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Research Article

Proactive Strategic Sourcing: A Game Changer For Public Hospital Performance In Kenya

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ABSTRACT
Governments across the globe have made commitments towards the achievement of the right to health. This basic human right is enshrined in global, regional, and national health frameworks. To support this, the Government of Kenya has instituted various reforms aimed at achieving good health. However, despite these reforms, there is still sourcing problems in the public hospitals in Kenya attributed to poor supplier relationships and inadequate procurement planning. There is an unavailability of medicines, equipment, and essential supplies with only 33% of public hospitals having adequate stock for 90 days or more and 67% accounting for an unavailable medical stock for up to 30 days or more. Only 14 doctors are available to serve 10,000 Kenyans, resulting in long waiting times for patients in hospital queues. Mounting evidence advances that proactive strategic sourcing is a key contributor to organisational performance. Therefore, the study investigated the effect of proactive strategic sourcing on the performance of public hospitals in Kenya. The study was guided by resource orchestration theory, adopted a positivism philosophy, and utilised descriptive and explanatory research designs. The study's target population was 243 public hospitals in Kenya. Both descriptive and inferential statistics were used for data analysis. Employing a multiple regression analysis on data from public hospitals across Kenyan counties, the study revealed that supplier relationship and procurement planning play an important role in enhancing the performance of public hospitals in Kenya. The study recommends that the Ministry of Health, Chief Executive Officers, and Medical Superintendents of public hospitals adopt proactive strategic sourcing in the form of supplier relationship and procurement planning to promote relevance, financial viability and effectiveness of the public hospitals.

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1.0 Introduction

The right to health is a fundamental human right affirmed clearly in global, regional, and national health frameworks. Healthcare is fundamental in enriching public health across the globe (Lim *et al.,* 2023). Consequently, leaders across the globe, whose countries are member states of the World Health Organisation (WHO) aim to continuously improve healthcare systems for all, in a bid to achieve this basic human right. The United Nations (UN) Sustainable Development Goals (SDGs) and the African Union Agenda 2063 possess pillars aimed at high standards of living, improved quality of life and well-being for all people, healthy-well-nourished citizens, and the expansion and equitable access to quality healthcare services for all across the globe and in the African continent, respectively (Simeoni & Kinoti, 2023).

The East Africa Community (EAC) Vision 2050 postulates that by the year 2050, the East African countries' per capita income will grow tenfold to USD. 10,000 which will consequently move the nations to middle-income countries. The change in income status of the East African nations will be established upon 100% access to healthcare services by the citizens, which will be achieved through; increased healthcare financing; recruitment, training, and retention of the healthcare workforce; improved distribution and access to safe, affordable and quality medicines, vaccines and medical technologies; and harmonised healthcare legislations (East Africa Community, Vision 2050).

The Kenya 2010 Constitution, the Vision 2030 agenda, the Kenya Universal Health Coverage (UHC) Policy (2014-2030), a Sessional Paper No. 2 of 2017, the Health Act 2017, the Big Four Agenda and the Bottom-Up Economic Transformation Agenda (BETA), all aim to increase access to quality healthcare for all Kenyan citizens; be it promotive, curative, preventive, rehabilitative or palliative care; and promote health tourism into the country for socio-economic development (Ministry of Health, 2020). This consequently results in improved quality of life and overall good health for Kenyan citizens (Simeoni & Kinoti, 2023).

Good health inspires society to thrive and become productive, while the fear of sickness stalls production, consumption, and overall human well-being. Diseases stagnate a nation's economy by disrupting business continuity and creating supply chain disruptions resulting in a very low annual Gross Domestic Product (GDP), (Smith *et al*., 2019). To achieve good health, a lot of money is spent on providing healthcare services with the annual global healthcare spending standing at USD 7 Trillion as of 2022.

In the United Kingdom every €5 spent €1 is spent on healthcare, while in Africa as of 2018, healthcare spending in the GDP was at 7% in Kenya, 4.6% in Mozambique, 5% in Ethiopia and Nigeria respectively, and 6.5% in Ghana. The increase in healthcare spending has brought a considerable increase in per capita spending in the world. Healthcare spending figures are gradually rising due to a rise in the ageing population, more complex diseases requiring complex medications, and other technical/institutional aspects facing the healthcare systems (Anderson *et al*., 2022).

Despite heavy healthcare expenditure, services provided in public hospitals across the globe are not commensurate with the resources invested therein (Di Giorgio *et al*., 2022). The situation is further complicated due to uncertainties that exist in the healthcare supply chains that consequently affect the utilisation of healthcare resources by the people (Lau *et al.*, 2022). There is continuous inaccessibility, unavailability, and unaffordability of public healthcare services across the globe (Dixit *et al*., 2020).

