

Effect of procurement devolution process of medical supplies on the technical efficiency of public health facilities in Nakuru and Baringo Counties of Kenya

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Abstract

This study analysed the effect of the procurement devolution process of medical supplies on the technical efficiency of public health facilities in Nakuru and Baringo Counties of Kenya. Although increased government expenditure was expected to improve efficiency and better health outcomes, Kenya's public health sector remains inefficient. The study used a quantitative descriptive research design that targeted 3199 employees in 401 level 2-5 public health facilities (PHFs). Using Slovin's formula, a sample size of 355 was proportionately sampled. While secondary data was obtained through desk review, primary data was collected through structured questionnaires that were administered to different cadres of employees. Primary data was coded and analysed using STATA/SPSS. To compute the technical efficiency of PHFs, the two-stage Data envelopment analysis (DEA) and multivariate logistic regression were adopted. Study findings show that devolution has improved demand for medical supplies, enhanced procurement efficiency, and promoted ethical procurement. However, complaints from patients have not been reduced, and the training of procurement personnel has not increased. Regression analysis indicates a significant relationship between procurement devolution process and technical efficiency. The coefficient of human capital development was 0.199 (T-value= 9.514, p-value= 0.000 < 0.05 significant level), implying a positive effect of the procurement devolution process on technical efficiency. This study concludes that despite increased health expenditure in Kenya, public health healthcare services have deteriorated due to the inefficiency of the public health sector. This study recommends increased financial and human resource support for Kenya's public health care.

Key terms: Integrity, medical supplies, procurement devolution process, selection and quantification, technical efficiency.

INTRODUCTION

Devolution is one of the health sector reforms initiated by developing countries in the 1980s and 1990s (Willis & Khan, 2009). This was driven by the need for greater efficiency and increased patient choice and participation. The health devolution process has been promoted to improve health systems through the attainment of allocative efficiency, cost efficiency, technical efficiency, economic growth, welfare improvement, and increased citizen participation, among others (Obasa, 2020; Gonçalves, 2014; Robinson, 2007; Magnussen et al., 2007; Bossert, 1998). Empirical research reveals that in spite of increased health expenditure, many health systems are characterised by reduced utilisation of and access to health care services, deterioration in public health facilities, perilous working conditions, exacerbated inequities, weaker local commitment to priority health issues, and decreased efficiency and effectiveness of service delivery (Vázquez et al., 2009; Lakshminarayanan, 2003). It has been argued that under certain conditions, devolution can improve equity of resource allocation (Bossert et al., 2003).

In sub-Saharan Africa, devolution is perceived to be neither good nor bad, with limited impact on service delivery (Abimbola et al., 2019; Cabral, 2011). There is thin and mixed evidence of better service delivery attributed to devolution. For example, the devolution of primary healthcare in Guinea, Mali, Benin and Mozambique increased access to affordable health services (Mehrotra, 2006). However, the health devolution process has been inhibited by financial challenges, weak institutional capacity, inequitable taxes, elite capture and nepotism (Steiner, 2007). Unfortunately for SSA, the availability of healthcare resources to mitigate these challenges has been continuously declining (Akin et al., 2005). In turn, this has jeopardised progress towards achieving the health-related Millennium Development Goals (Zere et al., 2006).

Kenya's New Constitution of 2010 marked a shift from the central governance system to a devolved health system. Devolved health functions include hiring and firing staff, paying salaries, procuring medical commodities, and directly managing public health facilities and fiscal aspects. Evidence shows that devolution has improved governance, economic

efficiency and service delivery (Moorkhejee, 2015; Alexeev & Habodaszova, 2012; Mitchell & Bossert, 2010; Golem, 2010; Ghani et al., 2010; Ekpo, 2007; Cheema & Rondinelli, 2007). Kenya's healthcare system faces financial and human resource constraints simultaneously with a dysfunctional health infrastructure (McCollum et al., 2018; Nshimirimana et al., 2016; Chuma & Okungu, 2011).

