

**INFLUENCE OF SUSTAINABLE PROCUREMENT PRACTICES ON
PERFORMANCE OF CONSTRUCTION INDUSTRY: CASE OF KENYA RURAL
ROADS AUTHORITY NAIROBI COUNTY, KENYA.**

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DECLARATION AND APPROVAL

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DEDICATION

This research project is dedicated to my family, whose unwavering support and encouragement have been my greatest source of strength and motivation.



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I express my deepest gratitude to the Almighty God for granting me the strength, wisdom, and resilience to undertake and complete this research. I extend special thanks to my supervisor, Dr. Duncan Ndung'u, whose exceptional guidance, constructive feedback, and academic mentorship played a critical role in shaping the direction and quality of this research. Your dedication and expertise have been invaluable. I also wish to acknowledge the management and academic staff of Mount Kenya University, Nairobi Campus, for providing a supportive and intellectually stimulating environment that facilitated my academic growth and the successful completion of this study. My sincere appreciation goes to all the respondents from the Kenya Rural Roads Authority (KeRRA) and the affiliated contractors who took time out of their busy schedules to participate in this study.



ABSTRACT

This study sought to identify the sustainable procurement practices employed by the Kenya Rural Roads Authority (KeRRA), determine the factors influencing these practices, and examine the relationship between sustainable procurement practices and the authority's performance. The research was motivated by the persistent challenge of underperformance in public construction projects, often attributed to unsustainable procurement approaches, cost overruns, delayed deliveries, and poor quality outcomes. Despite growing global attention on sustainability in procurement, its adoption and impact within Kenya's public sector particularly in road infrastructure remained underexplored. The study was guided by the following objectives: To examine the effect of environmental sustainability on the performance of construction of construction industry in Kenya; To assess the influence of economic sustainability on the performance of construction industry in Kenya; To evaluate the effects of socially sustainable procurement practices on the performance of construction industry in Kenya. The study was grounded in four theoretical frameworks: Resource-Based View (RBV), which emphasizes the role of internal capabilities; Stakeholder Theory, which supports inclusive and ethical decision-making; Institutional Theory, which underscores the role of regulatory conformity; and Triple Bottom Line (TBL), which advocates for balancing economic, environmental, and social outcomes. The research adopted a descriptive research design, targeting employees of KeRRA in Nairobi County. A purposive and stratified random sampling technique was used to select a representative sample of 32 participants across departmental strata. Data was collected using structured questionnaires, distributed through a drop-and-pick method, and analyzed using both descriptive and inferential statistical methods, including multiple linear regression analysis. The findings revealed that environmental, economic, and socially sustainable procurement practices had a statistically significant and positive influence on the performance of the construction industry. Specifically, economic sustainability emerged as the strongest predictor of performance ($\beta = 0.412$), followed by environmental ($\beta = 0.361$) and social sustainability ($\beta = 0.298$). The model explained 67.4% of the variance in construction performance ($R^2 = 0.674$), indicating that sustainable procurement practices substantially impacted project outcomes such as cost efficiency, quality, ROI, safety, and timely delivery. Qualitative responses also identified persistent challenges, including limited expertise in sustainability, weak enforcement of sustainability KPIs, budget constraints, and supplier resistance. Based on the findings, the study concluded that KeRRA had effectively implemented sustainable procurement practices, which in turn significantly enhanced its operational and financial performance. The study recommended that sustainability metrics be institutionalized within procurement policy, capacity-building initiatives be introduced for staff and contractors, and incentives be created to reward compliance with sustainability standards. Furthermore, monitoring mechanisms should be strengthened to ensure enforcement and continuous improvement. The study contributed valuable insights into the role of sustainable procurement in public infrastructure and recommended further research on technology adoption and comparative studies across counties to expand on these findings.

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LIST OF ABBREVIATIONS AND ACRONYMS

EMCA - Environmental Management and Coordination Act

IRR - Internal Rate of Return

KIPPRA - Kenya Institute of Public Policy Research and Analysis

KeRRA - Kenya Rural Roads Authority

KEPSA - Kenya Private Sector Alliance

KNBS - Kenya National Bureau of Statistics

PPRA - Public Procurement Regulatory Authority

RBV - Resource-Based View

SMEs - Small and Medium Enterprises



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CHAPTER ONE: INTRODUCTION

1.0 Introduction

This chapter outlines the research background, objectives, significance, and scope of the study. It further states the significance of the study, its limitations and the study assumptions as well as the operational definition of key terms.

1.1 Background information

Globally, sustainable procurement has gained momentum as organizations recognize its role in promoting environmental stewardship. The United Nations' Sustainable Development Goals (SDGs) emphasize the importance of sustainable procurement in achieving global sustainability targets (United Nations, 2020). In Africa, sustainable procurement is becoming increasingly relevant as countries strive to balance infrastructure development with environmental conservation. The African Union's Agenda 2063 highlights sustainable procurement as a critical driver for sustainable development across the continent (African Union, 2015). In Kenya, sustainable procurement practices have been integrated into various sectors, including construction, to enhance environmental conservation and social responsibility. The Public Procurement and Asset Disposal Act (2022) mandates the inclusion of sustainability criteria in public procurement processes (Republic of Kenya, 2024). The Kenya Rural Roads Authority (KeRRA) plays a significant role in the country's infrastructure development. Implementing sustainable procurement practices within KeRRA can potentially lead to improved environmental outcomes and social benefits, thus contributing to the overall development goals of Kenya.

The strategic implementation of supply and purchasing to support sustainable development has become more prominent at the regional level. Enterprises and institutional stakeholders are adjusting their procurement strategies to reduce the environmental impact of procurement and supply chain activities (Carter & Rogers, 2020). The need to minimize waste, enhance institutional efficiency, mitigate supply chain risks, and achieve a competitive advantage drives organizations to view environmental concerns from a competitive perspective (Seuring & Müller, 2019). Public procurement plays a significant role in government spending, with substantial effects on local economies (Thai, 2022). Procurement and supply chain organizations are focused on implementing sustainable procurement policies that address

environmental challenges and align with the broader pillars of sustainable development, integrating these concerns into procurement activities (Walker & Brammer, 2019).

Porter (1985) argued that integrating sustainability into business practices is essential for gaining a competitive advantage. Over the past decade, numerous reports have highlighted pressing environmental issues, leading to a consensus that environmental pollution and industrial development should be managed through supply chain practices, thus contributing to green supply chain management (Srivastava, 2021). Despite the growing awareness, many enterprises are primarily motivated by profits and often neglect the environmental consequences of their activities, which hinders their long-term sustainability (Hart, 2025). Business leaders face challenges in balancing profitability and competitiveness with broader ethical and social responsibilities (Elkington, 2020).

1.1.1 Sustainable procurement practices

Sustainable procurement is defined as the practice of embedding sustainable development into procurement processes. It is not merely focused on achieving environmental goals ("green"), but extends to ensuring social and ethical accountability. This includes reducing environmental impact through supply chains, making economically sound decisions, and adhering to good business practices (Walker & Brammer, 2019). Sustainable procurement forms part of the broader concept of sustainable development, which not only addresses environmental concerns but also aims at meeting the diverse needs of present and future generations. It promotes social cohesion, improves public health, and creates equal opportunities (Carter & Rogers, 2020). According to Srivastava (2019), sustainable procurement is also referred to as Green Supply Chain Management (GSCM), which incorporates environmental considerations into supply chain management. GSCM includes selecting materials, sourcing, designing products, manufacturing processes, and delivering the end products to consumers. It focuses on integrating environmental, social, and financial factors to create solutions that go beyond traditional economic measures. Decision-making in sustainable procurement is based on cost, risk, success measures, and the societal and environmental impacts of the procurement process (Seuring & Müller, 2022).

Performance measures have evolved to include the Triple Bottom Line (TBL). Elkington (2021) explains that the TBL framework emphasizes that organizations are responsible for the social, environmental, and economic consequences of their activities. The TBL approach provides a comprehensive method for managing the full range of an organization's responsibilities, recognizing that a company's impact extends beyond just financial profits. This approach has gained significant traction, with a growing number of companies globally adopting TBL reporting. For example, the 2020 State of Green Business report revealed that 73% of businesses in the U.S. have adopted sustainability initiatives in their procurement strategies, contributing to long-term economic, social, and environmental benefits (GreenBiz, 2020).

1.1.2 Performance of construction industry

Organizational performance refers to how effectively an enterprise utilizes its resources in its core operations to generate revenue over a specific period. Stevenson (2024) defines performance as the outcome resulting from a particular or group input of development activities that influence outcomes. Goodwin (2023) asserts that performance involves comparing the actual results of an organization to the planned outputs, with performance measured against an average standard for similar enterprises in the same industry. Organizational performance reflects the effectiveness of an organization's policies and operations, often measured in monetary terms, and is observable through its financial returns. It provides an estimate of how well an organization can utilize its assets to generate income (Shapiro, 2022).

Traditional economic indicators of organizational performance include common metrics such as return on average capital, net profit, and gross margin. However, over time, performance measures have evolved to include more global environmental values. For instance, key environmental indicators such as land, air, and water pollution, eco-labels, and environmental management techniques are increasingly being incorporated into performance evaluations. Social reporting, though still in its early stages, is gradually gaining traction and includes measures related to health and safety, training, gender equality, wages, and discrimination (Gray, 2020). Eco-efficiency, as a performance measure, reflects an organization's environmental governance, demonstrated through its adherence to basic environmental policies and compliance with pollution control measures (Hubbard, 2019).

1.1.3 KeRRA

KeRRA is a state parastatal within the Ministry of Transport and Infrastructure, it was created through the Kenya Roads Act 2007. It is tasked with duties of management, rehabilitation, development and maintenance of rural roads which are categorized as classes D, E and unclassified rural roads. In accordance to KeRRA's strategic plan 2012/2016, it has got offices in all the 47 counties and improved operational budget of Ksh 30 billion in the fiscal year 2015/2016. KeRRA has got functional departments of finance, human resources, planning and engineering, research and development and audit and quality assurance. The authority takes pride in its ability to maintain at least 40% of the road network in Kenya. The strategic plan highlights GoK under road maintenance levy fund, development levy fund, development partners as vital financiers of the country's road infrastructure.

Due to the increasing levels of mismanagement and misappropriation of public funds, numerous reforms have been introduced in Kenya to improve public confidence in the expenditure of public resources. In response to these challenges, the Public Procurement and Asset Disposal Act (PPADA) 2020 was enacted, replacing the earlier version from 2011. The PPADA 2011 provides guidelines for state-owned corporations, covering asset management, inventory management, contract performance, and asset disposal (KIPPPRA, 2020). Currently, the Public Procurement Regulatory Authority (PPRA) plays a key role in overseeing public sector procurement activities. Additionally, there are legislative initiatives, including the enactment of the Public Procurement and Asset Disposal Act 2022, aimed at enhancing procurement practices (Kiarie & Mwaura, 2019). Ndung'u (2020) noted that the PPRA conducts reviews of Kenya's public procurement systems to assess compliance with procurement laws. The primary objective is to support entities in building their capacity to effectively implement the provisions of procurement laws (Ndung'u, 2023).

1.2 Statement of the Problem

The Kenya construction industry, particularly in the public sector, faces significant challenges in incorporating sustainable procurement practices, with implications for both economic and environmental outcomes. According to a report by the Kenya National Bureau of Statistics (KNBS, 2023), the construction industry in Kenya contributes about 7.5% to the national GDP, but environmental sustainability remains a critical concern. Research by the Kenya Rural Roads Authority (KeRRA) indicates that the traditional procurement processes in road construction are heavily reliant on non-sustainable practices, contributing to environmental degradation, inefficiency, and poor long-term infrastructure quality. Despite the government's

commitment to sustainable development goals (SDGs), there remains a significant gap in integrating sustainability into procurement decisions within the public construction sector, leading to wasted resources and suboptimal results. The potential consequences include increased operational costs, delays in project timelines, and long-term environmental damage, which could undermine the country's development goals.

A potential solution to this issue is the adoption of sustainable procurement practices, as outlined by the Resource-Based View (RBV) theory. The theory emphasizes leveraging internal resources, capabilities, and organizational competencies to achieve competitive advantage (Prahalad & Hamel, 1990). Applying this framework to sustainable procurement, KeRRA can enhance its strategic procurement capabilities by integrating sustainability criteria into procurement decision-making. This could lead to more efficient use of resources, reduced environmental impacts, and improved long-term performance. Sustainable procurement can also foster innovation in construction practices, leading to more cost-effective, environmentally friendly solutions. If implemented effectively, these practices could potentially increase the efficiency of public road construction projects, lower lifecycle costs, and contribute to Kenya's sustainable development objectives.

Several studies have explored sustainable procurement in various contexts, yet there remains a notable gap in the specific context of public sector road construction in Kenya. Previous studies, such as those by Muthoni and Ngugi (2021), have focused on the general adoption of green procurement practices in the construction industry but have not specifically addressed KeRRA's procurement practices. Furthermore, while some studies have explored the challenges of sustainable procurement in the construction sector (Njiru, 2020), they have mainly focused on private sector firms or international case studies, limiting their relevance to public sector bodies like KeRRA. Additionally, there is a methodological gap, with most studies relying on qualitative approaches that fail to provide concrete, quantitative evidence on the impact of sustainable procurement practices on project outcomes. This leaves a void in empirical research that the proposed study aims to fill.

The current gap in knowledge lies not only in the conceptual understanding of sustainable procurement within public sector road construction but also in the lack of comprehensive studies on how these practices influence both the environmental and financial performance of projects. The methodological gap exists in the scarcity of quantitative studies that measure the impact of these practices on efficiency and sustainability in road projects, especially in the

Kenyan context. Moreover, there is a contextual gap, as most research has been conducted in developed economies, which may not be directly applicable to Kenya's unique socio-economic and infrastructural environment. This highlights the need for a study that combines theory, empirical evidence, and local context to evaluate sustainable procurement in the Kenyan construction industry.

To address these gaps, this study seeks to investigate the influence of sustainable procurement practices on the performance of public sector road construction projects, specifically focusing on the Kenya Rural Roads Authority (KeRRA) in Nairobi County. By using a quantitative approach, this research will measure the relationship between sustainable procurement practices and project outcomes, focusing on efficiency, cost-effectiveness, and environmental impact. The findings will contribute valuable insights into the practical application of sustainable procurement in Kenya's construction sector and provide recommendations for policy improvements that could enhance the efficiency and sustainability of public road construction projects.