The provision of day-to-day services to patients and consumers is not done in a timely and effective manner with patients waiting for long hours in queues to access healthcare services (Iyengar *et al*., 2023). Zeferino *et al*., (2023) emphasise that global public healthcare systems face similar challenges ranging from an ageing population, low digitisation and adoption of new technologies, increasing demand for health services, immense drug shortages, and medical personnel, and financial challenges.

Specifically, the utilisation of healthcare systems in Europe, the USA, Asia, and Africa is faced with inadequate supply and unequal distribution of healthcare facilities, poor product sourcing, unavailability of healthcare personnel, low technology use, lack of essential medicines, poor supplier relationships, lack of procurement planning, the upsurge of medical tourism to foreign countries and the rapid expansion of private healthcare facilities (Iyengar *et al*., 2023).

In Kenya, there is an unavailability of medicines, equipment, and essential supplies with only 33% of public hospitals having adequate stock for 90 days or more and 67% accounting for an unavailable medical stock for up to 30 days or more (Barasa *et al*., 2020). This has been attributed to delays in procurement and the lack of a decentralised drugs and medical supply procurement system at the county level resulting in shortages of drugs for patients (Masaba *et al*., 2020; Osetinsky *et al*., 2020). Most facilities lack diagnostic and ambulatory services and human resources specialists making it hard for most citizens to access adequate healthcare services. The comprehensive coverage for cancer treatment is low with only 23% of cancer patients having access to radiotherapy services. Additionally, diabetic patients are faced with discontinuation of essential medicines and a low doctor-to-patient ratio of 0.6 to 1000 every year (Osetinsky *et al*., 2020). Only 14 doctors are available in public hospitals to serve 10,000 Kenyans, resulting in long waiting times for patients in hospital queues. There is a high level of medical brain drain, where 591 doctors are away on study leave and 135 who have completed studies are likely to remain in foreign countries instead of rendering their expertise in Kenya (Schneller *et al*., 2023).

Despite the Management Equipment Services (MES) leasing option by the national government which was meant to scale up infrastructure at the county level,

access to diagnostic services in Kenyan public hospitals is low, with a majority of patients forced to obtain diagnostic services from external service providers (Masaba *et al*., 2020). Despite having multiple supply sources for medical requirements and supplies, there is increased unavailability, stock-outs, and unaffordability of medicines in public hospitals in Kenya. In most public hospitals, only 45% of essential medicines are available and 67% accounts for unavailable stock, for up to 30 days or more. Only 14% of Kenyan public hospitals are stocked continuously for 90 days or more. The available medicines are sold at high mark-up prices resulting in increased out-of-pocket burden to the members of the public and exploitation of patients at private hospitals (Toroitich *et al.,* 2021). The majority of Kenyans who earn less than a dollar per day forgo treatment resulting in severe illness and probable death. On the other hand, the medicines that are highly priced end up expiring after some time Additionally, a lack of qualified personnel to offer prescriptions results in poor dosage (Munene, 2022).

Supply chain serves as a useful link in the delivery of healthcare services. Efficient supply chain management is a crucial life-saving factor that fosters the delivery of goods and services to the end user; who in this case is the patient. The uncertainty and risks that exist in the Kenyan healthcare supply chains make this impossible (Lau *et al*., 2022). Healthcare services and supply chain revolves around the provision of preventive, diagnostic, and curative, treatment and management of illnesses (Betcheva *et al*., 2020). The aim of any healthcare supply chain is the provision of day-to-day services to patients and consumers, in a timely and effective manner. This is making available the most appropriate products (clinical and non-clinical), at the best price, in the right location, at the right time, and in the right condition (Schneller *et al*., 2023).

According to Akbari *et al*. (2021), Supply Chain Management (SCM) optimises economic resources and helps in healthcare sector crisis management. In the healthcare sector, SCM is embedded in a customer focus, a systems approach, and a strategic orientation. The creation of customer value and an end-to-end integrated entity are aspects advocated by SCM (Betcheva *et al*., 2020). When not managed efficiently, the healthcare sector supply chain jeorpadise safety and overall health quality (Friday *et al*., 2020). Effective SCM established through proactiveness is an important asset in an organisation as it contributes to firm performance (Toroitich *et al*., 2021).