In Kenya, the share of National Government expenditure on health increased from Kshs. 92 billion in 2018/19 to Kshs. 109.8 billion in 2022/23. While the ratio of national Government expenditure on health to total National Government expenditure was 3.0 per cent in 2018/19, this was expected to rise to 4.0 per cent in the period 2022/23. The share of County Governments' expenditure on health to total County Governments' expenditure rose from 22.7 per cent in 2018/19 to 25.6 per cent in 2020/21, then reduced to 23.3 per cent in 2022/23. Similarly, health services expenditure by County Governments has steadily increased over the last five years. Although government expenditure on health has increased in absolute terms, it is less than 7 per cent of Gross Domestic Product (GDP). The doctor-to-population ratio is presently 1:16,000, which exceeds the World Health Organization recommendation.

LITERATURE REVIEW

Despite the emergence of devolution as a primary objective on the agenda of national governments, there is limited empirical evidence on the potential benefits of devolution (Robalino et al., 2001). Several studies indicate that the effect of the devolution process on service delivery is weak, incomplete and often contradictory (Abimbola et al., 2019; Channa & Faguet, 2016). Evidence shows that despite increased health expenditures following decentralisation, local governments decreased the share of public good types of health care services (Schwartz et al., 2002). In the United Kingdom, evidence shows that further devolution has little significance since responsibility for the National Health Services (NHS) is already devolved to each national administration (Katikireddi et al., 2017).

Empirical evidence shows that although it was anticipated that increased government expenditure would improve efficiency and better health outcomes

in the pre-devolution era, Kenya's public health sector is inefficient (Makheti, 2017; Nshimirimana et al., 2016; Kinyanjui et al., 2015; Kipruto & Letting 2015; San et al., 2010; Kirigia et al., 2004). Several studies carried out on efficiency in procurement performance in health systems do not identify the quantitative and qualitative relationships between skills, tendering processes, technology and funding for pharmaceutical procurement processes in relation to the performance of public health facilities (Wasike & Mugambi, 2015). Further, there is a dearth of information on the technical efficiency of Kenya's public health facilities in the post-health devolution era. This study assessed the effect of the procurement devolution process of medical supplies on the technical efficiency of public health facilities in Nakuru and Baringo Counties of Kenya.

Theoretical Framework

Agency Theory

Agency Theory is attributed to Ross (1973), Jensen and Meckling (1976), Bossert (1998), and Brinkerhoff and Bossert (2013). An agency is a contract under which one or more persons (principal) engage another person (agent) on their behalf. The Principal Agent (P-A) theory assumes divergence between the desires and goals of the principal and those of the agent. In the health sector, the patient, as principal, appoints the health provider as an agent to provide health services. The P-A helps us understand health sector devolution.

RESULTS AND FINDINGS

These variables are presented in Table 1.

Descriptive Statistics

To analyse the effect of the procurement devolution process of medical supplies on the technical efficiency of public health facilities in Nakuru and Baringo Counties of Kenya, this study considered four key procurement indicators, namely selection and quantification (Table 1), distribution (Table 2), price and cost (Table 3), and ethical procurement (Table 4). In the following section, we present results of the effect of selection and quantification of medical supplies on the technical efficiency of public health facilities, the effect of distribution of medical supplies on the technical efficiency of public health facilities, the effect of price and cost of medical supplies on the technical efficiency of public health facilities, and the effect of ethical procurement of medical supplies on the technical efficiency of public health facilities in Nakuru and Baringo Counties of Kenya.

Effect of Selection and Quantification of Medical Supplies on the Technical Efficiency of Public Health Facilities

To examine the effect of selection and quantification of medical supplies, this study evaluated demand for medical supplies, inventory policy, inventory management systems, complaints from patients about medical supplies, purchasing effectiveness, agreements with suppliers, inventory management systems, procurement efficiency, supply chain continuity, compliance rate, policy compliance, emergency purchases, price competitiveness, competitive bidding, coherence in technical specifications, and distribution channels. The results of

Table 1: Effect of Selection and Quantification of Medical Supplies

	SD	D	NS	A	SA	CHISQ	P>CHISQ
Demand for medical supplies has improved	7.85	18.77	16.38	44.03	12.97	115.58	<.0001
Inventory policy has been frequently revised	7.09	19.93	38.18	33.11	1.69	148.59	<.0001
Implementation of appropriate inventory management systems has been made possible	6.12	22.79	33.67	35.71	1.70	142.46	<.0001
Complaints from patients about medical supplies have reduced	14.43	31.54	16.78	31.54	5.70	76.33	<.0001
User departments of medical supplies are able to easily notify buyers of specific quantities according to identified needs	7.88	17.47	29.45	39.73	5.48	123.03	<.0001
There is purchasing effectiveness since inventory turnover has increased	7.12	22.71	33.56	34.58	2.03	131.63	<.0001