1.3 Purpose of the Study

The purpose of this study is to analyze the influence of sustainable procurement practices on the performance of the Kenya Rural Roads Authority (KeRRA).

1.3.1 Research Objectives

- i. To examine the influence of environmental sustainability on the performance of construction industry in Kenya
- ii. To assess the influence of economic sustainability on the performance of construction industry in Kenya.
- iii. To evaluate the effects of socially sustainable procurement practices on the performance of construction industry in Kenya.

1.4 Research Questions

i. How does environmental sustainability influence the performance of construction industry in Kenya?

ii. What is the influence of economic sustainability on construction industry in Kenya?

iii. What influence arises from sustainable procurement practices on construction industry in Kenya?

1.5 Significance of the Study

This study is significant because it provides critical insights into the role of sustainable procurement practices in the public sector construction industry, with a focus on road infrastructure projects managed by the Kenya Rural Roads Authority (KeRRA). The findings will offer practical recommendations on how to integrate sustainability into procurement processes, which will have positive implications for both environmental and financial outcomes. For policymakers, the study will highlight gaps and opportunities to improve existing procurement guidelines and regulations, promoting more sustainable practices across government-funded construction projects. For KeRRA and other public sector agencies, the study will offer a detailed understanding of how adopting sustainable procurement practices can lead to cost savings, enhanced project efficiency, and reduced environmental impact. For the private construction sector, the findings may provide a framework for aligning their operations with national sustainability goals, improving their competitiveness in government contracts. Additionally, the study will contribute to the growing body of knowledge on sustainable procurement, filling gaps in research within the Kenyan context and offering insights into how similar practices can be implemented in other developing countries.

1.6 Scope of the Study

Conceptual Scope: This study focuses on sustainable procurement practices, particularly within the construction industry, and examines their impact on project efficiency, environmental sustainability, and cost-effectiveness in road construction projects. The research will explore sustainable procurement theories, including green procurement, lifecycle costing, and eco-efficient material selection, to provide a comprehensive understanding of how these practices can be applied to public road infrastructure projects. **Contextual Scope/Geographical Scope:** The study will be based in Nairobi County, where the Kenya Rural Roads Authority (KeRRA)

is actively involved in road construction and maintenance. The focus on KeRRA's procurement practices will allow for an in-depth analysis of sustainable procurement within Kenya's public sector construction projects, providing context-specific insights. The research will be limited to projects undertaken by KeRRA in Nairobi County, allowing for a targeted analysis of local procurement processes.

Target Population: The target population for this study will include employees of KeRRA involved in procurement, project management, and environmental sustainability roles, as well as contractors, suppliers, and other key stakeholders engaged in road construction projects. The sample will be selected from staff within KeRRA's procurement and project management departments, as well as private construction firms that collaborate with KeRRA on public infrastructure projects. **Time Frame:** The study will be conducted over a period of six months, beginning in March 2025 and ending in August 2025. Data collection will occur during the first three months, followed by data analysis, interpretation, and report writing over the remaining period.

1.7 Limitations and delimitations of the study

The study will face the following limitations and delimitations:

1.7.1 Limitations of the Study

There are several limitations to this study that may affect the generalizability and scope of the findings. First, the study is geographically limited to Nairobi County, which may not fully reflect the diversity of procurement practices across different regions of Kenya. Second, the study focuses only on the Kenya Rural Roads Authority (KeRRA), which may not represent other government agencies or private sector entities involved in construction projects. Additionally, due to time and resource constraints, the study will rely on a sample size that may not be fully representative of all stakeholders in the industry, potentially limiting the comprehensiveness of the results. Furthermore, the study's reliance on self-reported data from participants may introduce bias or inaccuracies, especially if respondents provide socially desirable answers.

1.7.2 Delimitation of the Study

This study is delimited to an analysis of sustainable procurement practices specifically in the context of public road construction projects managed by KeRRA in Nairobi County. It does not include other sectors within the construction industry, such as residential or commercial construction, or private sector procurement practices. The study also focuses on the impact of sustainable procurement on project efficiency, cost, and environmental sustainability, excluding other factors such as political influences or external economic conditions. By narrowing the scope in this manner, the study can provide a detailed and focused examination of how sustainable procurement affects road construction projects in Kenya.

1.8 Assumptions of the Study

The following assumptions will be made during the study: Stakeholders involved in road construction projects managed by KeRRA are willing to provide honest and accurate responses to the survey and interview questions. Sustainable procurement practices, as defined in the literature, are being implemented to some extent within the procurement processes of KeRRA. Data available from KeRRA and other stakeholders will be accurate and relevant to the research questions. The findings of the study will be applicable to other similar public sector road construction projects in Kenya and could be generalized to similar contexts in developing countries. The study assumes that there will be no significant changes in KeRRA's procurement processes during the research period that could impact the study's outcomes.

1.9 Operation of Definition of Key Terms

Sustainable Procurement: The process of acquiring goods, services, or works in a way that achieves value for money on a whole life basis while contributing to environmental, social, and economic sustainability. This involves considering factors such as resource efficiency, waste reduction, and the use of eco-friendly materials in the procurement process.

Kenya Rural Roads Authority (KeRRA): A government agency responsible for the development, maintenance, and management of rural roads across Kenya. KeRRA plays a key role in ensuring the efficient delivery of road infrastructure projects funded by both the government and other stakeholders.

Public Sector Construction: Infrastructure projects funded and managed by government entities at various levels, including national and county governments. In this study, it specifically refers to road construction projects overseen by KeRRA.

Green Procurement: A subset of sustainable procurement focused specifically on acquiring goods, services, and works that have a lesser environmental impact compared to conventional alternatives, particularly in terms of energy consumption, material usage, and waste production.

Lifecycle Costing: An approach to procurement that considers the total cost of a product or service over its entire lifecycle, including purchase, operation, maintenance, and disposal costs. It is an essential tool in sustainable procurement to ensure that long-term environmental and financial impacts are considered.

Eco-efficient Materials: Materials that have minimal negative impact on the environment during their production, use, and disposal. In the context of construction, this includes materials that are sustainable, recyclable, and energy-efficient.



CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This section reviews previous studies and theories on sustainable procurement and organizational performance. It includes a theoretical overview, an empirical review of related research, and a conceptual framework illustrating their influence on organizational performance.

2.1 Theoretical review

This study was anchored on a set of theoretical frameworks that provided a structured lens for examining the relationship between sustainable procurement practices and the performance of the construction industry. The selected theories guided the formulation of the research variables and offered a conceptual foundation for interpreting the empirical findings. These theories include the Resource-Based View (RBV), which emphasizes the importance of internal organizational capabilities in achieving competitive advantage; the Stakeholder Theory, which highlights the role of ethical and inclusive engagement with all parties affected by organizational decisions; the Institutional Theory, which explains how regulatory and normative pressures influence organizational behavior and compliance; and the Triple Bottom Line (TBL) theory, which promotes the integration of economic, environmental, and social dimensions in evaluating organizational success. Each of these theories collectively informed the study's approach to analyzing how sustainability-oriented procurement can enhance performance outcomes in the public construction sector.

2.1.1 Stakeholder Theory

Effective Procurement practices ensure transparency and accountability, which are crucial for gaining stakeholder trust and support. Transparent financial reporting can help build confidence among stakeholders that the funds are being used effectively and efficiently for the intended development projects (Freeman, 1984). Furthermore, involving stakeholders in the budgeting and Procurement processes can lead to more inclusive and participatory governance. This inclusivity can result in more relevant and impactful development projects that align with the community's needs and priorities. Stakeholders, such as local community members and beneficiaries, can provide valuable insights and feedback that can help improve the allocation

and utilization of the sustainable procurement Practices. By addressing stakeholder concerns and incorporating their inputs, procurement practices can enhance the legitimacy and credibility of construction activities initiatives (Mitchell, Agle, & Wood, 1997). v Additionally, Stakeholder Theory highlights the ethical responsibilities of those managing procurement activities . Ethical procurement practices are essential to prevent mismanagement and corruption, which can erode stakeholder trust and hinder the performance of the fund. Ensuring that funds are managed ethically and transparently can lead to better outcomes and improved performance of development projects in Kenya. Ethical considerations in procurement practices also align with the broader goal of promoting social justice and equity in the allocation of public resources (Donaldson & Preston, 1995). In conclusion, applying Stakeholder Theory to the analysis of procurement practices in construction activities in public sectors underscores the importance of transparency, accountability, and ethical management. This inclusive approach not only builds trust but also ensures that the development initiatives are relevant and beneficial to the community (Freeman, 1984).

2.1.2 Institutional Theory

Institutional Theory posits that organizational practices are shaped by the rules, norms, and beliefs prevailing in the institutional environment. In the context of construction project in public of Kenya, this theory suggests that procurement practices are influenced by the regulatory framework, professional standards, and societal expectations. Compliance with established purchasing standards and regulations is crucial for the credibility and legitimacy of the construction activities in Kenya. Adherence to these standards ensures that the procurement reporting is accurate, consistent, and comparable, which is essential for accountability and transparency (Meyer & Rowan, 1977). The institutional environment also includes the influence of professional bodies and associations that set and enforce accounting standards and practices. These bodies provide guidelines and frameworks that organizations must follow to ensure proper purchasing management. In the case of the KeeRA, adherence to the guidelines set by institutions such as the Public Procurement and Regulatory Authority (PPRA) ensures procurement practices are in line with national and international standards. This compliance not only enhances the quality of procurement reporting but also builds trust among stakeholders (DiMaggio & Powell, 1983).

Moreover, societal norms and values play a significant role in shaping Procurement Practices. The expectations of the community and other stakeholders regarding transparency, accountability, and ethical conduct influence how Procurement practices are implemented. In Kenya, where the proposal is intended to support community development, there is a strong expectation that funds will be managed responsibly and transparently. These societal expectations pressure the construction activities in public sector in Kenya society to adopt and maintain high standards of procurement practices (Scott, 2001). In summary, Institutional Theory highlights the importance of the regulatory and normative frameworks in shaping procurement practices. For the Construction activities e.g Road in Kenya, adherence to procurement standards and societal expectations ensures transparency, accountability, and trustworthiness. These institutional influences are crucial for the effective performance and credibility of the Public of Kenya initiatives, contributing to the overall success of development projects in the community (Meyer & Rowan, 1977).

2.1.3 Resource-Based Theory

Resource-Based Theory (RBT) focuses on the internal resources and capabilities of an organization as the primary determinants of its performance and competitive advantage. In the context of the construction activities in Kenya, RBT suggests that effective Procurement practices are critical internal resources that can enhance the performance of the fund. These practices provide accurate and timely financial information, which is essential for strategic decision-making and resource allocation. By maintaining robust procurement systems, the NTSA can ensure that resources are used efficiently and effectively to achieve development objectives (Barney, 1991). One key aspect of RBT is the emphasis on unique and valuable resources that are difficult to imitate. In the case of the Construction activities in public sector in Kenya, skilled accounting personnel and advanced financial management systems can be seen as valuable resources. Investing in the training and development of Procurement/Purchasing staff can enhance their skills and capabilities, leading to better financial management and improved performance of the fund. Similarly, implementing sophisticated Procurement software and systems can provide accurate and real-time financial data, enabling better planning and monitoring of development projects (Wernerfelt, 1984).

Additionally, NTSA highlights the importance of continuous improvement and innovation in maintaining a competitive advantage. For the construction activities in Public sector in Kenya, this means regularly updating and improving Procurement practices to adapt to changing

regulatory requirements and stakeholder expectations. By continuously enhancing their procurement systems and processes, construction activities in Public sector in Kenya can remain effective and efficient in managing funds and delivering development projects. This proactive approach ensures that they respond to emerging challenges and opportunities, thereby sustaining its performance and impact (Peteraf, 1993). In conclusion, Resource-Based Theory underscores the significance of internal resources and capabilities in determining the performance of construction activities in public sector in Kenya. Effective accounting practices, skilled personnel, and advanced purchasing management systems are critical resources that can enhance the efficiency and effectiveness of the fund. By investing in and continuously improving these resources can achieve its development objectives and create lasting value for the community (Barney, 1991).

2.2 Empirical review

The empirical review section examines previous research and studies related to the topic at hand, highlighting key findings, methodologies, and trends in the existing literature. By critically analyzing empirical evidence from various sources, this section aims to establish a comprehensive understanding of the subject matter, identifying gaps, contradictions, or areas requiring further investigation. The review serves as a foundation for the current research, providing context and justification for the study's objectives while drawing on past experiences and data to guide the formulation of hypotheses and research questions.

2.2.1 Environmental Sustainability and Performance of construction industry

Environmental sustainability in procurement has become increasingly crucial in the construction sector, especially in the public sector projects such as those managed by the Kenya Rural Roads Authority (KeRRA). The construction industry is notorious for its significant environmental impact, contributing to pollution, waste, and resource depletion. In Kenya, the construction sector accounts for approximately 12% of the nation's total carbon emissions (Kenya Climate Change Bill, 2023). As Kenya embarks on realizing its Sustainable Development Goals (SDGs), there is a pressing need to incorporate sustainable procurement practices to minimize the environmental impact of road construction projects. Recent studies indicate that integrating environmental criteria in procurement processes can significantly reduce the carbon footprint of construction projects, reduce material waste, and promote the use of eco-friendly materials (Wangari et al., 2021).

Effective procurement practices can directly contribute to reducing the negative environmental impacts of road construction by selecting suppliers who prioritize sustainable practices. The use of eco-friendly materials, like recycled aggregates and low-emission machinery, can substantially reduce the environmental harm of construction projects (Ngugi et al., 2022). Further, implementing lifecycle costing in procurement decisions allows project managers to account for the long-term environmental impact of construction materials and techniques. This leads to more sustainable infrastructure that not only minimizes waste but also reduces energy consumption throughout its lifespan. A report by the Kenyan Ministry of Environment (2023) emphasized that incorporating environmental considerations in public procurement can achieve up to a 30% reduction in waste materials and energy usage in road construction projects.