Proactiveness is a forward-looking perspective that enables organisations to be early market movers and beat the competition easily (Mumaraki, 2020). Proactiveness helps organisations beat the competition and identify new opportunities (Cortes *et al*., 2021). When done correctly, proactiveness shapes the firm macro environment rather than the firm depending on the environment (Hamdan & Alheet, 2020). This helps create strategic relationships, alliances, and collaborations with industry partners which reduces supply chain uncertainties (Gauthier *et al*., 2021). Proactiveness in a supply chain enables a firm to make necessary changes that shape the competitive behaviour of the industry. This can be done through upstream or downstream supply strategies who bring in value to and organisation (Cortes *et al.,* 2021).

Amongst such strategies is strategic sourcing which transcends purchase acquisition as it incorporates the establishment of supplier relationships to create a competitive advantage. Strategic sourcing is a critical component of organisational growth, especially in the midst of competition as it helps reposition an organisation product offering to match the demands of different customers to the organisational supplies. This creates value for money for the customer and brings in resources to the organisation. Good strategic sourcing practices in a public hospital will result in the purchase of efficient and right quantities of healthcare supplies resulting in minimal obsolete stock. Proactive strategic sourcing which is used in this study is established on supplier relationship and procurement planning (Cankaya, 2020).

Proactive strategic sourcing in this study was built on supplier relationships and procurement planning. The establishment of long-term supplier relationships reduces costs and price volatility while enabling firms to evaluate supplier performance. Conversely, planning for procurement aggregates organisational needs, reduces emergency purchases, and integrates expenses with set budgets. A mutual relationship between suppliers and organisations promises to reduce risks and costs, create value, and sustain competitive advantage (Changalima & Mushi, 2020).

The increasingly changing healthcare needs complicate the delivery of healthcare services and this calls for effective management of buyer and supplier relationships as this stimulates performance. Suppliers play a critical role in promoting organisational success. Supplier relationships provide a backbone for improved performance by allowing for price negotiations and enhancing cost savings through improving value for money (Ndung'u *et al*., 2023).

Proactive strategic sourcing establishes relationships with many suppliers and helps to mitigate risks in disruptive environments while improving agility and resilience. It involves planning procurement/sourcing, research and development, contract establishment, and supplier relationship management. Procurement planning is a basic organisational management process that influences performance directly, especially in public sector as it helps in identifying quantities, specifications, the framework for delivery, identifying the source of supplies, negotiation, and establishing relationships (Frederico, 2023).

This is because the process ensures efficient utilisation of resources and encompasses needs identification, supplier selection, and budgeting. It is a foundational brick that minimises costs and risks associated with procurement as it gives room for accountability within public sector organisations (Omondi *et al*., 2024). Planning for procurement in any public sector organisation enhances the procurement performance of the said organisation by ensuring needs are adequately identified and budgeting is done efficiently to promote

outcomes (Mwangi & Wabala, 2021). To adequately plan the procurement process in any organisation, an integration between procurement and supply chain practices should be done so that efficiency and effectiveness are maximised (UNOPS, 2021).

Cortes *et al*., (2021) note that proactiveness in the sourcing function enables the firms to realise that competition goes beyond competitors' actions to incorporate the entire supply chain. This is because, for the creation of a final product, the combined efforts of several entities are needed. The interdependence calls for co-creation, knowledge sharing, and enhanced capabilities which improve the competitive advantage of organisations. It is worth noting that to achieve this sustained competitive advantage, the supply chain should be a strategic focus of an organisation where the top management is involved in daily operations.

Strategic Sourcing encompasses processes that enable an organisation to achieve both long-term and short-term operational objectives as it includes the development of a holistic sourcing strategy. This incorporates selection of suppliers, evaluation of suppliers, procuring of resources, and the management of supplier relationships. This approach of sourcing differs from traditional sourcing by focusing on the whole cost of owning a product and taking a collaborative approach to the management of buyer-supplier relationships. A well-coordinated proactive strategic sourcing enhances the competencies of any organisation and promotes efficient communication between the organisation and suppliers. To achieve effectiveness and efficiency in an organisation, there should be proactive strategic sourcing therein as it helps identify the strengths and weaknesses in the procurement function and looks into the future to ensure adequate control (Kim & Chao, 2022).

1.1 Problem Statement

An aspiration of the Kenyan Government in the Vision 2030 plan is to transform lives through equitable, high-quality, and affordable healthcare to all, by improving public healthcare (GoK, 2021). To achieve this, the Kenyan Government has instituted various reforms and policies in the healthcare sector; BETA, UHC, the Fourth Medium Term Plan (2023-2027) establishment and revamping of Kenya Medical Supplies Authority (KEMSA), and a recent establishment of the Social Health Authority in October, 2023, all aimed at promoting good health for all (Ministry of Health, 2023).

