

**PUBLIC PROCUREMENT PRACTICES AND ENVIRONMENTAL
SUSTAINABILITY IN UGANDA'S PUBLIC SECTOR: A CASE OF MINISTRY OF
WORKS AND TRANSPORT**

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**UGANDA CHRISTIAN
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DECLARATION

I, **Moses Nantamu**, hereby declare that no portion of the work presented in this dissertation has ever been submitted to any other university or institution of learning for the award of an academic degree or for any other purposes. I therefore submit this dissertation titled “Public Procurement Practices and Environmental Sustainability in Uganda’s Public Sector: A Case of the Ministry of Works and Transport” in partial fulfilment of the requirements for the award of the degree of Master of Science in Procurement and Supply Chain Management of Uganda Christian University, Mukono–Uganda.

Signed.....Date: 28.04.2026.....

MOSES NANTAMU

APPROVAL

This is to certify that the dissertation by **Moses Nantamu**, titled “Public Procurement Practices and Environmental Sustainability in Uganda’s Public Sector: A Case of the Ministry of Works and Transport”, has been carried out under my supervision and is hereby approved for submission and examination in partial fulfilment of the requirements for the award of the Master of Science in Procurement and Supply Chain Management of Uganda Christian University, Mukono–Uganda.

Signed 

Date 8TH JUNE 2026

PASCAL MULOOSI

DEDICATION

I dedicate this work first and foremost to God Almighty, for His guidance, strength, and blessings throughout my academic journey.

I lovingly dedicate it to the memory of my late father, George W. N. W. Wabeene, and to my dearest mother, Mrs. Harriet. E. Wabeene, whose sacrifices and values have shaped me into a responsible citizen.

I also extend this dedication to all my siblings, and to all my friends, especially Denis Bataale and Jasper Ninsiima, for their constant support and encouragement.

With heartfelt gratitude, I dedicate this dissertation to my beloved wife, Lydia Bakita, who has been my greatest source of strength, inspiration, and my support system throughout this academic endeavor.

Finally, I dedicate this work to my dearest children **Alpha Igaga, Almah. L. Arianah, Abba Igaga, Abby Blessing, and Ariella. E. Omega** with the hope that you grow up to become responsible, God fearing, and impactful citizens.

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ACRONYMS AND ABBREVIATIONS

MoWT : Ministry of Works and Transport

SDGs Sustainable Development Goals

PPDA Public Procurement and Disposal of Public Assets Authority

EIAs Enforce Mandatory Environmental Impact Assessments

ABSTRACT

This study sought to examine the influence of public procurement practices on environmental sustainability at the Ministry of Works and Transport (MoWT). The study objectives were: to assess the influence of procurement planning on environmental sustainability, to examine the influence of procurement contracting on environmental sustainability, and lastly to evaluate the influence of e-procurement systems on environmental sustainability in the study context.

The study adopted a cross-sectional research design and data was collected from a cross-section of 122 respondents at a single point in time using both qualitative and quantitative research approaches to achieve the three objectives of the study. The study employed simple random sampling and purposive techniques to select key informants. Both questionnaires and key informant interviews were used as tools for data collection.

The results revealed that procurement contracting ($\beta = 0.352$, $p = 0.000$) and procurement planning ($\beta = 0.348$, $p = 0.000$) were statistically significant predictors of environmental sustainability, demonstrating that both practices play a critical role in shaping sustainable outcomes within MoWT. However, e-procurement systems did not significantly predict environmental sustainability ($\beta = -0.082$, $p = 0.412$), indicating that although digital systems exist, they are not yet effectively utilised to enforce or support environmental sustainability practices in the procurement process.

Therefore, with the above findings, the study contributes to the body of knowledge on sustainable public procurement by providing empirical evidence on how procurement planning and contracting practices influence environmental sustainability in Uganda's public sector. Finally, the study recommends that MoWT should strengthen planning and contracting practices by embedding environmental criteria and enforcement mechanisms. Additionally, the e-procurement platform should be upgraded to support green procurement functionality and tracking mechanisms.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This section presents an overview of the study, covering the background, problem statement, research purpose, hypotheses, significance, scope, and the conceptual framework. To gain a comprehensive understanding of the role of environmental sustainability procurement in Uganda's public sector, it is important to examine the issue from theoretical, historical, contextual, and conceptual perspectives.

1.2 Background of study

Sustainability has emerged as a pivotal concern in global development, underscored by the need to balance economic growth with environmental protection. Historically, scholars such as Malthus (1878) warned about the consequences of unchecked industrialization, predicting resource depletion and environmental degradation. Similarly, Meadows et al. (1972) emphasized the unsustainable nature of resource consumption patterns, highlighting the risks of environmental collapse. As global challenges became more urgent, international frameworks like the UN's Agenda 21 (1992) and the Sustainable Development Goals (SDGs) were established, underscoring the importance of incorporating environmental sustainability into national policies, including public procurement processes.

In the procurement field, sustainability involves incorporating environmental considerations into the acquisition of goods, services, and works, taking into account their full lifecycle from production through to disposal (Silvius, 2012). Jauhari (2022) further emphasizes that procurement can act as an effective instrument for advancing sustainability, especially when procurement processes are aligned with environmental, economic, and social objectives. An expanding body of literature indicates that sustainably managed public procurement can generate substantial

environmental advantages, including lowering carbon emissions, reducing waste, and encouraging the adoption of renewable resources (Lamming et al., 2004; Carter & Easton, 2011).

In Uganda, sustainable procurement remains at an early stage of development. The Public Procurement and Disposal of Public Assets Authority (PPDA) has introduced green procurement guidelines to promote more environmentally responsible practices. Nevertheless, the effective implementation of these guidelines has encountered considerable challenges (Chirwa, 2016). Recent Auditor General reports (2021–2023) indicate that Uganda’s Ministry of Works and Transport (MoWT), a major public institution responsible for infrastructure development, still encounters difficulties in embedding environmental sustainability within its procurement procedures. Key concerns include inadequate enforcement of Environmental Impact Assessments (EIAs) and the omission of environmentally friendly provisions in contracts related to road and construction projects.

This study sought to bridge the gap in knowledge regarding how public sector procurement practices, particularly within the MoWT, can be aligned with environmental sustainability objectives. Although global literature highlights growing awareness of sustainable procurement, its adoption and practical implementation in developing countries such as Uganda remain relatively low. Tesfaye and Jebessa (2016) point out that developing countries encounter several obstacles in integrating sustainability into public procurement, such as inadequate regulatory frameworks, limited technical capacity, and weak monitoring and enforcement systems.

Despite the existing literature on public procurement and environmental sustainability, several gaps persist. First, although extensive studies have been conducted in developed countries, there is limited understanding of the particular challenges and opportunities associated with sustainability within Uganda’s public procurement system. Second, even though the PPDA has formulated green procurement guidelines, there is scarce empirical evidence regarding their actual implementation and effectiveness within Uganda’s public sector. Third, earlier research has frequently neglected the influence of institutional and organizational factors on the adoption of sustainable procurement practices, an aspect that requires deeper investigation within Uganda’s public sector institutions.

The importance of this study was highlighted by the growing focus on sustainable development in both global and national policy frameworks. As Uganda advances its infrastructure agenda through projects overseen by the MoWT, it is essential that procurement processes incorporate environmental sustainability to support long-term development objectives and reduce the adverse environmental effects associated with construction activities. Moreover, the study was timely in light of the increasing global attention on climate change, resource conservation, and the implementation of the SDGs. As countries worldwide, including Uganda, work toward these objectives, integrating environmental sustainability into public procurement practices emerges as a crucial approach for promoting a sustainable future.

1.3 Statement of the problem

In Uganda, sustainable public procurement has gained growing attention, especially within the Ministry of Works and Transport (MoWT), which oversees major infrastructure development projects. Despite increasing awareness of the importance of environmental sustainability in procurement, the Ministry still faces challenges in effectively incorporating environmental considerations into its procurement processes. Although the Public Procurement and Disposal of Public Assets Authority (PPDA) has established green procurement guidelines to encourage sustainability, their implementation has been limited and uneven across government ministries, especially within the MoWT.

The Ministry of Works and Transport oversees large-scale construction and road infrastructure projects, which can have substantial environmental impacts. However, several reports, including those by the Auditor General (2021–2023), have highlighted significant lapses in MoWT's adherence to environmental regulations. These reports indicate that the Ministry often fails to enforce mandatory environmental impact assessments (EIAs) or to incorporate eco-friendly provisions in contracts. This failure undermines Uganda's efforts to meet global sustainability goals, particularly the Sustainable Development Goals (SDGs), which emphasize the integration of environmental sustainability into national development agendas.

Additionally, the MoWT encounters several contextual challenges that impede the adoption of sustainable procurement practices. These include insufficient technical expertise to assess and

implement green procurement, weak enforcement mechanisms, and limited capacity among procurement officers to prioritize sustainability over conventional cost-focused procurement approaches.

Additionally, there is a lack of comprehensive monitoring and evaluation frameworks that can track the environmental outcomes of procurement decisions. As a result, there is an ongoing gap between policy guidelines and actual procurement practices on the ground.

This study aimed to tackle these challenges by examining how the MoWT's procurement practices can be improved to align more closely with environmental sustainability objectives. It investigated the barriers to the effective implementation of green procurement guidelines and explored the institutional and organizational factors affecting the adoption of sustainable procurement. The research sought to offer practical recommendations for enhancing the MoWT's procurement processes and advancing a more sustainable public sector in Uganda.

By addressing these issues, this study contributed to filling the knowledge gap on sustainable procurement practices in Uganda's public sector and offer insights into how the MoWT can better integrate environmental sustainability into its procurement strategies. Ultimately, the research would help policymakers and procurement officers in Uganda develop more effective, sustainable procurement frameworks that align with both national and international sustainability objectives

.

1.4 Purpose of the study

The purpose of this study was to investigate the procurement practices within Uganda's Ministry of Works and Transport (MoWT) and assessed how these practices can be aligned with environmental sustainability goals. Specifically, the study aimed to identify the barriers and challenges hindering the effective implementation of sustainable procurement practices within the Ministry and to explore the institutional and organizational factors that influence the integration of environmental considerations into procurement processes.

1.5 Specific objectives

- i) To assess the effect of procurement planning on environmental sustainability at the Ministry of Works and Transport.
- ii) To find out E-procurement systems in MoWT procurement affect the enforcement of environmental sustainability practices in public sector projects.
- iii) To assess the effect of procurement contract management practices on the incorporation of environmental sustainability in the MoWT.

