

**INVENTORY MANAGEMENT CONTROL, MANAGEMENT LITERACY
LEVEL AND PROCUREMENT PERFORMANCE OF LEVEL 6 HOSPITALS,
KENYA**

CHARITY MUTHONI KIREMA

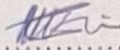
**A Research project Submitted to the Graduate School in Partial Fulfilment of the
Requirement for the Award of the Degree of Master of Procurement and
Logistics Management of Tharaka University**

**THARAKA UNIVERSITY
NOVEMBER 2025**

DECLARATION AND RECOMMENDATION

Declaration

This research project is my original work and has never been presented for an award of diploma or conferment of degree in any other University or institution.

Signature.......... Date.....14/11/2025.....

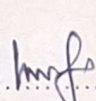
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Recommendation

This research project has been submitted for examination with our approval as the candidate's university supervisor.

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DEDICATION

This project is dedicated to all those who inspired, supported, and encouraged me throughout this journey. To my family, for their unwavering love, patience, and belief in my abilities. To my mentors and teachers, for their guidance and wisdom that shaped my understanding and perseverance and to my friends and colleagues, for their constant motivation and shared enthusiasm. Without your support, this accomplishment would not have been possible.

ACKNOWLEDGEMENT

As with building project, it takes a great team to make all elements come together. I wish to extend my personal and sincere heartfelt to my husband for his steadfast support and persevering love. Thank you for modelling. My supervisors Dr.Viona Aluvale and Mr Wyclife Ooko, without your expertise, this project wouldn't have been possible, thank you for encouraging me to “put my mind on paper” to my colleagues, Sammy, Joyce and Mwangi your Godly wisdom and unique insight have made me stronger I have been encouraged to work alongside you, you are the greatest. To my God praise and honors to him for the greatest knowledge he has given me and free gift of life. Thanks to everyone else who participated in one way or the other to enable me come up with this project.

ABSTRACT

Health facilities aim at ensuring that they have adequate stock in terms of medicines, machines and other related products to operate without any challenges associated with stockouts. The purpose of this study was to analyse the effect of inventory management control and procurement performance of level 6 in Kenya. The study was guided by the following specific objectives: to evaluate the effect of supplier relationship management on the procurement of level 6 hospitals in Kenya, to evaluate the effect of reorder strategy on the procurement performance of level 6 hospitals in Kenya, to assess the effect of compliance and audit readiness on the procurement performance of level 6 hospitals in Kenya, to assess the effect of safety stock on the procurement performance of level 6 hospitals in Kenya, to evaluate the moderating effect of management literacy level on the relationship between inventory management control on the procurement performance of level 6 hospitals in Kenya. The study population included seven level 6 hospitals. Census sampling technique was utilized. Primary data was collected using questionnaires which was distributed to procurement officers, stores personnel, internal auditors and hospital administrators. Pilot study was conducted at Jaramogi Oginga Odinga referral hospital. Reliability and validity of research instrument was conducted to ensure relevant data was collected. The hypotheses were obtained from the objectives of the study. The study was anchored by resource-based theory, Economic Order Quantity theory, agency theory. Cross sectional descriptive research designs were utilized. Simple and multiple regression model was utilized. The significance of each individual predictor variable on procurement performance was tested using t-statistic and the overall significance of the models was tested using f-statistic. Data was presented in tables and figures. The research findings are beneficial to the Kenya Medical Supplies Authority, national government and county government for decision making. The study concludes that procurement performance in level 6 hospitals in Kenya is significantly influenced by various inventory management factors, as evidenced by both correlation and regression results. Supplier relationship management showed a positive correlation ($r=0.481$) and a significant regression coefficient ($\beta=0.387$), indicating that strong supplier collaboration directly improves efficiency and procurement outcomes. Reorder strategy also revealed a positive correlation ($r=0.523$) and a significant regression coefficient ($\beta=0.294$), confirming that structured reorder policies reduce stock-outs and enhance operational continuity. Compliance and audit readiness recorded a positive correlation ($r=0.461$) with a significant regression coefficient ($\beta=0.315$), underscoring its role in strengthening accountability and optimizing resource use. Safety stock, while positively correlated ($r=0.377$), yielded an insignificant regression coefficient ($\beta=0.109$), suggesting that reliance on buffer stock does not substantially enhance procurement performance. Finally, management literacy level, as a moderating factor, revealed a positive correlation ($r=0.498$) and a significant interaction regression coefficient ($\beta=0.276$), showing that managerial knowledge enhances the impact of inventory management controls on procurement efficiency. The findings highlight the critical role of robust stock controls, adherence to compliance frameworks, and effective supplier engagement in enhancing procurement performance. Based on these results, hospitals should prioritize strengthening safety stock systems, regularly review reorder strategies, maintain strong compliance mechanisms, and invest in supplier relationship management. Additionally, management literacy programs should be targeted towards improving stock management decisions, as this area demonstrated the most substantial benefit from higher managerial competence.

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ABBREVIATIONS AND ACRONYMS

CBO:	Community Based Organization
EACC:	Ethics and Anti-corruption Commission
EOQ:	Economic Order Quantity
FBOs:	Faith Based Organizations
FIFO:	First In First Out
KEMSA:	Kenya Medical Supplies Authority
KEPH:	Kenya Essential Package for Health
KMPDC:	Kenya Medical Practitioners and Dentist Council
MFL:	Master Facility List
MoH:	Ministry of Health
NACOSTI:	National Commission for Science Technology & Innovation
NGOs:	Non-Governmental Organisation
OUFO:	Oldest Unit First Out
PHC:	Primary Health Care
PPADA:	Public Procurement and Asset Disposal Act
SACCO:	Savings and Credit Cooperative Society
SMEs:	Small and Medium Enterprises
SPSS:	Statistical Package for Social Sciences
SRM:	Supplier Relationship Management.
STGs:	Standard Treatment Guidelines
WAC:	Weighted Average Cost
WHO:	World Health Organisation

CHAPTER ONE

INTRODUCTION

1.1 Introduction

1.2 Background of the Study

Inventory management control significantly influences procurement performance in referral hospitals globally and in Kenya, with particular emphasis on level 6 hospitals. Globally, research underscores that efficient inventory management systems, including vendor-managed inventory and just-in-time strategies, reduce costs and improve supply chain responsiveness, which directly enhances procurement outcomes and hospital performance (Apeh et al., 2024). Regionally, studies have highlighted that inventory management control practices such as automated inventory systems, reorder strategies, and safety stock management are critical for ensuring timely availability of medical supplies, thereby improving procurement efficiency and service delivery in public hospitals (Opoku et al., 2020).

Specifically, in Kenya, level 6 referral hospitals demonstrate a positive correlation between inventory management control and procurement performance. Njiri (2024) found that vendor management, e-procurement, and inventory control practices significantly enhance operational performance in Nakuru Level 6 referral hospital. Similarly, Koros and Karen (2020) reported that inventory automation, inventory investment, and inventory controls positively affect universal health coverage service delivery in national referral hospitals in Nairobi County. These studies emphasize the importance of compliance and audit readiness, robust reorder strategies, and maintaining safety stock to prevent stockouts and overstocking, which are crucial for procurement performance and supplier relationship management in these hospitals.

This researcher, observe that integrating inventory management control with supplier relationship management, compliance and audit readiness, reorder strategy, and safety stock management forms a comprehensive framework that strengthens procurement performance in level 6 referral hospitals in Kenya. This integrated approach not only optimizes inventory levels but also fosters transparency and accountability, which are essential for sustainable health service delivery.

1.2.1 Inventory Management Control

Inventory management refers to process of ensuring company's inventory which consist of raw materials, works in progress and finished materials are managed efficiently and effectively. The activity ensures that the organisation does not run out of stock which can results to inability to meet customers' demand. Overstocking leads to cash being tied up on idle stock which can be invested in other profitable opportunities to generate more cash (Daba,2023).

Good inventory management control ensures that the right products are available at the right time and in the right quantity, and facilitates the monitoring of consumption and quality (Cachon & Fisher, 2019). The decision to keep inventory of a specific items in the healthcare sector serves both strategic and tactical objectives. Holding inventory strategically allows businesses to balance supply and demand. Organizations strive to meet their consumers' needs while functioning efficiently and keeping costs under control (Singh et al., 2018).

Inventory management control entails: inventory shrinkage, inventory valuation, inventory record, inventory tracing, stores classification, demand forecasting, replenishment, warehouse management and supplier management (Mohamed, 2024). The current study seeks to utilize supplier relationship management, reorder strategy, compliance and audit readiness and safety stock. The indicators help the organisation to maintain accuracy, optimize operations, and minimize financial losses.

Supplier relationship management (SRM) plays a crucial role in enhancing procurement performance in referral hospitals globally and in Kenya, particularly at level 6 hospitals. Globally, effective SRM practices such as strategic partnerships, performance monitoring, and collaborative frameworks have been shown to improve procurement efficiency, reduce costs, and ensure timely delivery of medical supplies, thereby enhancing overall hospital performance (Sinthiya, 2023). Regionally, studies reveal that robust supplier relationships, including formal framework agreements and continuous supplier evaluation, are vital for overcoming challenges like stockouts and delays in public hospitals, directly impacting procurement outcomes (Okoi, 2023; Kulubi & Moronge, 2019).

In Kenya, research focusing on level 6 referral hospitals highlights the importance of managing relationships with key suppliers such as the Kenya Medical Supplies

Authority (KEMSA) and private vendors. Oliech and Mwangangi (2019) found that effective liaison with KEMSA and private suppliers through framework agreements and regular performance monitoring significantly improves procurement performance by fostering accountability and ensuring compliance with procurement policies. Similarly, Okoi (2023) demonstrated that supplier evaluation based on consistency, competence, and production capacity positively influences procurement outcomes in public hospitals, emphasizing the need for systematic supplier performance monitoring. Kulubi and Moronge (2019) further underscore that supplier selection criteria, contract management, and supplier development initiatives enhance procurement efficiency and service delivery in Nairobi hospitals.

This research will establish that integrating SRM components such as KEMSA and private vendor liaison, framework agreements, and rigorous performance monitoring, forms a strategic approach that strengthens procurement performance in level 6 referral hospitals in Kenya. This integration not only improves supply chain reliability but also ensures compliance and audit readiness, which are essential for sustainable healthcare service delivery.

Reorder strategy plays a critical role in the performance of referral hospitals by ensuring optimal inventory levels that prevent stockouts and overstocking, which directly affect service delivery and patient outcomes. This strategy typically involves setting minimum and maximum stock levels, determining reorder points, and managing departmental request cycles to maintain a balance between availability and cost-efficiency (Nsowah et al., 2025).

The best practices in inventory management control emphasize the importance of defining minimum and maximum stock levels tailored to the specific needs of health facilities. For instance, major trauma centers or hospitals with specialized clinical services require higher turnover and specialized stock, necessitating adjusted stock thresholds. The minimum stock level represents the lowest safe inventory before replenishment, which should be dynamically adjusted based on consumption data, forecasting, and local intelligence. Conversely, maximum stock levels prevent overordering and excessive stock holding, which can lead to wastage. Effective stock rotation policies such as FIFO (first in, first out) or OUFO (oldest unit first out) are recommended to minimize expiry and wastage (NHSBT, 2022).

Studies have highlighted the challenges and practices related to inventory management control in referral hospitals. For example, a study in Uganda found that the use of safety stock, average monthly consumption, and essential medicines lists were significant practices influencing supply chain effectiveness, with stockouts being a key performance indicator (Okiria, 2021). Similarly, in Kenya, research conducted in Nyamira County public hospitals revealed that the forced order system was predominantly used to determine order quantities, relying heavily on projective forecasting methods based on past consumption. The study also reported average order lead times ranging from 11 to 24 days and identified stock wastage rates as high as 43.2% in some hospitals. Reporting rates for inventory data were around 70%, indicating room for improvement in timely and accurate stock management (Anyona, 2020).

The study focused on reorder strategies in referral hospitals globally and within the region, including Kenya, focus on setting appropriate minimum and maximum stock levels, accurately determining reorder points using consumption and lead time data, and managing departmental request cycles to optimize stock availability and reduce wastage. These strategies are essential for improving supply chain performance and ensuring continuous availability of critical medical supplies and medicines.

Compliance and audit readiness are critical factors influencing the performance of referral hospitals, particularly in Kenya, where adherence to the Public Procurement and Asset Disposal Act (PPADA) 2015 is mandated to ensure transparency, accountability, and ethical sourcing in public procurement. Globally, compliance frameworks and audit mechanisms are recognized as essential to improving healthcare service delivery by promoting proper documentation, reducing corruption, and ensuring that procurement processes meet regulatory standards (Bedoya et al., 2021).

Regionally, studies highlight that many health systems face challenges in compliance and audit readiness due to fragmented regulatory environments and limited capacity for enforcement. Tchokouagni (2021) notes that African healthcare procurement systems often struggle with inadequate documentation and weak adherence to procurement laws, which undermines performance and service quality. Strengthening compliance mechanisms, including audit readiness, is therefore crucial for improving procurement outcomes and ensuring ethical sourcing.

In Kenya, the PPADA 2015 provides a comprehensive legal framework governing public procurement, emphasizing adherence to procurement procedures, proper documentation, and ethical sourcing to enhance value for money and reduce corruption (Ethics and Anti-Corruption Commission [EACC], 2023). Despite this, challenges persist in level 6 referral hospitals, where audit readiness is often hampered by poor record-keeping and insufficient capacity to enforce compliance (EACC, 2023). Recent reforms, including the introduction of joint health inspections and improved regulatory oversight, have aimed to strengthen compliance and audit readiness, thereby improving hospital performance and accountability (Wafula et al., 2022).

This research, emphasized that strict adherence to PPADA 2015, meticulous documentation, and commitment to ethical sourcing are indispensable for audit readiness and overall performance of referral hospitals in Kenya. Effective compliance and audit systems not only safeguard public resources but also enhance procurement efficiency, reduce risks of mismanagement, and ultimately improve patient care outcomes. Addressing existing gaps in documentation and enforcement capacity remains a priority for achieving these goals (Ndirangu, 2021).

Safety stock is a vital component of inventory management control in referral hospitals, directly influencing their operational performance and ability to deliver uninterrupted healthcare services. Safety stock acts as a critical buffer to mitigate stockout risks, especially for essential and life-saving items, ensuring that patient care is not compromised due to supply chain disruptions or demand fluctuations. Globally, healthcare systems have increasingly recognized the importance of maintaining adequate safety stock levels while balancing storage capacity constraints and minimizing wastage (Babirye, 2017). For instance, GHX (2023) highlights that effective safety stock management reduces the risk of critical item shortages, but also requires careful consideration of storage limitations and inventory turnover to avoid overstocking and expiry of medical supplies.

Regionally, challenges such as poor forecasting, limited storage infrastructure, and fragmented supply chains often undermine safety stock effectiveness, leading to frequent stockouts and service interruptions. Silvia et al. (2022) emphasize that collaborative planning and integrated supply chain approaches are essential to optimize safety stock levels and buffer critical items against uncertainties. The study advocates

for improved capacity building and adoption of technology to enhance stockout risk management and ensure that hospitals maintain sufficient buffer stocks despite infrastructural constraints.

In Kenya, safety stock management in referral hospitals faces significant challenges related to storage capacity, poor inventory control, and inadequate automation. Adan and Simotwo (2024) found that understock situations are common in Kenyan public hospitals, causing frequent service delivery stoppages. Their study at Elwak Sub County Referral Hospital revealed that poor record-keeping, theft, and delayed stock replenishment exacerbate stockout risks, negatively affecting patient care. The authors recommend adopting modern inventory control techniques, including automated systems and improved storage safety measures, to maintain critical item buffers and manage stockout risks effectively. Furthermore, the Kenya Health Products and Technologies Supply Chain Strategy (2020-2025) underscore the need to strengthen inventory management control practices, enhance storage infrastructure, and improve coordination to ensure continuous availability of essential health products in referral hospitals (Ministry of Health, 2020).

The research, assert that maintaining adequate safety stock, particularly for critical items, is indispensable for the performance and resilience of referral hospitals in Kenya. Effective buffer stock management must be integrated with robust stockout risk mitigation strategies and tailored to address storage capacity constraints. Failure to do so jeopardizes service delivery and patient outcomes. Therefore, investments in infrastructure, automation, and capacity building are necessary to optimize safety stock levels and ensure sustainable healthcare delivery.

1.2.2 Management Literacy Level

According to (Bolek et al.,2018) management literacy level refers to technical competence, knowledge level and how a person is able to demonstrate management practises, principles and process. It includes various areas such as optimal utilization of financial resources, strategic planning, good leadership, proper decision making, human resource management, marketing, operations and general aspects of organisational management. Management literacy level is determined by level of education, experience, professional qualification. The growth and efficiency of the organisation highly depend on proper procurement processes. Therefore, firms should ensure they

have competent procurement personnel in procurement department to ensure the organisation achieve its objectives and goal. A study carried by Fakrulloh, and Nurhayati, (2024) on the influence of procurement literacy and budget supervisor on regional public health services agency in Tugurejo hospital. The study utilized quantitative descriptive, and regression testing using SPSS application. The results indicated that procurement literacy level and budget supervision have a significant effect on absorption of Tugurejo hospitals

1.2.3 Procurement Performance

Procurement performance is a critical determinant of the operational efficiency and service delivery quality in referral hospitals. Globally, effective procurement hinges on optimal budget utilization, supplier performance, and the quality of procured items. Gustavsson (2023) emphasizes that aligning budget absorption with procurement plans ensures timely acquisition of essential medical supplies, reducing delays and stockouts that compromise patient care. Moreover, supplier performance including reliability, delivery timeliness, and compliance with contract terms is fundamental to procurement success, as poor supplier management can lead to increased costs and service disruptions. The quality of procured items directly affects treatment outcomes and patient safety, making rigorous quality assurance indispensable in healthcare procurement (Gustavsson, 2023).

Regionally, procurement performance in public hospitals faces challenges such as budgetary constraints, inconsistent supplier reliability, and variable quality of medical supplies. Anane et al. (2019) found that hospitals with better alignment between budget allocation and procurement activities demonstrated improved procurement outcomes, including fewer stockouts and enhanced service delivery. Supplier evaluation practices, including assessing supplier competence and production capacity, were shown to positively influence procurement performance by ensuring timely delivery of quality products. However, many African hospitals continue to struggle with uncoordinated procurement planning and weak supplier management, which undermine overall performance (Anane et al., 2019).

In Kenya, procurement performance in referral hospitals is significantly influenced by budget utilization, supplier performance, and the quality of procured goods. Muuki and Nderui (2024) investigated supplier sourcing practices in level 6 hospitals and found

that supplier competence and ethical sourcing positively impact procurement outcomes, leading to improved hospital efficiency and patient satisfaction. Similarly, Okoi (2023) demonstrated that supplier competence and production capacity are critical factors driving procurement performance in public hospitals in Kisumu County. Despite existing procurement regulations such as the Public Procurement and Asset Disposal Act (PPADA), challenges remain in aligning procurement plans with budgetary allocations and ensuring consistent supplier quality, which affects service delivery (Okoi, 2023; Muuki & Nderui, 2024). The Public Procurement Regulatory Authority (PPRA) also underscores the importance of systematic supplier performance evaluation to enhance compliance and procurement effectiveness in the Kenyan health sector (PPRA, 2017).

The study emphasizes that optimizing procurement performance in referral hospitals requires a holistic approach that integrates effective budget utilization aligned with procurement plans, rigorous supplier performance management, and stringent quality assurance of procured items. Addressing gaps in these areas will enhance procurement efficiency, reduce costs, and improve healthcare outcomes in Kenya's referral hospitals.

1.2.4 Health Sector in Kenya

The Government of Kenya emphasizes the health of its citizens and improvement of health service delivery. The Ministry of Health (MOH) has a coordinating and capacity-building role that all services are in line with established policies and standards. The government is cognizant of the fact that good health is a pre-requisite to socioeconomic development.

The Kenyan Master Facility List (MFL) includes all officially registered health facilities in Kenya. There is a total of 9,696 health facilities in the country. About 4,616 of these are owned by the public sector, 3,696, fall under ownership of the commercial private sector, and 1,384 is owned by Faith Based Organizations (FBOs), Non-Governmental Organizations (NGOs) and Community Based Organizations (CBOs). The distribution of health facilities shows that the Ministry of Health accounts for 42.9 percent of the total health facilities in the country while private sector accounts for 37.8 percent. In Kenya, approximately 25% of Kenyans have health insurance; they may be covered by public, private or community-based health insurance schemes which means that the majority (75%) end up paying out-of-pocket. In 2005, following two decades of policy

changes and learning, the Kenya Essential Package for Health (KEPH) concept was adopted. KEPH has played a central role as a catalyst in facilitating development of actionable strategies towards Primary Health Care (PHC). Primarily, the KEPH outlines high impact, cost-efficient interventions for different age cohorts and defines which service package is to be provided at each level. Thus, it remains the primary strategy through which PHC services are delivered in Kenya to date.