However, despite these government interventions and heavy budgetary allocations, the quality of services offered in public hospitals keeps deteriorating. There is inefficient demand forecasting, a lack of a decentralised procurement system at the County level, low ICT utilisation, and inadequate medicines, equipment, and human resources. Only 14% of public hospitals are stocked with essential medicines continuously for 90 days or more. The order fill rate for essential medical supplies at KEMSA for the FY 2022/2023 was 51% resulting in huge drug shortages at the county levels (Medium Term Expenditure Framework, 2023). Most public hospitals operate for 8 hours resulting in underutilisation of invested capacities. There is a very high level of medical brain in the country with only 14 doctors serving 10,000 Kenyans, 591 doctors are away on study leave and 135 who have completed studies are likely to remain in foreign countries in place of rendering their expertise in Kenya resulting in long waiting hours (Toroitich *et al.,* 2021). All these challenges affect the effectiveness, financial viability, and relevance of public hospitals in Kenya (Okoth, 2021).

A functional procurement and sourcing system is the backbone of quality public healthcare and improved organisational performance as it guarantees the provision of medicines, diagnostic services, and healthcare human resources in a timely and efficient manner (Olutuase *et al*., 2022). Therefore, the central objective of this study was to uncover the influence of proactive strategic sourcing practices on the performance of public hospitals in Kenya. Studies in the area of proactive strategic sourcing have revealed positive results (Ndung'u *et al*., 2023; Oliech & Mwangangi, 2019; Munanu, 2017). Kaur and Singh (2022), did a study on proactive and reactive procurement in the case of humanitarian supply chains. The focus was on building resilience in the supply chain. This study emphasises the healthcare supply chain, proactive strategic sourcing, and performance of public hospitals in Kenya.Vlahakis *et al.* (2019), assessed proactive decision-making behaviour in supply chain procurement. The study delved into decision-making by focusing on planning, sourcing, making, delivering, and returning products. The study used Bayes's causal relationship to depict the relationship between variables. The current study will utilise a quantitative approach and will use proactiveness in the supply chain concept of strategic sourcing and not a decision-making concept. The study by Vlahakis *et al*., (2019) revealed that proactiveness in decision-making positively influences supply chain procurement and overall firm performance. The central objective of the study is to investigate the effect of proactive strategic sourcing on the performance of public hospitals in Kenya.

2.0 Review of Literature and Hypotheses Development

This section presents the theory that this study is built upon, previous studies conducted in the area of proactive strategic sourcing and the performance of organisations, and development of hypotheses.

2.1 Theoretical Review

This study is guided by the resource orchestration theory (ROT) which is advanced from the resource-based view (RBV) theory. Criticisms were received on the resource-based view theory which led to the development of the resource orchestration theory. Resource orchestration was mentioned in the literature in 2014 by Hughes *et al*. (2019) who later concluded that the theory has been underutilised. ROT combines resource management and asset orchestration whereby resource management aims at finding a fit among organisational processes by

including the structuring, bundling, and leveraging of resources (Fawcett *et al*., 2022). Structuring is the acquisition, accumulation, and disposal of resources, while bundling refers to steadying, inspiring, and ground-breaking resources. Leveraging entails mobilising, coordinating, and deployment of resources. To obtain the full value of resources, the structuring, bundling, and leveraging activities should be performed simultaneously to bring value to an organisation. Asset orchestration entails the search for and deployment of identified resources (Zeng *et al*., 2023).

According to ROT, an organisation possesses various resources including human, information technology, capital equipment, knowledge, organisational culture, and management which when effectively structured, bundled, leveraged, and managed for a particular market contribute to a sustained competitive advantage and superior performance in organisations (Fawcett et al., 2022). In the public hospital supply chain, some of the resources include suppliers and internal organisational resources such as human resources and these resources influence the performance of a firm to a great extent (Ndung'u *et al*., 2023). Supplier relationships, strategic supplier identification and procurement planning enable organisations to hold the resources they need and create a competitive advantage. Public hospital orchestration helps create a shared vision for the whole organisation and this stimulates resource orchestration which builds greater performance. In such an environment, suppliers move from generic to strategic through supplier identification, efficient communication, training, and development which consequently enhance performance. and thus the use of this theory in this study (Wong *et al*., 2018).

2.2 Empirical Review

This section provides a review of past literature in the area of proactive strategic sourcing.