1.6 Research questions

- i) How does procurement planning affect environmental sustainability at the Ministry of Works and Transport?
- ii) To what extent do E-procurement systems in MoWT procurement practices ensure the enforcement of environmental sustainability practices in public sector infrastructure projects?
- iii) What is the effect of procurement contract management practices on the incorporation of environmental sustainability in MoWT infrastructure projects?

1.7 Research hypotheses

The following hypotheses were tested:

- i) Procurement planning practices significantly affect environmental sustainability at the MoWT infrastructure projects.
- ii) Procurement Contract management practices significantly affect environmental sustainability at the MoWT infrastructure projects.
- iii) E-procurement systems significantly affect environmental sustainability at the Ministry of Works and Transport.

1.8 Conceptual Framework

Public Procurement (IV)

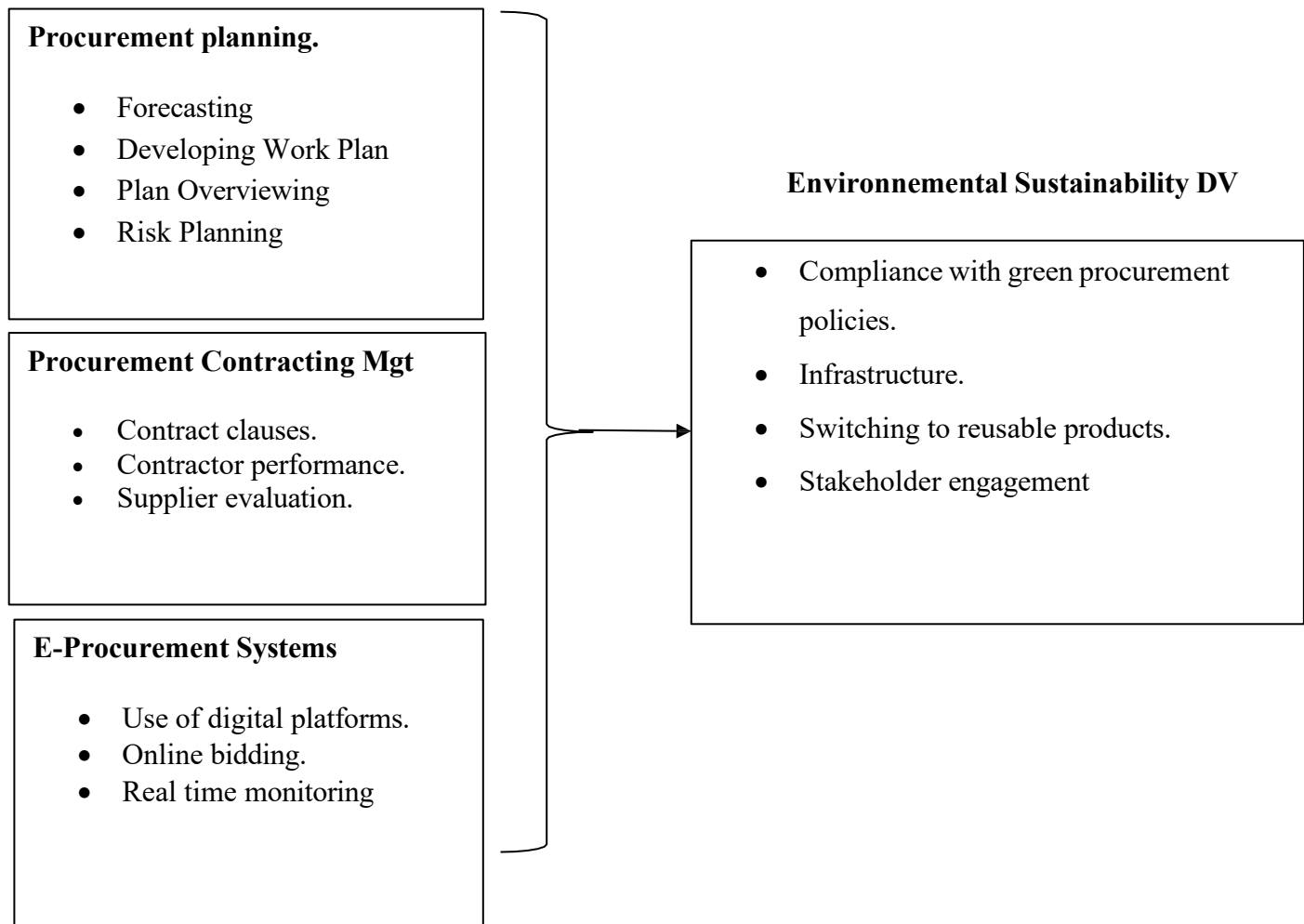


Figure 1.1: A Conceptual framework showing the relationship between public procurement practices and environmental sustainability at the Ministry of Works and Transport

Source: *Adopted and modified from the work of Parasuraman (1985), Fida et al (2020) and modified by the researcher.*

The conceptual framework depicted the link between public procurement practices and environmental sustainability outcomes in the Ministry of Works and Transport. It proposed that key procurement practices—such as procurement planning, monitoring and compliance mechanisms, and contract management—play a significant role in achieving and enforcing environmental sustainability in public sector infrastructure projects.

Procurement planning practices determine the extent to which sustainability considerations are integrated at the early stages of project formulation. Monitoring and compliance mechanisms ensure that sustainability requirements are tracked, reported, and enforced throughout the procurement process. Contract management practices govern how well sustainability provisions are maintained, evaluated, and adhered to during project execution.

The framework hypothesizes that improvements in these procurement practices can lead to greater incorporation of sustainability measures, improved compliance with environmental standards, and the development of environmentally responsible infrastructure. Thus, public procurement is positioned not merely as a transactional function, but as a strategic tool for advancing environmental sustainability within government operations.

1.9 Justification of the study

Numerous empirical studies have explored the connection between public procurement practices and environmental sustainability (Hooper et al., 2018; Testa et al., 2012), with most focusing on procurement planning, processes, and contracting. However, few have specifically focused on the public procurement practices and their influence on environmental sustainability within Uganda's public sector, particularly at institutional level (Bryngemark et al., 2022; Keulemans & Van de Walle, 2017).

In the Ugandan context, available literature has primarily explored procurement preferences and procedural compliance, with limited focus on how procurement planning, monitoring and compliance, and contract management practices shape environmental outcomes. Furthermore, existing studies often rely on theoretical lenses like network theory, which may not adequately explain the practical procurement mechanisms that drive or hinder sustainability integration.

1.10 Significance of the study

This study offered both theoretical and practical contributions to the fields of public procurement and environmental sustainability.

1.10.1 Theoretical Significance

This study contributed to the understanding of sustainable public procurement by highlighting the link between procurement practices and environmental sustainability within the specific context of Uganda's public sector. It moves beyond traditional theory to provide a practical conceptual framework that links procurement planning, monitoring and compliance, and contract management with sustainability outcomes. The study also fills a contextual gap by focusing on Uganda's Ministry of Works and Transport, a central entity in infrastructure development and procurement.

1.10.2 Practical significance

The findings of this study were useful for policymakers, procurement officers, and administrators, including the Permanent Secretary and managers at the Ministry of Works and Transport. The research offered empirical evidence to guide informed decisions on public procurement policies and sustainability practices. Additionally, the conceptual framework and research findings contributed to the development of strategies aimed at enhancing environmentally sustainable procurement practices. Specifically, the study benefited the Ministry of Works and Transport as the key entity responsible for policy formulation, capacity building, regulation, monitoring, and evaluation within Uganda's transport and infrastructure sector.

1.11 Scope of the study

The scope of this study was defined in terms of its content, geographic coverage, and time period.

1.11.1 Content scope

This study examined the relationship between public procurement practices (independent variable) and environmental sustainability outcomes (dependent variable) in Uganda's public sector. The independent variable included three components: procurement planning, monitoring and compliance mechanisms, E-procurement and contract management practices. The dependent

variable is environmental sustainability, measured through incorporation of sustainable practices, enforcement of sustainability measures, and sustainable infrastructure development.

1.11.2 Geographical scope

The study was carried out at the Ministry of Works and Transport headquarters in Kampala, Uganda. The ministry was chosen due to its central role in national procurement and infrastructure projects, making it an ideal case for examining sustainable procurement practices in the public sector.

1.11.3 Time scope

The study spanned the period from 2018 to 2024, a timeframe selected to capture recent public procurement practices and sustainability initiatives, including changes prompted by the COVID-19 pandemic. This period enabled an analysis of evolving procurement trends and their environmental impacts.

1.12 Operational definitions of key terms and concepts

Sustainability is a societal goal aimed at enabling long-term coexistence on Earth. Its definitions vary across literature, context, and time. It is generally understood to encompass three dimensions: environmental, economic, and social sustainability. **Environmental Sustainability:** This is the ability to maintain an ecological balance by conserving natural resources to ensure the well-being of current and future generations. It involves practices that minimize environmental degradation and promote the responsible use of resources.

Procurement: The process of obtaining goods, services, or works for an organization using methods such as purchasing, renting, leasing, hiring, licensing, franchising, or other contractual arrangements (Barasa, 2014).

Procurement Planning: Its systematic process of identifying and consolidating organizational requirements, determining procurement timelines, and ensuring that goods and services are acquired in a timely manner to meet organizational needs efficiently.

Procurement Contract: A legally binding agreement between a buyer and a seller, where the seller agrees to supply goods or services under defined terms and conditions. Also called a purchase contract, it creates legal obligations that protect both parties throughout the procurement process.

Procurement Control: The process of supervising procurement activities to ensure they are carried out ethically, legally, and efficiently. It is essential for monitoring contracts, managing suppliers, and ensuring accountability in the use of public funds.

Sustainability: A broad concept describing the capacity of people and organizations to coexist on Earth while promoting long-term environmental, economic, and social well-being. Although definitions vary across literature and contexts, it generally includes three main dimensions: environmental, economic, and social sustainability.

Green Procurement: The process of acquiring products and services that minimize environmental impact across their entire lifecycle, from production and use to disposal.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant literature on public procurement practices and environmental sustainability. The literature offers a basis for comparing the study's findings with existing research, highlighting similarities and gaps. Sources include dissertations, academic publications, peer-reviewed journals, and articles examining the link between procurement and sustainability.

2.2 Theoretical review

The theoretical foundation of this study is based on a combination of the Resource-Based View (RBV), Stakeholder Theory, and Systems Theory, each providing a distinct perspective on how procurement practices affect environmental sustainability in Uganda's public sector, especially within the Ministry of Works and Transport (MoWT). These theories have been revisited and applied in recent procurement and sustainability literature, affirming their continued relevance in guiding both research and practice in this field.