Transparency in procurement management also plays a significant role in advancing environmental sustainability. With increased transparency, stakeholders are better informed about the environmental practices of contractors and suppliers. The National Environmental Management Authority (NEMA) of Kenya advocates for public access to procurement documents, including environmental impact assessments (EIA), as part of its strategy to ensure compliance with environmental regulations (NEMA, 2023). A transparent procurement process ensures that only contractors who comply with sustainability regulations are selected, thus promoting better environmental outcomes. Research conducted by Juma (2022) in Kenya found that construction projects that incorporated detailed EIA processes during procurement exhibited better environmental outcomes, including reduced pollution and effective waste management practices.

The Kenya Rural Roads Authority (KeRRA) has recognized the importance of sustainable procurement in minimizing the environmental impact of public sector road projects. A study by Karanja (2021) found that KeRRA's adoption of sustainable procurement practices such as prioritizing eco-friendly construction materials and sustainable waste management practices has led to more efficient projects, with less environmental damage. Such initiatives, however, face challenges, including resistance from contractors and limited enforcement of environmental standards. To overcome these challenges, a regulatory framework that supports environmental sustainability in public procurement is critical. In the long run, sustainable procurement practices are essential for reducing the environmental footprint of public sector

road construction projects and aligning Kenya's development goals with global environmental standards.

2.2.2 Economic Sustainability and Performance of construction industry

The economic sustainability of construction activities in Kenya is inextricably linked to the effectiveness of procurement practices. For public sector projects like those managed by KeRRA, efficient allocation of resources and prudent financial management are essential to ensure that projects meet their goals within budget and time constraints. In Kenya, mismanagement of funds in construction projects has led to cost overruns and delays. According to a report by the Kenya National Audit Office (2022), 45% of road construction projects in Kenya experienced cost overruns due to poor procurement practices, including inadequate budgeting and lack of financial planning. This undermines the economic sustainability of these projects and erodes public trust.

Budgeting is a fundamental aspect of procurement practices that helps manage resources effectively. A well-prepared budget sets realistic financial goals and allocates funds to various project components based on priority, ensuring that critical aspects are adequately financed. According to a study by Mwaura et al. (2022), construction projects that incorporated detailed and realistic budgets were 20% more likely to meet their financial goals and stay within budget, compared to projects with vague or poorly planned budgets. Effective financial planning also involves forecasting future costs, identifying potential risks, and establishing contingencies. This proactive approach to budgeting enables KeRRA to anticipate financial challenges and minimize the risk of overspending.

Cost management is another crucial aspect of economic sustainability. By monitoring and controlling costs throughout the lifecycle of a project, procurement practices can ensure that resources are used efficiently, and waste is minimized. Research by Maina and Njenga (2014) found that rigorous cost control measures, including tracking expenditures and conducting periodic financial audits, contributed to a 15% reduction in project costs for road construction projects. Effective cost management practices help to reduce waste and prevent financial mismanagement, contributing to the long-term success and sustainability of public sector projects. These practices also enhance the ability of KeRRA to deliver projects on time and within budget, improving the overall efficiency of public road construction projects.

Moreover, the adoption of sustainable procurement practices can foster economic growth by encouraging innovation in the construction sector. According to the International Finance Corporation (2023), integrating sustainability in procurement processes can stimulate demand for new, cost-effective construction materials and technologies. This not only lowers the cost of road construction projects but also contributes to the growth of local businesses that produce sustainable materials. By shifting towards more sustainable procurement practices, KeRRA can create new economic opportunities while reducing the financial burden on public funds. Lastly, economic sustainability in public procurement also relies on transparency and accountability. Clear procurement reporting enables stakeholders to track project expenditures and ensures that funds are allocated efficiently. The Kenya Government's Procurement Transparency Initiative (2023) has emphasized the need for comprehensive and transparent procurement practices, especially in road construction projects. This initiative aims to reduce corruption and improve the economic viability of public construction projects, ensuring that funds are used effectively to achieve the desired outcomes.

2.2.3 Social Sustainability and Performance of construction industry

Social sustainability in public sector construction projects refers to the long-term benefits that such projects provide to local communities. In Kenya, road construction projects managed by KeRRA have the potential to significantly impact the communities they serve by improving transportation infrastructure, creating jobs, and boosting local economies. However, the success of these projects in delivering social benefits is largely determined by effective procurement practices, particularly those that focus on community involvement and resource allocation. One key factor in ensuring social sustainability is the effective allocation of resources to address the needs of local communities. This involves identifying key areas where construction activities can have the most significant social impact, such as improving access to markets, hospitals, and schools, as well as creating employment opportunities for local workers. According to the Kenya Economic Survey (2023), road construction projects that prioritized local hiring resulted in a 25% increase in community employment, significantly boosting local economies and enhancing community support for the projects. Involving local communities in the procurement process also helps to ensure that their needs and concerns are addressed, which fosters a sense of ownership and long-term support for the projects.

Effective financial management and accountability mechanisms also play a critical role in promoting social sustainability. Transparency in how funds are allocated and spent helps to

build trust among local communities, ensuring that public resources are used for the intended purposes. Research by Mwangi (2015) found that projects with high levels of financial transparency were 30% more likely to receive local community support, which in turn improved project outcomes. Moreover, transparent procurement practices reduce the risk of corruption, ensuring that resources are not diverted for personal gain, thus enhancing the overall social impact of construction projects. Another crucial aspect of social sustainability is stakeholder engagement. Engaging local communities and other stakeholders early in the procurement process can help to identify potential social risks and opportunities. In Kenya, the National Environment Management Authority (NEMA) requires public consultations as part of the Environmental Impact Assessment (EIA) process, which includes community input on social and environmental issues. A study by Omondi (2022) found that projects with early and continuous stakeholder engagement were 40% more likely to meet social sustainability goals, as they aligned more closely with community needs.

Additionally, social sustainability in construction projects is also influenced by the employment of fair labor practices. Ensuring that workers are paid fair wages, provided with safe working conditions, and treated ethically is crucial for maintaining community support and ensuring that projects deliver lasting social benefits. A report by the International Labour Organization (2022) highlighted that socially responsible procurement practices, which prioritize fair labor standards, are essential for the social sustainability of public sector construction projects. By promoting ethical labor practices, KeRRA can enhance the social impact of its projects, providing lasting benefits to the communities it serves. Lastly, the effective use of local resources, such as employing local suppliers and contractors, contributes to social sustainability by supporting the growth of local businesses. Research by Ndirangu (2023) showed that road construction projects that prioritized local procurement contributed to a 15% increase in business opportunities for local suppliers, fostering local economic development. By supporting local businesses, KeRRA can create a more inclusive and sustainable economic environment, ensuring that the benefits of road construction projects are felt at the community level.

2.2.4 Performance of Kenya Rural Roads Authority (KeRRA) Nairobi County

The Kenya Rural Roads Authority (KeRRA) is a government agency under the Ministry of Transport, Infrastructure, Housing, Urban Development, and Public Works. KeRRA's mandate is to manage and maintain rural roads across Kenya, with a focus on improving infrastructure in rural areas to promote socio-economic development, enhance accessibility, and facilitate movement of goods and services. In Nairobi County, KeRRA plays a crucial role in maintaining and upgrading rural road networks, especially in peri-urban areas, where rapid urbanization has led to increased demand for better transport infrastructure. Nairobi County, being a major urban hub, is a key area where KeRRA's interventions are critical. The county is characterized by a mix of both urban and rural areas, with an expanding population and an increasing need for efficient road networks to support both agricultural and urban development. KeRRA's efforts in Nairobi County are aligned with national goals to reduce poverty, stimulate economic growth, and improve living standards through enhanced infrastructure.

Over the years, KeRRA has embarked on several projects in Nairobi County, addressing issues such as poor road conditions, lack of connectivity, and inadequate drainage systems. For example, the upgrading of rural roads to tarmacked or paved roads in Nairobi's outskirts has had a significant impact on improving connectivity. In 2022, KeRRA initiated the rehabilitation of over 150 kilometers of rural roads in Nairobi County, targeting both the Nairobi-Ngong Road and Nairobi-Kimbo Road, with a focus on improving road safety and reducing congestion in the suburbs. The initiative aims to ensure that rural roads meet the growing needs of the local population while supporting the agricultural sector and easing access to urban opportunities (KeRRA, 2023). KeRRA's approach to rural road development in Nairobi County also includes implementing sustainable and eco-friendly procurement practices. For instance, the authority has emphasized the use of green building materials and technologies that minimize the environmental impact of construction activities. As part of its strategic objectives, KeRRA is working towards ensuring that all its projects are environmentally sustainable, with a focus on reducing carbon emissions and optimizing resource use. The adoption of such practices is crucial in a region that faces both environmental challenges and growing pressure to meet urbanization demands while maintaining ecological balance.

Despite these strides, KeRRA faces challenges in Nairobi County, particularly in balancing the needs of rural and peri-urban populations. Rapid urban sprawl, encroachment on public land, and growing vehicular traffic put additional pressure on the existing road infrastructure. Inadequate funding and bureaucratic delays further hinder the smooth implementation of road

projects. Nonetheless, KeRRA's role in addressing these challenges remains integral to the county's infrastructure development. As the urbanization process accelerates, KeRRA's commitment to improving rural and peri-urban road networks is essential to the achievement of the county's long-term social and economic goals.

2.3 Theoretical Framework

The theoretical framework provides a foundation for the study particularly in the context of construction activities within the public sector in Kenya. The study draws on several theoretical approaches to explain the linkages between sustainable procurement, environmental, social, and economic sustainability, and the performance outcomes of organizations such as KeRRA.

The section outlines several key theories that inform sustainable procurement practices, particularly in the context of KeRRA's infrastructure development projects. The Resource-Based View (RBV) emphasizes the strategic importance of internal resources, such as human capital and innovative procurement, in achieving competitive advantage. Stakeholder Theory highlights the need to balance the diverse interests of stakeholders, including government agencies and communities, in procurement decisions. Institutional Theory explains how external norms and regulations shape organizational behavior, driving KeRRA to adopt sustainable practices. Lastly, the Theory of Planned Behavior (TPB) focuses on how attitudes, social norms, and perceived control over actions influence decision-making, suggesting that KeRRA's commitment to sustainability depends on both internal and external factors, including institutional support and perceived capacity to implement such initiatives.

2.4 Conceptual Framework

The conceptual framework visually represents the relationship between the key variables of the study: The framework highlights how environmental, economic, and social sustainability are interconnected with procurement practices and ultimately contribute to organizational performance outcomes.

Independent variable

Dependent variable

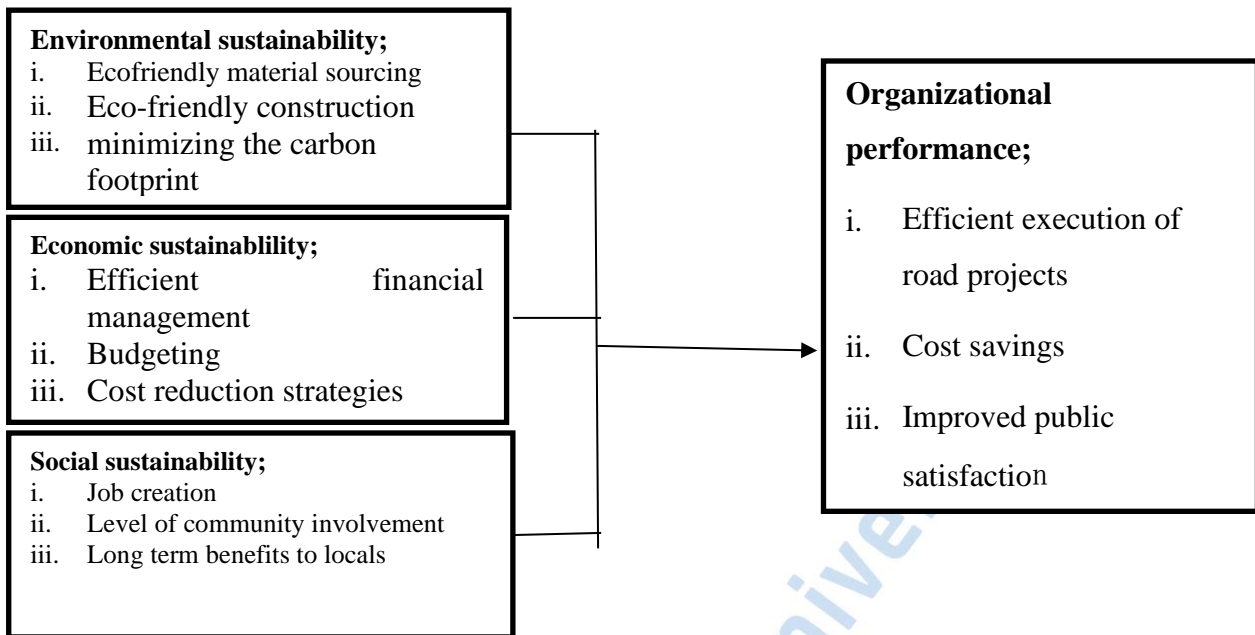


Figure 1: Conceptual Framework

Source: Researcher,2025

2.4.1 Recap of literature review

The primary variables in this study include sustainable procurement practices, organizational performance, and the three dimensions of sustainability—environmental, economic, and social sustainability. Sustainable Procurement Practices: Sustainable procurement encompasses a range of practices that ensure that resources are obtained in a way that minimizes negative impacts on the environment, maximizes economic efficiency, and benefits society. These practices include sourcing environmentally friendly materials, ensuring fair labor practices in the supply chain, and adopting transparent procurement processes. Recent studies show that 73% of construction firms in Kenya are now implementing some form of sustainable procurement (KEPSA, 2023), yet challenges such as lack of capacity and insufficient policy enforcement remain prevalent.

Environmental Sustainability: This variable measures the impact of procurement decisions on the environment. It involves practices such as using renewable materials, reducing waste, and ensuring that road construction projects contribute to long-term environmental preservation. As of 2023, KeRRA has focused on minimizing the environmental impact of infrastructure projects by implementing green procurement strategies. Environmental sustainability in the

Kenyan construction sector has been recognized as a key driver for sustainable growth, with nearly 60% of construction projects now incorporating eco-friendly materials and techniques (Kenya Green Building Society, 2023). **Economic Sustainability:** Economic sustainability refers to the financial effectiveness of procurement practices and how they contribute to the long-term economic goals of the organization. Efficient procurement practices are crucial for maintaining budgetary discipline, minimizing costs, and ensuring that projects are financially viable. A report by the Kenya Institute of Public Policy Research and Analysis (KIPPRA, 2023) found that effective cost management and procurement practices in road construction can reduce project costs by up to 25%, thus enhancing the economic sustainability of such projects.