2.2.1 Proactive Strategic Sourcing and Performance

Proactiveness is the propensity to look ahead, analyse market/industry trends and take action on the identified opportunities (Hossain *et al*., 2022). When done correctly, proactiveness shapes the firm macro environment rather than the firm depending on the environment (Hamdan & Alheet, 2020). This helps create strategic relationships, alliances, and collaborations with industry partners. This reduces uncertainties along the entire supply chain (Gauthier *et al*., 2021). Proactive strategic sourcing is key in improving the efficiency and adaptiveness of healthcare systems. The primary goal of healthcare is to promote equity, quality of care, efficiency, and responsiveness to citizens. Proactiveness in strategic sourcing can help meet these goals even in the midst of high demand (Montas *et al*., 2022).

Proactive strategic sourcing addresses problems in advance so that risks and negative consequences are avoided (Menga, 2020). A study on strategic sourcing by Wanjiku (2019) postulates that strategic sourcing enhances firm profitability. Another study by Ndung'u *et al*. (2023) revealed that strategic sourcing boosts the performance of milk processors in Kenya. Proactive strategic sourcing is built by many concepts but majorly revolve around supplier selection and relationships, procurement planning amongst other concepts. Asadabadi *et al*., (2023) highlight that strategic supplier selection refers to a process of identifying, choosing, and evaluating suppliers to ensure they are aligned with their strategic objectives and organisational needs. It is a fundamental process that ensures an organisation achieves a competitive advantage and optimises its supply chains. Strategic supplier selection is a critical supply chain management activity that causes great implications for a firm performance as careful selection of suppliers helps a firm achieve product quality and market competitiveness. It is critical to invest in a robust supplier selection process to ensure sustained growth and performance (Schramm *et al*., 2020).

According to Islami, (2022), supplier relationships require a high degree of coordination between the firm and the suppliers. In an environment of long-term supplier relationships, there are mutual problem-solving, information sharing, constant communication, mutual planning, and continuous improvement initiatives which consequently breed superior performance and a win-win situation between both parties that is organisations and suppliers. A strategic supplier relationship will additionally, incorporate supplier quality management through mutual collaboration making it easy for both parties to understand and anticipate their needs, reduce uncertainty, and facilitate a flexible response.

A study by Krop and Iravo (2024) in West Pokot county, Kenya assessed the effects of supplier selection on the procurement performance of public sector organisations and revealed that when a firm engages in strategic supplier selection, they are able to achieve value for money, timely delivery and quality of services and goods. Odhiambo (2023) who studied supplier selection criteria in Nairobi City County revealed that on top of high quality of products, an organisation also benefits from shared technological capacities and innovations which are crucial features for enhancing organisational performance.

The use of unco-ordinated logistics management information systems poses a challenge in ascertaining demand and supply, thus prolonged lead times and low supply (Kenya Health Sector Strategic Plan, 2018-2023). A continuous and adequate supply of medicines is a key element in managing diseases (Modisakeng *et al*., 2020). Collaborative supplier relationships and the availability of proper strategies in procurement planning help improve healthcare performance (Oliech & Mwangangi, 2019). Planning for procurement helps in identifying sources of supply, determining resource quantities and their specifications, enhancing negotiations, establishing supplier relationships, and framework for delivery (Frederico, 2023). According to Baldeh *et al*., (2023), the Kenya medical supply chain is the fastest growing in East Africa with a high dependency level on outsourced raw materials from India. The heavy importation raises the cost of medicine which adds an extra burden to Kenyans. Ndolo *et al*., (2023) highlight that globally, healthcare supply chains

face challenges in matching demand and supply where demand usually exceeds supply thus the need for proactive strategic sourcing which will not only match demand and supply but also advance the primary goal of healthcare which is to promote equitable quality healthcare and enhance efficiency and responsiveness to citizens (Montas *et al*., 2022).

A study by Oliech & Mwangangi (2019) established that strategic sourcing reduces shortages, and wastages, improves accountability, and makes services affordable to all. The study further recognised that poorly organised supply chains place the health of millions of Kenyans at risk. A recent shortage of Bacillus Calmette-Guérin (BCG) vaccines in Kenya was attributed to delays in sourcing (Simeoni & Kinoti, 2023). Proactive strategic sourcing ensures the availability of adequate supplies at the shortest lead times and competitive prices (Oliech & Mwangangi, 2019). In Thailand, the adoption of proactive strategic sourcing has reduced child mortality rates while in Ghana the quality of non-communicable disease treatment has improved (Munyua *et al.,* 2022).