The Resource Based View (RBV), originally advanced by Barney (1991), has been refined in recent years to consider not just tangible resources but also intangible capabilities such as institutional knowledge, procurement planning tools, and sustainability expertise. According to Agyemang et al. (2020), public procurement institutions that possess internal competencies in sustainable procurement processes such as life cycle costing, green evaluation criteria, and contract enforcement mechanisms are more likely to integrate environmental considerations effectively. In the context of Uganda's MoWT, RBV implies that without adequate internal capabilities, the Ministry may struggle to implement environmental sustainability measures regardless of external policy mandates. While RBV has been extensively applied in private sector studies, its application to public infrastructure procurement in resource constrained countries like Uganda remains limited, especially concerning sustainability-related capabilities.

Stakeholder Theory, originally developed by Freeman (1984), emphasizes that public institutions must consider and balance the needs of diverse stakeholders including government agencies, environmental bodies, taxpayers, suppliers, and civil society when making procurement decisions. Recent studies such as those by Chari et al. (2022) and Osei-Kyei and Chan (2020) reinforce that stakeholder involvement is vital in ensuring accountability and transparency in sustainable public procurement, especially in infrastructure projects with potential environmental impacts. In the case of MoWT, stakeholder theory highlights the importance of involving the National Environmental Management Authority (NEMA), local communities, and oversight agencies in procurement planning, monitoring, and evaluation processes. However, empirical evidence on how stakeholder engagement shapes procurement practices in Uganda's public sector is sparse and calls for deeper investigation.

Systems Theory, as conceptualized by Bertalanffy (1968), continues to find relevance in explaining how interconnected institutional functions such as procurement planning, contract management, and compliance must align to achieve sustainable outcomes. Systems Theory has been employed in recent studies like Walker and Brammer (2022), who observed that fragmented procurement processes often hinder the integration of environmental goals in public sector projects. Similarly, Islam et al. (2023) demonstrated that in developing countries, failure in one subsystem (e.g., compliance monitoring) often disrupts the entire procurement effort toward sustainability. For MoWT, this theory underscores the importance of ensuring functional harmony across departments and procurement stages to consistently integrate environmental considerations. Despite this, many procurement systems in Uganda remain siloed, with little cross functional collaboration, contributing to poor enforcement of green procurement guidelines.

Collectively, these theories converge on the notion that sustainable public procurement is not the result of isolated efforts but rather an outcome of resource sufficiency (RBV), inclusive governance (Stakeholder Theory), and process integration (Systems Theory). However, there remains a critical research gap in applying these theories jointly to examine the determinants of environmental sustainability in public procurement in Uganda. Many studies have treated them in isolation, and few have used them to explain infrastructure-related procurement challenges specific to ministries in Uganda like MoWT.

This study draws on the theoretical contributions of Agyemang et al. (2020), Chari et al. (2022), and Walker and Brammer (2022) by combining these three perspectives into a single, integrated analytical framework. This integrated approach is crucial for understanding not just the technical aspects of procurement but also the organizational, systemic, and stakeholder factors that influence sustainability outcomes. It also enables the formulation of empirically testable hypotheses grounded in both theory and practice, especially concerning procurement planning, contract management, and e-procurement in Uganda's public infrastructure projects.

By combining these theories, this research seeks to enhance the existing knowledge by showing how institutional resource capacities, stakeholder engagement, and system alignment influence the implementation of sustainable procurement. This approach helps bridge theoretical and empirical gaps in understanding sustainable public procurement practices in Uganda's infrastructure sector and provides insights for practical policy and institutional reforms.

2.3 Empirical literature review

Several empirical studies have explored the link between public procurement practices and environmental sustainability. This section provides a critical review of these studies in relation to the objectives of the current research.

2.3.1 Procurement planning and environmental sustainability

Procurement planning ensures that procurement processes align with sustainability goals. Studies show that organizations that incorporate sustainability considerations, such as life-cycle costs and emissions reduction, enhance environmental sustainability (Machuki, 2023; Tan, 2023).

Effective procurement begins with need identification and strategic planning (Mwamasage, 2021). Organizations must incorporate sustainability considerations such as resource efficiency, waste management, pollution control, and life-cycle costs during procurement planning (Environmental Impact Assessment Report, 2023). Planning also ensures consistency with organizational objectives, prevents unnecessary purchases, and integrates environmental concerns like emissions reduction and energy conservation (Tan, 2023).

Many public institutions struggle with effective sustainable procurement planning due to inadequate forecasting and risk management strategies (Machuki, 2023). The Public Procurement and Disposal Authority (PPDA) plays a crucial role in guiding procurement planning through forecasting, work plan development, and risk planning (Tan, 2023). Despite these frameworks, inefficiencies remain necessitating stronger compliance and accountability mechanisms.

Sustainable procurement planning also involves selecting appropriate procurement methods to enhance value for money while considering environmental impact (Makkonen, 2024). The open tendering process, for instance, ensures fair supplier participation and promotes transparency in contract awards (Makkonen, 2024). Gunasekaran et al. (2004) emphasize that procurement planning enhances overall organizational performance by ensuring cost effectiveness and quality assurance.

2.3.2 Procurement contracting and environmental sustainability

Sustainable procurement contracting involves integrating sustainability clauses into contracts to ensure supplier compliance with environmental standards. Contracts regulate relationships between suppliers and procuring entities to ensure sustainability goals are met (Schmitz & Platts, 2004).

Procurement contracting is key in environmental sustainability, according to the European Union (2024) organizations should seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared to goods, services and works with the same primary function that would otherwise be procured. In the social procurement market, the purchaser wants delivery of a quality product at a competitive price plus a social value. The supplier is responsible to provide both the business needs and the social value (European Union, 2024).

Urbaniak (2022) argues that monitoring suppliers and contractors is a key aspect of managing contractor relationships, particularly in ensuring the procurement of essential supplies for an organization. An organization exercises control over deliverables and performance through contracting. The primary purpose of contracts in business is to define the terms, pricing, and

service standards for clients, as well as to manage relationships with partners and contractors (Janssens, 2008). An organization oversees contract design, supervision, and closure in its supplier relationships through a contract framework (Janssens, 2008). Consequently, contracts serve as active documents that govern the day-to-day operations of the business.

Thus, an organization's contracting capability and the quality of its contracts are crucial to project success. The main goal of contracting is to ensure that goods or services are delivered on time, at the agreed cost, and meet all specified requirements (Schmitz & Platts, 2004). The scholars further note that contracting entails building strong relationships with suppliers, ensuring actual service delivery, maximizing value for money, and maintaining consistent quality for stakeholders and end users. The main objective of contracting in any organization is to clearly communicate commitments and obligations to customers and suppliers, ensuring that they are understood and fulfilled (Schmitz & Platts, 2004). Contracts are employed to effectively manage trading relationships among buyers, sellers, and intermediaries, impacting various roles within an organization. Therefore, contracts are critical in executing public procurement. Effective contracting requires systematic management of contract design, supervision, and closure (Agere, 2009). The significant challenges of conducting business with public entities, combined with rising transaction volumes and values within a tightening regulatory framework, have led businesses to recognize the importance of effective contractor monitoring (Barasa, 2014).

Regarding contract design, Hinton (2003) states that an effective contracting system includes contract design, supervision/compliance, and closure processes, which together ensure reliable performance. Contract design refers to the activities carried out by government representatives after a contract is awarded to regulate how both parties—the government and the contractor—fulfill the contract's requirements. It also encompasses all interactions between the government and the contractor from the contract's initiation until the work is completed.

Contract monitoring includes staff capability, documented plans and metrics, contingency planning, clear communication of expectations to vendors, performance procedures, post-award meetings, and proper organization of contract files (Arrows, 2021). According to Snider and Rendon (2022), successful contract management also relies on key factors such as a qualified

workforce, strong relationships, adequate resources, well-defined processes, effective leadership, and supportive policies. All of these factors impact an organization's contract management processes and outcomes. This study examined how these mechanisms influence the public procurement process and environmental sustainability. Additionally, the study defined procurement contracting through its components—contract design, contract supervision, and contract closure—as a means of managing public procurement in support of environmental sustainability.

Regarding contract supervision, the European Union (2024) highlights its importance, noting that it allows procurers to gather critical information for developing effective procurement strategies during the planning phase. Supply market analysis is carried out to assess the current capabilities and sustainability practices within the market, evaluate the capacity and potential of suppliers to adopt and advance best practices, and determine the organization's influence in driving sustainable procurement objectives.

Machuki (2023) highlights that engaging in discussions with key suppliers fosters understanding and allows purchasers to learn about sustainable products and services that suppliers may not have offered before due to the absence of specific requests. Additionally, the European Union (2024) suggests that supplier relationship management is crucial for enhancing suppliers' ability to provide sustainable goods, services, and works. Therefore, this study formulates the second hypothesis: Procurement contracting activities do not have a significant effect on environmental sustainability in the Ministry of Works and Transport.

2.3.3 E-Procurement systems and environmental sustainability

E-procurement refers to the use of digital platforms in procurement processes. These systems enhance transparency, reduce paper use, and allow procurement entities to include environmental specifications in electronic bidding documents (Vaidya et al., 2006).

Amann et al. (2014) assert that e-procurement enables the integration of green procurement clauses and facilitates supplier evaluation against environmental benchmarks. Neupane et al. (2012) found that e-procurement promotes transparency and consistent application of sustainability

requirements. In Uganda, however, implementation of e-GP remains limited. Tumwine & Muwonge (2021) observed that MoWT has not yet fully utilized e-platforms for tracking environmental impacts in its procurement activities.

2.3.4 Gaps in the literature reviewed.

Public procurement is increasingly recognized as a strategic tool for advancing sustainable development goals, particularly environmental sustainability. Scholars such as Brammer and Walker (2011) and McCrudden (2004) have underscored the transformative role procurement can play in influencing market behavior and promoting green innovation. However, the majority of existing literature has been conducted in high income and developed economies, primarily focusing on policy sophistication, private sector alignment, and advanced e-procurement systems. There is limited empirical evidence from developing countries, especially within Sub-Saharan Africa, where institutional capacities and enforcement mechanisms differ markedly (Akenroye et al., 2013; UNEP, 2013).

Specifically, the literature reveals a contextual gap in examining how procurement practices effect on environmental sustainability in Uganda's public sector. Most of the existing studies in Uganda (e.g., Obanda, 2010; Basheka, 2008) focus broadly on procurement performance, value for money, or corruption in procurement processes, with minimal emphasis on environmental considerations. Very few studies have zoomed into sector-specific institutions such as the Ministry of Works and Transport (MoWT), which has a direct impact on infrastructure development, land use, and emissions key contributors to environmental degradation.