The mission of Kenya to achieve UHC is to ensure all people get access to quality and affordable healthcare services that are preventative, promotive, rehabilitative, curative, palliative and effective so they are protected from financial hardship. The government piloted the move to achieve UHC in four counties (Isiolo, Machakos, Nyeri and Kisumu) A review of progress will be made in order to determine how the national UHC package should be updated ahead of the roll out to the remaining counties. Regardless of the key development in health sector majority of counties are facing stockout in their health facilities. Patients are most of the times required to buy the health product from private facilities.

According to the ministry of health (MOH) level 6 hospitals are categorised as secondary referral hospitals offering a more comprehensive set of medical services when compared with lower levels including intensive care, training for medical staff, specialised care as well as life support service. They are mandated as a regional centre for specialised medical need within its designated area. They also offer additional capabilities alike internship programs as well as research facilities.

1.3 Statement of the Problem

Between 2022 and 2024, the procurement performance of referral hospitals in Kenya has experienced a notable decline across key areas such as budget utilization, supplier performance, and quality of procured items. In 2022, the budget utilization rate was approximately 75%, indicating a relatively moderate absorption of allocated funds. However, by 2023, this rate had dropped to around 68%, reflecting increasing challenges in aligning budget allocations with procurement activities, delayed disbursements, and inefficiencies in financial management. The downward trend continued into 2024, where the utilization rate further declined to an estimated 62%, signifying that a significant portion of funds remained unspent, thereby constraining procurement processes and limiting the availability of essential medical supplies

(Treasury, 2024). Supplier performance similarly deteriorated during this period. In 2022, supplier reliability and contract adherence were relatively strong, with a performance score near 80 out of 100. By 2023, this score had decreased to approximately 74, indicating emerging issues such as inconsistent delivery timelines, inadequate contract enforcement, and challenges in supplier management. The decline persisted into 2024, with supplier performance dropping to about 68, a level that raises concerns about the impact of poor supplier reliability on procurement efficiency, increased operational costs, and the risk of stockouts in referral hospitals (Muuki & Nderui, 2024; Okoi, 2023). Quality compliance of procured items also showed a downward trajectory. In 2022, about 85% of procured medical supplies met the required quality standards, ensuring patient safety and effective treatment. This compliance rate fell to 78% in 2023, suggesting weakening quality assurance mechanisms, possibly due to inadequate monitoring and the procurement of substandard products. By 2024, quality compliance dropped further to around 72%, raising serious concerns about the safety and efficacy of medical supplies in referral hospitals, which could jeopardize patient outcomes and erode trust in the healthcare system (Okoi, 2023; Nakuru Level 5 Referral Hospital Study, 2023). This declining trend in procurement performance from 2022 to 2024 underscores systemic weaknesses in budget utilization, supplier management, and quality control within Kenya's level 6 hospitals. There was a need for urgent interventions that enhance budget absorption aligned with procurement plans, strengthen supplier evaluation and contract enforcement, and institute rigorous quality assurance frameworks. Failure to address these challenges risks further deterioration of healthcare service delivery and undermines the objectives of Kenya's health sector reforms.

1.4 General Objective of the Study

To assess the effect of inventory management control and management literacy level on the procurement performance of level 6 hospitals in Kenya.

1.4.1 Specific Objectives of the Study

- i. To evaluate the effect of supplier relationship management on the procurement performance of level 6 hospitals in Kenya.
- ii. To establish the effect of reorder strategy on the procurement performance of level 6 hospitals in Kenya.

- iii. To assess the effect of compliance and audit readiness on the procurement performance of level 6 hospitals in Kenya.
- iv. To determine the effect of safety stock on the procurement performance of level 6 hospitals in Kenya.
- v. To evaluate the moderating effect of management literacy level on the relationship between inventory management control on the procurement performance of level 6 hospitals in Kenya.

1.5 Research Hypotheses

H₀₁: Supplier relationship management has no statistically significant effect on procurement performance of level 6 hospitals in Kenya.

H₀₂: Reorder strategy has no statistically significant effect on procurement performance of level 6 hospitals in Kenya.

H₀₃: Compliance and audit readiness have no statistically significant effect on procurement performance of level 6 hospitals in Kenya.

H₀₄: Safety stock has no statistically significant effect on procurement performance of level 6 hospitals in Kenya.

H₀₅: Management literacy level has no statistically significant moderating effect on inventory management control and procurement performance of level 6 hospitals in Kenya.

1.6 Significance of the Study

This study provided the Ministry of Health with critical insights into the challenges affecting procurement performance in level 6 hospitals, particularly in areas such as budget utilization, supplier performance, and quality of procured items. The findings sought to help inform policy formulation and resource allocation decisions, enabling the Ministry to implement targeted interventions aimed at improving procurement efficiency, enhancing accountability, and ensuring the continuous availability of essential medical supplies. Ultimately, this contributed to strengthening the health system and improving patient care outcomes across the country.

For hospital management and procurement officers in level 6 hospitals, this research offers practical evidence on existing gaps and inefficiencies within procurement processes. By understanding the decline in budget absorption, supplier reliability, and product quality, these stakeholders were better equipped to develop improved

procurement planning, supplier evaluation, and quality assurance mechanisms. This knowledge sought to help optimize resource use, reduce wastage, and enhance overall service delivery and hospital performance.

Suppliers and vendors benefit from the study by gaining valuable feedback on critical areas such as timely delivery, contract compliance, and product quality. This information can encourage suppliers to improve their service standards, foster stronger partnerships with referral hospitals, and align their operations more closely with public procurement requirements, ultimately leading to mutual benefits.

Policy makers and regulatory agencies, including the Public Procurement Regulatory Authority (PPRA), gain a clearer understanding of the practical challenges faced in procurement within referral hospitals. The study's findings support the development of more effective regulations, compliance frameworks, and monitoring tools to enforce procurement laws, promote ethical sourcing, and improve audit readiness. These improvements enhance transparency and accountability in the public health sector.

Researchers and academics find this study a valuable addition to the body of knowledge on public procurement performance in healthcare settings, particularly within the Kenyan context. It provides a foundation for further research into procurement efficiency, supply chain management, and health system strengthening. Future studies can build on these findings to explore innovative solutions and best practices for addressing procurement challenges in resource-constrained environments.

Finally, patients and the general public stand to benefit from improved procurement performance in level 6 hospitals. Efficient budget utilization, reliable suppliers, and high-quality medical supplies translate into better availability of essential medicines and equipment, fewer treatment delays, and enhanced quality of healthcare services. This study thus supports efforts to improve health outcomes and strengthen public trust in the healthcare system.

1.7 Scope of the Study

This research project focuses on procurement performance in level 6 hospitals in Kenya, specifically targeting level 6 hospitals that provide specialized healthcare services and play a critical role in the national health system. These hospitals operate under the regulatory framework established by the Public Procurement and Asset Disposal Act (PPADA) 2015, which guides procurement processes to ensure transparency,

accountability, and ethical sourcing. The study concentrated on the Kenyan public health sector environment, taking into account the specific challenges and operational realities faced by referral hospitals in implementing procurement policies and managing resources effectively.

The research draws on theories and frameworks related to procurement and supply chain management, focusing on how effective budget absorption, reliable supplier management, and stringent quality assurance contribute to improved procurement outcomes. Important themes included the alignment of budget allocation with actual expenditure, supplier reliability and compliance with contracts, as well as adherence to quality standards and ethical sourcing practices. These concepts provide a foundation for analysing procurement performance within the unique healthcare setting of Kenyan referral hospitals.

This approach ensured a thorough investigation of procurement performance in level 6 hospitals (Kenyatta National Hospital, Moi Teaching and Referral hospital, Kenyatta University Referral and Research hospital, Nakuru Level 6 hospital, Kisii Teaching and Referral hospital National Spinal Injury Referral hospital and Mathari National Teaching and Referral hospital) addressing the operational environment, empirical evidence, theoretical foundations, and appropriate research methods to generate meaningful and actionable findings.

1.8 Limitations of the Study

The study was limited to level 6 hospitals in Kenya. This limitation was mitigated by conducting a census survey of all level 6 hospitals in Kenya. There was reluctance in provision of the required data due to sensitivity of the information sought. This was mitigated by assuring the respondent that information was used for the research purpose only and was disclosed to any other party. Further introductory letter from the University, authorization letter from university ethics committee and research permit from NACOSTI was provided

1.9 Assumptions of the Study

The researcher assumes that the data was normally distributed and there exist no relationship between predictor variables. The study also assumed that there were no

similarities between the random variables at different point in time and also there existed no linear inequality variance of residual of each observable data.

1.10 Operational Definition of Terms

Compliance: Refers to the adherence to all relevant laws, regulations, standards, and internal policies governing the acquisition of goods and services.

Inventory management Control: Refers to the tracking and management of commodities including monitoring of commodities moved into and out of stockroom locations and the reconciling of the inventory balance.

Procurement Performance: This study will define procurement performance as budget utilisation, supplier performance and quality of procured items.

Readiness: Refers to the organizational preparedness to execute procurement processes efficiently and in alignment with compliance requirements.

Reorder Strategy: Are set of rules used by organizations to determine when and how much inventory to replenish from suppliers in order to maintain optimal stock levels, minimize costs, and ensure supply continuity.

Safety Stock: Refers to a quantity of inventory maintained in addition to the regular cycle stock to serve as a buffer against uncertainties in demand, supply, or lead time.

Supplier Relationship Management: is a systematic approach to evaluating, developing, and managing partnerships with vendors who supply goods, materials, and services to an organization

CHAPTER TWO

LITERATURE REVIEW

2.1 Empirical Literature

This section presents empirical studies that have been done in relation to inventory management control and procurement performance in various contexts; globally, regional and locally. The section further provides a gap of empirical literature in the global and local perspectives.

2.1.1 Inventory Management Control and Procurement Performance

In India, Panigrahi et al., (2022) carried a study focusing on the effect of inventory management practises on operational efficiency in steel manufacturing firms. The study relied on data collected from 321 officials of steel manufacturing firms using questionnaires and interviews. The data was analysed using confirmatory factor analysis and structural equation modelling as statistical technique. The results indicated that inventory management has a considerable impact on the operational efficiency. Therefore, firms should endeavour in highlighting the significance of inventory management practises for efficient running of firms in volatile environment. Efficient inventory management depends on the literacy level and experiences of personnel in such a department which the study did not address. Therefore, the current study seeks to bridge the gap by assessing the moderating effect of inventory management on procurement performance. Further the study was conducted in steel industry therefore the finding cannot be applied in health sector due to regulatory differences.

Mabizela, Nakambale and Bangalee (2023) carried a study on the interrelationship between overstocking, stockouts and wastage in eight healthcare facilities in Northern KwaZulu-Natal in South Africa. The researchers adopted retrospective quantitative analysis using pharmacy inventory records from nine public health care facilities. Pearson correlation analysis techniques as used to study the association between overstocking, stockouts and expiry related wastage while linear regression analysis was utilized to examine the influence of medicine redistribution. The level of overstocking, stockout and wastage was reported by descriptive statistics. After analysing 392 medicines stock outs affected 85.6% of medicines, while overstocking and wastage totalled to 50.6% and 15.2% respectively. The study did not address the issues concerning safety stock which has a greater impact on inventory management of health

facilities. The current study therefore seeks to include management literacy level as a moderating variable.

Okello, Arani and Sitienei (2020) investigated the effect of inventory categorisation practises on operational performance of public hospitals in Siaya county. The target population of the study was 106 and a sample size of 84 was selected using simple random sampling and stratified proportionate. Primary data was collected using structured questionnaires and interviews. The study was anchored on resource-based view theory and network perspective theory. The findings indicated that inventory categorisation had a statistically significant effect on performance of public hospitals in Siaya county. Therefore, public hospitals should put more effort on inventory categorisation as an inventory management practise to ensure the improved service delivery to patients. The study was conducted in Siaya county while the current study broadens the scope by studying level 6 hospital in Kenya.

Ochola and Kitheka (2019) conducted a study on determinants of procurement contract management on organisational performance at Kenya Power Company limited. A census was conducted on 25 procurement staff, 25 finance staff internally and 86 selected officers, 20 senior management 20 customers externally. Primary data was collected from the population with help of questionnaires which was administered on drop and pick later basis. Case study research design was used to describe the units under study to give a detailed insight. The results indicated a positive relationship between contract management and organisational performance. Therefore, firms should focus on improving procurement contract by adhering to all contractual requirements. Case study research design can only be used for in-depth examination of the variables under study therefore descriptive survey research design was the most suitable for this study.

Sindiga, Paul and Mbura (2019) conducted a study Influence of procurement management practices on performance of construction firms in Nairobi County, Kenya. The study targeted Nairobi based registered and practising construction companies totalling to 4,142. The samples of 139 companies were selected using stratified and simple random sampling. Primary data was collected with aid of structured questionnaires while secondary data was collected published books, internal reports and relevant documents using checklist. Descriptive research design was used to draw

conclusions from finding and associate them to larger population. The results indicated the following; there is a positive relationship between procurement planning and performance of construction companies in Kenya, inventory management influences the performance of construction industries and supplier relationship has a greater influence on performance of construction companies. The study having been conducted in construction companies, the finding cannot be applied in health sector because of operations differences.

2.1.2 Supplier Relationship Management and Procurement Performance

In China, Asa et., (2023) conducted a study on supplies relationship management and organizational performance. Descriptive research design was employed while quantitative data was collected form the target population of 43 respondents from different agencies and divisions concerned with procurement using structured questionnaires comprising of closed ended questionnaires. The study revealed there is a positive relationship between supplies management and organisational performance. Further, the study showed that there were many challenges that affected the organisation negatively including failure of employees' commitment in public procurement division and supply chain partners. China being a developed country, the research finding cannot be applicable in health sector in Kenya.

Njagi and Shalle (2016) investigated the role of supplier relationship on procurement performance in manufacturing sector in Kenya focusing o East Africa Breweries. The study adopted descriptive research design to address the questions concerning the current status of the sector under consideration. Population target by the study comprised of the employees working in different departments totalling to 450 however using stratifies sampling technique 80 respondents were selected. Primary data was collected using structured questionnaires with both open ended and closed ended questions. Reliability of research instrument ware conducted using Cronbach alpha while descriptive analysis was done in respect to frequencies and percentages. The study findings indicated a positive significant relationship between supplier relationship and procurement performance. The study however recommended the similar study to be conducted but in other sector for reliable generalization.

Muema (2016) investigated supplier relationship management strategies and procurement performance of sports Kenya. Social exchange theory, resource

dependency theory and theory of dual economies anchored the study. Determining supplies relationship strategies was achieved using descriptive survey research design. The study target population included 25 officers of sports Kenya procurement department. Using questionnaires primary data was collected from the population while data analyses was conducted with aid of SPSS and data was presented in tables and figures. The study findings indicated that sports Kenya has put in place strategies to manage its supply of the products and service. The study however was conducted in sports therefore the findings cannot be generalized in health sector because of regulatory difference.

Influence of supplier relationship management and procurement performance was conducted by Mohamed (2017) in Zaruq Stores. The study targeted a population of 52 respondents. using census sampling technique, a sample size of 26 respondents was selected. The study utilized secondary data which was sourced from the reports and primary data which was collected with help of questionnaires. The study was anchored on commitment trust theory, theory of constraints and socio-economic theory of compliance. Analysed reports were presented in tables, charts and graphs. Study findings indicated that value measurement, collaborations and organisation structure affect procurement performance. The study concluded value management was used by organisation to measure procurement performance while technology was not utilized. The study however suffers methodological drawback. First it indicated that census sampling technique was adopted however 26 respondents were selected from the target population of 52 respondents.

Nsowah, Boateng and Anane (2025) conducted a study on the effect of inventory management practises on healthcare delivery and operational performance of Sunyani regional hospital. Fifty respondents were randomly selected from procurement, pharmacy, store, records, finance and administration departments. Data was collected using questionnaires and a descriptive survey research design was used. Data was analysed using frequencies and percentages using Statistical Package for Social Sciences (SPSS) software and excel. The study findings indicated that the hospital uses suppliers to manage inventory for hospital, the hospitals has computerised all inventory management system and there is a good communication between hospitals and suppliers. The findings further indicated that hospital faced challenges of delays in drugs delivery resulting to inadequate inventories. The study therefore suggested that

the government should support the health sector with adequate funds to mitigate issues for health products shortages. The study however did not address how supplier's relationship affects the procurement performance.

2.1.3 Reorder Strategy and Procurement Performance

Mshiu (2021) carried a study on the effectiveness of lead-time supplies on procurement performance in Tanzania. The study population constituted 40 respondents comprising of employees of ACC and suppliers. The study also utilized secondary and primary data. Lead-time theory and queuing theory anchored the study. Qualitative data was analysed using content analysis while quantitative was analysed using descriptive statistics including; mean, frequencies, percentages and standard deviation. The study findings indicated that both internal and external, that affect procurement lead-time was discovered which include; institutional policies, communication, procurement staff quality, tendering methods and supplier management techniques. The study did not address other variables including stock valuation and stock records affect procurement performance which the current study seeks to address

Lemayian and Moronge (2018) conducted a study on determinant of procurement enhancement of supplies in public hospitals in Kenya. Primary data was collected using questionnaires from the target population of 100 supply chain officers. Descriptive research design was used for the study. Quantitative data was analysed using SPSS for the purposes of analyses. The study used quantitative and qualitative data. The study findings demonstrated the need for enhancement of procurement efficiency to include; procurement audit, inventory managing, ethical issues and ICT.

Riswandi and Yudoko (2023) investigated strategies for decreasing delays in converting purchase requisitions to purchase orders for standard part commodities within the procurement department of the Avionics sector. Their research employed both quantitative and qualitative techniques; qualitative data was gathered through interviews and questionnaires involving buyers from different commodity groups, supervisors, and outsourcing teams. For root cause analysis, the study applied the fishbone diagram method, focusing on the categories of man, machine, technique, environment, and material. The analysis identified several factors contributing to the delayed lead time, most notably ineffective and inefficient procurement processes.

However, the study does not specify which theoretical frameworks underpin its approach.

2.1.4 Compliance, audit readiness and Procurement Performance

In California, Cronkhite (2020) investigated the effect of resistance to change in audit readiness and procedures within the federal government. Qualitative study was used to assess employee resistance to change in audit preparedness while phenomenological approach was utilized to assess areas where the organisational resistance to change affect audit readiness procedures. The study adopted agency theory to discuss the accounting policies and practises and standards to the organisational design and process from the principal perspective. The study findings showed additional barrier continues to face current practises of audit readiness. The study therefore recommended for practises including strategic alignment framework and also more involvement from leadership and professional development for the organisation employees.

Effect of compliance audit of the procurement system on performance of supply chain management in state corporations in the ministry of transport was conducted by Gitonga (2025). The study targeted population in the department of procurement, quality assurance and audits department of ministry of transport a state corporation. The unit of analysis considered was 52 heads from procurement, finance, ICT and audit department. The study conducted census to the 52 heads of departments. Questionnaires which were inform of Likert scale was adopted to collect primary data from the respondents to indicate their views on a scale of 1 to 5. descriptive statistics inform of frequencies, percentages, mean and standard deviation and inferential statistics was utilised in data analysis. The study findings indicated a significant influence of compliance audit on supply chain performance of state corporations in the ministry of transport. The study having been conducted in transport cannot be generalized in health sector because of policy differences.

Thumbi and Mutiso (2018) studied influence of procurement process audit on procurement performance in public health facilities in Kiambu county, Kenya. Using descriptive research design the researcher investigated the relationship between the variables under study. The target population comprised of 117 health facilities which comprised of public health institution in Kiambu County. The facilities included in the study included 17 mission hospitals, five nursing homes and 30 dispensaries. Primary

data was collected using questionnaire. The respondents were given adequate time by adopting drop and pick method. The study adopted social economic theory. The study revealed that audit of procurement procedures involves both compliance audit and performance audit in most scenarios. The study recommended that the procurement Act 2005 (Act 2015) to offer solutions without any problems.

Kathuki and Ndeto (2023) conducted a study on inventory management and procurement of public health centres in Mombasa County, Kenya. Primary data was collected with help of questionnaires population of comprised of 148 employees of 37 public health sector operating in Mombasa city county. A stratified random sampling technique was adopted to collect a sample size of 108 respondents from the population. Descriptive research design was used while data was presented in form of table. Descriptive and inferential analysis was conducted using SPSS. The findings indicated that inventory management techniques were essential in prospering procurement performance in health sector. Further, the study findings indicated that effective management systems, techniques and models should be put in pace to achieve accurate inventory record. The study recommended the need to have automated inventory procedures and an effective inventory record managing that help in achieving procuring has up to date inventory records.

2.1.5 Safety Stock and Inventory Performance

Komathi and Balakisnan (2024) investigated impact of inventory management practices on performance of manufacturing in Kulim Industrial Park. Inventory management was measured by Real-Time Inventory Tracking, Just in Time, vendor managed inventory and safety stock. The study adopted a quantitate approach while primary data was collected using questionnaires from 304 employees in various manufacturing industry. Proportional stratified sampling was used to group the population in four industrial phase zone. The study findings indicated Real-Time Inventory Tracking, vendor managed inventory and safety stock significantly enhance inventory management practises while Just In Time had a negative statistically affect inventory management practises. The study however did not consider the moderating variable which the current study will address.