Agreements with suppliers have been honoured	8.42	24.58	32.32	30.64	4.04	100.22	<.0001
Inventory management systems have been improved	6.53	19.93	29.90	41.24	2.41	151.32	<.0001
Procurement efficiency has been enhanced since the procurement section performs functions it is expected to perform within its budget	7.56	18.56	35.40	35.74	2.75	136.65	<.0001
Supplier defects and rejections have reduced	7.72	15.10	35.57	37.58	4.03	146.26	<.0001
There are reliable deliveries/supply chain continuity	8.78	19.59	25.00	43.58	3.04	147.21	<.0001
Compliance rate by suppliers has increased	7.09	19.26	31.42	39.19	3.04	141.09	<.0001
Policy compliance by suppliers has increased	7.43	15.54	37.84	36.49	2.70	157.92	<.0001
The rate of emergency purchases has declined	7.88	25.00	33.22	29.11	4.79	96.49	<.0001
There exists price competitiveness since the price paid to suppliers matches published market prices	10.20	21.43	40.82	24.15	3.40	121.14	<.0001
There is competitive bidding through open tendering	8.08	12.79	31.31	40.07	7.74	129.92	<.0001
There are coherent technical specifications	5.08	14.24	43.39	33.90	3.39	187.59	<.0001
Channels of the distribution system have improved	7.74	15.15	22.9	49.16	5.05	186.48	<.0001

Source: Researcher, 2024

Table 1 show the impact of the procurement devolution on selection and quantification in public health facilities in Baringo and Nakuru counties of Kenya. From the Table, it is evident that as a result of procurement devolution in public health facilities in Baringo and Nakuru Counties of Kenya, demand for medical supplies, inventory management systems, and channels of the distribution system have improved; there has been a reduction in emergency purchased and complaints from patients about medical supplies; implementation of appropriate inventory management systems has been made possible; user departments of medical supplies easily notify buyers of specific quantities according to identified needs; there is the effectiveness of purchasing due to an increase in inventory turnover; agreements with suppliers have been honoured while procurement efficiency has been enhanced; there is reliable supply-chain continuity; both compliance rate and policy compliance by suppliers have increased; there is competitive bidding through open tendering, and there are coherent technical specifications in

procurement devolution in Kenya's public health system. However, they disagreed that complaints from patients about medical supplies had been reduced. Further, the respondents were unsure about the existence of price competitiveness in public health facilities within Baringo and Nakuru Counties of Kenya.

Effect of Distribution of Medical Supplies on the Technical Efficiency of Public Health Facilities

This study examined the effect of the distribution of medical supplies on the technical efficiency of public health facilities in Nakuru and Baringo Counties of Kenya. The distribution of medical supplies was determined by the type, quantity, quality, condition of medical supplies, adequacy of inventory control measures, the gap between placing an order and its delivery, training of personnel in the distribution of medical supplies, emergency supplies, ordering process, inventory control, handling and warehousing of medical supplies. The results are indicated in Table 2.