Additionally, the procurement planning stage, a critical entry point for incorporating environmental sustainability, remains under-explored in local literature. While Ameyaw et al. (2012) and Gelderman et al. (2006) highlight the importance of early-stage planning in determining procurement success, most Ugandan studies limit their analysis to budgetary alignment and forecasting accuracy (Basheka & Bisangabasaija, 2010), often excluding how environmental considerations are integrated during planning.

Technological gap is also evident in the literature, particularly regarding the role of e-procurement systems in advancing environmental sustainability. While international studies such as Neupane et al. (2014) and Vaidya et al. (2006) acknowledge the potential of digital systems to reduce paper waste, enhance process efficiency, and facilitate greener supply chain decisions, there is limited empirical exploration of these benefits within Uganda's government ministries. The implementation of the Electronic Government Procurement (e-GP) system by the Public Procurement and Disposal of Public Assets Authority (PPDA) in Uganda presents a new research opportunity to evaluate how digital tools are influencing sustainable procurement decisions.

Moreover, contract management practices, which ensure the enforcement of environmental sustainability clauses post-award, are often neglected in procurement research. Studies such as Preuss (2009) and Erridge and Greer (2002) stress the importance of monitoring supplier compliance with sustainability standards. In Uganda, however, many assessments (e.g., PPDA Annual Reports, 2020–2023) indicate persistent challenges in monitoring and enforcing environmental requirements during contract execution, especially in infrastructure projects under MoWT. This reflects a practical implementation gap in understanding how contract management influences environmental outcomes.

From a theoretical standpoint, much of the African procurement literature has been grounded in network theories (Baggio & Cooper, 2010), which emphasize internal organizational dynamics and relationships. These frameworks, while useful, fail to fully capture external institutional pressures, legal mandates, professional norms, and inter-organizational imitation that shape procurement behavior, therefore a methodological gap persists in many Ugandan studies, which often rely on qualitative designs or case studies with small sample sizes (Amin, 2005), limiting the statistical generalizability of their findings. By employing a quantitative design with a broader sampling approach, this study seeks to offer more robust, empirical insights into procurement practices and environmental sustainability in Uganda's public sector.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter outlined the methodology that was employed to achieve the study's objectives. According to Creswell (2012), research methodology referred to a structured process used to collect, analyze, and interpret data in order to gain a deeper understanding of a particular issue and effectively address the research objectives. This chapter outlined the research design, target population, sampling methods and sample size, data collection techniques and instruments, validity and reliability measures, data collection procedures, data analysis methods, variable measurement, and ethical considerations. The methodology was structured to ensure that the results are accurate, reliable, and pertinent to examining public procurement practices and environmental sustainability in Uganda's Ministry of Works and Transport.

3.2 Research design

This study employed a cross-sectional survey design as its main methodological approach. This design was appropriate because it allowed the assessment of the relationship between public procurement practices and environmental sustainability at a single point in time. Using a quantitative approach allowed the researcher to measure data, detect patterns, and analyze relationships between key variables through statistical techniques. Creswell (2012) notes that quantitative designs are particularly suitable for exploring cause-and-effect relationships, testing hypotheses, and generating results that can be generalized to a broader population.

The descriptive design was well-suited for this study because it provided a thorough understanding of the existing state of procurement planning, e-procurement systems, and contract management practices in connection with environmental sustainability at the Ministry of Works and Transport (MoWT). As noted by Kothari (2004), a descriptive design offers a structured framework for collecting data that is relevant, accurate, and representative of real-world conditions. Amin (2005)

added that this design allows the researcher to identify research variables, examine their distribution, and analyze the relationships between them.

Moreover, a cross-sectional design was used to collect data at a single point in time, offering cost and time efficiency. This approach allowed the researcher to evaluate the current procurement practices and sustainability measures within the MoWT without the need for extended observation.

To enhance the analysis, the study incorporated correlational elements, allowing the investigation of relationships between variables, such as the impact of procurement planning on environmental sustainability. This approach supported the second research objective, which aimed to examine the links between contract management practices and the integration of sustainability principles.

Moreover, while the dominant approach remained quantitative, the study was open to a complementary triangulation strategy. This involved integrating selected elements of qualitative data, particularly through open-ended questionnaire items or key informant interviews, to capture deeper insights into respondents' experiences, perceptions, and contextual dynamics. Such integration enhanced the interpretive power of the findings and aligned with Amin's (2005) assertion that methodological triangulation improved the validity of research results by offering a more holistic perspective.

3.3 Study population

A study population is defined as the complete set of elements or all members from which a sample is selected (Babbie, 2010; Lavrakas, 2021). Salkind (2018) described a population as a group of potential participants to whom the study's findings could be generalized. For this study, the target population included, among others, the Permanent Secretary, Assistant Permanent Secretary, Senior Procurement Manager, Procurement Officers, Environmental Impact Assessment Manager, and junior managers at the Ministry of Works and Transport. A total population of 187 elements was identified, and it was from this population that a sample size of 124 was determined. These categories were selected because of their roles as key stakeholders in the operations of the Ministry of Works and Transport and their relevant knowledge of the variables being studied.

3.3.1 Population, Sample Size, and Sampling Methods

Table 3.1: Population, sample size and sampling methods

Respondent Category	Population	Sample	Sampling methods
Permanent secretary	1	1	Purposive Sampling
Assistant permanent secretary	2	2	Purposive Sampling
Senior procurement manager	1	1	Purposive Sampling
Environmental Impact Assessment Manager	3	2	Purposive Sampling
Ministry of Works & Transport junior managers	180	118	Simple random sampling
Total	187	124	

Source: **Ministry of Works & Transport HRM Data (2024)**

3.3.2 Sample size and sampling methods

A sample was defined as a collection of individuals, objects, components, or items drawn from a broader population for measurement (Mugenda & Mugenda, 2003). Similarly, Amin (2005) described a sample as a set of respondents drawn from the study population who were expected to actively engage in the study. Using Krejcie and Morgan's (1970) sample size determination table (Appendix 3), a sample of 124 respondents was systematically selected from a population of 187. This sample included 1 Permanent Secretary, 2 Assistant Permanent Secretaries, 1 Senior Procurement Manager, 2 Environmental Impact Assessment Managers, and 118 junior managers from the Ministry of Works and Transport.

3.4 Sampling methods

The study employed both non-random sampling (purposive sampling) and random sampling techniques (simple random sampling). Simple random sampling, a randomized sampling technique, was applied in selecting the Permanent Secretary, Assistant Permanent Secretaries,

Senior Procurement Manager, Assistant Procurement Manager, and Environmental Impact Assessment Managers. The researcher collected the appropriate number of elements from the sampling frame, wrote their corresponding codes on pieces of paper, placed the papers in a box, and thoroughly mixed them to ensure a random selection of elements until the required number was reached. This sampling technique was adopted because it gave each research element an equal probability of being selected, thereby minimizing selection bias. On the other hand, purposive sampling was applied to the Ministry of Works and Transport junior managers. These participants were deliberately selected based on their expert and in-depth knowledge of the variables under investigation (Mugenda & Mugenda, 2003).

3.5 Data collection methods

The Data collection methods in this study included Questionnaire survey and Interviewing as illustrated hereunder.

3.5.1 Questionnaire survey

A questionnaire was a structured series of written questions to which respondents responded, generally within a narrow range of options (Kothari, 2004). It was particularly beneficial for gathering information from a large number of respondents. This strategy enabled the researcher to collect substantial amounts of information from a sizable sample, allowed respondents adequate time to respond, maintained respondent anonymity, and eliminated interviewer bias (Amin, 2005). This method was administered to the Ministry of Works and Transport junior managers to gather quantitative data. The questionnaire survey was self-administered, with some respondents filling it out independently to ensure data quality (Sekaran, 2003). Additionally, this strategy generated new insights for both the investigator and the respondents (Voss et al., 2021). The tool included closed-ended questions specifically designed to address the study's research objectives.

This approach was chosen because it was easy to administer, safeguarded respondents' privacy, and facilitated higher and quicker response rates from a larger sample, thereby enhancing the generalizability of the findings to the wider population (Creswell, 2012). Additionally, the questionnaire was designed to align with the study's purpose, research questions, and hypotheses,

enabling the researcher to analyze the collected data more effectively (Amin, 2005). It comprised structured, closed-ended questions, with responses measured on a 5-point Likert scale (5 – Strongly Agree, 4 – Agree, 3 – Not Sure, 2 – Disagree, 1 – Strongly Disagree), which was deemed suitable for evaluating a broad range of factors. The interview guide is provided in Appendix II, and the questionnaire is included as Appendix I.

3.5.2 Interview method

To obtain reliable information through interviews, the researcher sought maximum cooperation from respondents. Prior to conducting the interviews, a pleasant rapport was built with each respondent to establish trust and openness (Mugenda & Mugenda, 1999). This method of data collection was used because it allowed for probing, ensured high response rates, was cost-effective, flexible, and provided in-depth information that could not be quantified or obtained through questionnaires (Mugenda & Mugenda, 2003). Moreover, interviews enabled the collection of rich, detailed data essential for meeting the specific objectives of the study.

Interviews also minimized confusion, as the interviewer could clarify any ambiguous questions and assist the respondent in providing relevant answers. Compared to questionnaires, they were more adaptable to context and provided higher response rates since respondents were less likely to refuse participation (Mugenda & Mugenda, 1999). A predetermined interview guide with pre-formulated questions was used to conduct personal interviews with key informants, including the Permanent Secretary, Assistant Permanent Secretary, Senior Procurement Manager, Assistant Procurement Manager, and Environmental Impact Assessment Manager. These key informants responded to open-ended questions. Interview notes were taken, audio recordings were made (after receiving informed consent), and all responses were later transcribed for analysis (Creswell, 2008).

3.6 Data collection procedure

The researcher initially secured an introductory letter from Uganda Christian University addressed to the Ministry of Works & Transport, stating that the data to be collected would be used exclusively for academic purposes. After obtaining the required clearance and authorization, the data collection process began. The researcher started by distributing questionnaires to the selected

respondents. After the questionnaire phase was completed, face-to-face interviews were held with chosen key informants.