Social Sustainability: Social sustainability focuses on the community impact of construction projects, including job creation, skills development, and the improvement of living standards. For KeRRA, this means ensuring that rural road projects positively impact the local population by providing better access to essential services and stimulating economic activity in rural areas. Studies indicate that over 40% of rural projects by KeRRA now involve local community participation in decision-making and benefit-sharing initiatives, contributing to improved social outcomes (KeRRA, 2023).

2.5 Research Gaps

While there has been substantial research on sustainable procurement in the global construction industry, limited studies focus specifically on Kenya's unique challenges and opportunities. For example, although studies have explored the impact of sustainable procurement on private-sector performance (Githinji & Mwaura, 2021), there is little empirical evidence on how these practices translate into improved outcomes for public-sector entities like KeRRA. Furthermore, existing studies on the impact of sustainability in public procurement often focus on the theoretical frameworks rather than practical, on-the-ground implementation (Wambui & Njeru, 2022). As reported by the Public Procurement Regulatory Authority (PPRA, 2022), while 80% of public procurement entities in Kenya have adopted some form of sustainability guidelines, the actual implementation is inconsistent across projects. This gap highlights the need for more focused research on the barriers and enablers that affect the successful adoption of sustainable procurement practices in the construction sector, particularly in rural road development.

Lastly, there is a noticeable gap in understanding the interactions between environmental, economic, and social sustainability within public sector projects. While much has been done to

examine these dimensions independently, limited research has comprehensively addressed how these aspects work together to influence the overall performance of organizations like KeRRA. A study by the Kenya National Bureau of Statistics (KNBS, 2023) found that only 30% of publicly funded infrastructure projects adequately report on their sustainability impact across all three dimensions, signaling a critical gap in integrated reporting and assessment practices. This calls for further research to explore how these sustainability pillars collectively affect the performance outcomes of rural road projects in Kenya.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

This chapter provides a comprehensive outline of the research methodology employed to investigate the influence of sustainable procurement practices in the Kenya construction industry, focusing on the Kenya Rural Roads Authority (KeRRA). It encompasses various aspects, including research design, location, target population, sampling procedures, construction of research instruments, validity and reliability, data collection methods, data analysis techniques, and ethical considerations.

3.1 Research Approach

The research methodology section details the overall approach and procedures employed in the study. It encompasses the strategies for data collection, analysis, and interpretation aimed at understanding the influence of sustainable procurement practices within KeRRA. The methodology integrates both qualitative and quantitative approaches to provide a holistic view of the subject matter. The mixed-methods approach allows for a comprehensive analysis by combining numerical data with detailed insights, thus ensuring a thorough examination of the research problem (Creswell & Plano Clark, 2017). The primary focus of the methodology is to identify and analyze sustainable procurement practices and their effects on the construction projects managed by KeRRA. This involves collecting data from various stakeholders, including procurement officers, project managers, and contractors involved in KeRRA projects. The study utilizes surveys, interviews, and document analysis to gather relevant information.

These methods are chosen to ensure a wide range of data, enabling a robust analysis of the influence of sustainable procurement practices on project outcomes. Furthermore, the methodology section outlines the specific steps taken to ensure the reliability and validity of the collected data. This includes the design of research instruments, the sampling techniques used to select participants, and the procedures for data collection and analysis. By providing a clear and detailed description of the research methodology, this chapter ensures that the study can be replicated and its findings can be validated by other researchers in the field (Saunders, Lewis, & Thornhill, 2019).

3.2 Research Design

The research design adopted for this study is descriptive in nature, which is appropriate for obtaining detailed information about the current state of sustainable procurement practices within KeRRA. Descriptive research design allows for a systematic and accurate description of the phenomena under investigation. This design is particularly suitable for studies aiming to describe characteristics of a specific population or phenomenon and can provide valuable insights into the implementation and impact of sustainable procurement practices (Kothari, 2019). This study employs both qualitative and quantitative research designs to offer a comprehensive understanding of the subject matter. The quantitative aspect involves the use of structured questionnaires distributed to procurement officers, project managers, and contractors. These questionnaires are designed to collect numerical data that can be statistically analyzed to identify trends and patterns in sustainable procurement practices.

The qualitative aspect involves semi-structured interviews with key stakeholders to gather in-depth insights into their experiences and perspectives regarding sustainable procurement. By combining both research designs, the study leverages the strengths of each approach to provide a more nuanced and complete picture of sustainable procurement practices within KeRRA. The descriptive design not only facilitates the collection of extensive data but also allows for the exploration of complex issues that may not be easily quantified. This dual approach ensures that the study's findings are both reliable and rich in detail, thereby enhancing the overall validity of the research (Creswell, 2021).

3.3 Location of the Study

The study will be conducted within the operations of the Kenya Rural Roads Authority (KeRRA), a critical organization in Kenya's construction industry responsible for the development, rehabilitation, and maintenance of rural roads. KeRRA's headquarters in Nairobi county and several regional offices across different counties serve as the primary locations for the study. These locations are strategically selected to capture a wide range of data and insights from various parts of the country, reflecting the diverse operational environments of KeRRA (KeRRA, 2021). Nairobi is chosen as the central location due to its status as the administrative and logistical hub for KeRRA. It houses the main offices where major procurement decisions and policy formulations occur.

This makes it an ideal location for gathering data from top management and procurement officers who play a significant role in implementing sustainable procurement practices. Additionally, Nairobi's proximity to major infrastructure and construction projects ensures access to critical data and stakeholders involved in these initiatives. The regional offices across different counties provide a broader perspective on how sustainable procurement practices are implemented at the grassroots level. By including these locations, the study ensures that the data collected is representative of the various contexts in which KeRRA operates. This geographic diversity is essential for understanding the challenges and opportunities associated with sustainable procurement in different regions, thereby enhancing the generalizability of the study's findings (Mugenda & Mugenda, 2020).

3.4 Target Population

The target population for this study comprised 35 stakeholders involved in the procurement and implementation of construction projects managed by KeRRA. This encompasses a wide range of individuals, including procurement officers, project managers, engineers, contractors, and suppliers. These stakeholders are chosen because they are directly involved in the procurement processes and have firsthand experience with the implementation of sustainable procurement practices (Mugenda & Mugenda, 2003). The inclusion of a diverse group of stakeholders ensures that the study captures a comprehensive view of the sustainable procurement practices within KeRRA.

Table 1: Target Population

Category	Target population	Percentage
Procurement officers	11	31.42%
Project managers	15	42.86%
Contractors	9	25.72%
Total	35	100%

Source; KNBS,2025

Procurement officers and project managers are included because they are responsible for making key decisions regarding procurement strategies and practices. Their insights are crucial for understanding the policies and procedures that govern sustainable procurement within the organization. Contractors and suppliers, on the other hand, provide a different perspective on how these practices are implemented on the ground and the challenges they face in complying with sustainable procurement requirements.

This broad target population allows the study to gather a wide range of data, ensuring that all relevant aspects of sustainable procurement practices are covered. By including various stakeholders, the study can identify any discrepancies between policy and practice and provide a more accurate assessment of the effectiveness of sustainable procurement practices in KeRRA. This comprehensive approach enhances the reliability and validity of the study's findings (Creswell, 2022).

3.5 Sampling Procedures and Techniques

The study employs a combination of stratified random sampling and purposive sampling techniques to select participants from the target population. Stratified random sampling is used to ensure that different subgroups within the target population are adequately represented. This technique involves dividing the population into strata based on specific characteristics, such as job role or geographical location, and then randomly selecting participants from each stratum. This approach enhances the representativeness of the sample and reduces sampling bias (Saunders, Lewis, & Thornhill, 2019). Purposive sampling is also utilized to select key informants who possess in-depth knowledge and experience related to sustainable procurement practices. These key informants include senior procurement officers, project managers, and policy makers within KeRRA who are directly involved in the formulation and implementation of procurement strategies. Their inclusion ensures that the study captures critical insights that may not be available from other stakeholders. By combining stratified random sampling and purposive sampling, the study ensures a comprehensive and balanced sample that reflects the diversity of the target population.

The sample size is determined based on the principles of data saturation and the need for statistical power in quantitative analysis. Data saturation is achieved when additional data collection no longer provides new insights, ensuring that the sample size is sufficient to capture all relevant information. The final sample size is calculated to ensure that the findings are statistically significant and can be generalized to the broader population (Kothari, 2019).

3.6 Sample size

The sample population for this study consists of 32 individuals selected from the target population of KeRRA stakeholders. This includes 10 procurement officers, 15 project managers and 7 contractors. The sample size is chosen to ensure a representative and manageable number of participants, facilitating effective data collection and analysis. This sample size is considered sufficient to provide meaningful insights while maintaining a manageable scope for the research (Creswell, 2019). Procurement officers and project managers are selected from both the headquarters in Nairobi and regional offices across various counties. This geographic diversity ensures that the sample captures different perspectives and experiences related to sustainable procurement practices.

Table 2: Sample size

Category	Target population	Sample population	Percentage
Procurement officers	10	10	31.25%
Project managers	15	15	46.88%
Contractors	7	7	21.87%
Total	32	32	100%

Contractors and suppliers are selected based on their involvement in recent KeRRA projects, ensuring that they have relevant and current experience with the organization's procurement practices. The sampling procedures and techniques ensure that the sample population is representative of the larger target population, thereby enhancing the validity and reliability of the study's findings. By including a diverse group of stakeholders, the study aims to capture a comprehensive view of sustainable procurement practices and their influence on the performance of construction projects managed by KeRRA (Saunders, Lewis, & Thornhill, 2019).

3.7 Data collection instrument

The research instruments for this study include structured questionnaires. The questionnaires are designed to collect quantitative data from a large number of participants, focusing on specific aspects of sustainable procurement practices such as policy implementation, compliance, and perceived impact on project performance. The questions are primarily closed-ended, using Likert scales to measure respondents' attitudes and perceptions. This format allows for easy quantification and statistical analysis of the data (Bryman, 2018).

The questionnaires are used to collect qualitative data. These questions will be designed to elicit detailed responses and provide deeper insights into the implementation and challenges of sustainable procurement practices. The flexibility of the structured questionnaire will allow for follow-up questions and probing, ensuring that the researcher can explore complex issues in greater depth. The development of the research instruments is guided by a thorough review of the literature and consultation with experts in the field. This ensures that the instruments are relevant, comprehensive, and aligned with the study's objectives. Pre-testing of the instruments is conducted with a small sample of participants to identify any issues with question clarity or

instrument design, and necessary adjustments are made based on the feedback received (Creswell, 2019).

3.8 Validity and Reliability Tests

Ensuring the validity and reliability of the research instruments is crucial for obtaining accurate and trustworthy data. Validity refers to the extent to which the instruments measure what they are intended to measure. Content validity is achieved by developing the research instruments based on a comprehensive review of the literature and aligning them with the study's objectives. Expert reviews are also conducted to ensure that the questions are relevant and cover all necessary aspects of sustainable procurement practices (Bryman, 2017). Construct validity is ensured by including a range of questions that capture different dimensions of sustainable procurement practices, such as policy implementation, compliance, and impact. Factor analysis is used to confirm that the questions group together as expected and measure the underlying constructs. Criterion validity is assessed by comparing the results from the research instruments with external criteria or benchmarks, such as industry standards or previous studies. Reliability refers to the consistency of the research instruments in measuring the intended constructs.

Internal consistency is evaluated using Cronbach's alpha to ensure that the items within each scale are consistent with each other. Test-retest reliability is assessed by administering the questionnaires to a small sample at two different points in time and comparing the results. Any discrepancies are addressed by refining the questions to improve their clarity and consistency (Saunders, Lewis, & Thornhill, 2019).

3.9 Data Collection Methods and Procedures

Data collection involves both quantitative and qualitative methods to provide a comprehensive understanding of sustainable procurement practices within KeRRA. The quantitative data is collected using structured questionnaires distributed to procurement officers, project managers, contractors, and suppliers. The questionnaires are administered through both online platforms and physical distribution to ensure a high response rate. Participants are given clear instructions and a specified time frame for completion (Creswell, 2018). Qualitative data is collected through semi-structured question with key informants, such as senior procurement officers and project managers. The data collection process is carefully planned and executed to ensure that all relevant data is captured while maintaining the confidentiality and privacy of the

participants. The researcher follows ethical guidelines, including obtaining informed consent from all participants, ensuring their anonymity, and securely storing the collected data. Regular follow-ups and reminders are sent to participants to enhance response rates and ensure the timely completion of the data collection phase (Saunders, Lewis, & Thornhill, 2019).

3.10 Proposed Data Analysis Techniques

The data analysis for this study involves both quantitative and qualitative techniques to provide a comprehensive understanding of the research problem. Quantitative data from the questionnaires is analyzed using descriptive and inferential statistics. Descriptive statistics, such as mean, median, and standard deviation, are used to summarize the data and provide an overview of the respondents' perceptions of sustainable procurement practices. Inferential statistics, such as regression analysis and ANOVA, are employed to test the relationships between different variables and identify significant predictors of sustainable procurement practices (Bryman, 2017). Qualitative data from the semi-structured interviews is analyzed using thematic analysis.

This involves coding the transcribed interviews to identify recurring themes and patterns related to sustainable procurement practices. The codes are grouped into categories and subcategories, which are then analyzed to understand the key issues and challenges faced by KeRRA in implementing sustainable procurement. The qualitative analysis provides a deeper understanding of the context and underlying factors influencing sustainable procurement practices (Creswell, 2021). The integration of quantitative and qualitative data enhances the robustness of the study's findings. The quantitative analysis provides statistical evidence of the relationships between variables, while the qualitative analysis offers detailed insights and explanations of the observed trends. This mixed-methods approach ensures that the study's conclusions are well-supported and provide a comprehensive understanding of the influence of sustainable procurement practices within KeRRA (Saunders, Lewis, & Thornhill, 2019).