Table 2: Effect of Distribution of Medical Supplies

	SD	D	NS	A	SA	CHISQ	P>CHISQ
The right medical supplies are availed in the right quantity	13.09	36.24	16.44	30.2	4.03	101.83	<.0001
The right medical supplies are availed in the right quality	9.76	27.27	23.91	35.02	4.04	96.99	<.0001
The right medical supplies are availed in the right place	8.72	20.13	18.12	45.64	7.38	141.13	<.0001
The right medical supplies are availed at the right time	12.50	37.5	22.97	24.66	2.36	104.2	<.0001
The right medical supplies are availed in the right condition	6.46	22.11	21.77	45.24	4.42	157.36	<.0001
Medical supplies are readily available when needed	16.44	38.59	19.13	22.82	3.02	97.64	<.0001
Adequate inventory control measures have been put in place	6.16	22.6	26.71	39.73	4.79	136.08	<.0001
The gap between placing an order and its delivery has been reduced	10.40	27.85	20.81	37.92	3.02	113.81	<.0001
There is better training of personnel in the distribution of medical supplies	10.17	27.12	35.25	24.75	2.71	103.46	<.0001
Adequate measures have been put in place to quickly deliver medical supplies in case of emergency	11.9	26.53	28.57	29.25	3.74	78.14	<.0001
There has been improved order processing	7.77	21.28	20.95	46.28	3.72	164.00	<.0001
There is adequate inventory control	6.48	16.38	24.91	46.76	5.46	168.08	<.0001
There is improved handling of medical supplies	7.43	13.18	20.61	53.72	5.07	231.58	<.0001
There is adequate warehousing of medical supplies	7.41	21.21	21.89	44.78	4.71	150.19	<.0001

Source: Researcher, 2024

Results of the effect of the distribution of medical supplies on the technical efficiency of public health facilities are presented in Table 2. The respondents agreed that the right medical supplies are availed in the right quality and in the right place; medical supplies are availed in the right condition; adequate inventory control measures have been put in place; the gap between placing an order and its delivery has been reduced; there have been improvements in order processing and handling of medical supplies. Further, they agreed that there is adequate inventory control and warehousing of medical supplies. However, they disagreed that the right medical supplies are available in the right quantity and at the right time. They also disagreed that medical supplies are readily available

when needed and that personnel should be trained better in the distribution of medical supplies. Further, the respondents disagreed that adequate measures have been put in place to quickly deliver medical supplies in case of emergency.

Effect of Price and Cost of Medical Supplies on the Technical Efficiency of Public Health Facilities

In this section, we examine the effect of price and cost of medical supplies on the technical efficiency of public health facilities. The variables under consideration include the acquisition of medical supplies at competitive market prices, the price of medical supplies, and procurement practices. The study findings are indicated in Table 3.

Table 3: Effect of Price and Cost of Medical Supplies

	SD	D	NS	A	SA	CHISQ	P>CHISQ
Medical supplies have been acquired at competitive market prices	9.46	17.23	34.46	35.14	3.72	121.67	<.0001
The prices of medical supplies represent value for money spent	9.80	23.99	41.22	22.30	2.70	129.44	<.0001
The prices of acquiring medical supplies reflect sound procurement practices	8.47	22.37	40.34	26.44	2.37	133.39	<.0001

Source: Researcher, 2024

The respondents agreed that medical supplies have been acquired at competitive market prices. However, they were undecided on whether the prices of medical supplies represent value for money spent and whether the prices of acquiring medical supplies reflect sound procurement practices.

Effect of Ethical Procurement of Medical Supplies on the Technical Efficiency of Public Health Facilities

In this section, we examine the effect of ethical procurement of medical supplies on the technical

efficiency of public health facilities. Specifically, this study focused on transparency and accountability, reduced misappropriation in the procurement of medical supplies, training of procurement personnel, knowledge about ethical procurement practices, promotion of sustainability, conflict of interest, maintenance of superior standards of integrity, respect for rules and regulations, exercising of due diligence, minimising of ethical risks and corrupt practices. The findings of this study are indicated in Table 4.

Table 4: Effect of Ethical Procurement of Medical Supplies

	SD	D	NS	A	SA	CHISQ	P>CHISQ
There is enhanced transparency in the procurement of medical supplies	6.85	29.11	34.25	27.74	2.05	122.76	<.0001
There is enhanced accountability in the procurement of medical supplies	9.70	21.07	34.78	32.44	2.01	120.25	<.0001
There is reduced misappropriation of resources	7.69	24.75	26.76	39.46	1.34	141.55	<.0001
There is better training for procurement personnel	9.15	23.39	37.97	27.12	2.37	119.97	<.0001
Personnel in public procurement are well-versed in ethical procurement practices	6.44	16.95	35.25	39.32	2.03	165.49	<.0001
Ethical procurement has promoted sustainability	6.10	15.93	33.90	41.02	3.05	166.94	<.0001
Conflict of interest has been eliminated	12.24	24.83	38.10	23.47	1.36	113.24	<.0001
Integrity has been realised	7.72	25.17	26.17	37.92	3.02	122.94	<.0001
Ethical procurement has been realised	6.08	19.93	33.11	38.18	2.70	147.28	<.0001
Rules and regulations are respected by all	8.36	23.75	32.78	30.77	4.35	100.43	<.0001
Staff maintain superior standards of integrity	5.72	19.19	27.61	43.10	4.38	154.38	<.0001
Staff exercise fairness in the performance of duty	6.08	13.18	21.96	51.69	7.09	154.43	<.0001
Due diligence is exercised by staff in the performance of duty	5.10	6.80	13.95	22.45	51.70	209.41	<.0001
Ethical risks have been minimised	5.41	16.89	26.69	45.95	5.07	172.21	<.0001
Corrupt practices have been minimised	12.75	27.18	28.52	26.51	5.03	60.03	<.0001