3.7 Data analysis

3.7.1 Quantitative data analysis

The investigator first cleaned the data by checking for mistakes, then constructed statistical codes, entered the data into SPSS, and checked for problems that may have occurred during the data entry process. After that, the researcher performed a descriptive analysis to explain any trends that existed in the categorical data or respondents' bio-data. Next, inferential analysis was conducted, involving correlation analysis to assess the strength, direction, and significance of the relationships between the study variables. According to Amin (2005), the significance of variables was assessed at a 95% confidence level; therefore, variables with a p-value equal to or below the considered level of significance (0.05) were regarded as significant, while those with a p-value above 0.05 were considered insignificant (Pearson correlation and significance values less than or greater than 0.05 at the 95% threshold of significance). Furthermore, regression analysis was used to assess the variation or change that predictor factors induced in the dependent variable. The Model Summary table, ANOVA table, and Coefficients table were all provided. Finally, interpretations were based on the R-square, significance values, beta coefficients, F-value, and t-values to create an empirical model for this study as the final result (Amin, 2005).

3.7.2 Qualitative data analysis.

Thematic Data Analysis was used to analyze the qualitative data gathered during interviews. The researcher first transcribed or translated audio data from the interviews into text, then read through the transcripts to become acquainted with the data. Descriptive codes were generated to represent a summary of participant responses, followed by the development of objective-oriented themes. The descriptive codes were then aligned under their respective themes, and links within the data were identified to interpret and write the report (Yin, 2009).

3.8 Quality Assurance: Validity and reliability

This study took into consideration the quality assurance aspects (i.e validity and reliability) as discussed below.

3.8.1 Validity

The validity test was used to determine if a measurement accurately reflected the idea under inquiry. Validity was utilized to assess whether the questionnaire measured what it was designed to evaluate (Bryman & Cramer, 2018). In this regard, validity aimed to establish if the data collection tool was appropriate for measuring the qualities it claimed to assess. Consequently, validity ensured that the data gathered was suitable for answering the research questions and achieving the objectives of the study. This study utilized content validity to evaluate how effectively the data collection instrument measured and captured the intended information (Leung, 2015). The instrument was reviewed by experts, who rated each item as relevant or irrelevant. A Content Validity Index (CVI) was then calculated using the following formula:

$$\text{CVI} = \frac{\text{No. of items rated relevant}}{\text{Total no. of items}}$$

Amin (2005) states that a CVI value of 0.8 indicates that the instrument is fully valid and can therefore be used for actual data collection.

3.8.2 Reliability.

The study conducted a pilot test with around 10 respondents from a different infrastructure project. The data was then entered into SPSS to calculate Cronbach's Alpha. Reliability assesses the consistency of the questionnaire, or the accuracy of its measurements (Cormack, 2000). Cronbach's Alpha coefficient was employed to assess the internal consistency and reliability of the questionnaire. SPSS was used to calculate the coefficient for each questionnaire item. Higher values, approaching one, indicated greater reliability and inter-item consistency, demonstrating that the instrument produced stable and consistent results.

3.10. Ethical clearance

The researcher followed a variety of research ethical guidelines at all phases of the study process. The research proposal was presented to the Uganda Christian University research committee for approval. Once the researcher was granted permission to commence data collection, approval to interview personnel at the institutions was requested from the relevant authorities.

3.10.1 Informed consent

Participants were asked to provide informed verbal consent. The study's aims were clearly explained to each participant. They were informed that no incentives would be provided, but that the findings would benefit the university administration. Participants were also assured that they could withdraw from the questionnaire at any point during the session. Privacy and confidentiality were respected both during and after the interviews.

At the start and end of each questionnaire, data collectors thanked the respondents for their willingness and time to participate in the study. Furthermore, the study report included only aggregated data, statistics, and discussions without revealing any participant identities.

Right to self-determination

The principle of self-determination was upheld by ensuring that prospective participants had the freedom to choose whether or not to participate, without fear of penalty or unfair treatment. Respondents were treated as autonomous agents, informed about the study's objectives, their rights including the right to withdraw at any time without penalty and were not coerced or deceived into participation. Their involvement was completely voluntary.

Confidentiality

Data collectors informed respondents that all information collected would be kept confidential.

Surveys were identified using numerical codes rather than participants' names to protect anonymity.

Right to refuse or withdraw

Participants were explicitly informed of their right to refuse participation or withdraw from the study at any time without any negative consequences.

Respect for diversity

Respect for diversity in terms of religion, culture, sexuality, and individual values was carefully observed throughout the study. This created an environment conducive to free and open participation. Respondents' views were respected, and the researcher fostered a sense of acceptance during and after all interactions in the study.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter presents and analyzes the study findings on how public procurement practices—specifically procurement planning, monitoring and compliance, and contract management—affect environmental sustainability in Uganda’s public sector, focusing on the Ministry of Works and Transport. The findings are drawn from data collected via structured questionnaires, key informant interviews, and document reviews.

4.2 Characteristics of respondents

In this section, the characteristics of respondents included in the study are presented.

Table 4.2: Descriptive results on characteristics of respondents

Item description	Category	Frequency	Percentage (%)
Gender	Male	66	56.9
	Female	50	43.1
	Total	116	100.0
Age	20–29 years	52	44.8
	30–39 years	32	27.6
	40–49 years	24	20.7
	Above 50 years	8	6.9
	Total	116	100.0
Level of education	Diploma	37	31.9
	Bachelors	45	38.8
	Masters	25	21.6
	PhD	9	7.8
	Total	116	100.0
Years spent working	Less than 1 year	11	9.5
	1–5 years	47	40.5
	6–10 years	35	30.1
	11–15 years	16	13.7
	16 years and above	7	6.0
	Total	116	100.0

Source: Primary data

The analysis of respondents' characteristics revealed that most participants, 52 (44.8%), were aged between 20 and 29 years, followed by 32 (27.6%) aged 30 to 39 years, with smaller proportions in the 40–49 years (24, 20.7%) and above 50 years (8, 6.9%) categories. Male respondents constituted the majority at 66 (56.9%), while females accounted for 50 (43.1%). Regarding education, 45 (38.8%) held a Bachelor's degree, 37 (31.9%) had a Diploma, 25 (21.6%) had a Master's degree, and 9 (7.8%) had attained a PhD. In terms of work experience, 47 (40.5%) had between 1 to 5 years of service, 35 (30.1%) had 11 to 15 years, 16 (13.7%) had 6 to 10 years, 11 (9.5%) had less than one year, and 7 (6.0%) had 16 years or more.

4.3. Descriptive statistics on environmental sustainability

This section presents descriptive statistics on environmental sustainability in relation to public procurement practices in the Ministry of Works and Transport. Key indicators assessed include compliance with green procurement policies, infrastructure development aligned with environmental goals, adoption of reusable products, and stakeholder engagement in eco-friendly procurement initiatives. These variables were assessed using a five-point Likert scale, where mean scores of 1.00–1.44 represent “Strongly Disagree,” 1.50–2.44 “Disagree,” 2.50–3.44 “Neutral,” 3.50–4.44 “Agree,” and 4.50–5.00 “Strongly Agree.” The descriptive analysis is based on responses from 116 participants who completed the structured questionnaire. Additionally, qualitative data from key informant interviews were analyzed thematically and combined with the quantitative results to offer a deeper insight into how public procurement impacts environmental sustainability in Uganda's public sector.

Table 4.3: Descriptive statistics on environmental sustainability

Statements		SD	D	N	A	SA	Mean	Standard deviation
The ministry uses an e-Government Procurement (e-GP) platform for most procurements.	Freq	15	30	18	52	1	2.95	1.126
	%	12.9%	25.9%	15.5%	44.8%	0.9%		
MOWT E-procurement has reduced the use of paper in procurement processes.	Freq	20	28	50	16	2	2.59	0.987
	%	17.2%	24.1%	43.1%	13.8%	1.7%		
Procurement information is accessible online to promote transparency.	Freq	19	17	62	18	0	2.68	0.929
	%	16.4%	14.7%	53.4%	15.5%	0.0%		
On every works project at MOWT, E-procurement supports supplier registration and evaluation	Freq	31	47	19	19	0	2.22	1.022
	%	26.7%	40.5%	16.4%	16.4%	0.0%		
The e-procurement system contributes to environmentally sustainable practices.	Freq	31	47	19	19	0	2.23	1.220
	%	26.7%	40.5%	16.4%	16.4%	0.0%		

Source: Primary data

The results show that 45.7% of respondents agreed that the Ministry uses an e-Government Procurement (e-GP) platform for most procurements, while 38.8% disagreed or strongly disagreed. The mean score of 2.95 (SD = 1.126) indicates a neutral stance. Some respondents highlighted operational inconsistencies. As KII01 noted, *“The e-GP system is there, but not all departments are using it consistently, some revert to manual processes.”* Similarly, KII02 mentioned, *“We have been trained in the e-GP platform, but usage depends on the urgency and the availability of internet.”* These insights reveal uneven adoption linked to internal capacity and infrastructure constraints.

When asked whether e-procurement has reduced paper usage, only 15.5% of participants agreed or strongly agreed, and a substantial 84.5% either disagreed or remained neutral. The mean score was 2.59 (SD = 0.987), reflecting limited change in paper-based practices. KII03 observed, *“We still print most documents for filing, digital submissions are sometimes rejected or not followed*

up.” KII04 added, *“Even after uploading documents online, we are often asked to deliver hard copies.”* These responses underscore the persistence of manual processes despite digital provisions.

Regarding online accessibility of procurement information for transparency, the responses were largely neutral (53.4%), with 15.5% agreeing and 31.1% disagreeing. The mean score was 2.68 (SD = 0.929). According to KII01, *“We only see information after contracts have been awarded; pre-bid details are not always visible online.”* Similarly, KII05 noted, *“Transparency is improving, but access is limited to those within the procurement unit.”* This suggests that digital transparency mechanisms are either partial or restricted in access.

On whether e-procurement supports supplier registration and evaluation in all works projects, 67.2% disagreed, producing a mean score of 2.22 (SD = 1.022). KII06 shared that *“The registration process is supposed to be online, but most of the time, suppliers submit their documents physically.”* KII02 further explained, *“We have no central e-system for supplier evaluation, it’s done manually or on ad-hoc spreadsheets.”* These findings reflect an incomplete digitization of supplier management processes.

Lastly, when asked if the e-procurement system contributes to environmentally sustainable procurement practices, only 16.4% agreed, while 67.2% disagreed or strongly disagreed. The mean score was 2.23 (SD = 1.220), indicating a weak perceived link between procurement systems and sustainability goals. KII03 stated, *“There’s no deliberate link between procurement software and environmental goals, it’s not part of the evaluation criteria.”* KII04 added, *“We talk about green procurement, but it doesn’t reflect in the system design or workflows.”* These views reflect a policy practice gap in embedding environmental sustainability into procurement operations.