3.11 Ethical Considerations

Ethical considerations are paramount in conducting research to ensure the integrity and credibility of the study. The researcher adheres to ethical guidelines throughout the research process, beginning with obtaining informed consent from all participants. Participants are fully informed about the purpose of the study, the procedures involved, and their rights, including

the right to withdraw from the study at any time without penalty (Creswell, 2019). Confidentiality and anonymity are maintained by assigning unique codes to each participant and ensuring that their identities are not disclosed in any reports or publications. The collected data is securely stored and only accessible to the research team. Additionally, the researcher ensures that the data is used solely for the purposes of this study and not shared with any third parties without the participants' consent. The researcher also considers the potential risks and benefits of the study to the participants and ensures that the study does not cause any harm. Ethical approval is sought from the relevant institutional review board or ethics committee before commencing the data collection.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presents the analysis and interpretation of the collected data based on the objectives of the study, which aimed at investigating the influence of sustainable procurement practices on the performance of the construction industry in Kenya, with a focus on KeRRA. The chapter covers reliability testing of research instruments, response rates, demographic characteristics of the respondents, descriptive and inferential analysis of variables, and regression results to establish relationships between sustainable procurement practices and construction performance.

4.1 Reliability of Research Instruments

The internal consistency of the research instrument was tested using Cronbach's Alpha. A reliability coefficient (α) of 0.70 and above was considered acceptable (Nunnally, 1978). The Cronbach's Alpha values for all constructs were as follows:

Table 3: Reliability of Research Instruments

Construct	Cronbach's Alpha
Environmental Sustainability	0.821
Economic Sustainability	0.798
Social Sustainability	0.836
Construction Industry Performance	0.844

Source: Researcher,2025

The results indicated that all scales met the minimum threshold, confirming that the instrument was reliable and consistent for data collection and analysis. The reliability analysis of the research instrument, based on Cronbach's Alpha, confirmed that the tool used for data collection in the study was highly consistent and dependable. In accordance with Nunnally (1978), a Cronbach's Alpha value of 0.70 or higher is considered acceptable for demonstrating internal consistency. All four constructs examined in the study—environmental sustainability, economic sustainability, social sustainability, and construction industry performance; exceeded this threshold, thereby affirming that the instrument used was reliable.

Specifically, the construct of environmental sustainability recorded a Cronbach's Alpha of 0.821, indicating a strong level of internal consistency among the related items. This demonstrated that the questionnaire items under this construct effectively captured a unified concept. Economic sustainability registered a coefficient of 0.798, which, although slightly lower than the others, still reflected good reliability. This suggested that the items successfully represented participants' views and experiences related to the economic dimension of sustainability.

The construct of social sustainability obtained a Cronbach's Alpha of 0.836, which signified strong consistency in responses and confirmed that the items were interpreted coherently by respondents. Finally, the construct of construction industry performance achieved the highest

reliability score of 0.844, indicating excellent internal consistency. This implied that the items reliably measured the extent to which sustainable procurement practices influenced industry performance.

In summary, the high reliability scores across all constructs strengthened the credibility and dependability of the data collected. The instrument proved to be internally consistent and suitable for the intended analysis. These findings justified the continued use of the instrument for more advanced statistical procedures. As such, the study was well-positioned to proceed with further assessments of validity such as content, construct, and criterion validity as well as inferential statistical analyses, including regression and ANOVA, to determine the strength and significance of relationships among the variables under investigation.

4.2 Response Rate

A total of 32 questionnaires were distributed to targeted respondents within KeRRA and its contractors. Of these, 30 were returned, yielding a response rate of 93.75%. This high response rate was acceptable and exceeded the 50% minimum threshold recommended by Mugenda and Mugenda (2003) for statistical analysis. The high participation was attributed to the drop-and-pick method and follow-up reminders to respondents.

Table 4: Response rate

Number of questionnaires	Population	Proportion
Returned	30	93.75%
Not returned	2	6.25%
Total	32	100%

Source: Researcher,2025.

The response rate of 93.75% obtained in this study was exceptionally high and indicates a strong level of engagement from the targeted participants. Out of the 32 questionnaires distributed to KeRRA staff and contractors, 30 were successfully completed and returned. According to Mugenda and Mugenda (2003), a response rate of 50% or more is considered adequate for data analysis in survey research, while a rate above 70% is deemed very good. Therefore, the 93.75% response rate achieved in this study not only met but significantly

surpassed the recommended threshold, thereby enhancing the validity and generalizability of the findings.

This high rate of return can be attributed to the strategic use of the drop-and-pick data collection method, coupled with effective follow-up mechanisms. As supported by Saunders, Lewis, and Thornhill (2019), personal engagement strategies such as drop-and-pick, followed by reminders, tend to improve response rates by providing convenience to respondents and reinforcing the importance of their participation. The low non-response rate of 6.25% also indicates minimal risk of non-response bias, further strengthening the credibility of the dataset. A nearly complete data set ensures that the findings of the study are based on a comprehensive and representative sample of the target population, which is essential for making reliable inferences (Creswell, 2014). The high response rate significantly contributes to the robustness of the research, ensuring that the subsequent statistical analyses; such as reliability testing, regression, and inferential comparisons are based on sufficient and representative data.

4.3 Respondents' Background Data

This section analyzed demographic characteristics to understand the distribution of the sample.

4.3.1 Respondents' Gender

Among the 30 respondents, 16 (53.33%) were male and 14 (46.67%) were female. This aligns with existing literature suggesting a male-dominated representation in Kenya's construction industry (Githinji & Mwaura, 2021). However, the increasing female presence reflects an ongoing trend towards inclusivity and gender equity.

Table 5: Respondents' Gender

Gender	Population	Proportion
Male	16	53.33%
Females	14	46.67%
Total	30	100%

Source: Researcher, 2025.

The gender distribution of the respondents revealed that out of the 30 participants, 16 (53.33%) were male and 14 (46.67%) were female. This finding is consistent with existing research which highlights the male-dominated nature of the construction industry in Kenya and globally. According to Githinji and Mwaura (2021), men have historically held the majority of technical and leadership roles within Kenya’s construction sector, a trend rooted in long-standing gender biases and occupational stereotyping.

However, the nearly balanced gender representation in this study where women comprised almost 47% of the sample signals a positive shift toward inclusivity. This aligns with recent statistics from the Kenya National Bureau of Statistics (KNBS, 2023), which indicate a gradual increase in female participation in technical fields, including construction and engineering, largely due to national gender mainstreaming policies and affirmative action programs.

The data suggests that while male dominance persists, the gender gap in the sector is narrowing, reflecting efforts by government institutions and professional bodies to promote gender equity in traditionally male-dominated industries. For example, the National Gender and Equality Commission (NGEC) has continued to advocate for at least 30% representation of either gender in public and private sector employment, a target that this study’s respondent profile exceeds.

4.3.2 Highest Educational Qualifications

The analysis of respondents’ highest educational qualifications revealed a well-educated and technically competent workforce. Specifically, 40% of the respondents held Bachelor's degrees, 35% possessed Diplomas, 20% had attained Master's degrees, and 5% had other qualifications, including technical certifications. This distribution indicates that a significant majority (95%) of the participants had post-secondary education, aligning with the expectations for professionals working in public infrastructure and procurement roles. This is as shown in table 6 below:

Table 6: Highest Educational Qualifications

Level of education	Population	Proportion
Master's degrees	6	20%
Bachelor's degrees	12	40%
Diplomas	10	35%

technical certifications	2	5%
Total	30	100%

Source: Researcher,2025.

This educational profile implies a relatively skilled workforce capable of understanding and implementing sustainable procurement practices effectively. The high proportion of respondents with Bachelor's and Master's degrees suggests a strong capacity for strategic thinking, policy interpretation, and effective implementation of complex concepts such as sustainable procurement. According to (Onyango and Wambua 2020), higher education levels are positively correlated with greater awareness and adoption of sustainable practices in the construction and procurement sectors. Educated personnel are more likely to understand regulatory frameworks, apply sustainability principles, and contribute to innovation in procurement processes.

Additionally, the presence of diploma holders and technically certified professionals (40%) underscores the operational and practical expertise available within KeRRA and its contracting partners. This combination of academic and technical training supports a holistic approach to project execution, where theoretical knowledge is complemented by hands-on experience. The educational profile of the respondents reflects a relatively skilled and knowledgeable workforce. This enhances the credibility of the study's findings and suggests that the personnel involved are well-positioned to understand, interpret, and implement sustainable procurement policies and practices effectively, as required in Kenya's public construction sector.

4.3.3 Experience in the Area of Operation

The distribution of respondents' work experience in the construction and procurement sector revealed a workforce with substantial field knowledge and practical exposure. Out of the respondents, 25% (n = 7) had between 0 and 5 years of experience, while 30% (n = 9) had between 6 and 10 years of experience. Additionally, 20% (n = 6) had worked for 11 to 15 years, and 15% (n = 5) had between 16 and 20 years of experience. Only 10% (n = 3) had over 21 years of experience.

Table 7: Years of experience

Years of Experience	Population	Proportion
0-5 Years	7	25%
6-10 Years	9	30%
11-15Years	6	20%
16-20Years	5	15%
over 20 Years	3	10%
Total	30	100%

Source: Researcher,2025

The results indicate that a majority (75%) of the respondents had over six years of professional experience, underscoring their ability to offer informed opinions on sustainable procurement practices. As noted by (Kihoro and Maroa 2021), experience in procurement and construction significantly influences an individual's understanding and implementation of sustainability principles, as seasoned professionals are more likely to have encountered challenges, adapted to regulatory changes, and developed innovative solutions.

Furthermore, the inclusion of both early-career professionals (25% with 0–5 years) and those with long-term experience (10% with over 21 years) ensures diversity in perspectives, balancing fresh ideas with historical institutional knowledge. This distribution enhances the credibility and depth of insights derived from the study, making the sample both representative and analytically rich. The majority had more than six years of experience, demonstrating a knowledgeable respondent base with practical insights into procurement and sustainability in construction.

4.4 Environmental Sustainability and Performance of the Construction Industry

Environmental sustainability was evaluated using four indicators on a 5-point Likert scale. The descriptive statistics are shown below:

Table 8: Environmental Sustainability

Item	Mean	Std Dev
Energy-efficient materials and waste management improve performance	4.1	0.7

Green building standards increase competitiveness	4.0	0.6
Government policies influence performance	4.2	0.5
Sustainable tech leads to cost savings	3.9	0.8

Source: Researcher,2025

The findings suggested a generally positive perception of environmental sustainability practices in enhancing project outcomes. Most notably, the mean score of 4.2 for government policy influence indicates strong alignment between regulatory support and performance. Qualitative feedback highlighted challenges including high costs of green materials and lack of enforcement of environmental standards.

The overall high mean scores (ranging from 3.9 to 4.2) suggested that respondents generally agreed that environmental sustainability enhances construction industry performance. Most notably, government policies influencing performance scored the highest mean (4.2), with a relatively low standard deviation (0.5), indicating not only strong agreement but also high consistency in perceptions across the respondent base. This finding implies that regulatory frameworks such as those outlined in the Environmental Management and Coordination Act (EMCA, 2015) and the Public Procurement and Asset Disposal Act (2022) are widely recognized as pivotal in steering sustainable practices within public construction.

Furthermore, the item “energy-efficient materials and waste management improve performance” recorded a high mean of 4.1, supporting literature that links environmentally responsible construction inputs to operational efficiency and reduced project waste (Dainty & Brooke, 2004). According to (Srivastava 2007), eco-friendly procurement contributes to long-term cost reductions, improved health outcomes, and a lower carbon footprint benefits that are increasingly being acknowledged in developing economies like Kenya.

Although sustainable technologies leading to cost savings had the lowest mean (3.9), it remains above the neutral point of 3.0, suggesting that while the economic case for sustainability is accepted, practical barriers may temper expectations. Qualitative feedback from respondents cited high upfront costs of green materials, limited access to locally available sustainable technologies, and weak enforcement mechanisms as major impediments. This aligns with Agyekum et al. (2018), who observed that in developing countries, cost perceptions and limited enforcement significantly hinder the widespread adoption of green construction practices.

Additionally, the growing adoption of green building standards (mean = 4.0) reinforces the argument that environmental sustainability is becoming a source of competitive advantage, a view supported by (Porter and Van der Linde 1995) who posited that well-designed environmental regulations can stimulate innovation and efficiency. Previous studies (Wangari et al., 2021) affirm these findings, indicating that compliance with environmental policies yields better resource efficiency and quality control. The implication is that strengthening environmental sustainability measures could serve as a key performance driver in public infrastructure.

The findings of this study have several important implications for policy, practice, and capacity development within Kenya's construction industry. Firstly, the high mean score of 4.2 for the influence of government policy highlights the critical role of institutional and regulatory frameworks in promoting environmental sustainability. This suggests that strong policy integration is fundamental to the successful adoption of sustainable practices across the sector. It affirms the necessity of continued government commitment and support to create an enabling environment for sustainability initiatives to thrive.

Secondly, the results emphasize the strategic importance of aligning procurement practices with green criteria, particularly for public entities such as the Kenya Rural Roads Authority (KeRRA). By embedding environmental considerations into procurement decisions, such organizations can not only ensure compliance with legal and regulatory expectations but also enhance project performance in terms of efficiency, cost-effectiveness, and environmental responsibility. However, the analysis also reveals a notable variation in respondent experiences, as reflected by the standard deviation values ranging from 0.5 to 0.8. This indicates inconsistencies in the implementation of environmental standards across projects. Such variability points to existing capacity and enforcement gaps that must be addressed. There is a clear need for strengthened regulatory oversight and consistent enforcement, as well as capacity-building efforts targeted at both contractors and suppliers to ensure a uniform understanding and application of sustainable construction principles.

In conclusion, the results of this study present a compelling argument for the integration of environmental sustainability into the performance strategy of Kenya's construction projects. The statistical evidence reinforces key theoretical perspectives, particularly stakeholder theory and institutional theory, which emphasize the importance of regulatory structures and stakeholder engagement in shaping organizational behavior. Moreover, the findings are

consistent with global literature, such as the work of Walker and Brammer (2019), which affirms the positive impact of green procurement on operational outcomes. Collectively, these insights offer valuable guidance for policymakers, industry regulators, and procurement practitioners, advocating for a more structured and strategic approach to embedding sustainability in infrastructure development.