Source: Researcher, 2024

The respondents agreed that there was reduced misappropriation of resources, public procurement personnel are well-versed in ethical procurement practices, ethical procurement has promoted sustainability while ethical risks have been minimised, conflict of interest and ethical procurement have been realised, rules and regulations are respected by all, and staff maintain superior standards of integrity and exercise fairness and due diligence in the performance of duty. However, they disagreed that corrupt practices had been minimised. The respondents were undecided about whether there is enhanced transparency and accountability in the procurement of medical supplies, better training of procurement personnel, and elimination of conflict of interest.

Regression Analysis Model Specification

In evaluating the effect of the procurement devolution process on the technical efficiency of public health facilities in Kenya, the variables that were considered

include selection and quantification, distribution, price and cost, and ethical issues in procurement.

These variables are presented as follows:

$$TE = f(SELE, DIST, PRIC, ETHI)$$

Where:

Technical efficiency is a function of SELE = selection and quantification; DIST= Distribution; PRIC = Price and cost; ETHI = Ethical issues

These are represented by the following regression model:

$$TE = \alpha_0 + \alpha_1 SELE + \alpha_2 DIST + \alpha_3 PRIC + \alpha_4 ETHI + \mu_i$$

Where TE = Technical efficiency,

α_0 = Intercept, α_1 , α_2 , α_3 , and α_4 = independent variables, while μ_i = Residual error

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Table 5: Value of R-Square

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.667 ^a	.445	.440	6.17704	.445	90.508	1	113	.000

a. Predictors: (Constant), procurement_devolution

Source: Researcher, 2024

From ANOVA Table 6, it can be observed that $F(1,113)=90.508$, $p\text{-value} = 0.000$, which was less than 0.05 significant level. This means that there was a significant relationship between the procurement

devolution process and technical efficiency. The results indicate that the procurement devolution process has a significant effect on the technical efficiency of the hospital in Kenya.

Table 6: ANOVA

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3453.390	1	3453.390	90.508	.000 ^b
	Residual	4311.601	113	38.156		
	Total	7764.991	114			

a. Dependent Variable: technical_efficiency
b. Predictors: (Constant), procurement_devolution

Source: Researcher, 2024

Table 7 gives the analysis of the coefficient of regression analysis. From the Table, the coefficient of the procurement devolution process was 0.199 with a (T-value= 9.514, p- value= 0.000 < 0.05 significant level). This means that the procurement devolution process

had a positive effect on technical efficiency. This means that an increase of 1 unit of procurement devolution process leads to an increase of 0.199 in technical efficiency.

Table 7 Coefficients of Regression Analysis

Coefficients						
Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.607	3.351		1.972	.051
	procurement devolution	.199	.021	.667	9.514	.000

a. Dependent Variable: technical efficiency

Source: Researcher, 2024

Discussion

Studies show that Kenya's health procurement process is influenced by accountability, adoption of ICT, ethics and procedures, skills, training, and tendering procedures, skills, and training and tendering procedures (Wasike & Mugambi, 2015; Ogutu & Were, 2013). Globally, regionally and nationally, the procurement of medical supplies is limited by several factors. For example, in Pakistan, the challenges include pharmaceutical financing and pharmaceutical cheating (Bastani et al., 2019). In Uganda, procurement challenges include a lack of credible and accessible drug consumption information, poor planning, forecasting and logistics, inadequate procurement skills, and poor procurement practices and logistics (Oluka et al., 2013). In Zimbabwe, the challenges include the unavailability of medicines, poor inventory management, insufficient financial resources, and increased healthcare costs (Shonhe, 2017). In Nigeria, a major challenge is sub-standard and falsified medications (Amadi & Tsui, 2019), while in Ethiopia, the challenges include poor data quality, staff capacity constraints, and policy constraints (Boche et al., 2022).