4.4 The procurement planning

Table 4.4: Descriptive statistics on procurement planning

Statements		SD	D	N	A	SA	Mean	Standard deviation
When planning for procures at Ministry of Works and Transport (MOWT), user department always bring all together their procurement requirement to be included in the overall procurement plan (Aggregation of requirements).	Freq	1	73	1	32	9	2.78	1.102
	%	0.9%	62.9%	0.9%	27.6%	7.8%		
At MOWT when planning for procurements, contracting work plans are always developed specifying the detailed description of Terms of References (TOR) for suppliers and or Scope of Work (SOW) for works.	Freq	20	9	46	33	8	3.00	1.157
	%	17.2%	7.8%	39.7%	28.4%	6.9%		
During procurement planning stage at MOWT, key aspects of bid evaluation (ie; methods and processes of selecting the Best Evaluated Bidder and conditions for final award of contract) are always discussed and officially determined.	Freq	18	38	42	16	2	2.53	0.973
	%	15.5%	32.8%	36.2%	13.8%	1.7%		
Procurement practices at MOWT always specify the detailed processes a project organization will go through to communicate the Best Evaluated Bidder and further specify time for unsuccessful bidders to render their complaints.	Freq	3	45	7	57	4	3.12	1.056
	%	2.6%	38.8%	6.0%	49.1%	3.4%		
At MOWT, Environmental considerations are included in procurement planning.	Freq	30	47	18	19	2	2.28	1.076
	%	25.9%	40.5%	15.5%	16.4%	1.7%		

The findings indicate that 35.4% of respondents agreed or strongly agreed that user departments at the Ministry of Works and Transport (MoWT) consistently consolidate their procurement needs

during planning, whereas 63.8% disagreed. The mean score of 2.78 (SD = 1.102) reflects a slightly negative view of this practice. KII01 noted, *“There is an attempt to consolidate needs, but often departments operate in silos, submitting requests independently.”* KII02 added, *“Aggregation is discussed in planning meetings but not consistently applied across departments.”* These views reflect a partial application of requirement aggregation practices.

Regarding the development of detailed Terms of Reference (TORs) or Scope of Work (SOW) during procurement planning, responses were fairly neutral, with 39.7% undecided and 35.3% in agreement. The mean score was 3.00 (SD = 1.157), indicating an average or inconsistent application. According to KII03, *“Sometimes TORs are comprehensive, but for small contracts, they’re often rushed or recycled.”* KII04 confirmed, *“We lack a standard checklist for TOR development, so quality varies from one project to another.”* This inconsistency may affect the clarity and effectiveness of procurement planning.

When asked whether key aspects of bid evaluation are discussed and officially determined during the planning stage, 48.3% of the respondents disagreed or strongly disagreed. The mean score was 2.53 (SD = 0.973), indicating that this practice is not well embedded. KII05 explained, *“We rarely finalize evaluation methods at planning stage. These are usually finalized later when the solicitation documents are being drafted.”* Similarly, KII02 observed, *“Only high-value procurements get that level of attention upfront; others follow routine procedures.”*

For the statement concerning communication processes with bidders, especially regarding the Best Evaluated Bidder and the complaints window, 52.5% of the respondents agreed or strongly agreed, with a mean score of 3.12 (SD = 1.056), suggesting a relatively positive view. KII06 shared, *“We now publish evaluation results online and notify bidders, though follow-up complaints are still manually handled.”* KII01 emphasized, *“There’s more transparency now, but timelines for complaints are not always respected.”* This suggests improvements in communication but highlights areas needing further procedural alignment.

Crucially, when asked whether environmental considerations are included in procurement planning, only 18.1% of respondents agreed, while 66.4% disagreed or strongly disagreed. The mean score was 2.28 (SD = 1.076), reflecting a clear deficiency in integrating environmental

sustainability. KII03 emphasized, “*We talk about green procurement, but it rarely shows up in the planning templates or TORs.*” KII05 added, “*Environmental considerations are not part of our planning checklist unless the donor requires it.*” These insights underscore a gap between policy aspirations and implementation, with sustainability still treated as a peripheral issue in procurement planning.

4.5 The procurement contracting management

Table 4.5: Descriptive statistics on procurement contracting management

Statements		SD	D	N	A	SA	Mean	Standard deviation
At MOWT, when designing procurement contracts, the procurement type to be considered (ie; Lump Sum contracts, Ad measurement Contract, Percentage based Contract, Cost- reimbursement contracts) are discussed, agreed and key terms are always specified.	Freq	0	10	3	100	3	3.83	0.608
	%	0.0%	8.6%	2.6%	86.2%	2.6%		
The ministry monitors contractor performance regarding environmental standards.	Freq	15	32	18	50	1	2.91	1.123
	%	12.9%	27.6%	15.5%	43.1%	0.9%		
Contracts include environmental compliance clauses.	Freq	26	35	50	5	0	2.29	0.865
	%	22.4%	30.2%	43.1%	4.3%	0.0%		
Contract supervisors at MOWT always keep records and always report on progress and completion of contracts.	Freq	17	19	61	19	0	2.71	0.914
	%	14.7%	16.4%	52.6%	16.4%	0.0%		
At MOWT, there is follow-up on environmental impact assessment (EIA) compliance during project execution	Freq	1	71	5	30	9	2.78	1.086
	%	0.9%	61.2%	4.3%	25.9%	7.8%		
Contractors are penalized for breaching environmental clauses.	Freq	2	13	9	86	6	3.70	0.805
	%	1.7%	11.2%	7.8%	74.1%	5.2%		
	Freq	2	13	9	86	6	3.72	0.815

Upon completion and decommissioning of any Works project at MOWT, a project Handover ceremony is conducted and project completion documents and certificates are always shared among contractual parties.	%	1.7%	11.2%	7.8%	74.1%	5.2%		
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Source: Primary data

The results show that 88.8% of the respondents agreed that the Ministry of Works and Transport (MoWT) discusses and specifies key terms related to the type of procurement contract during contract design, while only 8.6% disagreed. The mean score of 3.83 (SD = 0.608) suggests a strong and consistent practice in this area. This is in agreement with KII01 who echoed that *“We always align contract types with project needs...., it’s a critical part of early planning.”* KII02 added, *“This process helps reduce disputes later in the execution stage.”* These views reflect institutional maturity in contract structuring.

Regarding monitoring of contractor performance on environmental standards, 43.1% agreed while 40.5% disagreed or strongly disagreed. The mean score was 2.91 (SD = 1.123), indicating a neutral stance on the consistency of monitoring. *According to KII03, “Monitoring depends on the supervising engineer’s commitment; some projects get more scrutiny than others.” KII04 observed, “If environmental issues arise, then attention increases; otherwise, it’s not a priority.”* These responses suggest variability in environmental oversight.

When asked whether contracts include environmental compliance clauses, 52.6% of the respondents disagreed or strongly disagreed, while only 4.3% agreed. The mean score of 2.29 (SD = 0.865) reflects weak inclusion of environmental requirements in contractual terms. *KII05 stated, “Unless specified by funders, most of our contracts don’t emphasize environmental clauses.” KII06 added, “We follow PPDA templates, and they don’t always include green terms.”* This points to a need for more standardized inclusion of sustainability clauses.

For the statement on whether contract supervisors keep records and report on progress and completion, 52.6% remained neutral, while only 16.4% agreed. The mean score was 2.71 (SD = 0.914), suggesting unclear or inconsistent documentation. *KII01 shared, “There is general reporting, but environmental aspects are rarely highlighted.” KII03 emphasized, “Supervisors focus more on cost and timelines than on environmental metrics.”* This highlights a reporting gap in sustainability tracking.

In terms of follow-up on Environmental Impact Assessment (EIA) compliance, 33.7% of respondents agreed, while 61.2% disagreed. The mean score of 2.78 (SD = 1.086) reflects limited follow-up during project execution. *KII02 stated, “EIA is treated as a one-time formality; ongoing compliance checks are rare.” KII05 explained, “Only projects with visible environmental risk get consistent follow up.”* These insights indicate procedural neglect in EIA enforcement.

Interestingly, 79.3% of respondents agreed that contractors are penalized for breaching environmental clauses, with a high mean score of 3.70 (SD = 0.805), showing strong enforcement where clauses exist. *KII06 noted, “Penalties are easier to apply when the clauses are clear and donor backed.” KII04 added, “We’ve seen cases where contractors had to pay or fix issues due to violations.”* This suggests that accountability exists when conditions are contractually defined.

Lastly, 79.3% also agreed that project handover ceremonies and document sharing take place after completion, with a mean score of 3.72 (SD = 0.815), indicating consistent practice. *KII01 remarked, “This is part of our closure checklist, and it happens across most projects.” KII02 commented, “While the handover is formalized, we still miss lessons learned reports related to environmental performance.”* This reflects procedural strength but with room for content improvement.

4.6 The e-procurement systems

Table 4.6: Descriptive statistics on e-procurement systems

Statements		SD	D	N	A	SA	Mean	Standard deviation
The ministry uses an e-Government Procurement (e-GP) platform for most procurements.	Freq	27	13	71	5	0	2.47	0.899
	%	23.3%	11.2%	61.2%	4.3%	0.0%		
MOWT E-procurement has reduced the use of paper in procurement processes.	Freq	2	13	9	86	6	3.70	0.805
	%	1.7%	11.2%	7.8%	74.1%	5.2%		
Procurement information is accessible online to promote transparency	Freq	7	28	12	69	0	3.23	1.016
	%	6.0%	24.1%	10.3%	59.5%	0.0%		
On every works project at MOWT, E-procurement supports supplier registration and evaluation	Freq	18	16	61	21	0	2.73	0.936
	%	15.5%	13.8%	52.6%	18.1%	0.0%		
The e-procurement system contributes to environmentally sustainable practices.	Freq	8	27	12	69	0	3.22	1.031
	%	6.9%	23.3%	10.3%	59.5%	0.0%		

Source: Primary data

The results show that while the Ministry of Works and Transport uses an e-Government Procurement (e-GP) platform, adherence and utilisation remain weak and inconsistent. A total of 61.2% of respondents were neutral and only 4.3% agreed that the Ministry uses the e-GP platform for most procurements, while 34.5% disagreed, producing a low mean score of 2.47 (SD = 0.899). This indicates limited commitment to maximizing the digital system during procurement processes. KII01 noted that “*Green procurement policies exist but are rarely enforced across departments,*” highlighting a policy practice gap that undermines sustainability efforts.

On a more positive note, there appears to be significant investment in e-procurement practices that reduce paper use, where an overwhelming 79.3% of respondents agreed or strongly agreed that

MOWT e-procurement has reduced the use of paper in procurement processes, reflected in a high mean score of 3.70 (SD = 0.805). This demonstrates growing awareness of the environmental benefits associated with digital procurement workflows. KII02 explained, *“We have adopted energy-saving technologies in offices and project sites which help reduce carbon footprint,”* suggesting tangible progress in greening the Ministry’s infrastructure and modernising procurement practices.