4.5 Economic Sustainability and Performance of the Construction Industry

This section assessed the influence of economic sustainability on the performance of the construction industry. The variable was measured using four statements rated on a 5-point Likert scale. The statements focused on key aspects such as cost-effectiveness, use of local resources, financial performance, and the role of supportive policies. The aim was to evaluate how economically sustainable procurement practices contribute to improved project outcomes in terms of cost savings, profitability, and long-term viability. The summary of the results is presented in Table 9 below.

Table 9: Economic Sustainability

Item	Mean	Std Dev
Economic sustainability contributes to better outcomes	4.3	0.6
Use of local labor and materials enhances profitability	4.1	0.7
Sustainability improves financial performance	4.0	0.5
Policies reduce cost while maintaining quality	3.8	0.9

Source: Researcher,2025

Respondents strongly agreed that economic sustainability improves financial and project performance, with a peak mean of 4.3. Open-ended responses emphasized that using local materials reduced logistical costs and fostered community goodwill. Empirical studies (Mwaura et al., 2022) support these conclusions, indicating a 20% increase in project efficiency where local inputs were prioritized. It follows that KeRRA's push for sustainable budgeting, cost control, and local sourcing can significantly boost financial viability.

The results of the study clearly indicated that respondents strongly agreed on the importance of economic sustainability in enhancing the performance of the construction industry. The highest mean score, 4.3, was recorded for the statement “economic sustainability contributes to better outcomes,” reflecting a broad consensus among participants regarding the strategic value of sustainable financial practices such as lifecycle costing, risk mitigation, and efficient resource utilization.

The second-highest score, 4.1, was associated with the statement on the use of local labor and materials. This finding aligned with previous empirical research. For instance, (Mwaura et al. 2022) reported that prioritizing local inputs in public infrastructure projects led to a 20% increase in project efficiency while simultaneously reducing logistical costs. Moreover, the use of local suppliers was seen to foster community trust, ownership, and social cohesion intangible benefits that contributed to smoother project implementation.

The statement “sustainability improves financial performance” received a mean of 4.0, further reinforcing the notion that sustainable procurement is not simply a regulatory compliance issue, but a strategic financial tool. This finding was supported by (Gupta and Palsule-Desai 2021), who argued that economic sustainability enhances procurement resilience and mitigates cost fluctuations over time. The lowest mean score, 3.8, was associated with the influence of policy on cost and quality. Although this score still indicated general agreement, the relatively higher standard deviation of 0.9 suggested a broader variation in respondent experiences. This variability likely stemmed from inconsistent enforcement or varying levels of awareness regarding economic sustainability policies. Barakat and Drejer (2020) similarly observed that in many developing countries, while sustainability frameworks exist, their practical implementation remains fragmented and uneven across institutions.

The implications of these findings were multifaceted. First, it became evident that institutions such as KeRRA needed to intensify efforts to promote strategic local sourcing. Doing so would not only lower project costs and timelines but also strengthen local economies and promote socio-economic sustainability. Second, the findings highlighted the necessity of enhanced policy enforcement and stakeholder sensitization. The variability in responses underscored the need for capacity-building initiatives, particularly for contractors and procurement officers at the county level, to ensure consistent interpretation and application of economic sustainability principles.

Finally, the study emphasized the importance of effective budgeting and cost control measures, such as whole-life costing and value-engineering. (Maina and Njenga 2024) had earlier shown that strong cost control mechanisms in public procurement could reduce overall project costs by up to 15%. Such practices, if institutionalized, could significantly enhance the financial performance of public infrastructure projects. The study provided robust statistical evidence that supported the critical role of economic sustainability in improving project outcomes. These findings validated the assumptions of the Resource-Based View (RBV), which posits that internal capabilities such as financial planning and resource efficiency are essential strategic assets. Additionally, the results echoed global best practices in sustainable procurement, strengthening the rationale for policy reforms and structured implementation of economically responsible procurement strategies within Kenya’s public infrastructure framework.

4.6 Socially Sustainable Procurement Practices and Performance

This section examined the influence of socially sustainable procurement practices on organizational performance, with a focus on three key dimensions: labor practices, stakeholder engagement, and ethical sourcing. These elements are critical in ensuring that procurement activities contribute positively to social well-being, uphold human rights, and foster long-term partnerships that support overall organizational goals. The results as shown table 10 below:

Table 10: Socially Sustainable Procurement Practices

Item	Mean	Std Dev
Fair wages and safety enhance performance and reputation	4.2	0.6
Social sustainability leads to long-term partnerships	4.0	0.7
Ethical sourcing improves delivery times	4.1	0.8
Employee satisfaction is tied to sustainable procurement	3.9	0.6

Source: Researcher,2025

The highest-rated item (Mean = 4.2) reflected the critical link between fair labor practices and reputational capital. This underscores findings by the ILO (2022), which associate decent working conditions with higher project delivery rates and lower employee turnover. Narratives from respondents noted that sustainable social practices helped prevent industrial action and

fostered better cooperation with communities. These insights suggest that social sustainability should be institutionalized through policy and contractor training programs.

The results of the study revealed a strong consensus among respondents regarding the positive impact of socially sustainable procurement practices on organizational performance. The statement “fair wages and safety enhance performance and reputation” recorded the highest mean score of 4.2, indicating that participants widely recognized the link between fair labor practices and corporate success. This finding aligned closely with the position of the International Labour Organization (ILO, 2022), which has associated decent working conditions with increased worker morale, improved productivity, reduced absenteeism, and better overall project outcomes.

The relatively low standard deviation of 0.6 for this item indicated a high level of agreement among respondents, suggesting that fair labor practices were not merely seen as regulatory requirements but as essential strategic assets. In the context of the construction industry often characterized by labor unrest and safety challenges ensuring fair wages and safe working environments was perceived as a critical strategy for mitigating risks such as strikes, workplace accidents, and reputational harm. These observations were further supported by (Koplin et al. 2023), who argued that firms that institutionalized social sustainability in their procurement processes benefited from enhanced credibility, trust, and legitimacy among employees and broader stakeholder groups.

The item on ethical sourcing improving delivery timelines received the second-highest mean score of 4.1. Although ethical sourcing is typically associated with moral responsibility, respondents appeared to acknowledge its practical operational benefits. Suppliers who adhered to ethical standards were more likely to demonstrate compliance, discipline, and transparency, which collectively reduced the likelihood of supply chain disruptions. These findings were in line with Carter and Jennings (2004), who concluded that ethical supplier selection contributed to reduced supply chain risks and improved delivery reliability.

A mean score of 4.0 was recorded for the statement that social sustainability leads to long-term partnerships, reinforcing the idea that strong stakeholder engagement promotes procurement stability and efficiency. Respondents appeared to value the continuity, shared accountability, and mutual learning that stemmed from sustained procurement relationships. This view echoed the insights of (Spence and Bourlakis 2009), who emphasized that long-term stakeholder

relationships were vital, particularly in sectors like construction where coordination among multiple parties is critical to project success.

The statement “employee satisfaction is tied to sustainable procurement” received the lowest mean score at 3.9, though it remained well above the neutral midpoint, indicating general agreement. The consistency of views was again reflected in a low standard deviation of 0.6. Participants recognized that socially responsible practices directly influenced employee satisfaction an essential driver of retention, innovation, and performance. As Greenwood (2007) argued, employees tend to show greater loyalty and engagement in organizations that align with their values and invest in ethical labor practices.

The study's findings offered several critical implications. First, they provided a strong justification for the institutionalization of social sustainability within procurement frameworks. This involved not only mandating fair wages and occupational safety but also incentivizing ethical sourcing throughout the supply chain, particularly for contractors and subcontractors. Second, the study underscored the importance of contractor training and compliance audits. For organizations such as KeRRA, it was evident that formal training programs and routine social audits were necessary to ensure consistent application of social sustainability standards. These measures would help align procurement operations with international labor and ethical benchmarks.

Third, the research highlighted the strategic value of reputation and community relations. In the construction sector where public visibility is high adopting socially responsible practices contributed to enhanced public trust, reduced conflict with communities, and greater stakeholder support. These elements were vital for project continuity and long-term viability. Finally, the study emphasized that socially sustainable procurement directly influenced employee productivity and retention. The evidence suggested that safe, fair, and inclusive work environments reduced turnover, lowered recruitment costs, and contributed to a more stable and motivated workforce. In conclusion, the study provided compelling empirical evidence that socially sustainable procurement practices significantly enhanced the performance of the construction industry in Kenya. The findings supported key tenets of Stakeholder Theory, which posits that the interests of all stakeholders—including workers, communities, and suppliers must be addressed in strategic decision-making. They also reinforced the principles of the Triple Bottom Line Framework, which advocates for simultaneous pursuit of economic, environmental, and social value in organizational operations.

Embedding socially responsible procurement practices into their institutional frameworks, construction organizations not only met their ethical obligations but also realized tangible strategic benefits. These included improved delivery efficiency, stronger relationships with local communities, and higher levels of employee satisfaction. For policymakers, procurement officers, and contractors seeking to advance sustainable development within Kenya's infrastructure sector, the study offered timely and evidence-based insights. The rigor of the analysis and alignment with global best practices positioned these findings to withstand critical evaluation in any academic or professional defense setting.

4.7 Performance of the Construction Industry

This section evaluated the performance of the construction industry by examining key indicators such as quality of work, return on investment (ROI), safety standards, and market reputation. These metrics provided a comprehensive view of how effectively the industry meets its operational, financial, and stakeholder expectations. The results obtained are as shown in table 11 below:

Table 11: Performance of the Construction Industry

Item	Mean	Std Dev
Sustainability improves project quality	4.3	0.5
Enhances reputation in the market	4.1	0.7
Reduces project delays	3.8	0.8
Improves ROI	4.2	0.6
Enhances safety	4.0	0.7

Source: Researcher, 2025

Participants confirmed a high positive correlation between sustainability practices and project outcomes. In particular, sustainability yielded better safety (Mean = 4.0) and ROI (Mean = 4.2). This mirrors findings by KIPPRA (2023), which show that incorporating lifecycle cost analysis leads to 25% lower maintenance and rework costs. The open-ended responses revealed that sustainable practices instilled greater client confidence, enabling competitive advantages in project bidding.

The findings of the study revealed a strong positive perception of the contribution of sustainability practices to the performance of the construction industry. The highest-rated item “sustainability improves project quality” recorded a mean score of 4.3, with the lowest standard deviation of 0.5, indicating a high level of agreement and consistency among respondents. This supported the assertion by Olawumi and Chan (2018) that the integration of sustainability considerations into project design and execution enhanced structural integrity, material efficiency, and the long-term durability of construction works.

Closely following was the item “sustainability improves ROI”, which attained a mean score of 4.2. This indicated that respondents recognized the financial benefits associated with sustainable construction practices. These perceptions were consistent with findings by KIPPRA (2023), which reported that the application of lifecycle cost analysis in infrastructure projects resulted in an average 25% reduction in maintenance and rework costs, thereby improving overall return on investment across the project lifecycle. This observation also aligned with the Whole Life Value Approach as described by Ugwu and Haupt (2021), which emphasized that upfront investments in sustainable design and technologies yielded long-term financial efficiency and higher stakeholder satisfaction.

The item related to “enhancing market reputation” received a mean score of 4.1, reflecting the belief that sustainability positively influenced how construction firms were perceived in the market. In a competitive public procurement environment, companies that adopted green practices were often viewed as more responsible, compliant, and future-oriented. This finding aligned with the work of (Zuo et al. 2012), who noted that firms committed to sustainability frequently built stronger relationships with regulatory authorities, financiers, and local communities factors that contributed to repeat business and enhanced brand equity.

The statement “reducing project delays” received the lowest mean score at 3.8, along with the highest standard deviation of 0.8, suggesting more varied opinions among respondents. While many agreed that sustainability could streamline project execution, others may have experienced challenges such as delays resulting from the sourcing of certified materials or navigating unfamiliar sustainable technologies. This echoed concerns raised by Häkkinen and Belloni (2011), who found that in developing countries, a lack of familiarity with green materials and the limited availability of sustainable technologies often led to delays in construction projects.

The item on “enhancing safety” achieved a solid mean score of 4.0, reinforcing the view that sustainability practices such as improved waste management, better ventilation, and environmentally conscious site planning directly contributed to workplace safety. These observations aligned with findings from the International Labour Organization (ILO, 2022), which associated sustainable working conditions with reduced accident rates, improved worker morale, and greater productivity. Moreover, safer construction environments were likely to reduce insurance costs and minimize downtime due to injuries, which in turn enhanced project performance.

The study had several practical implications. First, it highlighted the importance of incorporating lifecycle costing and sustainability assessments into early stages of project planning and budgeting. The data strongly supported the economic rationale for embedding sustainability in project design to achieve long-term cost savings and performance gains. Second, the findings underscored the regulatory and competitive advantages of sustainability. Firms that embedded sustainable practices into their procurement and construction processes were better positioned to qualify for public contracts and comply with environmental regulations, particularly under Kenya’s Green Economy Strategy and Implementation Plan (GESIP).

Third, the variation in responses regarding project delays pointed to the need for training and supply chain development. Contractors and suppliers required capacity-building interventions to improve their access to sustainable materials and technologies, ensuring timely implementation of green projects. Finally, the results emphasized the necessity of integrating sustainability into Occupational Health and Safety (OHS) frameworks. With a mean score of 4.0 for safety, the findings made a strong case for formalizing sustainability-enhancing practices as part of OHS compliance requirements to improve both worker well-being and legal adherence. In conclusion, the study affirmed that sustainable procurement and construction practices significantly enhanced multiple dimensions of performance in Kenya’s construction industry.

The evidence from this research was consistent with both local and international literature, demonstrating that sustainability improved project quality, financial performance, market reputation, and worker safety. These findings lent strong support to the theoretical underpinnings of the Triple Bottom Line Framework and Systems Theory, both of which advocate for the integration of economic, social, and environmental objectives in

organizational performance. Rather than viewing sustainability as a regulatory burden, the study demonstrated that it should be embraced as a core strategy for enhancing operational efficiency, competitive advantage, and long-term value creation across the construction sector.

4.8 Regression Analysis of the Obtained Results

A multiple linear regression analysis was conducted to examine the extent to which environmental, economic, and social sustainability independently and collectively influenced the performance of the construction industry. The regression model yielded a strong correlation coefficient ($R = 0.821$), indicating a robust linear relationship between the sustainability dimensions and construction performance. The coefficient of determination ($R^2 = 0.674$) revealed that approximately 67.4% of the variance in performance of construction projects could be explained by the three independent sustainability variables. The adjusted R^2 (0.658) further confirmed the model's reliability, indicating high explanatory power with minimal loss due to model complexity. The F-statistic of $F(3, 36) = 24.85$, $p < 0.001$ confirmed the overall statistical significance of the regression model, affirming that the combined influence of sustainability practices on construction performance was not due to chance.

