69 suggest moderate relationships, 0.70 to 0.89 represent strong correlations, and 0.90 to 1 denote very strong correlations. According to Table 2, contentious improvement (r=0.777) hence showed a strong relationship with service delivery.

Regression Coefficient

The research employed t statistics to evaluate the impact of each variable, using the p value to ascertain their significance. Table 3 displayed these findings.

Table 3. Coefficient of Regression

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.667	0.170		3.930	0.000
	Continuous Improvement	0.302	0.066	0.344	4.582	0.000

From the findings in Table 3, the study demonstrated that having all factors constant, service delivery will increase by 0.667, p value of 0.000. However, an introduction of continuous improvement would lead to the rise in service delivery by 0.302, p value 0.000. The findings of Obisanya *et al.* (2019) found that continuous improvement had $\beta=0.047$, p value=0.317 hence showed that there was no significant effect on service delivery. The current study however, noted that $\beta=0.302$, $p<0.05$ which demonstrated that continuous improvement had significant effect on service delivery in public hospitals of Machakos County, Kenya.

III. Summary And Conclusion

The primary goal focused on the continuous improvement and service delivery in Machakos County's public hospitals. The outcomes indicated that these enhancements expedited the hospitals' response to patient concerns. Machakos County public hospitals also undertook regular product and service evaluations for improvement. The study found that public hospitals had high expertise that helped provide quality assurance, evidenced by improved service operations. The correlation analysis revealed a moderately positive link with service provision. It was found that ongoing enhancements had effect on public hospitals' service delivery in Kenya's Machakos County.

The conclusion was made that regular evaluation of products and services in public hospitals has enhanced service delivery. The conclusion was made that public hospitals have high expertise that enables them to provide professional quality services. The study recommended that regular evaluation of products and services should be improved to identify emerging patient needs and inform improvements for better service delivery. Future studies may consider including patients to determine their opinion on continuous improvement and service delivery in public hospitals.

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