However, procurement information accessibility online to promote transparency shows only moderate progress. While 59.5% agreed with this practice, 30.1% either disagreed or strongly disagreed, resulting in a mean score of 3.23 (SD = 1.016). This indicates that although online access exists, its consistency, effectiveness, and user-friendliness still require improvement. KII03 shared, *“The Ministry is gradually phasing out disposables, but some units still rely heavily on single-use items due to cost concerns,”* underscoring inconsistent implementation of green alternatives despite the availability of digital options.

Stakeholder involvement through e-procurement, particularly in supporting supplier registration and evaluation on every works project at MOWT, remains limited. A majority of respondents (52.6%) were neutral, only 18.1% agreed, and 29.3% disagreed, producing a mean score of 2.73 (SD = 0.936). This suggests that the Ministry has not yet fully leveraged e-procurement systems to streamline stakeholder participation and enhance supplier engagement. KII04 observed, *“Stakeholder engagement happens occasionally but lacks a structured framework to ensure broad participation,”* pointing to the need for systematic stakeholder inclusion to advance sustainable procurement.

Finally, there is only moderate recognition among respondents that the e-procurement system contributes to environmentally sustainable practices. While 59.5% agreed, 30.2% disagreed, leading to a mean score of 3.22 (SD = 1.031). This implies that although e-procurement has potential to support sustainability, its impact is not yet fully realised across the Ministry’s operations. KII05 commented, *“There is awareness of sustainability in procurement, but practical implementation is still a challenge,”* indicating that environmental stewardship in procurement is more aspirational than operational. KII06 added, *“E-procurement systems provide some*

transparency, yet integration of environmental criteria into bidding remains limited,” revealing a disconnect between digital procurement tools and sustainability objectives.

4.7 Multiple Regression analysis

Table 4.7a: Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.534 ^a	.285	.266	.398142929825510
a. Predictors: (Constant), procurement contracting, procurement planning, procurement systems				

Source: Primary data 2025.

According to Table 4.7a, the R value is 0.534, while the adjusted R Square (coefficient of determination) is 0.266. This indicates that approximately 26.6% of the variation in environmental sustainability is explained by the public procurement practices (such as procurement planning, procurement systems, and procurement contracting). The standard error of the estimate is 0.398, reflecting the average distance that the observed values fall from the regression line.

Table 4.8b: ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	7.066	3	2.355	14.859	.000
Residual	17.754	112	.159		
Total	24.820	115			

The Analysis of Variance (ANOVA) results indicate that the regression model is statistically significant in predicting environmental sustainability based on public procurement practices,

including e-procurement, procurement planning, and procurement contracting. The model produced an F-ratio of 14.859 (df=3) with $p < 0.001$, indicating strong statistical significance.

Table 4.9c: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(constant)	.929	.327		2.845	.005		
Procurement planning	.370	.101	.348	3.677	.000	.715	1.399
E-procurement systems	-.059	.072	-.082	-.824	.412	.639	1.566
Procurement contracting	.292	.076	.352	3.818	.000	.751	1.331
a. Dependent Variable: Environmental Sustainability							

Source. Primary data 2025

Table 4.7c presents the regression coefficients derived from the multiple regression model, which was estimated to examine how public procurement practices procurement planning, e-procurement systems, and procurement contract management jointly influence environmental sustainability at the Ministry of Works and Transport (MoWT). The coefficients in this table originate from the regression matrix, where environmental sustainability (dependent variable) was regressed on the three independent variables. The standardized beta (β) values indicate the relative strength and direction of influence of each predictor, while the t-values and corresponding p-values test whether each predictor significantly contributes to the model.

Before interpreting the coefficients, diagnostic tests were conducted to ensure the reliability of the regression model. Multicollinearity was assessed using tolerance and Variance Inflation Factor (VIF) values. All VIF values (ranging from 1.331 to 1.566) were well below the threshold of 10, and tolerance values were above 0.2, confirming that the independent variables were not highly correlated and that each variable uniquely contributed to explaining environmental sustainability.

This validates the suitability of the regression model and ensures that the estimated coefficients are stable and reliable.

The findings indicate that procurement planning is a statistically significant and positive predictor of environmental sustainability ($\beta = 0.348$, $t = 3.677$, $p = 0.000$). This implies that a unit improvement in procurement planning practices leads to a corresponding increase in environmental sustainability outcomes, holding other variables constant. The significance of this variable suggests that planning processes form the foundation upon which sustainability is embedded within procurement. From a practical perspective, this means that when sustainability considerations such as environmental criteria, lifecycle costing, and risk assessments are incorporated at the initial stages of procurement, they influence the entire procurement cycle. This finding is strongly supported by qualitative evidence. For instance, KII03 emphasized that *“We talk about green procurement, but it rarely shows up in the planning templates or TORs,”* indicating that where planning is weak, sustainability is not effectively integrated. Similarly, KII05 noted that *“Environmental considerations are not part of our planning checklist unless the donor requires it,”* reinforcing the argument that strengthening procurement planning structures is critical for achieving sustainability outcomes. Therefore, the study confidently confirms that procurement planning is a key driver of environmental sustainability within MoWT.

In contrast, the results show that e-procurement systems have a negative and statistically insignificant relationship with environmental sustainability ($\beta = -0.082$, $t = -0.824$, $p = 0.412$). While the negative coefficient suggests an inverse relationship, the lack of statistical significance indicates that this effect is weak and cannot be generalized within the study context. However, rather than dismissing this result, it is important to interpret its practical meaning. The negative sign does not imply that e-procurement undermines sustainability; instead, it reflects the current operational reality where e-procurement systems exist but are not effectively configured to promote environmental outcomes. In other words, the system is being used for administrative efficiency (such as document processing and communication) rather than for enforcing environmental compliance or integrating green criteria into procurement decisions. This interpretation is reinforced by qualitative findings. KII03 stated that *“There’s no deliberate link between procurement software and environmental goals, it’s not part of the evaluation criteria,”*

while KII04 added that *“We talk about green procurement, but it doesn’t reflect in the system design or workflows.”* These insights explain why the statistical relationship is weak and negative: the system lacks embedded sustainability indicators, monitoring tools, and enforcement mechanisms. Therefore, the insignificance of e-procurement in this model highlights a structural and functional gap rather than a failure of digital procurement itself. The study thus demonstrates that without deliberate integration of environmental metrics into e-procurement platforms, their potential to drive sustainability remains underutilised.

Procurement contract management emerges as the strongest and most statistically significant predictor of environmental sustainability ($\beta = 0.352$, $t = 3.818$, $p = 0.000$). The positive and significant coefficient indicates that improvements in contract management practices lead to substantial gains in environmental sustainability outcomes. This variable has the highest beta value among the predictors, suggesting that it exerts the greatest influence within the model. From a practical standpoint, this finding underscores that sustainability is ultimately enforced during the implementation phase of procurement. Activities such as inclusion of environmental clauses, monitoring contractor compliance, enforcing penalties, and evaluating performance determine whether sustainability objectives are achieved in practice. The qualitative data strongly supports this finding. KII06 noted that *“Penalties are easier to apply when the clauses are clear and donor backed,”* while KII04 observed that *“We’ve seen cases where contractors had to pay or fix issues due to violations.”* These responses illustrate that where contract management mechanisms are robust, sustainability outcomes are more likely to be realized. Conversely, earlier findings showed that environmental clauses are not consistently included in contracts, which limits enforcement. Therefore, the results suggest that even when sustainability is considered during planning, its success depends heavily on the strength of contract execution and enforcement mechanisms.

CHAPTER FIVE

DISCUSSION OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the main study findings in relation to the research objectives and theoretical frameworks, focusing on how procurement planning, procurement contracting, and e-procurement systems affect environmental sustainability at the Ministry of Works and Transport (MoWT). The discussion combines quantitative results with qualitative insights from key informants and is grounded in the Resource-Based View (RBV) and Systems Theory. These frameworks highlight that effective sustainability practices depend on internal capabilities and the coordination of institutional processes.

5.2 Procurement planning and environmental sustainability

The study revealed that procurement planning has an impact on environmental sustainability at the Ministry of Works and Transport (MoWT). When sustainability considerations were embedded at the planning stage such as life-cycle costing, waste management, and emissions control procurement outcomes tended to be more environmentally responsible. This finding supports Preuss (2009), who emphasized that green procurement is most effective when environmental objectives are integrated early in the planning phase. Similarly, Walker and Brammer (2012) argued that embedding sustainability objectives within procurement planning enables public organizations to align their purchasing strategies with broader environmental goals.

The qualitative evidence from MoWT suggested that planning processes were often reactive and fragmented, with limited coordination across departments. Participants highlighted challenges such as rushed planning cycles, inadequate needs aggregation, and insufficient attention to sustainability unless externally mandated by donors. These systemic weaknesses reflect the assertions of Thai (2001), who found that poor planning practices in public procurement often lead to inefficiencies, duplication, and limited environmental consideration. Consistent with the views of Machuki (2023) and Tan (2023), it was evident that institutional constraints such as weak

forecasting, limited risk assessment, and low awareness hindered the incorporation of environmental priorities into procurement work plans.

Interpreted through the lens of the Resource-Based View (RBV), these findings suggest that MoWT lacks critical internal resources such as trained personnel, analytical tools for sustainability forecasting, and frameworks for integrating environmental criteria into planning decisions (Barney, 1991; Hart, 1995). From a Systems Theory perspective, ineffective coordination between planning, technical, and environmental units disrupts the systemic alignment necessary for sustainable procurement outcomes (Rogers et al., 2008). To strengthen sustainability performance, MoWT should enhance its internal planning capacity through training, establish cross-departmental planning frameworks, and institutionalize sustainability requirements in procurement work plans and budgeting cycles. Such measures would ensure that environmental sustainability is embedded not as an afterthought but as a foundational component of procurement strategy.

5.3 Procurement contracting and environmental sustainability

The study further revealed that procurement contracting played a substantial role in shaping environmental sustainability outcomes within MoWT. Contracts that clearly outlined environmental obligations, supplier responsibilities, and monitoring frameworks tended to produce more sustainable results. This is consistent with Gelderman et al. (2006), who observed that well-structured contracts shape supplier behavior and promote adherence to environmental objectives. Likewise, Brammer and Walker (2011) highlighted that contracts should incorporate measurable sustainability standards and enforceable performance requirements.