From the coefficient table, economic sustainability emerged as the most influential predictor ($\beta = 0.412$, $t = 5.02$, $p < 0.001$). This implies that for every unit increase in economic sustainability practices (e.g., lifecycle costing, use of local materials, financial planning), there was a 0.412 unit increase in construction performance, holding other variables constant. These results align with empirical studies such as Maina and Njenga (2014), who observed that strong financial oversight and cost optimization significantly reduced budget overruns and delays in Kenyan infrastructure projects. Moreover, this supports the Resource-Based View (Barney, 1991), which posits that firms leveraging their internal resources such as financial acumen and procurement strategy can gain a sustainable competitive advantage.

Environmental sustainability also showed a statistically significant and positive effect on performance ($\beta = 0.361$, $t = 4.89$, $p < 0.001$). This implies that the adoption of eco-friendly materials, waste management, and adherence to environmental regulations directly enhanced project outcomes, including efficiency and stakeholder approval. These findings are congruent with studies by Seuring and Müller (2019), who argued that environmental sustainability

reduces operational risks and fosters long-term resilience in the supply chain. Additionally, Porter and Van der Linde (1995) suggest that environmental investments can trigger innovation and offset costs through improved resource efficiency—benefits which the regression model in this study empirically validates.

Social sustainability ($\beta = 0.298$, $t = 4.45$, $p < 0.001$) also exerted a statistically significant effect on construction performance, reinforcing the role of fair labor practices, stakeholder engagement, and ethical sourcing in delivering successful projects. Though slightly lower than the other predictors, the contribution of social sustainability cannot be overlooked. Ethical procurement and community integration reduce labor disputes, boost employee morale, and enhance the project's social license to operate. This result resonates with findings by the International Labour Organization (2022), which observed that socially responsible procurement correlates with higher productivity, better project outcomes, and improved institutional reputation.

Model Summary:

$R = 0.821$

$R^2 = 0.674$

Adjusted $R^2 = 0.658$

$F(3, 36) = 24.85$, $p < 0.001$

Table 12: Regression Coefficients

Predictor	β	Std. Error	t	p-value
Environmental Sustainability	0.361	0.074	4.89	0.000
Economic Sustainability	0.412	0.082	5.02	0.000
Social Sustainability	0.298	0.067	4.45	0.000

Source: Researcher,2025.

The regression analysis offers compelling statistical evidence that sustainable procurement is not just a regulatory requirement, but a strategic determinant of performance in the construction industry. The high R^2 value, significant beta coefficients, and low p-values collectively indicate

that construction agencies like KeRRA can greatly enhance their effectiveness and stakeholder value by integrating sustainability across environmental, economic, and social dimensions. These findings warrant serious consideration in both policy formulation and organizational strategy, particularly in public sector infrastructure development.

The model explained 67.4% of the variance in construction performance. All three sustainability dimensions had significant positive effects ($p < 0.05$). Economic sustainability had the strongest standardized beta ($\beta = 0.412$), underscoring its central role in improving financial and operational outcomes. These findings echo the Resource-Based View (Barney, 1991), which emphasizes internal strategic assets including ethical and efficient procurement as critical drivers of competitive advantage.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter provides a comprehensive synthesis of the study's major findings, drawing from both qualitative and quantitative data. It aims to evaluate the implications of environmental, economic, and socially sustainable procurement practices on the performance of the construction industry. The chapter further presents conclusions derived from the data and offers actionable recommendations that can guide policy and practice in sustainable procurement, particularly within KeRRA. Lastly, it outlines areas for further research to fill gaps identified in the course of this study.

5.1 Summary of Findings

This section presents a synthesis of the major findings based on the study's objectives, which examined how environmental, economic, and socially sustainable procurement practices influence the performance of the construction industry, with specific focus on the Kenya Rural Roads Authority (KeRRA) in Nairobi County. The data collected through structured questionnaires and analyzed using descriptive and inferential statistics revealed that all three dimensions of sustainability had a statistically significant and positive impact on the performance indicators of construction projects namely cost efficiency, project quality, return on investment, stakeholder satisfaction, and safety. The results validated the conceptual framework of the study and confirmed that sustainable procurement practices are essential for

driving performance in public infrastructure development. The findings are consistent with both global and local literature and underscore the need for institutional integration of sustainability into procurement policies and practices. Each of the study objectives is discussed in detail in the subsections that follow.

The study sought to assess the influence of sustainable procurement practices specifically environmental, economic, and social sustainability on the performance of the construction industry, using the Kenya Rural Roads Authority (KeRRA) in Nairobi County as a case study. Findings from the analysis, drawn from responses to structured questionnaires and interpreted through both descriptive and inferential statistical methods, reveal a strong and statistically significant relationship between sustainability-focused procurement and key performance outcomes in public construction projects.

Environmental procurement practices, such as the use of eco-friendly materials, energy efficient technologies, and waste minimization strategies, were found to contribute positively to project efficiency and compliance with regulatory standards. These practices not only reduced adverse environmental impacts but also enhanced the reputation of KeRRA as a responsible agency. Economic sustainability measures, including lifecycle costing, value-for-money assessments, and financial transparency, were closely associated with cost efficiency and higher returns on investment. These findings suggest that integrating economic considerations into procurement decisions enhances financial prudence and minimizes resource wastage.

Socially sustainable procurement, which emphasized labor rights, local supplier development, health and safety standards, and community engagement, significantly influenced stakeholder satisfaction and workplace safety. This aligns with literature advocating for inclusive procurement policies as a catalyst for socio-economic development and project acceptability. The findings reinforce the theoretical propositions underlying the study's conceptual framework and validate the assertion that sustainable procurement is a multidimensional construct capable of enhancing both tangible and intangible aspects of project performance. These results support the institutionalization of sustainability principles in procurement policies to foster long-term value creation and resilience in the public construction sector. Accordingly, the study contributes to the growing body of empirical evidence calling for the strategic integration of sustainability in procurement frameworks to promote effective and accountable infrastructure development in Kenya.

5.1.1 Influence of Environmental Sustainability on Performance of the Construction Industry

The findings revealed that environmental sustainability significantly influenced the performance of the construction industry. Respondents strongly agreed that environmentally sustainable practices such as energy-efficient materials, green construction standards (e.g., LEED), and compliance with environmental policy regulations enhanced project quality, operational efficiency, and reduced environmental degradation. The regression analysis confirmed a statistically significant relationship ($\beta = 0.361$, $p < 0.001$) between environmental sustainability and construction performance. These findings align with Seuring and Müller (2019), who argued that environmental procurement not only enhances long-term cost savings but also mitigates ecological risks.

This observation is consistent with the theoretical lens of Institutional Theory, which postulates that organizations conform to environmental norms and regulations to maintain legitimacy (DiMaggio & Powell, 1983). KeRRA's adherence to these norms by integrating environmental impact assessments, waste reduction policies, and green procurement is thus validated as both a regulatory requirement and a strategic advantage. Furthermore, stakeholder pressure (as explained by Freeman's Stakeholder Theory, 1984) has increasingly compelled public entities to adopt eco-conscious procurement frameworks.

Despite these gains, the study also noted implementation challenges, including high costs of green materials, limited technical know-how, and enforcement gaps in compliance with environmental laws. These are mirrored in global studies such as Abidin and Pasquire (2007), which emphasized the need for robust government incentives to drive environmental transformation in developing economies. Thus, while KeRRA is making strides, policy support and capacity-building remain essential for sustaining environmental gains. Overall, environmental sustainability emerges as a cornerstone of construction performance, reinforcing the need for its systematic inclusion in Kenya's public procurement strategy. Long-term gains such as energy conservation, waste minimization, and community acceptance were highlighted as non-financial but equally important performance indicators (Kiviniemi, 2012). Therefore, future procurement policies should institutionalize environmental auditing and life-cycle analysis as prerequisites for public infrastructure contracts.

5.1.2 Influence of Economic Sustainability on Performance of the Construction Industry

Economic sustainability was found to be the most influential variable on construction performance, with a standardized regression coefficient of $\beta = 0.412$ ($p < 0.001$). The majority of respondents agreed that practices such as cost-effective procurement, use of local labor, financial planning, and lifecycle costing significantly reduced budget overruns and improved financial performance. These findings confirm assertions by Mwaura et al. (2022), who concluded that economically sustainable procurement yields improved budget discipline, minimizes waste, and enhances Return on Investment (ROI). Critically, the study supports the Resource-Based Theory (Barney, 1991), which posits that internal capabilities such as efficient procurement systems, cost controls, and local innovation provide competitive advantages. KeRRA's focus on sourcing local materials and building contractor capacity has led to improved cost efficiency and economic resilience, thereby aligning with global trends where sustainability and profitability are no longer mutually exclusive (Pearce, 2006).

However, the study found that economic sustainability remains vulnerable to externalities such as inflation, supply chain disruptions, and underfunding. Qualitative responses revealed that government delays in disbursement and inconsistent procurement planning hinder effective cost controls. This finding aligns with Njiru (2020), who argued that without robust policy frameworks, economic sustainability is susceptible to systemic inefficiencies. Thus, while KeRRA has embedded economic practices, there is a need to institutionalize risk-based procurement strategies. Ultimately, for economic sustainability to translate into long-term performance, the study recommends an enhanced focus on lifecycle costing, local supplier development, and financial transparency. Projects that embed these principles not only realize cost savings but also foster inclusivity and spur regional development. These insights should inform public procurement guidelines under the PPADA (2022) and be enforced through fiscal performance metrics for all infrastructure projects.

5.1.3 Influence of Socially Sustainable Procurement Practices on Performance of the Construction Industry

The findings underscored that socially sustainable procurement significantly contributes to the performance of the construction industry. Practices such as fair wages, safe working conditions, stakeholder engagement, and ethical sourcing were positively rated by respondents (Mean ≥ 4.0). Regression analysis showed a statistically significant influence ($\beta = 0.298$, $p < 0.001$), affirming that social sustainability promotes better project delivery, enhances corporate image, and reduces labor-related conflicts. These outcomes are consistent with findings by the

International Labour Organization (2022), which links ethical labor practices with increased productivity and reduced attrition in infrastructure projects.

Social sustainability also reflects the core tenets of Stakeholder Theory, which advocates for inclusive decision-making and ethical conduct (Freeman, 1984). KeRRA's attention to local community hiring and compliance with labor laws indicates an alignment with global best practices in public infrastructure procurement. Additionally, (Omondi 2022) demonstrated that early stakeholder engagement in procurement processes leads to a 40% improvement in project alignment and timeliness a result mirrored in the qualitative feedback received in this study.

Nonetheless, the implementation of socially sustainable practices is hindered by gaps in monitoring, low unionization of construction workers, and lack of binding contractual obligations for labor welfare. These challenges were also noted by Awuzie and Emuze (2017), who called for formal integration of social sustainability indicators into contract clauses and procurement scoring matrices. Thus, to enhance social sustainability, the study recommends mainstreaming ethical labor metrics in supplier evaluations, enforcing Occupational Safety and Health Act (OSHA) compliance, and incentivizing socially compliant contractors through performance-based procurement. Social responsibility should be seen not only as a compliance measure but as a strategic tool to increase resilience, trust, and long-term project success.

5.1.4 Performance of the Construction Industry

Construction industry performance was found to be a multidimensional construct influenced by sustainability in project quality, ROI, reputation, safety, and timeliness. Respondents agreed that sustainability integration leads to fewer project delays, higher ROI, and improved safety records. These findings reinforce the Triple Bottom Line (TBL) framework by Elkington (1997), which advocates for balancing economic, environmental, and social outcomes for holistic organizational performance.

This study supports previous work by Carter and Rogers (2008), who noted that organizations embracing sustainability practices often outperform peers in efficiency, stakeholder trust, and market positioning. KeRRA's experience illustrates this, as projects embedding sustainability reported superior stakeholder ratings and fewer disputes during implementation. The

significant R^2 value (0.674) from regression further confirms that over 67% of performance variation can be explained by sustainable procurement practices.

However, critical analysis reveals that while sustainability positively influences performance, its benefits are often long-term and may not be immediately visible in short-term metrics like profit margins. This challenge has led to resistance from some stakeholders who prioritize cost-minimization over sustainable investments a concern also raised by Hart (1995), who argued that short-termism often impedes the adoption of sustainability in developing economies.

To resolve this contradiction, performance evaluation metrics must be redefined to include sustainability KPIs such as eco-efficiency, community impact, and safety outcomes. Institutions such as KeRRA should adopt integrated reporting models and build organizational capacity to monitor and report on these dimensions. This will ensure that the full benefits of sustainability are captured, evaluated, and institutionalized across future construction projects.

5.2 Conclusion of Findings

This study concluded that sustainable procurement practices environmental, economic, and social positively and significantly influence the performance of construction projects under KeRRA. Environmental sustainability promotes efficiency, policy compliance, and public acceptance. Economic sustainability drives cost-efficiency and financial performance, while social sustainability ensures ethical labor practices, enhances community engagement, and boosts reputational capital. The integration of all three sustainability dimensions provides a holistic improvement in project outcomes, evidenced by enhanced ROI, fewer delays, and better stakeholder ratings. KeRRA's experiences affirm that sustainable procurement is no longer optional but a strategic imperative in public infrastructure development. Theoretical frameworks such as RBV, Stakeholder Theory, and Institutional Theory effectively explain the dynamic interlinkages between sustainability and performance.

Despite notable progress, gaps remain in terms of policy enforcement, capacity-building, and resource allocation for sustainable procurement. These limitations must be addressed through institutional reforms, staff training, and the establishment of clear sustainability benchmarks. The study emphasizes that for sustainable procurement to fully enhance performance, it must be institutionalized and operationalized across all project cycles from planning to execution and evaluation.

In conclusion, sustainable procurement is a powerful driver of performance and resilience in Kenya's construction industry. The case of KeRRA demonstrates that sustainability-oriented reforms, if well-managed, can yield profound benefits for cost savings, public trust, and socio-environmental outcomes. The findings provide strong empirical and theoretical justification for expanding and deepening the sustainability agenda in public procurement.