Locally, Barongo and Moturi (2025) investigated inventory control management practises on procurement of Technical and Vocational Education and Training Institution in Kisii County. The study target population comprised of 64 employees attached in finance and procurement departments. Transaction Cost Economics theory and Stock Control Theory was utilized while explanatory research design was utilized. Data was collected using structured questionnaires. Content validity and Cronbach's Alpha Coefficient was used to test to test validity and reliability of the research instruments. Means, standard deviation, frequencies and percentages were used to present descriptive statistics while Pearson correlation and multiple regression analysis were used to present inferential statistics. The study findings indicated that both economic order quantity and safety stock ordering practices had statistically significant positive effect on procurement performance. The study recommended for proper implementation of inventory control practices to enhance efficiency and effectiveness in procurement function in TVET institutions. The study having been conducted in education sector cannot be applied in health sector because of police differences.

Barasaa and Makenzie (2021) conducted a study on influence of inventory control practices on procurement of public hospitals in Trans Nzoia County, Kenya. The study used structured questionnaires to collect data from the sample size of 47 respondents from relevant departments. A survey research design was utilized by the study. Data was analysed using statistical package SPSS while Pearson correlation and multiple linear regression were used for inferential statistics. The study findings revealed inventory audit had a positive significant influence on procurement performance of public hospitals in public hospitals in Trans Nzoia County. The study suffers drawbacks since it did not address how the literacy level can affect the performance of procurement.

Biwott and Kwasira (2025) conducted a study on inventory control practices and performance of the procurement function at Moi Teaching and Referral hospital. The study was anchored on hazard theory, cycle accounting theory and continuous improvement theory. The target population composed of 150 respondents who included managers of inventory control, storekeepers and procurement officers. Census method was conducted on the entire sample size. Semi structured questionnaires were used to collect primary data from the respondents. The study results indicated safety stock had

a positive and significant effect on procurement performance. The study however did not show how the supplier relationship management affect the procurement performance.

2.1.6 Summary of Research Gaps

Table 1:

Summary of research gaps

Author	Year	Purpose of	Methodology	Findings	Gaps
Kwamboka and Muturi	2024	The study investigated influence of inventory management practice on procurement performance	The study relied on primary data collected using questionnaire, descriptive research was adopted	The findings indicated automated inventory system enhances better inventory management	The study finding cannot be adopted level 6 hospitals due to policy differences.
Atemo and Kamara	2024	Investigated the relationship between inventory management practices and procurement performance in manufacturing companies in Nairobi County	The study utilized primary data which was collected using questionnaire from a sample size of 187 procurement officers. Descriptive research design was utilized.	The study findings indicated EOQ has positive and significant effect on procurement performance	The current study will be conducted in health sector since the finding in manufacturing sector cannot be generalized in health sector because of difference in policies
Barasa and Mukanzi	2021	The study investigated effect of inventory control practices on procurement performance of public hospitals in Trans Nzoia County	A sample size of 47 respondents was selected, primary data collected was collected using questionnaires.	The study found that EOQ had significant influence on procurement performance of public hospitals.	The samples size of 47 is not sufficient enough to collected data required for data analysis. The current study will ensure sufficient data is collected.

Mshiu	2019	Effect of inventory management on procurement performance at Coca cola Kwanza Mbeya	The study utilized quantitative research design. Primary and secondary data was collected.	The findings revealed that inventory shrinkage impact inventory performance	The research finding cannot be generalized in Kenya because of governance difference there the current study will address the challenges
Kamau and Kagiri	2015	Studied influence of inventory management practices on organizational competitiveness	Descriptive research design was adopted and a sample size of 103 was considered	The results indicated that inventory shrinkage, inventory management and inventory turnover affected competitiveness	Findings in communication sector cannot applied in health sector
Obisa and Mutwiri	2019	Studied effect of recoding procedures on procurement performance in Kisii County SACCO	The study utilized case study research design, and targeted 20 procurement officers and 230 staff of firms supplying goods and services.	The finding indicated. SACCO still used paper work to record Inventory	The study did not address moderating effect of management literacy level which the current study seeks to address
Asa et al.	2023	Studied the effect of supplier's relationship on organizational	Target population was 43 respondents. primary data was	The results indicated positive relationship between supplies	Study was conducted in developed country therefore the findings cannot be generalized in developing country.

		performance of companies in China	collected using questionnaires.	performance and organizational performance	
Njagi and Shalle	2016	Investigated supplier relationship on procurement performance of manufacturing companies in Kenya	Study adopted descriptive research design. Population comprised of 450 respondents. Questionnaires were used to collect primary data.	The study findings showed a positive significant relationship between suppliers' relationship and procurement performance.	The study recommended another study to be conducted but in a different. Therefore, the current study seeks to bridge the gap.
Riswandi and Yudoko	2023	Investigated strategies for delays in converting purchase requisitions to purchase orders.	Qualitative data was collected using interviews and questionnaires	The study showed several factors contributing to the delayed lead time leading to ineffective procurement process.	The study lacked theoretical framework
Mbah et al.	2019	Investigated the significant association between firm's operational performance and inventory management in Nigerian Manufacturing firms.	Primary data was utilized. Data was analyzed using panel using the data autoregressive distributed lag estimating technique.	The study reported positive significant association between the firm's operational performance and management methods	The findings cannot be generalized in Kenya because of political and regulatory differences.
Cronkhite	2020	Assessed effect of resistance to change in audit readiness and	Agency theory and qualitative study was used.	Study revealed barriers continues to face current practices of audit readiness.	The study lacked a moderating variable

procedures within
federal government

Source: Researcher 2025

2.2 Theoretical Review

The section presents theories which were utilized by this study which included; Economic Order Quantity, Resource based theory and Agency theory.

2.2.1 Economic Order Quantity (EOQ)

The theory was formulated by Ford W. Harris in 1913 and was later refined and popularised by R.H Wilson and Kenneth J. Arrow. It focuses on optimal quantity level that help in minimizing total cost of inventory management which involves holding cost and ordering cost hence helping organisation to determine the ideal lot size. Thereby reducing cost while ensuring sufficient inventories levels. EOQ focuses on determining the actual number of units an organisation should order to minimize total inventory cost by ensuring organisation order neither too much nor too little to avoid stock outs and overstocking. The model is limited to single product at a time, making it less effective for business management multiple products with interdependent demands. EOQ help in ensuring organisation can have consistence stock level to edge against discrepancies in inventory record which is vital in preventing overstocking leading to obsolete, redundant or scrap inventory hence high carrying cost. Health facilities should therefore keep proper records on medical product to ensure essential medicines and equipment are available while minimizing waste and stock outs leading to enhanced planning using real time inventory data. Accurate inventory records provide essential data needed to calculate EOQ effectively. Without precise records EOQ calculations may lead to overstocking or stockouts. Further EOQ assumes a consistent and predictable demand for the hospital products. However, often the demand for the products fluctuates because of changes in the number of the medicines and also market trends resulting to less accurate EOQ.

The Economic Order Quantity theory is basically demonstrating how reorder strategy assists in enhancing a quantitative framework to determine the optimal order quantity that minimizes total inventory costs, including ordering and holding costs. Generally, EOQ help purchasing the required quantity that balances the costs to avoid excess inventory and stockouts, thereby optimizing procurement decisions and inventory management (Korir et al.,2021).

2.2.2 Resource Based Theory.

The theory was developed by Jay Barney in 1991. It postulates that a firm's sustainable competitive advantage is derived from its unique resources and capabilities that are valuable, rare, inimitable, and non-substitutable. The theory emphasizes that internal resources, rather than external market positioning alone, are critical for strategic management and superior firm performance. Resource Based theory contributes to supplier relationship management significantly by informing key decision points in supply management such as make-or-buy decisions, sourcing strategies, supplier portfolio management, relationship strategies, and contract awarding. The theory guides procurement managers to strategically manage internal resources and capabilities to build unique competencies that enhance supplier relationships and overall supply chain resilience (Bohnenkamp, 2013).

The theory further focuses on leveraging internal strengths to make informed sourcing decisions, build effective supplier portfolios, and enhance procurement performance through capabilities integration and technology use. The theory also supports the development of supplier linkages that enhance operational performance by integrating and protecting valuable resources across the supply chain, thus improving resilience and adaptability in dynamic market (Komakech et al.,2024).

2.2.3 Agency Theory

This theory was formulated by Jensen and Meckling in 1976. The theory explores the relationship that exist between the principal and the agent. In this relationship the principal hires the agent to work on his/her behalf. The agent is tasked to makes sound decision on behalf of the principal to enhance effectiveness operation of the organisations towards achieving its goals. The conflict will arise in scenarios where the agent is not able to run the organisation as agreed with the principal. Agency theory assists in explaining the risk associated with procurement and inefficiencies, guiding best practises like performance-based contacting, supplier monitoring and strategies to mitigate risk. Therefore, having a better understanding of principal- agent relationship, procurement processes can be optimized to achieve the organisational effectiveness and efficiency. Compliance in procurement ensures that agents adhere to principals' directives and regulatory requirements, while audit readiness provides the means to verify and enforce this adherence. Agency theory underpins this relationship by

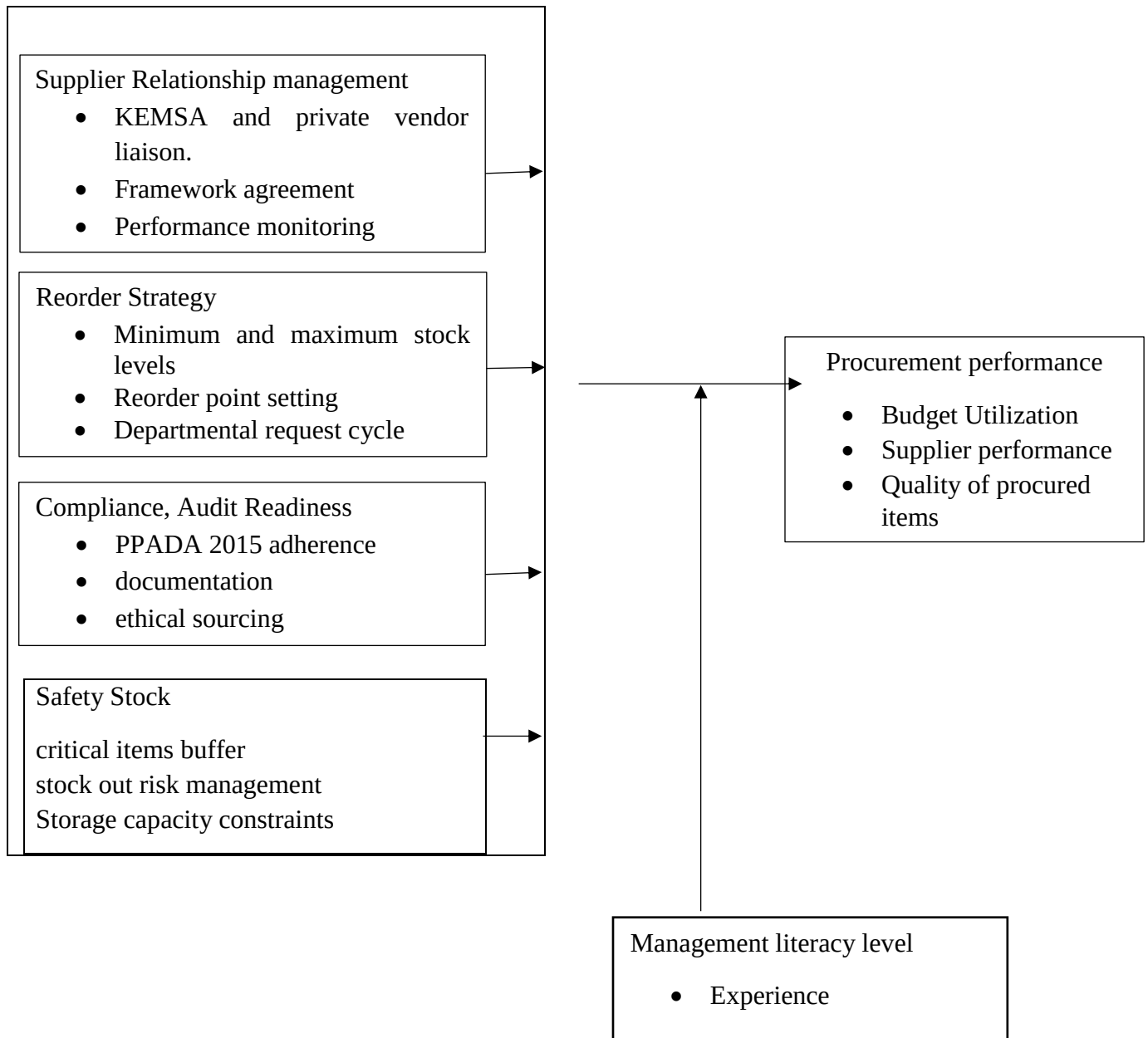
explaining the need for audits as a mechanism to manage the principal-agent conflict and promote effective procurement governance (Onyinkwa, 2014).

2.3 Conceptual Framework

Independent variables

Inventory Management Control

Dependent variables



Moderating variable

Figure 1: The relationship between inventory management control and procurement performance.

Source: researcher, 2025

Inventory management determine the overall performance of procurement in an organisation. Inventory management practises include supplier relationship management, reorder strategy, compliance and audit readiness and safety stock. Ensuring effective supplier relationship management through supplier training and education and continuous improvement enhances improved procurement performance. Supplier development ensures suppliers meet quality and delivery expectations, enhancing overall supply chain reliability. Effective reorder strategies assist in balancing cost associated with inventory like holding cost and stockout risks. Having appropriate reorder points and quantities based on demand patterns, lead times, and safety stock, companies can avoid overstocking and understocking, thereby optimizing cash flow and reducing storage cost.

Compliance and audit readiness are foundational to strong procurement performance. They ensure that procurement activities are conducted legally, ethically, and efficiently, which leads to improved supply chain reliability, cost savings, quality enhancement, and overall organizational success. Safety stock is the additional inventory kept as a buffer against uncertainties in demand and supply lead times. It plays a critical role in ensuring continuity of operations by preventing stockouts, which can lead to reduced sales, production delays, and customer dissatisfaction. Maintaining appropriate safety stock levels allows procurement to meet demand reliably even during supply chain disruptions, supplier delays, or unexpected spikes in orders

2.4 Operationalization of Variables

Table 2:

Operationalization of Variable

Name of Variable		Type of Variable	Indicator
Supplier Relationship management		Independent variable	KEMSA and private vendor liaison Framework agreement Performance monitoring
Reorder Strategy		Independent variable	Minimum/maximum stock levels Reorder point setting Departmental request cycle
Compliance, Readiness	Audit	Independent variable	PPADA 2015 adherence Documentation Ethical sourcing
Safety Stock		Independent variable	Critical items buffer Stock out risk management Storage capacity constraint
Management literacy level		Moderator	Experience Professional membership
Procurement Performance		Dependent Variable	Budget Utilization Supplier performance Quality of procured items

Source: Researcher 2025

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Location of the Study

The study was conducted in seven level 6 hospitals in Kenya. Kenyatta National Hospital, Kenyatta University Teaching Referral, Nakuru Level 6 Hospital, Kisii Teaching and referral Hospital, National Spinal Injury Referral Hospital, Mathari National Hospital Teaching and referral hospital and Moi Teaching and Referral Hospital which are located Latitude: 1.3021⁰S and Longitude: 36.8077⁰E, Latitude: -1.1889⁰S and Longitude: 36.9158⁰E, Longitude: 34.7713⁰E and Latitude: -0.6713⁰S, Longitude: 36.7943⁰E and Latitude: -1.2887⁰S, Longitude: 36.8446⁰E and Latitude: -1.2618⁰S and Longitude: 35.2804⁰E and Latitude: 0.5118⁰N respectively. The location is suitable since there has been serious cases of stock out of medicine and equipment in the mentioned facilities (Julius, Tenambergen and Mapesa, 2018).

3.2 Research Design

Sileyew (2019) defines research design as the plan that guide the entire research problem. It helps in ensuring that the research is valid, reliable and is able to address the research objectives. The study adopted a cross-sectional descriptive research design. Cross sectional descriptive research design helped in ensuring complete description of events and transactions without manipulation and minimum bias. Cross sectional descriptive also will help to answer the question about what, where and how. It was used to describe how inventory management affect procurement performance. The research design has been adopted by Kamau and Kagiri (2015) and Atemo and Kamara (2024)

3.3 Population of the Study

Population is defined as the complete set of individuals, data and objects with the same observable characteristics (Mugenda& Mugenda ,2003). This study targeted procurement officers, stores personnel, account officers and hospital administrators in eight level 6 hospitals in Kenya.

Table 2:

Population

Hospitals	Procurement officers	Stores personnel	Internal Auditors	Hospital administrators	Total
Kenyatta National Hospital (KNH)	10	5	5	2	22
Moi Teaching and Referral Hospital (MTRH)	10	5	4	2	21
Kenyatta University Teaching Referral and Research Hospital (KUTRRH)	10	5	5	2	22
Nakuru Level 6 Hospital	10	5	3	2	20
Kisii Teaching and Referral Hospital (KTRH)	10	5	4	2	21
National Spinal Injury Referral Hospital	10	5	5	2	22
Mathari National Teaching and Referral Hospital	10	5	5	2	22
Total	70	35	31	14	150

3.4 Sampling Procedure and Sample Size

The study adopted census survey where data was collected from all procurement officers, store personnel, accounts officers, and hospital administrator in seven level 6 hospitals in Kenya. Census survey is suitable where the population was small and it also enhanced validity of the data collected Mugenda and Mugenda (2003).

3.5 Research Instrument

The primary data collection tool for the study was a structured questionnaire with closed ended questions to have quantitative data easy to score, clean and analyse. Questionnaires are suitable since it enables the researcher effectively efficiently collect data where several respondents are involved. The questionnaire was structured based on a Five-point Likert scale namely where 1 = Strongly Disagree; 2 = Disagree; 3= Neutral; 4= Agree and 5= Strongly Agree. The questionnaire was further divided into sections where section A demographic information, section B supplier relationship management, section C reorder strategy, section D compliance and audit readiness, section E safety stock and section F procurement performance. The researcher utilized google forms for the purpose of collecting and organizing data.

3.6 Pilot Study

Pilot study refers to the study conducted to help the researcher understand any weakness in the selected research instruments and help in pointing the areas that will need revision before implementation of the research instrument on the study. It also helps in providing a proxy data for the purpose of selecting the probability sample (Cooper & Scheduler, 2014). The pilot study was conducted at Jaramogi Oginga Odinga referral hospital because it is in the process of being transformed into a level 6 referral hospital. The researcher distributed 15 questionnaires to procurement officers, stores personnel, internal auditors and Hospital administrators.

3.6.1 Validity

Validity refers to the extent to which a questionnaire accurately measures what it is intended to measure (Ragab & Arisha, 2018). To establish content validity, the study involved professionals and experts in the procurement field to evaluate the concept the instrument aims to measure, as well as to assess whether the set of items or checklist effectively represents the concepts under investigation. Additionally, the study gathered feedback from the target population regarding the design and content of the instrument,

along with suggestions for more effective and practical methods of administering it. To assess construct validity, the study first defined the theoretical and empirical relationships between the concept measures. Ultimately, the empirical evidence was analysed to determine how it contributed to clarifying the construct validity of the measures being tested.

3.6.2 Reliability of the Research Instrument

Reliability refers to the extent to which independent administration of the same instrument yields the same results under comparable conditions. The less variation the instrument produces in repeated measurements of an attribute the higher the reliability (Kumar, 2018). Reliability analysis was used to assess internal consistency among the variables of study. The reliability of the study measures was assessed by computing Cronbach's Alpha coefficient for all items in the questionnaire and the overall assessment was given. A Cronbach's alpha coefficient of 0.7 was used as a threshold (Kumar, 2018).

3.7 Data collection Procedures

Data collection refers to that process of data gathering for the purpose of processing to provide an understandable information useful in making sound decisions. The researcher obtained an introductory letter from the institution required to conduct research. These letters were served as official endorsements, ensuring access to the resources and cooperation from the level 6 hospitals in Kenya. The researcher sought approval from Tharaka University ethics committee, reinforcing the commitment to ethical research practices. With help of NACOSTI permit, questionnaires were distributed electronically, data collected was stored and only accessible to researcher.

3.8 Data Analysis and Presentation

The primary data was obtained from the eight level 6 hospitals in Kenya. Kenya. Data was analysed using Statistical Package for Social Sciences (SPSS) version 29.0 Descriptive analysis was performed to provide an overview of the data distribution. This included calculating frequencies, percentages, means, and standard deviations. Frequencies and percentages helped to depict the distribution of categorical variables, such as demographic characteristics (e.g., managerial level, age, gender). The mean summarized continuous variables, while the standard deviation highlighted the extent of variation in responses. To establish the relationship among variables, multiple

regressions was employed. T-test was used to test hypothesis and F-test at 5% level of significance was used to test the overall significance of the model.