In Kenya, the procurement of medical services is inhibited by poor quantification and procurement procedures, inadequate transportation, unskilled personnel, inadequate funding, understaffed and demotivated staff, legal bureaucracies, price fluctuations, drug stockouts, expired drugs, counterfeit drugs, lack of adequate and highly skilled

procurement personnel, and limited access to essential medicines and equipment. These factors inhibit the attainment of universal health care for the majority of Kenyans (Muhia et al., 2017; Gimoi, 2017; Wamae & Kungu, 2014; Mungu, 2013; Mogoi, 2010).

The distribution of medical supplies in Kenya has received attention, as evidenced by various empirical studies. These studies examined diverse aspects such as procurement personnel, inventory management practices, inventory monitoring techniques, information technology, demand forecasting, infrastructure, funding, compliance with rules, and market price fluctuations. Studies show that the most popular inventory management practices used by public hospitals are ERP systems (Njoroge, 2015). The most common practices included ICT, partnerships, outsourcing, tendering, distribution and logistics, and inventory control (Aura, 2017). In Kenya's public health facilities, effective inventory monitoring and inventory management significantly and positively affect performance (Gatari et al., 2022; Odhiambo & Kihara, 2018; Mwele & Gichure, 2017).

The distribution of medical supplies in Kenya is constrained by a poor regulatory environment, which breeds corruption. In turn, this undermines the attainment of universal health coverage (UHC) goals of equity, quality, and responsiveness (Naher et al., 2022). The efficient inventory management practices and performance of public hospitals in Kenya are limited by failure to invest in modern technologies,

insufficient funding, poor infrastructure, limited training, unreliable suppliers, inadequate funding, and market price fluctuations (Njoroge, 2015; Odeny, 2015).

The price and cost of medical supplies are affected by several factors. For example, India's low per capita health expenditure is among the highest globally (Chen et al., 2012). As a result, the health financing system in India exhibits health inequity, inadequate availability and reach, unequal access, poor quality, and costly healthcare services. In Saudi Arabia, there is limited evidence and low scientific validity supporting the idea that privatisation could increase access to medical care (Alkhamis, 2017). The rising healthcare prices, particularly in emerging and developing countries, coupled with corruption, negatively impact access to healthcare (Rangasamy, 2021; Mostert et al., 2015).

Ethical practices are the acceptable norms that supply chain professionals and institutions espouse to ensure a perfect supply process (Sengbeh, 2015). These practices ensure that the public procurement function performs to the expectations of taxpayers and other stakeholders (Mwangi & Kwasira, 2015). Compliance with ethical practices has been one of the critical issues in the public sector over the past decades (Israel et al., 2019). The importance of ethics in procurement has received prominent attention in global, regional and local empirical research. For example, in the COMESA region, evidence shows that rules and ethical considerations, competence of procurement staff, and teamwork significantly and positively predict performance (Mpeera et al., 2013). In Saudi Arabia, ethical commitment positively influences the performance of small and medium enterprises (Mazharul & Alharthi, 2020). Moreover, in Nigeria, ethics, accountability, and transparency are critical in public procurement (Akaninyene & Mark, 2015). In Tanzania, ICT, staff competence, and ethical procurement practices are significantly associated with organisational performance (Zai, 2021). Evidence from Zimbabwe's public sector shows that consistent and professional procurement practices can positively impact the effective expenditure of public funds (Chidya, 2021).

Several studies have been done in Kenya on the effect of ethical procurement on the performance of

organisations. While some studies indicate positive outcomes of ethical procurement, other studies show that the outcomes have not been in tandem with expectations because of challenges. For example, the procurement performance of state corporations in Nairobi and Mombasa Counties of Kenya is influenced by accountability, transparency, ethics, and procurement leadership and planning (Mbura & Kitheka, 2020; Salim & Kitheka, 2019; Mwangi & Kwasira, 2015; Sengbeh, 2015). Procurement performance in Kenya's humanitarian organisations, sugar manufacturing firms, and small and medium enterprises (SMEs) is influenced by ethics, procurement planning, staff competence, and procurement best practices (Nyakundi, 2018; Odero & Ayub, 2017; Makali, 2015).