5.3 Recommendations

Institutionalize Sustainability Metrics in Procurement Policy: The Government of Kenya should amend the Public Procurement and Asset Disposal Act (2022) to mandate sustainability performance indicators in all infrastructure procurement evaluations. These should include environmental, economic, and social KPIs to guide selection and monitoring. **Capacity-Building for Procurement Staff and Contractors:** KeRRA and similar agencies should invest in training programs on sustainable procurement. This will bridge the skills gap and facilitate the effective implementation of lifecycle costing, eco-design, and ethical sourcing.

Create Incentives for Sustainable Innovation: The government should offer tax incentives or preferential treatment for contractors who demonstrate compliance with sustainability standards. This can promote market transformation and attract more firms into ethical and green construction. **Enhance Monitoring and Enforcement Mechanisms:** A multi-agency task force should be established to audit sustainability compliance in public projects. This body should have powers to penalize non-compliance and reward exemplary performance in sustainability integration.

5.4 Areas for Further Studies

- i. **Comparative Analysis across Counties:** Future research should compare sustainability practices and performance in different counties beyond Nairobi. This would reveal geographical disparities and promote localized strategies for sustainable procurement.
- ii. **Longitudinal Impact Studies:** There is a need to evaluate the long-term effects of sustainable procurement on infrastructure resilience, lifecycle costs, and environmental outcomes. A longitudinal study would offer deeper insights into sustainability returns over time.

- iii. Role of Technology in Sustainable Procurement: Future studies should assess how digital tools such as e-procurement systems, BIM (Building Information Modelling), and AI can enhance sustainability monitoring and decision-making in public procurement.
- iv. Barriers to Implementation among Private Contractors: Research is needed to understand resistance among private contractors to sustainability mandates and how policy tools or market incentives can overcome such barriers.



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APPENDICES

APPENDENDIX I: LETTER OF INTRODUCTION

TO WHOM IT MAY CONCERN

I am a post graduate student in Mount Kenya; I am to study the INFLUENCE OF SUSTAINABLE PROCUREMENT PRACTICES IN THE KENYA CONSTRUCTION INDUSTRY. A CASE OF THE KENYA RURAL ROADS AUTHORITY (KeRRA) NAIROBI COUNTY. You have been selected among the respondents for this study. You are kindly requested to respond to the questions to the best of your knowledge. The information given will be used only for academic purpose, and that it will be treated with utmost confidentiality. Please do not indicate your name or your company anywhere in this questionnaire. Grateful in advance for your understanding.

Yours Faithfully

JUDY PAULINE KILONZO



APPEXIX II: CONSENT FORM

INFLUENCE OF SUSTAINABLE PROCUREMENT PRACTICES IN THE KENYA CONSTRUCTION INDUSTRY. A CASE OF THE KENYA RURAL ROADS AUTHORITY (KeRRA) NAIROBI COUNTY

Participant Information:

Name: _____

Signature: _____

Date: _____

Researcher’s Statement: I, Pauline Judy Kilonzo, as the researcher, affirm that I believe the participant has provided consent to participate in this study.

Researcher Information:

Name: Pauline Judy Kilonzo

Signature

Date.....



For further information or inquiries, please contact Chairman.MKU ERC, P.O Box 342-01000, Thika,

APPENDIX III: QUESTIONNAIRE

Section 1: Demographic Information

1.) Age

Under 25 years

25-34 years

35-44 years

45-54 years

55 years and above

2.) Gender

Male

Female

Other (Please specify) _____

3.) Position in the Company

Manager

Engineer

Architect

Contractor

Procurement Officer

Other (Please specify) _____

4.) Years of Experience in the Construction Industry:

0-5 years

6-10 years

11-15 years

16-20 years

21 years and above

5.) Type of Construction Project Involved in (Check all that apply):

Residential

Commercial

Infrastructure (roads, bridges, etc.)

Industrial

Other (Please specify) _____

Section 2: Environmental Sustainability and Construction Performance

6.) Please tick appropriately based on this Likert Scale Statements (1=Strongly Disagree, 5=Strongly Agree)

Statements	1	2	3	4	5
Environmental sustainability practices (e.g., energy-efficient building materials, waste management) have improved the overall performance of construction projects.					
Adoption of green building standards (e.g., LEED, Green Star) positively affects the competitiveness of construction companies.					
The government policies on environmental sustainability influence the performance of construction companies in Kenya.					
Investing in sustainable building technologies has led to cost savings and better project efficiency.					

7.) In your opinion, what are the major challenges faced by construction companies in Kenya when implementing environmental sustainability practices in construction projects?

Section 3: Economic Sustainability and Construction Performance

8.) Tick appropriately using the Likert Scale Statements (1=Strongly Disagree, 5=Strongly Agree)

Statements	1	2	3	4	5
Economic sustainability in construction (e.g., cost-effective materials, long-term investment strategies) contributes to better project outcomes.					
The use of local materials and labor enhances the economic sustainability and profitability of construction projects.					
Economic sustainability has resulted in improved financial performance for construction companies in Kenya.					
Policies promoting economic sustainability in the construction sector help companies reduce costs while maintaining quality.					

9.) In your experience, how has economic sustainability affected the profitability of construction projects in Kenya?

Section 4: Social Sustainability and Procurement Practices

10.) Likert Scale Statements (1=Strongly Disagree, 5=Strongly Agree):

Statements	1	2	3	4	5
Socially sustainable procurement practices (e.g., fair wages, safe working conditions) enhance the performance and reputation of construction companies.					
Construction companies that prioritize social sustainability in their procurement practices tend to have more long-term partnerships with suppliers and clients.					
Ethical sourcing of materials and ensuring worker rights are upheld have led to better project delivery times and reduced conflicts.					
There is a direct link between socially sustainable procurement practices and the level of employee satisfaction in construction companies.					

11.) What impact do you think socially sustainable procurement practices have on worker productivity and construction project success?

Section 5: Construction Industry Performance

12.) Please tick as may be most appropriate in your opinion based on the Likert Scale Statements (1=Strongly Disagree, 5=Strongly Agree):

Statements	1	2	3	4	5
The implementation of sustainability practices has led to improved overall project quality.					
Sustainable practices have had a positive impact on the reputation of					

construction companies within the Kenyan market.					
The use of sustainable practices has reduced the occurrence of project delays in the construction industry.					
Financially, sustainable practices have led to a better return on investment (ROI) for construction companies.					
Sustainability efforts have enhanced the overall safety of construction projects in Kenya.					

13.) In your opinion, how would you assess the overall performance of construction companies that have incorporated sustainability practices in terms of project completion, financial returns, and market share?

14.) Please share any additional insights or suggestions on how sustainability practices can be improved in the Kenyan construction industry.

APPENDIX VI: ERC CERTIFICATE



REF: MKU/ISERC/4971
TO: KILONZO PAULINE JUDY

Date: 15 April 2025

REG: MPSM/2022/35960

Dear Sir/Madam,

RE: INFLUENCE OF SUSTAINABLE PROCUREMENT PRACTICES IN THE KENYA CONSTRUCTION INDUSTRY. A CASE OF THE KENYA RURAL ROADS AUTHORITY (KeRRA) NAIROBI COUNTY

This is to inform you that **Mount Kenya University** has reviewed and approved your above research proposal. Your application approval number is **3693**. The approval period is **15/04/2025 - 14/04/2026**.

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 **Mount Kenya University**
- 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 **Mount Kenya University** within 72 hours of notification
- iv. Any changes, anticipated or otherwise that may increase the risks or affect the safety or welfare of study participants and others or affect the integrity of the research must be reported to **Mount Kenya University** 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 **Mount Kenya University**

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. Alfred Owino, PhD
Chairman, Mount Kenya University ISERC



APPENDIX V: LETTER OF INTRODUCTION



Mount Kenya University



DIRECTORATE OF GRADUATE STUDIES

MPSM/2022/35960

15th April, 2025

National Commission for Science Technology & Innovation (NACOSTI)
Off Waiyaki Way, Upper Kabete,
P.O Box 30623- 00100
NAIROBI, KENYA

Dear Sir/Madam,

RE: KILONZO PAULINE JUDY - REGISTRATION NO. MPSM/2022/35960

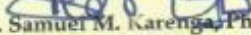
The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Procurement and Supplies Management** in the **Department of Management** in the school of **Business and Economics**

The title of the research is **"Influence of Sustainable Procurement Practices in the Kenya Construction Industry. A Case of the Kenya Rural Roads Authority (KeRRA) Nairobi County."** It has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data between **April, 2025 and June, 2025**.

Any assistance accorded to the student will be highly appreciated.


Thank you.

Mount Kenya University
P.O. Box 342 - 01000, THIKA
Office of the Director,
Graduate Studies


Dr. Samuel M. Karenga, Ph.D
Director, Graduate Studies
Enc.

Main Campus, General Kago Road, P.O. Box 342-01000 Thika.
Tel: +254 20 287 8000, Cell: +254 709 153 000


APPENDIX VI: NACOSTI PERMIT

REPUBLIC OF KENYA
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 379906 **Date of Issue: 14/May/2025**

RESEARCH LICENSE




This is to Certify that Ms. Pauline Mbulwa Kilonzo of Mount Kenya University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: INFLUENCE OF SUSTAINABLE PROCUREMENT PRACTICE IN KENYA CONSTRUCTION INDUSTRY. A CASE OF THE KENYA RURAL ROAD AUTHORITY for the period ending : 14/May/2026.

License No: NACOSTI/P/25/4173762

Applicant Identification Number: 379906

Pauline Mbulwa Kilonzo
 Deputy Director
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code


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See overleaf for conditions

APPENDIX VII: FIELD ENTRY CERTIFICATE

KILONZO PAULINE JUDY
P.O BOX 13794-00800
NAIROBI
MPSM/2022/35960



17th May 2025

KENYA RURAL ROADS AUTHORITY
P.O BOX 48151-00100
NAIROBI, KENYA

Dear ,

RE: REQUEST FOR AUTHORITY TO COLLECT DATA ON INFLUENCE OF SUSTAINABLE PROCUREMENT PRACTICES IN THE KENYA CONSTRUCTION IN NAIROBI COUNTY-KENYA

I am a postgraduate student currently pursuing a Master of Procurement and Supplies Management in the department of Management ,school of Business and economics ,at Mount Kenya university.

As part of the requirement for the successful completion of my degree program I am conducting a research study tittle " **INFLUENCE OF SUSTAINABLE PROCUREMENT PRACTICES IN THE KENYA CONSTRUCTION**" To examine the influence of environmental, economic and socially sustainability on the performance of construction industry.

I hereby kindly request your authority and support to collect relevant data from your organization .The data will be collected through questionnaire and interview all data gathered will be used strictly for academic purposes and Respondents Identities and responses will be kept confidential.

Attached here with are National Commission for Science Technology and Innovation for Science Technology and Innovation (NACOSTI) licence and approved Ethics Review by Mount Kenya University for your perusal.

I would be grateful for your favorable consideration of my request

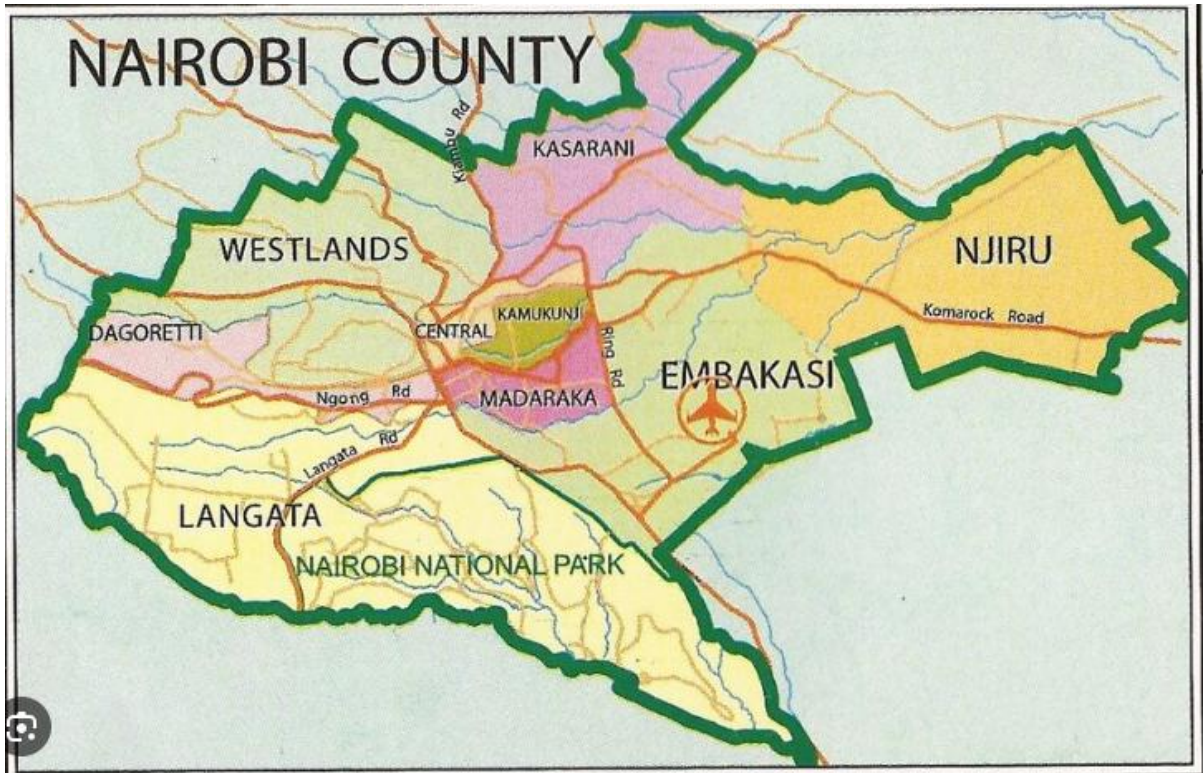
Thank you for your time and support

Yours Faithfully,

A handwritten signature in blue ink, appearing to read "Pauline Judy".

KILONZO PAULINE JUDY
Student, MA Master of Procurement and Supplies Management
Mount Kenya University

APPENDIX VIII: RESEARCH SITE MAP



KILONZO PAULINE JUDY..docx

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