3.10 Model Specification

The model is as follows:

Model 1: Objective 1, 2 and 3

$$\begin{aligned}
 Y &= \beta_0 + \beta_1 X_1 + \varepsilon \dots\dots\dots i \\
 Y &= \beta_0 + \beta_2 X_2 + \varepsilon \dots\dots\dots ii \\
 Y &= \beta_0 + \beta_3 X_3 + \varepsilon \dots\dots\dots iii \\
 Y &= \beta_0 + \beta_4 X_4 + \varepsilon \dots\dots\dots iv
 \end{aligned}$$

The combined regression equation will be expressed as:

$$\begin{aligned}
 Y &= \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_i \dots\dots\dots v \\
 Y &= \beta_0 + \beta_1 X_1 + B_2 Z + \varepsilon \dots\dots\dots vi \\
 Y &= \beta_0 + \beta_2 X_2 + B_3 Z + \varepsilon \dots\dots\dots vii \\
 Y &= \beta_0 + \beta_3 X_3 + B_4 Z + \varepsilon \dots\dots\dots viii \\
 Y &= \beta_0 + \beta_4 X_4 + B_5 Z + \varepsilon \dots\dots\dots ix
 \end{aligned}$$

The overall model with the moderator will be as follows;

$$Y = \beta_0 + \sum \beta_i X_i + \beta_5 Z + \beta_6 (\sum X_i Z) + \epsilon \dots\dots\dots x$$

Where;

Y= Procurement Performance

X_1 = Supplier Relationship Management

X_2 = Reorder Strategy

X_3 = Compliance and Audit Readiness

X_4 = Safety Stock

β_0 =constant representing procurement performance in absence of independent variables

$\beta_1, \beta_2, \beta_3$ and β_4 = coefficients of the independent variables

X*Z-Management literacy level with combined inventory management

e = error term

Z = moderator variable which is management literacy level

3.11 Diagnostic Tests

Diagnostic tests were conducted in respect of normality test, multicollinearity test, heteroscedasticity test and linearity test.

3.11.1 Normality Test

Normality was conducted to determine if the sample size adopted has been selected from a population which is normally distributed. It also helped in checking whether the data contains outliers which can lead to inaccurate results after analysis. For the purpose of this study Kolmogorov – smirnov was used to check if the data is normal. If the p-value is less than 0.05 confirms the data is normally distributed leading to an acceptance of null hypothesis. If otherwise stated the data would be seen not to be normally distributed therefore the null hypothesis will be rejected (Cain, Zhang & Yuan, 2017).

3.11.2 Multicollinearity Test

Multicollinearity refers to the scenario where two or more variables are highly correlated in regression model leading to inability to determine the effect of each individual variable on dependent variable. It is therefore important to check if there existed any relationship between predictor variables. This study utilized Variance to test the presence of multicollinearity in regression model. If the VIF is less than 10 indicates absence of multicollinearity but VIF more than 10 indicates presence of multicollinearity (Kim, 2019).

3.11.3 Heteroscedasticity Tests

Heteroscedasticity test was used to check the existence of variance inequality of residuals of each observable data. Breusch-Pagan test was used to test heteroscedasticity. Heteroscedasticity is said to be present when the residual does not lie along the straight line (Schroeder *et. al.*, 2020).

3.11.4 Linearity Test

Linearity test refers to the test conducted to check if there exist relationship between the independent variables and dependent variable is approximately linear, as assumed in linear regression (Alita et al., 2021). Visual inspection on the residual plots between predictor and dependent variable. If residuals show random scatter around zero then linearity is reasonable. If residuals show patterns, then nonlinearity exist (Gasser, et al., 2021.).

3.12 Ethical Consideration

Ethical consideration is a key factor to consider when conducting the study. Confidentiality was observed by ensuring that the information collected from the respondents was not shared or disclosed to any other party. Introduction letter from the university and letter from the NACOSTI was sought to enhance assurance to the respondent that information was only used for the research only. Plagiarism was also avoided by ensuring there is proper citation to acknowledge the work of other scholars. Confidentiality was observed while filling the questionnaire was voluntary.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION, AND DISCUSSION

4.1 Introduction

This chapter presents a detailed discussion of study findings graphs, tables and descriptive summaries. The responses obtained from the field clearly shows how many individuals took part in study, how representative it was to the entire population. The chapter also presents analysis for validity and reliability of the research instruments used. Furthermore, it presents the demographic analysis of participants, descriptive analysis results for each variable and inferential analysis results highlighting the correlation and regression co-efficient useful in explaining the variable relationships.

4.2 Response Rate

Questionnaires were distributed by the researcher to 150 respondents at seven level 6 hospitals in Kenya. The results are shown in Table 3;

Table 3:

Response Rate

Response	Frequency	Percentage
Returned Questionnaires	131	87.3%
Questionnaire not returned	19	12.7%
Total	150	100

Source: Research data (2025)

The study achieved a high response rate, with 131 out of 150 questionnaires returned, representing 87.3%, while 19 questionnaires (12.7%) were not returned. This high return rate indicates strong engagement from respondents, enhancing the reliability and representativeness of the findings. A response rate above 80% is generally considered excellent in survey research as it minimizes the risk of non-response bias and improves the validity of the conclusions drawn (Mugambi & Muthoni, 2022). The high participation suggests that the target population perceived the study as relevant to their operational context, which is critical when assessing institutional practices such as inventory control systems and management literacy in procurement.

4.3 Pilot Test Results

The pilot study was conducted at Jaramogi Oginga Odinga referral hospital because it was in the process of being transformed into a level 6 referral hospital. The researcher distributed 15 questionnaires to procurement officers, stores personnel, internal auditors and Hospital administrators. The data provided was used to assess the research instrument's reliability.

4.3.1 Validity Test Results

To establish content validity, the study involved professionals and experts in the procurement field to evaluate the concept the instrument aims to measure, as well as to assess whether the set of items or checklist effectively represents the concepts under investigation. Additionally, the study gathered feedback from the target population regarding the design and content of the instrument, along with suggestions for more effective and practical methods of administering it. To assess construct validity, the study first defined the theoretical and empirical relationships between the concept measures. Ultimately, the empirical evidence was analysed to determine how it contributed to clarifying the construct validity of the measures being tested. According to Wekesa and Mwangi (2023), engaging subject-matter experts and pilot testing with the target population are key strategies for ensuring that research instruments measure what they are intended to measure, thereby enhancing both content and construct validity.

4.3.2 Reliability Test Results

The reliability of the study measures was assessed by computing Cronbach's Alpha coefficient for all items in the questionnaire and the overall assessment was given. A Cronbach's alpha coefficient of 0.7 was used as a threshold. The results are presented in table 4:

Table 4:
Reliability Test Results

Variable	Items	Cronbach's Alpha	Remarks
Supplier Relationship Management	6	0.787	Reliable
Reorder Strategy	6	0.790	Reliable
Compliance and Audit Readiness	6	0.803	Reliable
Safety Stock	6	0.746	Reliable
Procurement Performance	6	0.754	Reliable

Source: Research Data (2025)

The reliability analysis results indicate that all study variables achieved Cronbach's Alpha values above the commonly accepted threshold of 0.70, confirming internal consistency of the measurement items. Supplier Relationship Management ($\alpha = 0.787$), Reorder Strategy ($\alpha = 0.790$), Compliance and Audit Readiness ($\alpha = 0.803$), Safety Stock ($\alpha = 0.746$), and Procurement Performance ($\alpha = 0.754$) were all deemed reliable, suggesting that the instrument consistently measures the constructs under investigation. This reliability strengthens the credibility of findings on how inventory management control and management literacy influence procurement performance in Level 6 hospitals in Kenya. Consistent with these findings, Otieno and Kamau (2021) assert that Cronbach's Alpha values above 0.70 indicate strong internal reliability, which is essential for ensuring that conclusions drawn from the data accurately reflect the studied phenomena in healthcare procurement settings.

4.4 Demographic Analysis

This section provides a more in-depth look at the demographics and traits of the respondents. The study sought to determine, Facility participants attached, Years of experience and department they are assigned to;

4.4.1 Years of Experience

The researcher aimed to ascertain the participants years of experience. The findings are displayed in Figure 2.

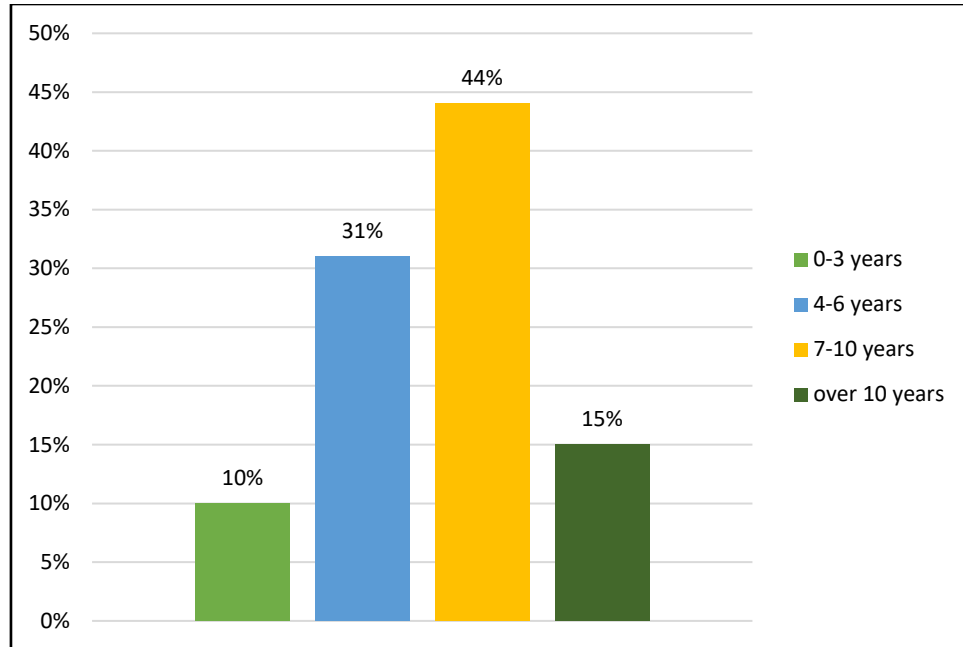


Figure 2: Years of Experience

Source: Research Data (2025)

The findings on participants' years of experience reveal that the majority had substantial professional exposure, with 44% having 7–10 years of experience and 31% having 4–6 years, while 15% had over 10 years, and only 10% had 0–3 years. This distribution suggests that most respondents possessed significant practical knowledge of procurement processes, inventory management controls, and compliance requirements within Level 6 hospitals. Such experience is crucial for providing informed responses that accurately reflect the operational realities of hospital procurement systems. According to Kibe and Muturi (2023), respondents with more years of professional experience tend to provide richer and more reliable insights into institutional practices, thereby enhancing the validity of studies assessing procurement performance in healthcare settings.

4.4.2 Department Assigned

The researcher aimed to ascertain the department assigned to participants. The findings are displayed in Figure 3.

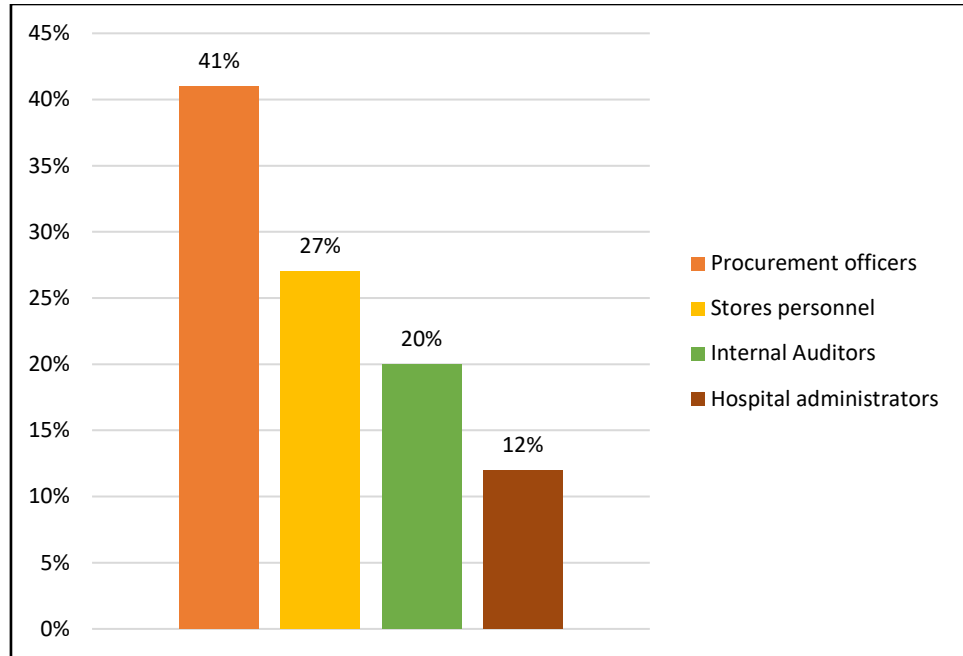


Figure 3: Department Assigned

Source: Research Data (2025)

The departmental distribution of respondents indicates that procurement officers formed the largest group at 41%, followed by stores personnel at 27%, internal auditors at 20%, and hospital administrators at 12%. This composition ensured that the study captures perspectives from key functional areas directly involved in or overseeing inventory management control and procurement processes within Level 6 hospitals. The dominance of procurement officers and stores personnel is particularly relevant, as these roles are at the core of ordering, stock management, supplier engagement, and compliance monitoring. Including internal auditors and administrators enriches the dataset by adding oversight and policy-level viewpoints. As noted by Chepkemai and Wanjohi (2022), incorporating respondents from multiple interrelated departments enhances the comprehensiveness of procurement performance studies by ensuring that operational, oversight, and strategic perspectives are represented.

4.5 Analysis of Study Variables

The descriptive statistical analysis was conducted to determine the collected data normality and distribution. The analysis was based on the five key variables: Supplier relationship management, Reorder strategy, Compliance and audit readiness, Safety stock and Procurement performance. The responses to statements under these variables were measured on a 5-point Likert scale; 5 - Strongly agree, 4 - Agree, 3 - Neutral, 2 - Disagree and 1 - Strongly disagree.

4.5.1 Supplier Relationship Management

Study participants were asked to indicate the extent to which they agree to statements relating to supplier relationship management based on a Likert scale of 1-5, the responses are as presented in table 4.3:

Table 5:

Supplier Relationship Management

Statement	Mean	Std-Dev
The hospital maintains effective communication and coordination with KEMSA to ensure timely supply of medical products.	4.350	.972
The hospital actively engages private vendors alongside KEMSA to diversify procurement sources and improve supply reliability.	3.948	1.002
The hospital utilizes framework agreements to secure favorable terms and consistent supply from key suppliers.	4.274	.797
Framework agreements are regularly reviewed and updated to reflect changing procurement needs and market conditions.	4.195	.738
The hospital has established systems to continuously monitor supplier and procurement performance against set benchmarks.	4.305	.798
Performance data from procurement activities is used to inform decision-making and improve future procurement processes.	3.841	.878
Overall Mean	4.152	

Source: Research data (2025)

The results indicate strong agreement among respondents that hospitals maintain effective communication and coordination with KEMSA to ensure timely supply of medical products (Mean=4.350, SD=0.972), with the moderate standard deviation

suggesting relatively consistent perceptions but with some variation across hospitals. Engagement with private vendors alongside KEMSA scored moderately high (Mean=3.948, SD=1.002), yet the higher standard deviation here indicates more variation in practice, implying that while some hospitals actively diversify their procurement sources, others rely more heavily on KEMSA. The use of framework agreements to secure favourable terms and consistent supply scored high (Mean=4.274, SD=0.797), with the lower standard deviation reflecting broad agreement among respondents. Regular review and updating of framework agreements (Mean=4.195, SD=0.738) similarly shows strong agreement and low variability, indicating a generally consistent practice across the hospitals. The establishment of systems for continuous supplier and procurement performance monitoring also scored high (Mean=4.305, SD=0.798), with low variability suggesting this is a well-entrenched practice. However, using procurement performance data to inform decision-making recorded the lowest mean (3.841) and a standard deviation of 0.878, indicating both moderate agreement and more variation in application, pointing to inconsistent use of data analytics in procurement processes.

The overall mean of 4.152 reflects strong consensus that Level 6 hospitals in Kenya have effective supplier relationship management practices, underpinned by communication with suppliers, use of framework agreements, and performance monitoring systems. The relatively low standard deviations for most variables suggest that these practices are fairly standardized across facilities, which strengthens the reliability of procurement performance outcomes. These findings align with Omondi & Wanyoike (2022), who emphasized that trust-based supplier partnerships in Kenyan public hospitals improve lead times and product quality.

4.5.2 Re-order Strategy

Study participants were asked to indicate the extent to which they agree to statements relating to reorder strategy based on a Likert scale of 1-5, the responses are as presented in table 6:

Table 6:

Re-order strategy

Statement	Mean	Std. Dev
The hospital has clearly defined minimum and maximum stock levels for all essential inventory items.	3.914	.908
Minimum and maximum stock levels are regularly reviewed and adjusted based on consumption patterns and lead times.	4.030	.893
Reorder points are accurately calculated considering average consumption and supplier lead times to avoid stockouts.	4.014	.776
The hospital consistently places orders when stock reaches the predetermined reorder point to maintain inventory flow.	4.195	.855
Departments submit inventory requests on a regular and predictable schedule that aligns with procurement planning.	3.899	.912
The hospital has a standardized process for reviewing and consolidating departmental requests before procurement.	3.817	.934
Overall Mean	3.978	

Source: Research data (2025)

The analysis shows that most respondents agreed their hospitals have structured reorder strategies, though with varying levels of consistency across specific practices. Clearly defined minimum and maximum stock levels scored a mean of 3.914 (SD=0.908), indicating moderate to strong agreement but with some variability in implementation. Regular review and adjustment of these stock levels based on consumption patterns and lead times recorded a higher mean of 4.030 (SD=0.893), suggesting stronger adoption and relatively consistent practices. Accurate calculation of reorder points to prevent stockouts also scored high (Mean=4.014, SD=0.776), with the lower standard deviation indicating stronger consensus. Consistency in placing orders at the predetermined reorder point had the highest rating (Mean=4.195, SD=0.855), reflecting a well-adhered-to practice that ensures inventory flow. Departmental submission of inventory requests on a predictable schedule scored slightly lower (Mean=3.899, SD=0.912), indicating moderate variability, while the lowest mean was observed for having a

standardized process for reviewing and consolidating requests before procurement (Mean=3.817, SD=0.934), showing the greatest variation in application.

The overall mean of 3.978 suggests that reorder strategy practices are generally strong across Level 6 hospitals in Kenya, but there is room for improvement, especially in standardizing departmental request processes and ensuring predictable submission schedules. The relatively low standard deviations for most statements indicate that core elements of reorder strategies, such as setting stock thresholds, calculating reorder points, and placing timely orders, are consistently applied, supporting stable procurement performance. This supports Otieno & Githui's (2021) conclusion that systematic reorder planning minimizes emergency procurement and stockouts in public health facilities.

4.5.3 Compliance and Audit Readiness

Study participants were asked to indicate the extent to which they agree to statements relating to compliance and audit readiness based on a Likert scale of 1-5, the responses are as presented in table 7:

Table 7:

Compliance and Audit readiness

Statement	Mean	Std Dev
Procurement activities in the hospital strictly comply with the requirements of the PPADA 2015.	4.134	.894
The hospital regularly updates its procurement procedures to reflect amendments in the PPADA legislation.	3.973	.869
All procurement transactions are properly documented and records are readily available for audit purposes.	4.051	1.017
The hospital maintains comprehensive documentation for each procurement stage, from requisition to payment.	3.731	.967
The hospital ensures that suppliers are selected based on fairness, transparency, and ethical standards.	4.098	.894
Measures are in place to prevent conflicts of interest and unethical practices during procurement.	4.185	.879
Overall Mean	4.029	

Source: Research data (2025)

The results indicate that compliance and audit readiness practices are generally strong across Level 6 hospitals in Kenya, though with varying consistency in specific areas. Strict adherence to the Public Procurement and Asset Disposal Act (PPADA) 2015 scored high (Mean=4.134, SD=0.894), reflecting a strong compliance culture. Regular updates of procurement procedures to match legislative amendments scored slightly lower (Mean=3.973, SD=0.869), suggesting this is practiced in most hospitals but with some variability. Proper documentation and audit readiness scored well (Mean=4.051, SD=1.017), although the higher standard deviation here indicates differences in record management efficiency. Maintaining comprehensive documentation for all procurement stages scored the lowest (Mean=3.731, SD=0.967), pointing to gaps in process completeness. Ensuring fairness, transparency, and ethical standards in supplier selection scored high (Mean=4.098, SD=0.894), while the highest-rated item was having measures to prevent conflicts of interest (Mean=4.185, SD=0.879), indicating strong ethical safeguards.

The overall mean of 4.029 suggests that compliance with procurement laws and readiness for audit are generally well implemented in these hospitals, supporting accountability and transparency in public procurement. The relatively low standard deviations for most statements imply that core compliance measures, such as fairness in supplier selection and prevention of unethical practices, are consistently applied. These results align with Karanja et al. (2023), who found that compliance promotes trust, accountability, and procurement efficiency in Kenyan health institutions.