In Nairobi County of Kenya, procurement performance is influenced by staff training, commitment by management, ICT, level of awareness, ethics, and institutional factors (Munywoki, 2016). A study on the procurement process of Embu Water Services Company (EWASCO) in Kenya shows that the procurement process is not only ineffective but also lacks a staff training policy (Ndolo & Njagi, 2014). In Kenya's health sector, the public procurement process of health care is positively influenced by accountability, ICT adoption and ethics (Ngugi & Mugo, 2012). Public hospitals in Homa Bay and Kisii counties of Kenya exhibit high levels of integrity in procurement personnel (Oloo et al., 2017).

Regionally and nationally, ethical procurement is constrained by several factors. These include fraud and corruption (Matthew et al., 2013). In Nigeria, factors include lack of leadership, weak laws, greed, and conflict of interest (Ebekozi, 2019; Abdullahi et al., 2019). In Ethiopia's health facilities, increased wastage of medicines was attributed to the issuing of medicines without health facilities' needs and requests, inadequate pharmacy personnel, and a weak monitoring system (Gebremariam et al., 2019). In Tanzania, lack of transparency and lack of accountability had a negative significant association with procurement function performance in state corporations (Masoud, 2022). In Kenya's health sector, ethical procurement is constrained by bureaucracy, inadequate funding, poor quantification, inadequate transportation, lack of skilled personnel, conflict of

interest, inappropriate and unethical practices, and inadequate procurement technology (Muhia et al., 2017; Philly et al., 2017; Amemba et al., 2013).

CONCLUSIONS AND RECOMMENDATION

Despite increased health expenditure in Kenya, public health healthcare services have deteriorated. Evidence shows that although it was anticipated that increased government expenditure would improve efficiency and better health outcomes, Kenya's public health sector is inefficient. This study evaluated demand for medical supplies, inventory policy, inventory management systems, complaints from patients about medical supplies, purchasing effectiveness, agreements with suppliers, inventory management systems, procurement efficiency, supply chain continuity, compliance rate, policy compliance, emergency purchases, price competitiveness, competitive bidding, coherence in technical specifications, and distribution channels.

The study shows that there is improved demand for medical supplies, inventory management systems, distribution systems, reduced emergency purchases and complaints from patients, and the effectiveness of purchasing accompanied by procurement efficiency. Further, reliable supply-chain continuity, competitive bidding through open tendering, and coherent technical specifications exist in procurement devolution in Kenya's public health system. However, respondents disagreed that complaints from patients about medical supplies have been reduced. Although respondents agreed that the right medical supplies are available in the right quality and in the right place and that medical supplies are available in the right condition, they disagreed that there is better training of

personnel in the distribution of medical supplies and that adequate measures have been put in place to quickly deliver medical supplies in case of emergency. Regression results show that there is a significant relationship between the procurement devolution process and technical efficiency. The results indicate that the procurement devolution process has a significant effect on the technical efficiency of the hospital in Kenya. The coefficient of the procurement devolution process was 0.199 with a (T-value= 9.514, p-value= 0.000 < 0.05 significant level). This implies that the procurement devolution process has a positive effect on technical efficiency. Thus, an increase of 1 unit of the procurement devolution process leads to an increase of 0.199 in technical efficiency.

Studies show that the procurement of medical supplies in Kenya is influenced by accountability, the adoption of ICT, and ethical procedures. Procurement challenges include lack of credible and accessible drug consumption information, poor planning, poor inventory management of medicines, insufficient financial resources, increasing cost of healthcare, staff capacity constraints, inadequate transportation, unskilled personnel, inadequate funding, understaffed and demotivated staff, bureaucratic legal requirements, market price fluctuations, drug stockouts, and counterfeit drugs, among others. These challenges inhibit the attainment of universal health care for the majority of Kenyans.

This study recommends that there should be increased financial and human resource support for Kenya's public health care.

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