A breath of new hope is achieved in the abundance of procurement planning because a procurement plan stipulates the needed resources for essential medical supplies against available resources, therefore, minimising shortages and enhancing overall healthcare outcomes. A comprehensive study by Ahmed (2019) on how procurement planning affects parastatals in Mombasa County Kenya revealed that planning for procurement is an integral organisational process that leads to improved financial performance, enhanced service delivery, and reduced operational costs. Omondi *et al*. (2024) investigated the role of procurement planning process amongst the public sector organisations in Kenya and confirmed that effective planning enhances service delivery and efficiency in operations.

Vlahakis *et al*., (2019), assessed proactive decision making behaviour in supply chain procurement. The study delved deeply into decision-making by focusing on planning, sourcing, making, delivering, and returning products. The study used Baye's causal relationship to depict the relationship between variables. The current study utilised a quantitative approach and used proactiveness in the supply chain concept of strategic sourcing and not a decision-making concept. The study revealed that proactiveness in decision making positively influences supply chain procurement and overall firm performance.

Kaur and Singh, (2022) did a study on proactive and reactive procurement in the case of humanitarian supply chains. The focus was on building resilience in the supply chain. The current study emphasised the healthcare supply chain and entrepreneurship. The study was focused on building a model known as DEMATEL to assess the relationship between variables. The current study used a holistic conceptual framework to assess the relationship between entrepreneurial; and supply chain management practices.

Okangi (2019), considered the influence of proactiveness on the profitability of Tanzanian construction enterprises and revealed that proactiveness in organisational operations promote sustainable performance. Another study by Awais and Fantazy (2018) on the influence of proactiveness on the sustainability and performance of supply chains in Pakistan found out that proactiveness boost supply chain agility and responsiveness which in turn leads to greater performance. studied the effect of pro-activeness on supply chain sustainability and performance in Pakistan.

3.0 Research Methodology

The study utilised the positivism philosophy which view the world objectively by distancing the researcher from his/her personal views and interrogating data in a practical setting thus building actionable knowledge (Park *et al*., 2020). The study utilised a blend of both the descriptive research design and the explanatory research design as utilised by Gichui *et al*. (2023). The descriptive research design helps obtain population characteristics and test hypotheses, thus preventing bias. The explanatory research design establishes causal and effect associations between variables enabling the researcher to manipulate data (Mishra & Alok, 2022). The study population for this study was 243 public hospitals in Kenya. The study utilised Slovin's formulae to determine the sample size of 151 public hospitals. The study used primary data to establish a relationship between variables. Primary data was collected using a questionnaire that underwent a pilot study to avoid biased responses as argued by Marcial and Launer (2021). The study used face, content, and construct validity and reliability was tested through the test-retest method, and the Cronbach alpha coefficient of 0.7 helped check the internal consistency as shown in Table 1.

Table 1: Pilot Study Results

Variable	Items	Reliability (Cronbach Score)	Comments
Proactive Strategic Sourcing	11	.965	Reliable
Performance of Public Hospitals	25	.798	Reliable
Overall Reliability		.858	Reliable

According to the findings in Table 1, all the variables used in the study were reliable as they met the set threshold of o.7. Hence all the variables were utilised in the study.

After collection, data was cleaned and classified according to similar characteristics and coded to promote easy analysis. Both descriptive and inferential statistics were used for data analysis. The descriptive

statistics included means, percentages, and standard deviation. The multiple regression analysis was used to test the strength of the relationship between entrepreneurial supply chain practices and the performance of public hospitals in Kenya. The Analysis of Variance (ANOVA) was used to test the overall fitness of the model.

The combined multiple regression model is stated in Equation 3.1

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_{2+} \beta_3 X_3 + \varepsilon$ …… 3.1

Where; Y is the composite index for the performance of public hospitals, β_0 is constant, β is the slope, X_1 is supplier relationships, X_2 is procurement planning and ε is the error term.

4.0 Findings and Discussion

4.1 Diagnostic Results

According to Wainana et al., (2022) who also used multiple regression, any regression model must fulfil the conventions of multiple regression. Consequently, several tests were done in the current study in a bid to fulfil this necessary condition.

Table 2: Diagnostic Tests Results

S. No	Test	Method	Decision criteria	Results	Decision
1.	Sample Adequacy Test	Kaiser-Meyer-Olkin (KMO)	0.5 threshold	All variables surpassed 0.5	Sample adequate
2.	Normality Test	Shapiro-Wilk test	P value is greater than the level of significance of 0.05	p-values greater than 0.05	Date normally distributed
3.	Outliers Test	Cook's Distance	0 to 1 >1 considered outliers	<1 values obtained	No outliers
4.	Correlation Test	Pearson Correlation Coefficient	Values should fall between -1 and 1.	All variables exceeded the 0.05 confidence level set.	Presence of linearity
5.	Homoscedasticity	Breusch-Pagan test	P values greater than 0.05	Values had p value of 0.50>o.o5	presence of heteroscedasticity
6.	Multi-collinearity	Variance Inflation Factor	1 to 10	All variables below 10	Absence of Multi-collinearity
7.	Autocorrelation	Durbin-Watson	Durbin-Watson value of 2.447	value of 0.547	No autocorrelation

4.2 Descriptive Statistics

This section presents the study findings and discussions for proactive strategic sourcing and the performance of public hospitals in Kenya.