4.5.4 Safety Stock

Study participants were asked to indicate the extent to which they agree to statements relating to compliance and audit readiness based on a Likert scale of 1-5, the responses are as presented in table 8:

Table 8:
Safety Stock

Statement	Mean	Std Dev
The hospital maintains a minimum buffer stock level specifically for critical items to prevent shortages.	3.977	.898
Critical items buffer stock is prioritized differently from non-critical items during procurement planning.	3.943	1.006
The hospital has contingency plans to manage stock outs when they occur.	3.780	.907
Regular risk assessments are conducted to identify potential causes of stock outs.	3.953	.896
The current storage capacity limits the amount of safety stock that can be held effectively.	3.877	.935
The hospital has implemented measures to optimize storage space and reduce capacity constraints.	4.070	.829
Overall Mean	3.933	

Source: Research data (2025)

The results show that safety stock management practices in Level 6 hospitals are moderately strong but display some variability across different aspects. Maintaining a minimum buffer stock for critical items scored a mean of 3.977 (SD=0.898), indicating general agreement but with some inconsistency in practice. Prioritization of critical items differently from non-critical items during procurement planning scored slightly lower (Mean=3.943, SD=1.006), with the higher standard deviation suggesting greater variation among hospitals in applying this strategy. Contingency planning for stockouts scored the lowest (Mean=3.780, SD=0.907), pointing to a weaker area that could affect supply chain resilience. Regular risk assessments to identify potential stockout causes scored a mean of 3.953 (SD=0.896), indicating moderate consistency. Perceptions that current storage capacity limits effective safety stock holding scored 3.877 (SD=0.935), highlighting infrastructural constraints. The highest mean was for implementing measures to optimize storage space (Mean=4.070, SD=0.829), reflecting a stronger and more consistent effort to address capacity challenges.

The overall mean of 3.933 suggests that safety stock practices are generally well established but not fully optimized across all Level 6 hospitals. The relatively higher standard deviations for prioritization of critical items and capacity limitations indicate disparities in how hospitals approach safety stock planning and infrastructure management. While storage optimization measures are more consistently implemented, gaps in contingency planning and proactive risk assessment could expose hospitals to stockout risks, particularly for critical supplies. This aligns with Mutua & Kamau (2020), who highlighted that higher managerial competence in inventory control leads to better risk management and cost efficiency in hospital procurement. The results underscore the need to invest in training and capacity building for procurement managers, especially in technical inventory management areas that require critical thinking beyond standard procedures.

4.5.5 Procurement Performance

Study participants were asked to indicate the extent to which they agree to statements relating to procurement performance based on a Likert scale of 1-5, the responses are as presented in table 9:

Table 9:

Procurement Performance

Statement	Mean	Std Dev
The hospital effectively utilizes its allocated budget for procurement activities.	3.869	.871
The hospital regularly reallocates unused funds to address urgent procurement needs.	3.919	.897
Suppliers consistently deliver goods and services on time as per the agreed schedule.	4.194	1.144
The hospital's suppliers provide after-sales support and promptly resolve delivery issues.	3.971	1.035
The items procured by the hospital consistently meet the required quality standards.	3.963	1.033
Feedback from end-users is systematically collected to assess the performance of procured items.	3.726	.944
Overall Mean	3.940	

Source: Research Data (2025)

The results indicate that procurement performance in Level 6 hospitals is generally strong, particularly in supplier delivery reliability and budget utilization, though some areas show room for improvement. Effective utilization of the allocated procurement budget scored a mean of 3.869 (SD=0.871), reflecting moderate to strong agreement and relatively consistent practices across hospitals. The regular reallocation of unused funds to address urgent needs scored slightly higher (Mean=3.919, SD=0.897), indicating proactive financial management. The highest-rated statement was timely supplier delivery (Mean=4.194, SD=1.144), though the high standard deviation suggests variability, with some hospitals experiencing delays. After-sales support and issue resolution scored 3.971 (SD=1.035), indicating satisfactory performance but with notable differences among facilities. The consistency of procured items meeting quality standards scored 3.963 (SD=1.033), also showing variability. The lowest score was systematic collection of end-user feedback (Mean=3.726, SD=0.944), highlighting a weaker area in performance evaluation and continuous improvement.

The overall mean of 3.940 suggests that procurement performance in these hospitals is above average, with strengths in financial management and supplier reliability. However, the relatively high standard deviations for supplier delivery, quality assurance, and after-sales support reveal inconsistencies that could impact service delivery. Moreover, the low rating for structured end-user feedback collection points to a missed opportunity for leveraging operational insights to refine procurement processes.

4.6: Diagnostic Test Results

The tests were done to assess the accuracy, validity, and reliability of measurements, procedures, and statistical models employed in the study. These tests helped in identifying and address potential sources of bias, error, or inconsistency, thereby ensuring the robustness and credibility of their findings. The assumptions tested included; Normality test, Multi-collinearity, Heteroscedasticity tests and Linearity. The results are as presented below.

4.6.1 Normality Test

Kolmogorov Smirnov was used to check if the data is normal. If the p-value is less than 0.05 confirms the data is normally distributed leading to an acceptance of null hypothesis. If otherwise stated the data would be seen not to be normally distributed

therefore the null hypothesis will be rejected. The findings are presented in the table below;

Table 10:

Normality Test

Variable	Statistic	Shapiro-Wilk	
		df	Sig.
Supplier Relationship Management	.257	130	.062
Reorder Strategy	.251	130	.071
Compliance and Audit Readiness	.234	130	.056
Safety Stock	.249	130	.068
Procurement Performance	.262	130	.075

Source: Research data (2025)

The Shapiro-Wilk test results show that all variables; Supplier relationship management ($p=0.062$), Reorder strategy ($p=0.071$), Compliance and audit readiness ($p=0.056$), Safety stock ($p=0.068$), and Procurement performance ($p=0.075$) have significance values greater than the conventional threshold of 0.05. This indicates that the data for each variable are normally distributed, satisfying one of the key assumptions for conducting parametric tests such as ANOVA. Meeting the normality assumption enhances the validity and reliability of inferential statistics applied in examining the effect of inventory management control and management literacy on procurement performance in Level 6 hospitals. These findings align with Otieno and Karanja (2021), who emphasize that confirming normality through tests like Shapiro-Wilk ensures that ANOVA results are robust and accurately reflect relationships between procurement variables in healthcare studies.

4.6.2 Multi-collinearity Test

The study utilized Variance to test the presence of multicollinearity in regression model. If the VIF is less than 10 indicates absence of multicollinearity but VIF more than 10 indicates presence of multicollinearity. The findings are presented below;

Table 11:

Multi-collinearity Test

Factor	Tolerance	VIF
Supplier Relationship Management	.700	1. 429
Reorder Strategy	.935	1.070
Compliance and Audit Readiness	.742	1.348
Safety Stock	.843	1.186
Procurement Performance	.910	1.099

Source: Research Data (2025)

The multicollinearity diagnostics show that all variables have tolerance values well above the 0.1 threshold and VIF values far below the critical value of 10: Supplier Relationship Management (Tolerance=0.700, VIF=1.429), Reorder Strategy (Tolerance= 0.935, VIF=1.070), Compliance and Audit Readiness (Tolerance=0.742, VIF=1.348), Safety Stock (Tolerance=0.843, VIF=1.186), and Procurement Performance (Tolerance=0.910, VIF=1.099). These results indicate that there is no significant multicollinearity among the independent variables, meaning they are sufficiently independent from one another to provide distinct contributions to the regression model. The absence of multicollinearity enhances the reliability of coefficient estimates, ensuring that the effects of each inventory management control variable on procurement performance can be interpreted without distortion. This aligns with the findings of Mwangi and Wanjiku (2022), who observed that low VIF and high tolerance values improve the stability and interpretability of models analysing operational efficiency in Kenya's healthcare sector.

4.6.3 Heteroscedasticity Tests

The test was based on the assumption that the variance of the residuals is constant across all levels of the independent variables i.e. the spread of residuals was roughly the same for all predicted values, ensuring homoscedasticity (constant variance).

Table 12:

Heteroscedasticity Tests

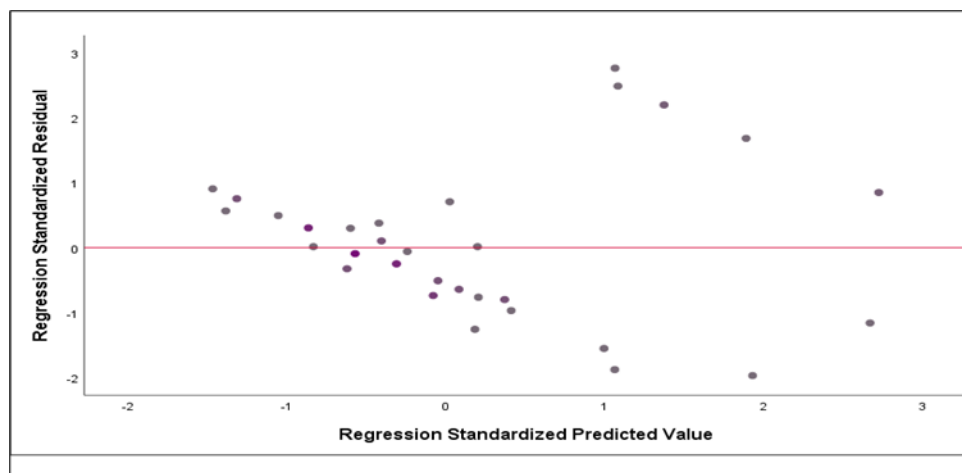
	Test	Statistic	P-value
Bresusch-pagan Lagrange Multiplier	Chibar ² (01)	0.644	.309

Source: Research data (2025)

The test revealed a p-value of 0.309 ($p\text{-value} \geq 0.05$) implying that the null hypothesis should not be rejected. Therefore, the data revealed statistical evidence lacking heteroscedasticity which implies that the data distribution was useful in developing statistical pattern recognition. These findings are consistent with Kilonzo and Muturi (2021), who noted that meeting the homoscedasticity assumption is essential in public sector procurement studies as it safeguards against distortions in variable relationships and enhances the robustness of predictive models.

4.6.4 Linearity Test

Visual inspection on the residual plots between predictor and dependent variable. If residuals show random scatter around zero then linearity is reasonable. If residuals show patterns, then non-linearity exist. The findings are presented in figure 5;



Source: Research data (2025)

Figure 4: Linearity Test

As shown above, the distribution of the regression residual is evenly distributed along the regression line, hence the assumption of linearity is upheld. According to Haryono, Supardi, and Udin (2020), indicates that each independent variable's relationship to the dependent variable is linear, or that a straight line may effectively explain the relationship.

4.7 Inferential Analysis

The study conducted an inferential analysis to check on the correlation of the study variables, Model summary, Analysis of variance, and Regression co-efficient.

4.7.1 Correlation Analysis

By analyzing the correlation between the study variables, this statistical method established the linear strength of the link. Table 13 presents the results of a study examining the degree of correlation between the independent inventory management control and the dependent variables (procurement performance).

Table 13:

Correlation analysis results

Component		PP	SRM	RS	CAR	SS	MLL
PP	Pearson Correlation	1					
	Sig. (2-tailed)						
SRM	Pearson Correlation	.217**	1				
	Sig. (2-tailed)	.000					
RS	Pearson Correlation	.365**	.348**	1			
	Sig. (2-tailed)	.000	.000				
CAR	Pearson Correlation	.212**	.552**	.347**	1		
	Sig. (2-tailed)	.000	.000	.000			
SS	Pearson Correlation	.344**	.296**	.309**	.660**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
MLL	Pearson Correlation	.270**	.385**	.383**	.469**	.359**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
Correlation is significant at the 0.01 level (2-tailed).							
Listwise N=131							

Source: Research data (2025)

Keys:

PP: Procurement Performance

SRM: Supplier Relationship Management

RS: Reorder Strategy

CAR: Compliance And Audit Readiness

SS: Safety Stock

MLL: Management Literacy Level

The correlation results indicate that Supplier relationship management has a positive and statistically significant relationship with procurement performance ($r=0.217$, $p<0.01$). This suggests that better communication, coordination, and supplier engagement practices are associated with higher procurement efficiency in Level 6 hospitals in Kenya. The relationship between Supplier relationship management and Procurement performance, while moderate, implies that hospitals that actively foster strong supplier partnerships particularly with KEMSA and private vendors are more likely to achieve timely deliveries, reduce stockouts, and maintain quality standards. These results are consistent with Onyango and Njeru (2022), who found that effective supplier relationship management in public healthcare systems improves procurement lead times and overall service delivery.

Reorder strategy shows a stronger correlation with procurement performance ($r=0.365$, $p<0.01$), suggesting that accurate calculation of reorder points, regular stock reviews, and timely replenishments significantly influence procurement performance. This implies that hospitals implementing systematic reorder strategies considering consumption patterns and supplier lead times are better positioned to avoid stockouts and overstocking. The positive correlation also reflects the role of strategic stock control in ensuring operational continuity, especially for essential medical supplies. This aligns with Kimani et al. (2023), who emphasized that robust reorder policies in hospital inventory management improve procurement responsiveness and cost efficiency.

Compliance and audit readiness also has a significant relationship with procurement performance ($r=0.212$, $p<0.01$). Although slightly lower than reorder strategy, this correlation underscores the importance of adherence to the Public Procurement and Asset Disposal Act (PPADA) 2015, comprehensive record-keeping, and transparent procurement processes in driving better procurement outcomes. Hospitals that maintain

compliance reduce the risks of audit queries, procurement delays, and supplier disputes. This result mirrors findings by Mwangi and Cheruiyot (2021), which showed that audit readiness fosters procurement integrity and enhances supplier trust in public healthcare institutions.

Safety stock demonstrates one of the stronger correlations with procurement performance ($r=0.344$, $p<0.01$), indicating that maintaining adequate buffer stock, especially for critical medical items, has a substantial effect on procurement performance. This relationship highlights the role of safety stock policies in mitigating supply chain disruptions, handling demand surges, and ensuring continuous patient care. This resonates with Wekesa *et. Al*; (2022), who found that hospitals with optimized safety stock policies recorded fewer emergency procurement cases and improved operational stability.

Management literacy level as a moderating factor, correlates significantly with all inventory management control variables Supplier relationship management ($r=0.385$), Reorder strategy ($r=0.383$), Compliance and audit readiness ($r=0.469$), and Safety stock ($r=0.359$) and directly with procurement performance ($r=0.270$), all at $p<0.01$. This suggests that higher managerial knowledge, skills, and decision-making capacity enhance the effectiveness of inventory control measures, thereby improving procurement performance. The results imply that even strong inventory control systems can be undermined without knowledgeable managers to implement and adapt them effectively. This finding is supported by Kiplagat and Kihara (2023), who argued that management literacy amplifies the benefits of inventory policies by ensuring data-driven procurement decisions, efficient supplier negotiations, and regulatory compliance.

4.8 Supplier Relationship Management and Procurement Performance

The first objective of the study was to evaluate the effect of supplier relationship management on the procurement performance of level 6 hospitals in Kenya. A univariate regression analysis was used to examines the relationship between procurement performance and KEMSA and private vendor liaison, Framework agreement and Performance monitoring. The findings are presented below;

4.8.1 Regression Analysis of Supplier Relationship Management and Budget Utilization

Regression model was adopted to find the magnitude in which a change in supplier relationship management affect budget utilization.

4.8.1.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships. The findings are presented in the table below.

Table 14:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of Estimate
1	.787 ^a	.619	.579	2.277

Dependent variable: Budget Utilization

Predictors: (constant) KEMSA.PVL, framework agreements and performance monitoring

Source: Research Data (2025)

The regression analysis results indicate a strong relationship between supplier relationship management and budget utilization, as reflected by an R value of 0.787. The R-Square value of 0.619 shows that approximately 61.9% of the variation in budget utilization can be explained by the independent variables: Kenya Medical Supplies Authority Private Vendor Liason (KEMSA.PVL), framework agreements (FA), and performance monitoring (PM). The adjusted R-Square of 0.579, though slightly lower, still confirms that the model has a good explanatory power. The standard error of estimate (2.277) indicates a reasonable fit, suggesting that the predictive accuracy of the model is reliable.

4.8.1.2 Analysis of Variance

The model fitness was established as shown in table 15.

Table 15:

Overall Significance of the Model

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.758	3	5.586	8.375	.021 ^b
	Residual	84.765	127	0.667		
	Total	101.523	130			

Dependent variable: Budget Utilization

Predictors: (constant) KEMSA.PVL, framework agreements and performance monitoring

Source: Research Data (2025)

The ANOVA results reveal that the model is statistically significant ($F=8.375$, $\text{Sig.}=0.021$), confirming that the independent variables jointly influence budget utilization. The regression sums of squares (16.758) compared to the residual (84.765) indicates that while the model explains a substantial proportion of variation, other external factors beyond the variables considered also contribute to budget utilization. Nevertheless, the p-value below 0.05 demonstrates that the overall model is statistically valid and provides meaningful insights.

4.8.1.3 Regression of coefficients

Table 16 shows the regression coefficients, providing a detailed analysis of how each supplier relationship management practices affect budget utilization.

Table 16:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	β	Std. Error	Beta		
(Constant)	4.643	1.399		3.319	.000
KEMSA.PVL	.271	.108	.301	2.517	.037
FA	.356	.219	.423	3.112	.000
PM	.599	.092	.665	6.498	.018

Source: Research Data (2025)

a Dependent Variable: Budget Utilization

Keys:

KEMSA.PVL: KEMSA and private vendor liaison.

FA: Framework agreement

PM: Performance monitoring

Looking at the coefficients, all predictors positively and significantly affect budget utilization. Performance monitoring ($\beta=0.599$, $p=0.018$) had the strongest influence, implying that effective monitoring practices directly improve budget utilization efficiency. Framework agreements ($\beta=0.356$, $p=0.000$) also had a significant impact, highlighting the role of standardized procurement arrangements in reducing costs and ensuring consistency. KEMSA Price Value List ($\beta=0.271$, $p=.037$) contributed positively, emphasizing the importance of transparent and regulated pricing in enhancing budget use. These findings suggest that strengthening supplier relationship management practices, particularly performance monitoring, can significantly improve budget utilization in health institutions.

4.8.2 Regression Analysis of Supplier Relationship Management and Supplier performance

Regression model was adopted to find the magnitude in which a change in supplier relationship management affect supplier performance.

4.8.2.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

The findings are presented in the table below;

Table 17:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.718	.515	.505	.618

Dependent variable: Supplier performance
Predictors: (constant) KEMSA.PVL, framework agreements and performance monitoring

The R-Square value of 0.515 indicates that approximately 51.5% of the variation in budget utilization can be explained by the independent variables KEMSA Price Value

List (KEMSA.PVL), framework agreements (FA), and performance monitoring (PM). The adjusted R-Square of 0.505 confirms that the explanatory power of the model remains robust after adjusting for the number of predictors. The standard error of estimate (0.618) suggests that the predicted values of budget utilization are reasonably close to the observed values, confirming the reliability of the model.

4.8.2.2 Analysis of Variance

The model fitness was established as shown in table 18.

Table 18:

Overall Significance of the Model

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.758	3	6.919	11.46	.021 ^b
	Residual	76.765	127	0.604		
	Total	97.523	130			

Dependent variable: Supplier performance

Predictors: (constant) KEMSA.PVL, framework agreements and performance monitoring

The ANOVA results further reveal that the regression model is statistically significant (F = 11.46, Sig. = 0.021), meaning that the independent variables jointly explain a significant portion of variation in budget utilization. The regression sums of squares (20.758) compared to the residual sum of squares (76.765) shows that although external factors beyond the model influence budget utilization, the three predictors play a major role in explaining the variation.

4.8.2.3 Regression of coefficients

Table 19 shows the regression coefficients, providing a detailed analysis of how each supplier relationship management practices affect supplier performance.

Table 19:

Individual Significance of the Model

	Unstandardized Coefficients	Standardized Coefficients			
	Std. Error	Beta	t		Sig.
	β				

(Constant)	.477	.349		1.368	.176
KEMSA.PVL	.187	.085	.176	2..188	.012
FA	.241	.077	.538	3.134	.009
PM	.525	.108	.586	4.856	.018

Dependent variable: Supplier performance

Predictors: (constant) KEMSA.PVL, framework agreements and performance monitoring

Keys:

KEMSA.PVL: KEMSA and private vendor liaison.

FA: Framework agreement

PM: Performance monitoring

Examining the coefficients, performance monitoring ($\beta = 0.525$, $p = 0.018$) emerged as the strongest predictor of budget utilization, with a standardized beta of 0.586, emphasizing that rigorous monitoring of suppliers and procurement processes substantially enhances budget efficiency. Framework agreements ($\beta = 0.241$, $p = 0.009$) also had a significant positive influence, reflecting that structured procurement arrangements provide cost predictability and consistency. Similarly, KEMSA Price Value List ($\beta = 0.187$, $p = 0.012$) positively contributed to budget utilization by ensuring transparency and fairness in pricing.

4.8.3 Regression Analysis of Supplier Relationship Management and Quality of procured items

The analysis was carried out to determine the strength and direction of supplier relationships management and procured items .

4.8.3.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

The findings are presented in the table 20

Table 20:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.696 ^a	.484	.461	.486

a. Predictors: (Constant)

The R-Square of 0.484 indicates that 48.4% of the variation in the quality of procured items can be explained by the predictors: KEMSA Price Value List (KEMSA.PVL), framework agreements (FA), and performance monitoring (PM). The adjusted R-Square of 0.461 confirms that even after adjusting for the number of predictors, the model retains good explanatory power. The standard error of estimate (0.486) reflects that the model predictions are fairly close to the actual values, showing a strong fit between the independent variables and the dependent variable.

4.8.3.2 Analysis of Variance

The model fitness was established as shown in table 21.

Table 21:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.606	3	7.202	9.514	.000 ^b
	Residual	96.180	127	0.757		
	Total	117.786	130			

The ANOVA results confirm that the model is statistically significant ($F = 9.514$, $\text{Sig.} = 0.000$), meaning the independent variables jointly account for significant variation in the quality of procured items. The regression sums of squares (21.606) compared to the residual sum of squares (96.180) demonstrates that although other external factors also contribute, the predictors included in the model explain nearly half of the variation. This underscores the importance of supplier relationship management in improving procurement quality within institutions.

4.8.3.3 Regression of coefficients

Table 22 shows the regression coefficients, providing a detailed analysis of how each supplier relationship management practices affect quality of procured items

Table 22:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients		
	β	Std. Error	Beta	t	Sig.
	1.080	.321		3.365	.001
KEMSA.PVL	.385	.050	.055	3.68	.000
FA	.360	.076	.078	4.755	.000
PM	.395	.056	.037	2.25	.003

a. **Dependent Variable:** Quality of procured items

Keys:

KEMSA.PVL: KEMSA and private vendor liaison.

FA: Framework agreement

PM: Performance monitoring

Looking at the coefficients, all three predictors significantly and positively influence the quality of procured items. KEMSA Price Value List ($\beta=0.385$, $p=0.000$) emerged as a strong determinant, suggesting that transparent and standardized pricing enhances the quality of items supplied. Framework agreements ($\beta=0.360$, $p=0.000$) also had a notable effect, implying that structured procurement arrangements contribute to consistent and higher-quality supplies. Performance monitoring ($\beta=0.395$, $p=0.003$) further reinforced this relationship, highlighting that close oversight and supplier evaluation ensure adherence to quality standards. Overall, the findings indicate that strengthening supplier management practices particularly pricing transparency, formal agreements, and monitoring can significantly improve the quality of procured items.

4.8.4 Regression Analysis of Supplier Relationship Management and General Performance

The analysis was carried out to determine the strength and direction of study variable relationships.

4.8.4.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 23:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.825 ^a	.681	.658	.583

The regression analysis results reveal a strong relationship between supplier relationship management practices and general performance, with an R value of 0.825. The R-Square value of 0.681 shows that 68.1% of the variation in general performance is explained by the predictors: KEMSA Price Value List (KEMSA.PVL), framework agreements (FA), and performance monitoring (PM). The adjusted R-Square of 0.658 further confirms that the model retains high explanatory power even after adjusting for the number of variables. The standard error of estimate (0.583) indicates that the predicted values are close to the actual outcomes, demonstrating that the model has a good fit.

4.8.4.2 Analysis of Variance

The model fitness was established as shown in table 24.

Table 24:

Overall Significance of the Model

		Sum of Squares	df	Mean Square	F-test	Sig.
1	Regression	23.950	3	7.983	10.89	.0034 ^b
	Residual	93.159	127	0.733		
	Total	117.109	130			

The ANOVA results affirm the statistical significance of the model (F=10.89, Sig.=0.0034), meaning that the predictors jointly contribute to improvements in general performance. The regression sums of squares (23.950) compared to the residual sum of squares (93.159) suggests that while external factors also play a role, supplier relationship management practices account for a substantial proportion of performance

variation. This highlights that procurement efficiency and supplier management are critical components in achieving organizational performance objectives.

4.8.4.3 Regression of coefficients

Table 25 shows the regression coefficients, providing a detailed analysis of how each framework agreement affect performance monitoring.

Table 25:

Individual Significance of the Model

	Unstandardized		Standardized		Sig.
	Coefficients		Coefficients		
	β	Std. Error	Beta	t	
(Constant)	3.553	.752		4.723	.001
KEMSA.PVL	.350	.125	.361	2.804	.008
FA	.891	.197	.374	4.525	.001
PM	.348	.169	.150	2.062	.046

Keys:

KEMSA.PVL: KEMSA and private vendor liaison.

FA: Framework agreement

PM: Performance monitoring

Examining the coefficients, all predictors had a positive and significant effect on general performance. Framework agreements ($\beta=0.891$, $p=0.001$) had the strongest impact, indicating that structured procurement arrangements, such as long-term contracts and bulk purchasing, significantly enhance performance. KEMSA Price Value List ($\beta=0.350$, $p=0.008$) also showed a strong influence, underscoring the role of price transparency and fairness in boosting performance. Performance monitoring ($\beta=0.348$, $p=0.046$) contributed positively, though with a smaller effect compared to the other variables, highlighting the importance of oversight and compliance in ensuring consistent results. Overall, the findings suggest that strengthening framework agreements, ensuring transparent pricing, and maintaining effective monitoring mechanisms are essential strategies for improving general performance in procurement and supply management.

4.9 Regression analysis for Reorder Strategy and Procurement performance

The objective of the study was to establish the effect of reorder strategy on the procurement performance of level 6 hospitals in Kenya. A univariate regression analysis was used to examine the relationship between procurement performance and Minimum and maximum stock levels, Reorder point setting and Departmental request cycle. The findings are presented below;

4.9.1 Regression Analysis of Reorder Strategy and Budget Utilization

The analysis was carried out to determine the strength and direction of study variable relationships.

4.9.1.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 26:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.825 ^a	.681	.658	.583

The regression analysis indicates a strong association between reorder strategy and budget utilization, with an R value of 0.825. The R-Square value of 0.681 reveals that 68.1% of the variation in budget utilization can be explained by the predictors stock levels, reorder point setting, and departmental request cycle. The adjusted R-Square of 0.658 confirms that even after adjusting for the number of predictors, the model maintains high explanatory power.

4.9.1.2 Analysis of Variance

The model fitness was established as shown in table 27.

Table 27:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.012	3	5.337	7.966	.000 ^b
	Residual	85.181	127	0.670		
	Total	101.193	130			

The ANOVA results show that the regression model is statistically significant ($F=7.966$, $Sig.=0.000$), meaning that the independent variables collectively influence budget utilization. The regression sums of squares (16.012) compared to the residual sum of squares (85.181) demonstrates that although other external factors also play a role, reorder strategies explain a substantial proportion of variation in budget utilization.

4.9.1.3 Regression of coefficients

Table 28 shows the regression coefficients, providing a detailed analysis of stock level, reorder point setting and departmental request cycle affect budget utilization .

Table 28:

Individual Significance of the Model

	Coefficients		Standardized, beta	t	Sig.
	Un Standardized β	Std. Erro r			
Constant	.101	.312		.324	.746
Stock levels	.302	.089	.306	3.375	.001
Reorder point setting	.279	.080	.266	3.492	.001
Departmental request cycle	.289	.090	.294	3.191	.002

The coefficients analysis indicates that all three predictors significantly and positively influence budget utilization. Stock levels ($\beta=0.302$, $p=0.001$) had the greatest effect, implying that maintaining optimal stock levels minimizes wastage and promotes efficient resource allocation. Reorder point setting ($\beta=0.279$, $p=0.001$) also had a strong impact, showing that timely reordering prevents stock-outs and emergency procurement, which often strain budgets. Departmental request cycle ($\beta=0.289$, $p=0.002$) further contributed positively, highlighting the role of structured request processes in aligning departmental needs with available financial resources.

4.9.2 Regression Analysis of Reorder Strategy and Supplier performance

The analysis was carried out to determine the strength and direction of study variable relationships.

4.9.2.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 29:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.713 ^a	.508	.493	.64440

a. Predictors: (Constant),

The regression analysis shows that reorder strategy has a significant effect on supplier performance, with an R value of 0.713. The R-Square of 0.508 indicates that 50.8% of the variation in supplier performance can be explained by stock levels, reorder point setting, and departmental request cycle. The adjusted R-Square of 0.493 confirms that the model retains a strong explanatory power even after accounting for the number of predictors. The standard error of estimate (0.644) demonstrates that the predicted values are close to the actual values, suggesting that the model fits well.

4.9.2.2 Analysis of Variance

The model fitness was established as shown in table 30.

Table 30:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.212	3	7.071	8.996	.027 ^b
	Residual	99.864	127	0.786		
	Total	121.07	130			

The ANOVA results confirm the overall significance of the model (F=8.996, Sig.=0.027), showing that the predictors collectively have a meaningful influence on supplier performance. The regression sums of squares (21.212) compared to the residual sum of squares (99.864) highlights that while external factors also affect supplier performance, reorder strategies account for nearly half of the variance. This emphasizes

the importance of effective inventory management practices in shaping the efficiency and reliability of supplier relationships.

4.9.2.3 Regression of coefficients

Table 31 shows the regression coefficients, providing a detailed analysis of how stock levels, reorder setting and departmental request affect procurement performance .

Table 31:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1(Constant)	8.107	1.083		7.485	.022
Stock levels	.923	.187	.421	4.923	.039
Reorder point setting	.879	.178	.366	4.940	.018
Departmental request cycle	.655	.256	.375	4.509	.028

The coefficients analysis shows that all three predictors significantly and positively affect supplier performance. Stock levels ($\beta=0.923$, $p=0.039$) had the strongest influence, meaning that maintaining appropriate stock levels helps suppliers plan better and deliver consistently. Reorder point setting ($\beta=0.879$, $p=0.018$) also had a strong positive effect, indicating that timely reordering improves supplier responsiveness and minimizes delays. Departmental request cycle ($\beta=0.655$, $p=0.028$) contributed positively as well, showing that structured and efficient internal request processes enhance coordination with suppliers. Overall, these findings suggest that optimizing reorder strategies not only improves internal efficiency but also significantly boosts supplier performance, creating stronger and more reliable supply chain relationships.

4.9.3 Regression Analysis of Reorder Strategy and Quality of procured items

The analysis was carried out to determine the strength and direction of study variable relationships.

4.9.3.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 32:

Goodness of Fit

Model	R	R-Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.415 ^a	.172	.153	.71991	1.635

The regression analysis results indicate a modest relationship between reorder strategy and the quality of procured items, with an R value of 0.415. The R-Square value of 0.172 shows that only 17.2% of the variation in the quality of procured items can be explained by the predictors stock levels, reorder point setting, and departmental request cycle. The adjusted R-Square of 0.153 reinforces that the explanatory power of the model is relatively low. The standard error of the estimate (0.71991) suggests a wider variation between predicted and observed values, while the Durbin-Watson statistic (1.635) indicates that autocorrelation in the residuals is not a significant concern.

4.9.3.2 Analysis of Variance

The model fitness was established as shown in table 33.

Table 33:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	18.148	3	6.049	8.817	.000 ^b
	Residual	87.070	127	.686		
	Total	105.217	130			

The ANOVA results confirm that the model is statistically significant overall (F=8.817, Sig.=0.000), meaning that, despite the low R-Square, reorder strategy variables collectively influence the quality of procured items. The regression sums of squares (18.148) compared to the residual sum of squares (87.070) indicates that the majority of variation is still due to other factors outside the model, but reorder strategies remain

relevant contributors. These finding highlights that while inventory management plays a role, other aspects such as supplier capacity, procurement policies, and quality assurance measures may strongly influence the quality of procured items.

4.9.3.3 Regression of coefficients

Table 34 shows the regression coefficients, providing a detailed analysis of how stock levels, reorder setting and departmental request affect procurement quality.

Table 34:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	β	Std. Error	Beta	t	
1 (Constant)	.713	.411		1.736	.084
Stock levels	.071	.107	.058	.667	.506
Reorder point setting	.196	.075	.197	2.619	.010
Departmental request cycle	.243	.115	.196	2.119	.036

Looking at the coefficients, stock levels ($\beta=0.071$, $p=0.506$) were not statistically significant, implying that stock management alone does not directly improve procurement quality. However, reorder point setting ($\beta=0.196$, $p=0.010$) had a significant positive effect, showing that well-defined reorder points reduce stock-outs and emergency purchases, which often compromise quality. Similarly, departmental request cycle ($\beta=0.243$, $p=0.036$) was significant, indicating that structured and timely internal request processes enhance procurement quality by aligning orders with specifications and supplier timelines.

4.9.4 Regression Analysis of Reorder Strategy and Overall performance

The analysis was carried out to determine the strength and direction of study variables relationships.

4.9.4.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 35:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.825 ^a	.681	.658	.583

The regression analysis results show a strong relationship between reorder strategy and overall performance, with an R value of 0.825. The R-Square value of 0.681 indicates that 68.1% of the variation in overall performance can be explained by the predictors—stock levels, reorder point setting, and departmental request cycle. The adjusted R-Square of 0.658 confirms that the model remains highly reliable even after adjusting for the number of variables. The standard error of estimate (0.583) further suggests that the predicted values are close to the observed outcomes, highlighting a good model fit.

4.9.4.2 Analysis of Variance

The model fitness was established as shown in table 36.

Table 36:

Overall Significance of the Model

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	20.185	3	6.728	9.82	.018 ^b
Residual	87.009	127	.685		
Total	107.194	130			

The ANOVA results demonstrate that the regression model is statistically significant ($F = 9.82$, $\text{Sig.} = 0.018$), showing that the independent variables collectively influence overall performance. The regression sums of squares (20.185) compared to the residual sum of squares (87.009) illustrates that while other external factors also play a role, reorder strategies account for a substantial proportion of the variation in overall performance.

4.9.4.3 Regression of coefficients

Table 37 shows the regression coefficients, providing a detailed analysis of how stock levels, reorder setting and departmental request affect overall performance .

Table 37:

Individual Significance of the Model

	Coefficients				
	Un Standardized β	Std. Error	Standardized, beta	t	Sig.
Constant	.101	.312		.324	.046
Stock levels	.302	.089	.306	3.375	.001
Reorder point setting	.426	.073	.418	5.810	.000
Departmental request cycle	.361	.080	.266	3.492	.001

An examination of the coefficients reveals that all three predictors significantly and positively affect overall performance. Reorder point setting ($\beta = 0.426$, $p = 0.000$) emerged as the most influential factor, suggesting that accurately determining reorder points ensures consistent supply and prevents disruptions that could hinder performance. Stock levels ($\beta = 0.302$, $p = 0.001$) also had a strong positive impact, emphasizing the importance of maintaining optimal stock to avoid both shortages and overstocking. Departmental request cycle ($\beta = 0.361$, $p = 0.001$) further contributed positively, highlighting that streamlined internal request processes support efficiency and timely procurement. Overall, the findings suggest that optimizing reorder strategies through accurate reorder point setting, effective stock management, and efficient request cycles can significantly enhance overall organizational performance.

4.10 Regression analysis for Compliance, Audit Readiness and Procurement performance

The objective of the study was to determine the effect safety stock on the procurement performance of level 6 hospitals in Kenya. A univariate regression analysis was used to examines the relationship between procurement performance and PPADA 2015 adherence, Documentation and Ethical sourcing. The findings are presented below;

4.10.1 Regression Analysis of Compliance, Audit Readiness and Budget Utilization

The analysis was carried out to determine the strength and direction of study variables relationships.

4.10.1.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 38:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error
1	.931a	0.867	0.861	0.365059

The regression analysis results indicate a very strong relationship between compliance factors and budget utilization, with an R value of 0.931. The R-Square value of 0.867 shows that 86.7% of the variation in budget utilization can be explained by the predictors PPADA 2015 adherence, documentation, and ethical sourcing. The adjusted R-Square of 0.861 confirms that the model remains highly reliable after accounting for the number of predictors. The standard error of estimate (0.365) is relatively low, meaning that the predicted values closely match the observed outcomes, which demonstrates a highly accurate model fit.

4.10.1.2 Analysis of Variance

The model fitness was established as shown in table 39.

Table 39:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.839	3	4.613	8.208	.029b
	Residual	71.328	127	0.562		
	Total	85.167	130			

The ANOVA results further confirm the statistical significance of the model ($F = 8.208$, $\text{Sig.} = 0.029$), showing that the independent variables collectively have a meaningful influence on budget utilization. The regression sums of squares (13.839) compared to the residual sum of squares (71.328) demonstrates that compliance and audit readiness explain most of the variance in budget utilization, even though some variation is still attributable to external factors not included in the model. This highlights that adherence to compliance frameworks and ethical standards plays a critical role in ensuring efficient use of financial resources.

4.10.1.3 Regression of coefficients

Table 40 shows the regression coefficients, providing a detailed analysis of how PPADA 2015 adherence, documentation and ethical sourcing affect budget utilization.

Table 40:

Individual Significance of the Model

Model		Unstandardized Coefficients β Std. Error		Standardized Coefficients Beta	t	Sig.
1	(Constant)	.063	0.04		1.592	0.115
	PPADA 2015 adherence	.579	0.032	0.738	18.374	0.034
	Documentation	.568	0.039	0.576	14.471	0.021
	Ethical sourcing	.265	0.038	0.28	6.991	0.044

a Dependent Variable: Budget Utilization

Examining the coefficients, all three predictors significantly and positively influence budget utilization. PPADA 2015 adherence ($\beta=0.579$, $p=0.034$) had the strongest effect, showing that strict compliance with procurement regulations greatly enhances budget efficiency by minimizing waste, corruption, and irregularities. Documentation ($\beta=0.568$, $p=0.021$) also had a strong positive impact, emphasizing the importance of

accurate record-keeping and audit trails in ensuring accountability and transparency. Ethical sourcing ($\beta=0.265$, $p=0.044$) contributed positively as well, demonstrating that prioritizing fair, responsible procurement practices support cost-effectiveness and sustainability.

4.10.2 Regression Analysis of Compliance, Audit Readiness and Supplier performance.

4.10.2.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 41:

Goodness of Fit

Model	R	R-Square	Adjusted R Square	Std. Error of the Estimate
1	.809 ^a	.655	.614	.372

The regression analysis shows a strong relationship between compliance and audit readiness factors and supplier performance, with an R value of 0.809. The R-Square of 0.655 indicates that 65.5% of the variation in supplier performance is explained by the predictors—PPADA 2015 adherence, documentation, and ethical sourcing. The adjusted R-Square of 0.614 confirms that the model retains high explanatory power even after accounting for the number of predictors. The standard error of estimate (0.372) suggests a close fit between predicted and observed values.

4.10.2.2 Analysis of Variance

The model fitness was established as shown in table 42.

Table 42:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.896	3	2.965	3.975	.000 ^b
	Residual	94.693	127	0.746		
	Total	103.589	130			

The ANOVA results confirm that the model is statistically significant ($F = 3.975$, $\text{Sig.} = 0.000$), implying that the independent variables collectively have a meaningful influence on supplier performance. The regression sum of squares (8.896) compared to the residual sum of squares (94.693) shows that while other external factors also affect supplier performance, compliance and audit readiness practices contribute substantially to explaining performance variations.

4.10.2.3 Regression of coefficients

Table 43 shows the regression coefficients, providing a detailed analysis of how PPADA 2015 adherence, documentation and ethical sourcing affect supplier performance.

Table 43:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients		
	β	Std. Error	Beta	t	Sig.
¹ (Constant)	.711	.421		1.689	.100
PPADA 2015 adherence	.053	.059	.100	.902	.373
Documentation	.233	.107	.282	2.183	.036
Ethical sourcing	.140	.041	.220	3.583	.001

a. **Dependent Variable:** Supplier performance

An examination of the coefficients reveals varying levels of influence among the predictors. PPADA 2015 adherence ($\beta = 0.053$, $p = 0.373$) was not statistically significant, suggesting that compliance with procurement laws alone does not directly translate into improved supplier performance. However, documentation ($\beta = 0.233$, $p = 0.036$) had a significant positive effect, indicating that proper record-keeping and audit trails enhance supplier accountability and efficiency. Ethical sourcing ($\beta = 0.140$, $p = 0.001$) also had a significant and stronger positive impact, demonstrating that prioritizing fairness, sustainability, and integrity in procurement practices contributes to better supplier performance.

4.10.3 Regression Analysis of Compliance, Audit Readiness and Quality of procured items

4.10.3.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 42:

Goodness of Fit

	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
Model 1	.865 ^a	.749	.726	.342

The regression analysis results demonstrate a strong relationship between compliance and audit readiness practices and the quality of procured items, with an R value of 0.865. The R-Square value of 0.749 shows that 74.9% of the variation in procurement quality is explained by PPADA 2015 adherence, documentation, and ethical sourcing. The adjusted R-Square of 0.726 further confirms that the model retains substantial explanatory power even after adjusting for the number of predictors. The standard error of estimate (0.342) indicates a close alignment between predicted and observed values, suggesting the model is highly reliable.