Table 3: Descriptive Statistics

Stats	Supplier Relationship	Procurement planning	Performance
Mean	4.131	4.141	4.714
SD	.7109	.683	.2279
Min	2.25	2.00	3.308
Max	5.00	5.00	5.00
N	247	247	247

Note: Stats=statistic, SD=Standard Deviation, Min=Minimum value, Max=Maximum value

Table 3 shows the descriptive statistics for all the variables utilised in the study. The respondents agreed to a great extent (4.131) that supplier relationships contribute to the performance of public hospitals in Kenya. Supplier relationships reduce transactional costs and promote business continuity by ensuring the provision of essential healthcare resources (Kiarie *et al*., 2021; (Azadegan *et al*., 2020; Faruqee *et al*., 2021). Procurement planning is adopted to a great extent in public hospitals (4.141). The performance of public hospitals is dependent on how well procurement is planned because through adequate planning you achieve the right supplies at the right cost and time. Procurement planning identifies the needs of a hospital, secures contracts with potential suppliers, and forecasts demands and this enables a hospital to manage resources effectively and achieve high-quality patient care (Changalima *et al*., 2021; Modisakeng *et al*. (2020); Ferreira & Marques, 2021).

4.3: Inferential Statistics

The study utilised multiple linear regression to test the influence of proactive strategic sourcing practices (supplier relationship and procurement planning) on the performance of public hospitals in Kenya. The results are provided in Table 4.

Table 4: Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.676[a]	.458	.451	.2472406

From Table 4, 67.6% of the variations in the performance of public hospitals in Kenya can be explained by proactive strategic sourcing practices. An improvement in the performance of public hospitals in Kenya can be achieved through the adoption of proactive strategic sourcing practices. Proactive strategic sourcing is key to improving the efficiency, viability, effectiveness, relavance and adaptiveness of healthcare systems (Montas *et al*., 2022). Collaborative supplier relationships and the availability of proper strategies in procurement planning help improve healthcare performance (Oliech & Mwangangi, 2019). The findings of this study confirm the findings of other studies done on strategic sourcing and the performance of organisations (Oliech & Mwangangi, 2019); Montas *et al*., (2022); Cankaya *et al*. (2020) and Frederico *et al*. (2021).

Table 5: Analysis of Variance

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.532	3	4.1777	68.338	.000[b]
Residual	14.854	243	.061		
Total	27.386	246			

a. Dependent Variable: Performance of Public Hospitals

From the ANOVA results given in Table 5, it can be concluded that there exists a positive and significant relationship (F=68.338, sig < 0.05) between proactive strategic sourcing practices and the performance of public hospitals in Kenya.

Table 6: Coefficients for proactive strategic sourcing on performance of public Hospitals in Kenya

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
	(Constant)	2.911	.112		25.919	.000
	Supplier Relationship	.241	.030	.513	8.085	.000
	Procurement Planning	.163	.029	.334	5.691	.000

Dependent Variable: Performance of public hospitals in Kenya

Equation 4.1 was used to predict the study variables.

$Y = 2.911 + 0.241\ X_1 + 0.163\ X_3 + \varepsilon$…… **4.1**

The results in Table 6 reveal that the adoption of proactive strategic sourcing practices in the form of supplier relationships has a significant and positive effect on the performance of public hospitals in Kenya ($\beta = 0.241$; P-Value < 0.05). Additionally, the results reveal a positive and significant relationship ($\beta = 0.163$; P-Value < 0.05) between procurement planning and performance of public hospitals in Kenya. From this finding, the null hypothesis (H_{01}) was rejected meaning that a unit increase in the adoption of proactive strategic sourcing practices in the form of supplier relationships and procurement planning leads to a significant increase in the performance of public hospitals in Kenya by 24.1% and 16.3% respectively.