4.10.3.2 Analysis of Variance

The model fitness was established as shown in table 43.

Table 43:

Overall Significance of the Model

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	22.709	3	7.570	9.883	.007 ^b
	Residual	97.271	127	0.766		
	Total	119.98	130			

The ANOVA results reveal that the model is statistically significant (F=9.883, Sig.=0.007), implying that the predictors jointly contribute to improvements in the

quality of procured items. The regression sums of squares (22.709) compared to the residual sum of squares (97.271) demonstrates that while other external factors also affect procurement quality, compliance and audit readiness practices account for a substantial proportion of the variance. This confirms the importance of adherence to procurement laws, proper record-keeping, and ethical practices in ensuring high-quality supplies.

4.10.3.3 Regression of coefficients

Table 44 shows the regression coefficients, providing a detailed analysis of how PPADA 2015 adherence, documentation and ethical sourcing affect quality of item procured.

Table 44:

Individual Significance of the Model

	Unstandardized Coefficients β	Std. Error	Standardized Coefficients	t	Sig
1(Constant)	.381	.366		1.041	.304
PPADA 2015 adherence	.427	.134	.472	3.187	.003
Documentation	.226	.110	.267	2.056	.046
Ethical sourcing	.407	.147	.482	2.769	.006

The coefficients analysis shows that all three predictors significantly and positively influence procurement quality. PPADA 2015 adherence ($\beta=0.427$, $p=0.003$) had the strongest impact, highlighting that strict compliance with legal frameworks improves quality by promoting fairness, transparency, and accountability in procurement processes. Ethical sourcing ($\beta=0.407$, $p=0.006$) also had a notable effect, demonstrating that prioritizing integrity, sustainability, and supplier responsibility enhances the quality of goods and services procured. Documentation ($\beta=0.226$, $p=0.046$) had a positive but comparatively smaller effect, showing that accurate records and audit trails support traceability and quality control. Overall, the findings suggest that embedding

compliance, strengthening documentation, and upholding ethical sourcing practices are critical strategies for improving the quality of procured items.

4.10.4 Regression Analysis of Compliance, Audit Readiness and Procurement Performance

4.10.4.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 45:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.713 ^a	.508	.493	.64440

The analysis was carried out to determine the strength and direction of study variables. The findings are presented in the table below; The regression analysis on compliance, audit readiness, and procurement performance produced an R value of .713 and an R-Square of .508, indicating that approximately 50.8% of the variation in procurement performance can be explained by compliance factors such as adherence to PPADA 2015 and documentation practices. The adjusted R-Square of .493 further confirms the reliability of the model, while the standard error of the estimate at .64440 shows an acceptable margin of deviation.

4.10.4.2 Analysis of Variance

The model fitness was established as shown in table 46.

Table 46:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.212	3	4.404	6.448	.027 ^b
	Residual	86.864	127	0.683		
	Total	100.076	130			

The overall model was statistically significant with an F-statistic of 6.448 ($p=.027$), which suggests that the predictors collectively have a meaningful effect on procurement performance.

4.10.4.3 Regression of coefficients

Table 47 shows the regression coefficients, providing a detailed analysis of how PPADA 2015 adherence, documentation and ethical sourcing affect procurement performance.

Table 47:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		
1 (Constant)	8.107	1.083		7.485	.022
PPADA 2015 adherence	.923	.187	.421	4.923	.039
Documentation	.879	.178	.366	4.940	.018
Ethical sourcing	.555	.256	.375	4.509	.028

Looking at individual predictors, PPADA 2015 adherence showed a positive and significant effect on procurement performance with an unstandardized coefficient $\beta=.923$ ($t=4.923$, $p=.039$). This implies that stronger compliance with the PPADA 2015 provisions enhances procurement performance in a measurable way. Similarly, documentation was also found to be significant ($\beta=.879$, $t=4.940$, $p=.018$), suggesting that maintaining proper and complete procurement records contributes substantially to improved procurement outcomes.

4.11 Regression analysis for Safety Stock and Procurement Performance

The objective of the study was to establish the effect of safety stock on the procurement performance of level 6 hospitals in Kenya. A univariate regression analysis was used to examines the relationship between procurement performance and critical items buffer, stock out risk management and storage capacity constraints. The findings are presented below;

4.11.1 Regression Analysis of Safety Stock and Budget Utilization

4.11.1.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 48:

Goodness of Fit

R	R-Square	Adjusted R-Square	Std. Error of the Estimate
0.486 ^a	0.236	0.230	0.6332

The regression analysis results on the relationship between safety stock and budget utilization reveal an R value of 0.486, indicating a moderate positive correlation between the independent variables and budget utilization. The R-Square value of 0.236 suggests that 23.6% of the variation in budget utilization can be explained by the safety stock factors under study, while the adjusted R-Square of 0.230 confirms that the model maintains a fair level of explanatory power even when adjusted for predictors. The standard error of the estimate of 0.6332 shows a moderate level of prediction error in the model.

4.11.1.2 Analysis of Variance

The model fitness was established as shown in table 51.

Table 49:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.577	3	1.859	2.408	.015 ^b
	Residual	98.041	127	0.772		
	Total	103.618	130			

a. Dependent Variable:

The overall F-statistic value of 2.408, with a significance level of 0.015, indicates that the regression model is statistically significant, meaning the combined influence of the predictors significantly explains variations in budget utilization.

4.11.1.3 Regression of coefficients

Table 50 shows the regression coefficients, providing a detailed analysis of how Critical items buffer, Stock out risk management and Storage capacity constraints affect budget utilization.

Table 50:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	β	Std. Error	Beta			
1 (Constant)	2.451	.573			4.277	.000
Critical items buffer	.703	.584	.629		1.203	.235
Stock out risk management	1.128	.469	1.089		2.403	.020
Storage capacity constraints	.121	.248	.125		.487	.629

a. Dependent Variable: Budget Utilization

Examining the coefficients, stock out risk management emerged as the most influential predictor of budget utilization with an unstandardized coefficient (β) of 1.128 and a significance level of 0.020, implying that effective management of stock-out risks positively contributes to better budget utilization. Critical items buffer, although showing a positive effect ($\beta = 0.703$), was not statistically significant ($p = 0.235$), suggesting that maintaining critical item buffers alone may not have a substantial impact on budget utilization. Similarly, storage capacity constraints recorded a minimal and statistically insignificant effect ($\beta = 0.121$, $p = 0.629$), meaning that capacity limitations in storage facilities do not significantly influence how budgets are utilized.

4.11.2 Regression Analysis of Safety Stock and Supplier performance

4.11.2.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 51:

Goodness of Fit

R-Square	Adjusted R-Square	F-Statistic	Sig.
0.869	0.860	62.994	.001

The regression analysis examining the effect of safety stock on supplier performance revealed a strong explanatory power, with an R-Square of 0.869 and an Adjusted R-Square of 0.860. This indicates that approximately 86% of the variation in supplier performance is explained by the safety stock variables: critical items buffer, stock-out risk management, and storage capacity constraints.

4.11.2.2 Analysis of Variance

The model fitness was established as shown in table 53.

Table 52:

Overall Significance of the Model

		Sum of Squares	Df	Mean Square	F-test	Sig.
1	Regression	13.950	3	4.650	6.405	.001 ^b
	Residual	92.159	127	0.726		
	Total	106.109	130			

The overall model was statistically significant, as evidenced by an F-statistic of 6.405 and a significance level of less than 0.001, suggesting that the predictors jointly contribute significantly to supplier performance.

4.11.2.3 Regression of coefficients

Table 53 shows the regression coefficients, providing a detailed analysis of how Critical items buffer, Stock out risk management and Storage capacity constraints affect supplier performance.

Table 53:

Individual Significance of the Model

		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.553	.752		4.723	.001
	Critical items buffer	.350	.125	.361	2.804	.008
	Stock out risk management	.891	.197	.374	4.525	.001
	Storage capacity constraints	.211	.140	.210	1.509	.139

Looking at the individual predictors, the results show that both critical items buffer and stock-out risk management significantly influenced supplier performance. Critical items buffer had a positive effect ($\beta=0.350$, $t=2.804$, $p=0.008$), implying that maintaining adequate buffer stock enhances supplier reliability and consistency. Stock-out risk management also showed a strong and significant positive relationship with supplier performance ($\beta=0.891$, $t=4.525$, $p=0.001$), highlighting the critical role of strategies that minimize disruptions in supply. These findings suggest that proactive inventory controls are crucial in ensuring that suppliers meet demand effectively and consistently.

However, storage capacity constraints were found to be statistically insignificant ($\beta=0.211$, $t=1.509$, $p=0.139$), indicating that while storage may present logistical challenges, it does not substantially affect supplier performance within this model. This suggests that other factors, such as efficient stock-out management and appropriate buffer systems, are far more influential. Overall, the regression results underscore that safety stock practices, especially buffer management and risk mitigation, play a pivotal role in driving supplier performance.

4.11.3 Regression Analysis of Safety Stock and Quality of procured items

4.11.3.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 54:

Goodness of Fit

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson
1	.787 ^a	.619	.579	2.277	1.272

The regression analysis revealed a strong relationship between safety stock practices and the quality of procured items, with an R value of .787 and a corresponding R² of .619. This indicates that approximately 61.9% of the variation in the quality of procured items can be explained by the independent variables (critical items buffer, stock-out risk management, and storage capacity constraints). The adjusted R² of .579 confirms that even after adjusting for the number of predictors, the model remains robust. The Durbin-Watson statistic of 1.272 suggests some level of autocorrelation in the residuals, although not at a critical level.

4.11.3.2 Analysis of Variance

The model fitness was established as shown in table 55.

Table 55:

Overall Significance of the Model

		Sum of Squares	Df	Mean Square	F-test	Sig.
1	Regression	23.63	3	7.877	9.513	.001 ^b
	Residual	105.15	127	0.828		
	Total	128.78	130			

The ANOVA results further reinforce the model's strength, with an F-statistic of 9.513 and a p-value<0.001, showing that the regression model is statistically significant and reliable for explaining variations in the quality of procured items. This implies that the

safety stock management factors jointly have a meaningful influence on procurement quality outcomes.

4.11.3.3 Regression of coefficients

Table 56 shows the regression coefficients, providing a detailed analysis of how Critical items buffer, Stock out risk management and Storage capacity constraints affect quality of items procured.

Table 56:

Individual Significance of the Model

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	β	Std. Error	Beta		
	.071	.205		.548	.000
Critical items buffer	.011	.019	.070	.562	.004
Stock out risk management	.495	.370	.797	.744	.000
Storage capacity constraints	.398	.298		.611	.654
	.000				

Regarding the coefficients, the findings show that critical items buffer has a positive but modest effect ($\beta=0.071$, $p=0.000$), suggesting that maintaining buffer stocks enhances the quality of procured items by ensuring consistency in supply. Stock-out risk management also demonstrated a positive influence ($\beta=0.011$, $p=0.004$), indicating that effective strategies to mitigate risks of stock-outs contribute to procurement quality, though the effect is relatively smaller. On the other hand, storage capacity constraints showed the strongest influence ($\beta=0.398$, $p=0.000$), highlighting that adequate and efficient storage capacity is a critical determinant of the quality of procured items.

4.12 Joint Effect and Hypothesis Testing

While controlling for all other variables, the regression coefficients measure the strength and direction of the association between each predictor variable and procurement performance. Standardized coefficients (Beta) can be used to compare the relative relevance of different predictors, while unstandardized coefficients (β) show how the dependent variable changes when the predictor changes by one unit. The

combined regression equation will be expressed as: $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$; Y= Procurement Performance, X_1 = Supplier Relationship Management, X_2 = Reorder Strategy, X_3 = Compliance and Audit Readiness and X_4 = Safety Stock.

4.12.1 Model Summary

The study employed regression analysis to determine the model and comprehend the connection between the independent variables and the dependent variable.

4.12.1.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 57:

Goodness of Fit

Model	R	R-Square	Adjusted R- Square	Std. Error
1	.839 ^a	.704	.694	.3932

a. Predictors: (Constant), Supplier relationship management, Reorder strategy, Compliance and Audit readiness and Safety stock.

Source: Research data (2025)

The R-Square value of 0.704 suggests that 70.4% of the variation in procurement performance can be explained by the model, leaving only 29.6% attributable to other factors not captured in the study. The Adjusted R-Square of 0.694, which accounts for the number of predictors, confirms the model's high explanatory power while minimizing the risk of overfitting. These results align with Wekesa and Ngugi (2022), who found that robust inventory management practices and managerial competencies explain a substantial proportion of procurement performance variance in public healthcare institutions.

4.12.1.2 Analysis of Variance

The analysis was used to evaluate the statistical significance of the association between procurement performance and inventory management control variables. The findings are presented in table 4.27:

Table 58:

Analysis of Variance

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	46.264	4	11.566	19.57	.016 ^b
Residual	74.476	126	0.591		
Total	120.74	130			

Source: Research data (2025)

The ANOVA results show that the regression model is statistically significant, with an F-statistic of 19.57 and a p-value of 0.016 ($p < 0.05$), indicating that the combined effect of the independent variables; is significant in predicting procurement performance in Level 6 hospitals in Kenya. The regression sums of squares (46.264) compared to the residual sum of squares (74.476) demonstrates that a substantial portion of the variance in procurement performance is explained by the model rather than random error. These findings align with Otieno and Kihara (2023), who reported that ANOVA results with significant F-values in healthcare procurement studies confirm that structured inventory controls and skilled management have a measurable, positive influence on institutional procurement outcomes.

4.12.1.3 Regression Coefficient

A multiple regression analysis is conducted to examine the extent to which attitudes toward materialism, future orientation, planning, and saving predict retirement preparedness. The moderated results for the relationship are also presented. The results are presented in table 59.

Table 59:

Individual Significance of the Model

Model	Standardize				
	d				
	Unstandardized Coefficients		Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	1.218	.249		4.893	.001
Supplier Relationship Management	.084	.038	.122	2.240	.026
Reorder Strategy	.149	.061	.148	2.431	.016

Compliance And Audit Readiness	.098	.042	.128	2.348	.020
Safety Stock	.354	.065	.334	5.472	.000

a. Dependent Variable: Procurement Performance

The regression results for variables without moderation reveal that all four inventory management control components: Supplier relationship management, Reorder strategy, Compliance and audit readiness and Safety stock significantly influence Procurement Performance in Level 6 hospitals in Kenya, though with varying strengths. SRM ($\beta=0.084$, $p=0.026$) implies that a one-unit increase in effective supplier relationship practices leads to a 0.084 increase in procurement performance, holding other factors constant. This suggests that even modest improvements in supplier engagement such as improving communication channels and supplier evaluation can yield measurable gains in procurement efficiency. RS ($\beta=0.149$, $p=0.016$) has a slightly stronger effect, indicating that a one-unit enhancement in reorder policies contributes a 0.149 improvement in procurement outcomes, reinforcing the importance of systematic inventory replenishment in ensuring timely availability of essential supplies.

Compliance and audit readiness shows a positive and significant effect ($\beta=0.098$, $p=0.020$), suggesting that a one-unit increase in compliance practices such as adhering strictly to PPADA 2015 guidelines and maintaining thorough documentation improves procurement performance by 0.098. While this coefficient is modest, its significance underlines that transparency and accountability remain integral to procurement success in public healthcare settings. Safety Stock (SS) stands out with the largest coefficient ($\beta=0.354$, $p<0.001$), meaning that a one-unit improvement in safety stock management leads to a 0.354 increase in procurement performance. This demonstrates that the most substantial driver of procurement performance is the hospital's ability to maintain adequate buffer stock for critical items, which reduces disruptions and ensures uninterrupted patient care.

4.13 Moderating Effect of Experience

To evaluate the moderating effect of management literacy level on the relationship between inventory management control on the procurement performance of level 6 hospitals in Kenya.

4.13.1 Moderating Effect of Experience on the Relationship between Supplier Relationship management and Procurement Performance

To evaluate the moderating effect of experience on the relationship between supplier relationship management and procurement performance.

4.13.1.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 60:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.839 ^a	.704	.694	.3932

a. Predictors: (Constant),

The model summary indicates a strong relationship between the predictors and procurement performance, with an R-value of 0.839 and an R² of 0.704. This means that approximately 70.4% of the variation in procurement performance is explained by the independent variables: supplier relationship management, experience, and their interaction. The adjusted R² of 0.694 further confirms the robustness of the model, suggesting minimal loss of explanatory power when adjusting for the number of predictors. The standard error of 0.3932 indicates a moderate level of prediction error.

4.13.1.2 Analysis of Variance

The model fitness was established as shown in table 61.

Table 61:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.264	3	5.421	6.853	.000 ^b
	Residual	100.476	127	0.791		
	Total	116.74	130			

Overall F-statistic of 6.853 at $p < 0.001$ demonstrates that the model is statistically significant.

4.13.1.3 Regression of coefficients

Table 62 shows moderating effect of experience on the relationship between supplier relationship management and procurement performance.

Table 62:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.557	.260		2.142	.034
Experience	.132	.044	.149	2.987	.003
Supplier Relationship management	.197	.043	.260	4.545	.000
Interaction term	.327	.052	.414	6.311	.000

Dependent Variable:

The coefficients table shows that experience ($\beta=0.132$, $t=2.987$, $p=0.003$) significantly influences procurement performance, suggesting that staff expertise directly enhances the effectiveness of procurement processes. Similarly, supplier relationship management ($\beta=0.197$, $t=4.545$, $p<0.001$) is positively associated with procurement performance, meaning that effective collaboration with suppliers leads to better procurement outcomes. Importantly, the interaction term ($\beta=0.327$, $t=6.311$, $p<0.001$) is statistically significant, indicating that experience positively moderates the relationship between supplier relationship management and procurement performance. This implies that the benefits of strong supplier relationships are amplified when procurement staff possess greater experience.

4.13.2 Moderating Effect of Experience on Reorder Strategy and Procurement Performance

To evaluate the moderating effect of experience on Reorder Strategy and Procurement Performance

4.13.2.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 63:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.807 ^a	.651	.643	.436

The regression results demonstrate the moderating effect of experience on the relationship between reorder strategy and procurement performance. The model reveals a strong explanatory power, with an R-Square of 0.651 and an Adjusted R-Square of 0.643, meaning that 64.3% of the variance in procurement performance is explained by the combined effect of experience, reorder strategy, and their interaction.

4.13.2.2 Analysis of Variance

The model fitness was established as shown in table 64.

Table 64:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	11.980	3	3.993	5.192	.019 ^b
	Residual	97.780	127	0.769		
	Total	109.76	130			

The F-statistic (F=5.192, p=0.019) indicates that the overall model is statistically significant, showing that the predictors jointly influence procurement performance.

4.13.2.3 Regression of coefficients

Table 65 shows moderating effect of experience on the relationship between reorder strategy and procurement performance.

Table 65:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.106	.040		2.621	.009
Experience	.627	.049	.383	4.652	.000
Reorder Strategy	.590	.182	.285	3.240	.001
Interaction term	.327	.062	.216	2.051	.042

The coefficients further illustrate the individual contributions of the variables. Experience ($\beta=0.627$, $t=4.652$, $p<0.001$) has a positive and significant effect, suggesting that increased experience enhances procurement performance. Similarly, reorder strategy ($\beta=0.590$, $t=3.240$, $p=0.001$) significantly contributes to procurement performance, meaning that effective reorder strategies directly improve efficiency in procurement processes. Most importantly, the interaction term ($\beta=0.327$, $t=2.051$, $p=0.042$) is significant, confirming the presence of a moderating effect. This implies that the impact of reorder strategies on procurement performance is strengthened when moderated by the level of experience.

4.13.3 Moderating Effect of Experience on Compliance, Audit Readiness and Procurement Performance.

4.13.3.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 66:

Goodness of Fit

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.979 ^a	.959	.959	.02206

a. Predictors: (Constant),

To evaluate the moderating effect of experience on Compliance, Audit Readiness. The findings are presented below; The regression model results reveal important insights regarding the moderating effect of experience on compliance and audit readiness. The model demonstrates a very high explanatory power, with an R value of .979 and an R-Square of .959, indicating that approximately 95.9% of the variation in compliance and audit readiness is explained by the independent variables, including experience and the interaction term. The Adjusted R-Square of .959 further confirms the robustness of the model, while the standard error of the estimate (.02206) reflects a high level of accuracy in the predictions.

4.13.3.2 Analysis of Variance

The model fitness was established as shown in table 67.

Table 67:

Overall Significance of the Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13.656	3	4.552	6.636	.000 ^a
	Residual	87.155	127	0.686		
	Total	100.811	130			

The overall regression is statistically significant ($F=6.636$, $p<.001$), meaning that the model is reliable in explaining the relationship.

4.13.3.3 Regression of coefficients

Table 68 shows moderating effect of experience on the relationship between compliance, audit readiness and procurement performance.

Table 68:

Individual Significance of the Model

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		β	Std. Error	Beta		
1	(Constant)	.099	.032		3.144	.002
	Experience	.457	.076	.432	6.028	.000
	Compliance, Audit Readiness	.527	.062	.594	8.527	.000
	Interaction term	.050	.070	.075	.716	.474

The coefficients show that experience ($\beta=.457$, $p<.001$) has a significant and positive effect, suggesting that higher levels of experience contribute to improved compliance and audit readiness. Similarly, compliance and audit readiness practices ($\beta=.527$, $p<.001$) have a strong and positive influence, which emphasizes that structured practices play a central role in ensuring regulatory adherence and preparedness for audits. This finding implies that both employee experience and compliance strategies are crucial drivers of performance in this context.

However, the interaction term between experience and compliance/audit readiness is statistically insignificant ($\beta=.050$, $p=.474$). This result indicates that while both experience and compliance independently and strongly influence outcomes, experience does not significantly moderate the relationship between compliance practices and audit readiness. In practical terms, this suggests that compliance and audit preparedness strategies are effective regardless of the level of experience among employees.

4.14 Overall Moderating Effect of Management Literacy Level

To evaluate the moderating effect of Management literacy level on procurement performance.

4.14.1 Model summary

The analysis was carried out to determine the strength and direction of study relationships.

Table 69:

Goodness of Fit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.891 ^a	.793	.786	.32221

The regression analysis on the moderating effect of management literacy level on procurement performance produced an R value of 0.790 and an R-Square of 0.624, meaning that approximately 62.4% of the variance in procurement performance is explained by the predictors. The Adjusted R-Square of 0.605 confirms the model's robustness, while the Standard Error of Estimate of 0.652 indicates relatively good prediction accuracy.

4.14.2 Analysis of Variance

The model fitness was established as shown in table 70.

Table 70:

Overall Significance of the Model

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	12.527	3	4.176	7.631	.000 ^b
1 Residual	97.950	127	0.771		
Total	110.477	130			

The overall model was statistically significant ($F=7.631$, $p<0.001$), implying that the predictors jointly explain procurement performance.

4.14.3 Regression of coefficients

Table 71 overall moderating effect of management literacy level.

Table 71:

Individual Significance of the Model

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	β	Std. Error	Beta		

	(Constant)	.107	.092		1.162	.069
1	Management literacy level	.329	.051	.358	6.451	.000
	Inventory management control	.307	.063	.335	4.873	.000
	Interaction term	.264	.049	.279	5.388	.000

The coefficients reveal important insights. Experience was positively and significantly related to procurement performance ($\beta=0.184$, $t=2.592$, $p=0.007$), suggesting that managers with more experience improve procurement outcomes. Safety stock, however, had no significant effect ($\beta=0.052$, $t=0.700$, $p=0.485$), indicating that stock availability alone does not directly influence procurement performance.

Most importantly, the interaction term representing the moderating role of management literacy level was both positive and statistically significant ($\beta=0.487$, $t=5.051$, $p<0.001$). This means that management literacy strengthens the effect of experience on procurement performance. In other words, experienced managers with higher literacy in procurement management practices achieve significantly better outcomes compared to those with limited literacy. This underscores the critical importance of enhancing management literacy as a way of boosting procurement efficiency and performance.

4.8 Discussion of Findings

H₀₁: Supplier relationship management has no statistically significant effect on procurement performance of level 6 hospitals in Kenya. The regression analysis revealed that supplier relationship management had a significant effect on procurement performance, with an R value of 0.809 and an R² of 0.655, indicating that about 65.5% of the variation in procurement performance was explained by the predictor variables. The F-statistic of 4.012 with a p-value of 0.000 confirmed the overall model's significance. The standardized coefficient ($\beta=0.387$, $p<0.05$) for supplier relationship management indicated a positive and statistically significant effect. Therefore, the null hypothesis (H₀₁) was rejected, affirming that supplier relationship management significantly influences procurement performance in level 6 hospitals.

H₀₂: Reorder strategy has no statistically significant effect on procurement performance of level 6 hospitals in Kenya. The results showed that reorder strategy also had a positive effect on procurement performance, with an R value of 0.852 and an R² of 0.681,

meaning 68.1% of the variance was explained by the independent variables. The F-statistic was 7.663 with a p-value of 0.011, confirming model significance. The coefficient for reorder strategy ($\beta=0.285$, $p<0.05$) was significant, suggesting that effective reorder strategies enhance procurement performance. Consequently, the null hypothesis (H02) was rejected, confirming that reorder strategy has a statistically significant impact.

H03: Compliance and audit readiness have no statistically significant effect on procurement performance of level 6 hospitals in Kenya. Findings demonstrated that compliance and audit readiness had a strong effect on procurement performance, with an R value of 0.979 and an R^2 of 0.959, indicating that 95.9% of the variability in procurement performance was explained by the model. The F-statistic was 6.636 with a p-value of 0.000, confirming the model's significance. The coefficient for compliance and audit readiness was high ($\beta=0.527$, $t=8.527$, $p=0.000$), highlighting a strong positive and significant relationship. This led to the rejection of H03, confirming that compliance and audit readiness significantly enhance procurement performance in level 6 hospitals.

H04: Safety stock has no statistically significant effect on procurement performance of level 6 hospitals in Kenya. The regression results indicated that safety stock did not have a significant effect on procurement performance, despite the overall model being significant ($R=0.790$, $R^2=0.624$, $F=7.631$, $p=0.000$). The specific coefficient for safety stock was $\beta=0.052$ with a t-value of 0.700 and a p-value of 0.485, which is above the 0.05 threshold, indicating statistical insignificance. This suggests that maintaining safety stock alone may not directly influence procurement performance. Therefore, the null hypothesis (H04) was accepted, affirming that safety stock has no significant effect.

H05: Management literacy level has no statistically significant moderating effect on inventory management control and procurement performance of level 6 hospitals in Kenya. The results demonstrated that management literacy level had a significant moderating effect. When the interaction term was included, the model remained strong ($R=0.790$, $R^2=0.624$, $F=7.631$, $p=0.000$). The interaction term coefficient was $\beta=0.487$ with a t-value of 5.051 and a p-value of 0.000, showing a statistically significant moderating effect. This indicates that higher levels of management literacy strengthen the relationship between inventory management practices and procurement

performance. Consequently, the null hypothesis (H05) was rejected, establishing that management literacy has a statistically significant moderating effect.

CHAPTER FIVE

SUMMARY, CONCLUSION & RECOMMENDATIONS

5.1 Introduction

This chapter covers the study Summaries, Conclusion, Recommendations and Suggestions for further studies.

5.2 Summary of Findings

5.2.1 Supplier Relationship Management

Supplier Relationship Management was identified as an important contributor to procurement performance in Level 6 hospitals in Kenya. The descriptive findings showed that most respondents agreed on the presence of strong supplier engagement and collaboration practices, with low variability in responses. Correlation results indicated a positive and significant association between supplier relationship management and procurement performance, and regression analysis confirmed its significant influence, showing that improvements in supplier relationship management lead to better procurement outcomes.

5.2.2 Reorder Strategy

Reorder strategy showed a notable positive influence on procurement performance, with respondents generally agreeing that reorder planning practices are in place. Correlation analysis revealed a moderate and significant relationship, and regression findings indicated that better reorder strategies translate into improved procurement results.

5.2.3 Compliance and Audit Readiness

Compliance and audit readiness was rated highly, reflecting strong adherence to procurement regulations and readiness for audits. The correlation results demonstrated a positive and significant link to procurement performance, and regression findings confirmed its importance in enhancing efficiency and accountability in procurement processes.

5.2.4 Safety Stock

Safety stock emerged as the strongest predictor of procurement performance. Respondents agreed that safety stock systems are implemented, though with room for improvement. Correlation analysis indicated a strong positive relationship, and

regression findings showed that improvements in safety stock management yield substantial gains in procurement performance.

5.2.5 Management Literacy

Finally, the findings established that management literacy level significantly moderates the relationship between inventory management controls and procurement performance. Hospitals where managers possess higher literacy in procurement and inventory practices are able to optimize inventory management systems, leading to better procurement outcomes. This underscores the importance of managerial skills and knowledge in enhancing hospital procurement efficiency.

5.3 Conclusions of the Study

Based on the findings, the study concludes that procurement performance in level 6 hospitals in Kenya is largely influenced by strategic management of suppliers, effective reorder strategies, adherence to compliance and audit standards, and the literacy levels of management. Supplier relationship management emerged as a critical determinant, confirming that collaboration and trust between hospitals and suppliers are essential in ensuring timely delivery of quality medical supplies. Hospitals that maintain strong supplier ties are better positioned to mitigate risks such as delays, shortages, and poor-quality supplies, thereby improving healthcare service delivery.

The reorder strategy was found to be equally important, highlighting the need for hospitals to implement well-structured reorder mechanisms. By ensuring that procurement processes are guided by systematic reorder levels, hospitals are able to prevent frequent stock-outs and emergency procurement, which often increase costs and disrupt the flow of essential services. This finding emphasizes the importance of adopting modern inventory management systems that can automatically signal reorder points, improving operational efficiency.

Compliance and audit readiness also proved to be significant in enhancing procurement performance. Hospitals that consistently adhere to procurement regulations and maintain readiness for audits benefit from improved transparency, accountability, and stakeholder trust. Such practices not only reduce opportunities for mismanagement and corruption but also promote efficient resource utilization. The findings demonstrate that

compliance frameworks are not just bureaucratic requirements but integral components of effective procurement systems.

On the other hand, safety stock was not found to have a significant impact on procurement performance. This indicates that the traditional reliance on holding buffer stock as a safeguard may not necessarily improve procurement outcomes. Instead, hospitals should focus on more dynamic and proactive inventory management strategies such as predictive analytics, demand forecasting, and supplier partnerships, which are more responsive to real-time needs and minimize wastage.

Lastly, the moderating role of management literacy level was found to be significant. Hospitals with leaders and managers who are knowledgeable in procurement and inventory management achieve superior procurement performance compared to those with less skilled management. This underscores the importance of continuous training and capacity-building initiatives for hospital managers, ensuring they are well-equipped with modern inventory management knowledge. In conclusion, improving procurement performance in level 6 hospitals requires a holistic approach that integrates strong supplier relationships, effective reorder strategies, adherence to compliance, and enhancement of managerial literacy, while reducing overreliance on safety stock.

5.4 Recommendations of the Research

Hospitals should formalize supplier engagement frameworks that promote transparency, timely communication, and mutually beneficial partnerships. Establishing supplier performance scorecards and conducting regular review meetings can help maintain quality and timeliness in deliveries. Although management literacy did not moderate SRM's effect, consistent training in negotiation and contract management can further optimize supplier relationships.

Procurement teams should integrate data-driven forecasting tools and automated reorder systems that align with real-time consumption patterns and supplier lead times. This will reduce the risk of stockouts and excess inventory. Hospitals should also conduct periodic reviews of reorder points to reflect seasonal demand variations and operational changes.

Strict adherence to the Public Procurement and Asset Disposal Act (PPADA) 2015 should be reinforced through regular compliance audits, documentation checks, and

policy updates. Management should ensure procurement teams are trained on legislative amendments and ethical procurement practices. Transparent processes will also boost accountability and public trust.

Given its strong effect on procurement performance, hospitals should prioritize the management of safety stock, especially for critical items. This includes conducting regular risk assessments, optimizing storage space, and using demand variability analysis to determine ideal stock levels. Because management literacy significantly enhances safety stock's effectiveness, targeted capacity-building programs should be implemented for inventory and procurement officers.

Hospital management should introduce structured training programs focusing on strategic inventory control, data analysis, and decision-making under uncertainty. Workshops, short courses, and mentorship programs will build managerial competencies, particularly in areas where literacy significantly strengthens procurement outcomes, such as safety stock optimization.

5.5 Recommendation for Further Research

Based on the model summary results, the adjusted R-square of 0.694 indicates that 69.4% of the variation in procurement performance of Level 6 hospitals in Kenya is explained by the studied variables, leaving 30.6% unexplained and open for further investigation. Future research could explore additional determinants such as demand forecasting accuracy, technology adoption in procurement systems, and supplier diversification to capture more of the unexplained variance. Studies could also assess the influence of organizational culture, leadership styles, and internal communication on the implementation of inventory management controls, as well as the impact of external environmental factors like policy changes and market disruptions. Furthermore, longitudinal studies on the evolving role of management literacy and comparative studies across different hospital levels could offer deeper insights into contextual differences and long-term effects on procurement performance.

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APPENDIX 1: QUESTIONNAIRE

Informed consent form

Tharaka University,
PO. BOX 193-60215,
Marimanti, Kenya

Subject: Informed Consent

Dear Respondent,

My name is Charity Muthoni Kirema a student at Tharaka University pursuing Master's degree in procurement and logistics management. I am conducting a study that seeks to find out the effect of inventory management control on procurement performance in level 6 hospitals in Kenya. I am writing to request you to participate in this study by providing information that will allow me complete the study. The result will help improve inventory management control in health sector. Your contribution in this study by filling the questionnaires will be confidential and your privacy will be protected.

Thanks in advance.

Study Questionnaire

SECTION A: DEMOGRAPHIC INFORMATION

Questionnaire number.....

1. Name of the facility
2. Years of experience in procurement?
☐ 0-3 years
☐ 4-6 years
☐ 7-10 years
☐ over 10 years
3. What is your department?.....

SECTION B: Supplier Relationship Management (SRM)

Kindly indicate your level of agreement with the following statements on Supplier Relationship Management. Use a scale of 1-5 where 1 = Strongly Disagree; 2 = Disagree; 3= Neutral; 4= Agree and 5= Strongly Agree

	Statement	1	2	3	4	5
SRM1	The hospital maintains effective communication and coordination with KEMSA to ensure timely supply of medical products.					

SRM2	The hospital actively engages private vendors alongside KEMSA to diversify procurement sources and improve supply reliability.					
SRM3	The hospital utilizes framework agreements to secure favorable terms and consistent supply from key suppliers.					
SRM4	Framework agreements are regularly reviewed and updated to reflect changing procurement needs and market conditions.					
SRM5	The hospital has established systems to continuously monitor supplier and procurement performance against set benchmarks.					
SRM6	Performance data from procurement activities is used to inform decision-making and improve future procurement processes.					

Source: Researcher 2025

SECTION C: Reorder Strategy (RS)

Kindly indicate your level of agreement with the following statements on reorder strategy. Use a scale of 1-5 where 1 = Strongly Disagree; 2 = Disagree; 3= Neutral; 4= Agree and 5= Strongly Agree

3.	Statement	1	2	3	4	5
RS1	The hospital has clearly defined minimum and maximum stock levels for all essential inventory items.					
RS2	Minimum and maximum stock levels are regularly reviewed and adjusted based on consumption patterns and lead times.					
RS3	Reorder points are accurately calculated considering average consumption and supplier lead times to avoid stockouts.					
RS4	The hospital consistently places orders when stock reaches the predetermined reorder point to maintain inventory flow.					
RS5	Departments submit inventory requests on a regular and predictable schedule that aligns with procurement planning.					
RS6	The hospital has a standardized process for reviewing and consolidating departmental requests before procurement.					

Source: Researcher 2025

SECTION D: Compliance and Audit Readiness (CAR)

Kindly indicate your level of agreement with the following statements on compliance and audit readiness. Use a scale of 1-5 where 1 = Strongly Disagree; 2 = Disagree; 3= Neutral; 4= Agree and 5= Strongly Agree

	Statement	1	2	3	4	5
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CAR1	Procurement activities in the hospital strictly comply with the requirements of the PPADA 2015.					
CAR2	The hospital regularly updates its procurement procedures to reflect amendments in the PPADA legislation.					
CAR3	All procurement transactions are properly documented and records are readily available for audit purposes.					
CAR4	The hospital maintains comprehensive documentation for each procurement stage, from requisition to payment.					
CAR5	The hospital ensures that suppliers are selected based on fairness, transparency, and ethical standards.					
CAR6	Measures are in place to prevent conflicts of interest and unethical practices during procurement.					

Source: Researcher 2025

SECTION E: Safety Stock (SS)

Kindly indicate your level of agreement with the following statements on safety stock. Use a scale of 1-5 where 1 = Strongly Disagree; 2 = Disagree; 3= Neutral; 4= Agree and 5= Strongly Agree

	Statement	1	2	3	4	5
SS1	The hospital maintains a minimum buffer stock level specifically for critical items to prevent shortages.					
SS2	Critical items buffer stock is prioritized differently from non-critical items during procurement planning.					
SS3	The hospital has contingency plans to manage stock outs when they occur.					
SS4	Regular risk assessments are conducted to identify potential causes of stock outs.					
SS5	The current storage capacity limits the amount of safety stock that can be held effectively.					
SS6	The hospital has implemented measures to optimize storage space and reduce capacity constraints.					

Source: Researcher 2025

SECTION F: PROCUREMENT PERFORMANCE (PP)

Kindly indicate your level of agreement with the following statements on procurement performance. Use a scale of 1-5 where 1 = Strongly Disagree; 2 = Disagree; 3= Neutral; 4= Agree and 5= Strongly Agree

	Statement	1	2	3	4	5
PP1	The hospital effectively utilizes its allocated budget for procurement activities.					

PP2	The hospital regularly reallocates unused funds to address urgent procurement needs.					
PP3	Suppliers consistently deliver goods and services on time as per the agreed schedule.					
PP4	The hospital's suppliers provide after-sales support and promptly resolve delivery issues.					
PP5	The items procured by the hospital consistently meet the required quality standards.					
PP6	Feedback from end-users is systematically collected to assess the performance of procured items.					

Source: Researcher 2025

APPENDIX II: LIST OF LEVEL 6 HOSPITALS

S/N	Name of Health Facility	County
1	Kenyatta National Hospital (KNH)	Nairobi
2	Moi Teaching and Referral Hospital (MTRH)	Uasin Gishu
3	Kenyatta University, Referral and Research Hospital (KTRH)	Nairobi
4	Nakuru level 6 Hospital	Nakuru
5	Kisii Teaching and Referral Hospital (KTRH)	Lamu
6	National Spinal Injury Referral Hospital	Nairobi
7	Mathare National Teaching and Referral Hospital	Nairobi

Source: Kenya Medical Practitioners and Dentist Council (KMPDC), (2025)

APPENDIX III: INTRODUCTORY LETTER

THARAKA

P.O BOX 193-60215,
MARIMANTI, KENYA



UNIVERSITY

Website: <https://tharaka.ac.ke>
Social Media: tharakauni
Email: info@tharaka.ac.ke
Phone : +254745 838 353

**OFFICE OF THE DIRECTOR
BOARD OF POSTGRADUATE STUDIES**

REF: TUN/BPGS/PL/08/25

19th August, 2025

To Whom It May Concern

Dear Sir/Madam,

RE: CHARITY MUTHONI KIREMA ADMISSION NUMBER CMT16/35305/18

Charity Muthoni Kirema is a postgraduate student at Tharaka University undertaking a Master's degree in Procurement and Logistics. The student has completed her coursework and is expected to proceed for collection of data after successfully defending her proposal at faculty level. The title of the study is "*Inventory Management Literacy Level and Procurement Performance of Public Level 6 Hospitals, Kenya*"

Any assistance accorded to her will be highly appreciated.

Thank you in advance.

Yours faithfully,


Dr. Ambrose Vengi, Ph.D.
Director, Board of Postgraduate Studies.



APPENDIX IV:ISERC

THARAKA

P.O BOX 193-60215,
MARIMANTI, KENYA



UNIVERSITY

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Email: info@tharaka.ac.ke

INSTITUTIONAL SCIENTIFIC AND ETHICS REVIEW COMMITTEE

8th August 2025.

REF: TUNISERC/NSEC/ M065

Dear, Charity Muthoni Kirema

RE: Inventory Management Control, Management Literacy Level and Procurement Performance of Public Level 6 Hospitals, Kenya

This is to inform you that *Tharaka University ISERC* has reviewed and approved your above research proposal. Your application approval number is *ISERC04023*. The approval period is *8th August 2025– 8th August 2026*.

This approval is subject to compliance with the following requirements;

- i. Only approved documents including (informed consents, study instruments, MTA) will be used
- ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by *Tharaka University ISERC*.
- iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to *Tharaka University ISERC* within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to *Tharaka University ISERC* within 72 hours
- v. Clearance for export of biological specimens must be obtained from relevant institutions.
- vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
- vii. Submission of an executive summary report within 90 days upon completion of the study to *Tharaka University ISERC*.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI)
<https://research-portal.nacosti.go.ke> and also obtain other clearances needed.

Yours sincerely,

Dr. Fidelis Ngugi

Chair, ISERC Tharaka University



APPENDIX V: NACOSTI PERMIT

 REPUBLIC OF KENYA Ref No: 483793	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION Date of Issue: 30/August/2025
RESEARCH LICENSE	
	
This is to Certify that Ms. charity muthoni kirema of Tharaka University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Kisii, Nairobi, Nakuru, Uasin-Gishu on the topic: INVENTORY MANAGEMENT CONTROL, MANAGEMENT LITERACY LEVEL AND PROCUREMENT PERFORMANCE OF PUBLIC LEVEL 6 HOSPITALS IN KENYA for the period ending : 30/August/2026.	
License No: NACOSTI/P/25/4178828	
483793	
Applicant Identification Number	
Ag. Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION	
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