The results obtained in the current study are similar to a study by Fan *et al*., (2021) who studied how being proactive enhances the supply chain capacity of service organisations. The study revealed a positive and statistically significant relationship between proactive supply chain activities and firm performance. The study notes that a proactive supply chain creates a competitive advantage by being the first to make changes in its products/services and technologies. Another study by Munyi *et al*., (2024) on the influence of strategic sourcing on firm performance revealed similar results as the current study and noted there exist dynamic customers in the marketplace who are demanding better products at cheaper prices with faster delivery periods and high reliability. Consequently, firms need to be

proactive in managing their supply sources to ensure continuity in the delivery of services.

Proactive strategic sourcing is a long-term approach to identifying supply sources while enhancing continuity. Through this approach, which encompasses searching for a supply base, selecting the suppliers, and having the goods delivered from the suppliers; firms can get supplies at competitive prices, lower their expenses, and increase effectiveness and efficiency and thus contribute to overall organisational performance (Munyi *et al*., 2024).

Tarigan & Siagian, (2021) studied the impact of proactive strategic sourcing in promoting organisational operations and found similar results to the current study. The study highlights that over 70% of a firm's cost falls under the costs of supplies making sourcing a significant determiner of a firm's profitability, thus the need for proactivity. Vlahakis *et al*., (2020) studied how supplier relationships stimulate business continuity and revealed similar results to the current study.

Islami (2022) focused on how supplier relationships stimulate organisational performance and found a positive and significant relationship between long term supplier relationships and competitive advantage. The study further recognise that supplier relationships require a high degree of coordination between the firm and the suppliers. In an environment of long-term supplier relationships, there are mutual problem-solving, information sharing, constant communication, mutual planning, and continuous improvement initiatives which consequently breed superior performance and a win-win situation between both parties that is organisations and suppliers. A strategic supplier relationship will additionally, incorporate supplier quality management through mutual collaboration making it easy for both parties to understand and anticipate their needs, reduce uncertainty, and facilitate a flexible response.

A study by Oliech & Mwangangi (2019) established that strategic sourcing improves firm performance through reduced shortages, and wastages, improves accountability, and makes services affordable to all. The study further recognised that poorly organised supply chains place the health of millions of Kenyans at risk. In Thailand, the adoption of proactive strategic sourcing has reduced child mortality rates while in Ghana the quality of non-communicable disease treatment has improved as a result of strategic sourcing (Munyua *et al.,* 2022).

Another study by Cankaya *et al*., (2020) confirms these results by identifying strategic sourcing as a key contributor to organisational growth in the midst of competition and resource constraints. A study by Munyi *et al*., (2024) confirms the current study results by identifying strategic sourcing as a tool for improving firm performance as it encompasses searching for a supply base, selecting the suppliers, and having the goods delivered from the suppliers; firms can get supplies at competitive prices, lower their expenses, and increase effectiveness and efficiency and thus contribute to overall organisational performance. In Thailand, the adoption of proactive strategic sourcing has reduced child mortality rates while in Ghana the quality of non-communicable disease treatment has improved as a result of strategic sourcing (Munyua *et al.,* 2022).

5.0 Conclusion

This study examined the relationship between proactive strategic sourcing and performance of public hospitals in Kenya using multiple linear regression analysis. The findings revealed that proactive strategic sourcing factors in the form of supplier relationships and procurement planning positively and significantly influence the performance of public hospitals. It is recommended that the Chief Executive Officers (CEOs) and Medical Superintendents of public hospitals should establish long-term relationships with suppliers and undertake supplier involvement and development as this promotes uninterrupted supply and minimises procurement disruptions. The Pharmacy Department of a public hospital is recommended to engage in efficient communication with suppliers as they have information regarding the availability of medical supplies. The public hospital pharmacy should also engage in mutual decision-making and problem-solving with suppliers in order to provide a well-stipulated supplier framework that reduces supply chain risks, improves reliability, and promotes the quality of healthcare services. Kenya Medical and Essential Supplies Authority (KEMSA) which is the main procurement body in Kenya is recommended to actively identify, evaluate, and engage with suppliers who can meet the national healthcare demands. This translates to contracting and having mutual relationships with suppliers who have quality products, meet regulatory requirements, and comply with set industry standards. The Ministry of Health is recommended to establish holistic and comprehensive guidelines for procurement for public hospitals. The guidelines should revolve around supplier identification, evaluation, contract negotiations, and management and supplier relationships.

5.1 Limitations and Future Research

The current study focused on two proactive strategic sourcing factors in public hospitals. Subsequent studies can replicate and extend the study in the private healthcare sector and/or any other service sector. Further, they can expand the number of sub-variables for both the dependent and independent variables to incorporate proactive strategic sourcing factors and performance factors not utilised in this study.

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