However, discussions with key informants revealed that most MoWT contracts lacked explicit environmental clauses, and where such provisions existed, enforcement was weak due to limited supervision capacity. These observations mirror Amann et al. (2014), who found that sustainability clauses in many public contracts remain ineffective because of inadequate monitoring and weak institutional oversight. The findings suggest that while contracting frameworks exist, their operationalization remains limited, thereby reducing their potential to contribute to environmental sustainability.

From the RBV perspective, these weaknesses can be attributed to a lack of specialized internal resources such as legal expertise, contract monitoring tools, and trained contract managers (Wernerfelt, 1984). Informed by Systems Theory, the disconnect between procurement and contract management functions limits feedback and learning, undermining sustainability performance (Checkland, 1999). To address these challenges, MoWT should strengthen contract design templates to incorporate mandatory environmental clauses, build staff capacity in contract supervision, and adopt digital monitoring tools to ensure continuous tracking of environmental compliance. Institutional reforms that enhance accountability and inter-unit collaboration would also improve the effectiveness of sustainable procurement contracting.

5.4 E-Procurement systems and environmental sustainability

The study observed that e-procurement systems offered potential to enhance environmental sustainability at MoWT by promoting transparency, reducing paper use, and enabling the inclusion of environmental criteria in electronic bidding processes. However, their current contribution remained limited because the existing e-GP system had not been fully configured to capture or monitor sustainability-related information. This observation aligns with Neupane et al. (2012) and Vaidya et al. (2006), who noted that e-procurement systems in many developing countries primarily focus on efficiency and transparency rather than integrating green procurement tools.

Key informant perspectives revealed that while MoWT uses the e-GP platform for approvals and advertisement, it lacks functionality for environmental evaluation or tracking of supplier compliance. This reflects findings by Weerakkody et al. (2017), who argued that digital procurement systems must be intentionally designed to incorporate sustainability indicators if they are to promote green procurement effectively.

From the RBV standpoint, the limited impact of e-procurement on sustainability stems from inadequate technological resources, insufficient staff training, and weak integration between procurement and environmental management systems (Teece et al., 1997). Systems Theory further explains that the e-GP platform currently operates in isolation, failing to link data and processes that would generate systemic feedback for sustainability improvement (Sarker & Sahay, 2004). Strengthening the environmental dimension of e-procurement therefore requires upgrading digital

tools to include environmental scoring criteria, enabling real-time monitoring of supplier performance, and integrating the e-GP system with broader environmental management databases. This alignment would transform the digital procurement system from a compliance tool into a driver of sustainable procurement innovation.

5.5 Conclusions and recommendations

5.5.1 Introduction

The study's conclusions and recommendations are presented, with conclusions linked to the three research objectives, followed by practical recommendations based on the findings. Lastly, directions for future research are suggested.

5.5.2 Conclusions

The study showed that procurement practices are vital for promoting environmental sustainability at the Ministry of Works and Transport (MoWT). Findings indicated that effective procurement planning and contracting support sustainability goals by enhancing requirement aggregation, incorporating environmental standards, and reinforcing contract enforcement. While e-procurement systems were positively linked to sustainability, their limited predictive strength indicates a need for improved digital integration and capacity building to maximize their impact. Overall, the findings highlight the importance of incorporating sustainability at all stages of the procurement process to support environmentally responsible governance and enhance institutional performance.

5.5.3 Recommendations

Based on the findings, the study proposes the following recommendations:

First, it is crucial to ensure effective procurement contracting.

Contracts should consistently include environmental compliance clauses and define clear monitoring and enforcement mechanisms. MoWT should train contract supervisors in green

criteria, maintain records of environmental performance, and enforce penalties for violations to ensure accountability.

There is need to establish a standardized green procurement checklist to ensure sustainability is embedded from the requirement aggregation stage.

There is need to incorporate environmental specifications into all Terms of Reference (TORs) and Scopes of Work (SOWs).

Allocate sufficient time and budget for procurement planning to facilitate effective market analysis, supplier consultations, and environmental risk assessments.

There is need to conduct regular training and sensitization for user departments on sustainable procurement principles to reduce the observed fragmentation and improve planning consistency.

Training procurement staff to use digital sustainability tools and integrating the system with environmental monitoring units will increase effectiveness.

5.5.4 Further research

Because this study focused on MoWT headquarters, application of findings may differ in other government agencies or at local government levels. Therefore, similar research should be conducted in district and municipal public procurement units to compare outcomes and challenges.

Additionally, other procurement related factors such as stakeholder engagement, supplier capacity, corruption, and audit oversight may influence environmental sustainability but were not examined in this study. Future research should explore these variables to provide a more holistic understanding.

Finally, since many infrastructure projects in Uganda involve donor funding with conditional sustainability requirements, another study could investigate the differential influence of donor versus government procurement practices on environmental outcomes in public sector projects.

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APPENDICES

APPENDIX ONE: STRUCTURED QUESTIONNAIRE

Topic: PUBLIC PROCUREMENT PRACTICES AND ENVIRONMENTAL SUSTAINABILITY IN UGANDA PUBLIC SECTOR: A CASE OF MINISTRY OF WORKS AND TRANSPORT

Dear Respondent,

My name is Moses Nantamu, and I am currently conducting a study to examine the effect of public procurement practices on environmental sustainability at the Ministry of Works and Transport. This research is part of the requirements for the award of a Master of Science in Procurement and Supply Chain Management at Uganda Christian University (UCU).

You have been identified as a valuable participant in this study. I kindly request that you take a few moments to respond to the questions in this questionnaire. Please feel free to share your views openly. You may also choose to skip any question that you are not comfortable answering.

I would like to assure you that all the information you provide will be treated with the utmost confidentiality and will be used strictly for academic purposes.

Thank you very much for your cooperation and for taking the time to contribute to this study.

SECTION A: RESPONDENTS BIO-DATA

Instructions: Please choose by ticking an option that is the most appropriate to you.

(i) Gender:

☐ Male ☐ Female

(ii) Age range: ☐ 20-29 years ☐ 30-39 years ☐ 40-49 years ☐ 50- above years

(iii) What level of education have you completed?

☐ Diploma ☐ Bachelors ☐ Masters ☐ PHD ☐ Others (please specify)

(iv) How many years have you spent working in this institution?

Less than 1 year ☐ 1 – 5 years ☐ 6– 10 years ☐ 11 – 15 years ☐ 16 years and above

For the following sections, please tick in box appropriately corresponding to a particular question. The abbreviation to the right-hand corner of the question means; **SD**- Strongly Disagree, **D**- Disagree, **N**- None decided, **A**-Agree & **SA**- Strongly Agree.

SCALE	1	2	3	4	5
	Strongly Disagree (SD)	Disagree(D)	Non decided(N)	Agree(A)	Strongly Agree (SA)

SECTION B: PROCUREMENT PLANNING

		SD	D	N	A	SA
5.	When planning for procures at Ministry of Works and Transport (MOWT), user department always bring all together their procurement requirement to be included in the overall procurement plan (Aggregation of requirements).					
6.	At MOWT when planning for procurements, contracting work plans are always developed specifying the detailed description of Terms Of References (TOR) for suppliers and or Scope Of Work (SOW) for works.					
7.	At MOWT during procurement planning, responsible authorities always determine the procurement methods to be used and further develop solicitation documents (ie; Expression of Interest, Request for proposals).					
8.	During procurement planning stage at MOWT, key aspects of bid evaluation (ie; methods and processes of selecting the Best Evaluated Bidder and conditions for final award of contract) are always discussed and officially determined.					
9.	Procurement practices at MOWT always specify the detailed processes a project organization will go through to communicate the Best Evaluated Bidder and further specify time for unsuccessful bidders to render their complaints.					
10.	At MOWT, Environmental considerations are included in procurement planning.					

SECTION C: PROCUREMENT CONTRACTING MANAGEMENT

		SD	D	N	A	SA
11.	At MOWT, when designing procurement contracts, the procurement type to be considered (ie; Lump Sum contracts, Ad measurement Contract, Percentage based Contract, Cost- reimbursement contracts) are discussed, agreed and key terms are always specified.					
12.	The ministry monitors contractor performance regarding environmental standards.					
13.	Contracts include environmental compliance clauses.					
14.	Contract supervisors at MOWT always keep records and always report on progress and completion of contracts.					
15.	At MOWT, there is follow-up on environmental impact assessment (EIA) compliance during project execution.					
16.	Contractors are penalized for breaching environmental clauses.					
17.	Upon completion and decommissioning of any Works project at MOWT, a project Handover ceremony is conducted and project completion documents and certificates are always shared among contractual parties.					

SECTION D: E-Procurement Systems

		SD	D	N	A	SA
18.	The ministry uses an e-Government Procurement (e-GP) platform for most procurements.					
19.	MOWT E-procurement has reduced the use of paper in procurement processes.					
20.	Procurement information is accessible online to promote transparency.					
21.	On every works project at MOWT, E-procurement supports supplier registration and evaluation					
22.	The e-procurement system contributes to environmentally sustainable practices.					

SECTION E: Environmental Sustainability (DV)

		SD	D	N	A	SA
18.	The Ministry adheres to national and institutional green procurement policies when acquiring goods and services.					
19.	The Ministry has put in place infrastructure that supports environmentally sustainable practices (e.g., eco-friendly buildings or energy-efficient systems).					
20.	The Ministry has replaced single-use products with reusable or recyclable alternatives in its operations.					
21.	The Ministry actively involves stakeholders in promoting environmental sustainability during the procurement process.					
22.	The Ministry's procurement practices contribute positively to the protection and preservation of the environment.					

“Thank you so much for sharing your time”

APPENDIX 11:

Dear Participant,

My name is Moses Nantamu, and I am conducting a research study aimed at examining the effect of public procurement practices on environmental sustainability at the Ministry of Works and Transport. This study is being conducted in partial fulfillment of the requirements for the award of a Master of Science in Procurement and Supply Chain Management at Uganda Christian University (UCU).

You have been purposively selected to participate in this study because you are considered knowledgeable about the variables under investigation. I kindly request you to spare some time to respond to a few questions related to this research. Please feel free to openly share your views and experiences.

Participation is voluntary, and you may choose to skip any question that makes you uncomfortable. Rest assured that all information provided will be treated with the utmost confidentiality and will be used strictly for academic purposes.

Thank you in advance for your cooperation and valuable time.

Appendix II: Interview Guide

1) What is your names sir/ madam?
2) What is your current position at the Ministry of Works and Transport?
3) How long have you been working with Ministry of Works and Transport?
4) Please comment on the overall environmental sustainability practices implemented at Ministry of Works and Transport? ➤ Probe on; {stakeholder engagement, operating dynamic and efficient supply chains, infrastructure that reduces greenhouse gas emissions, switching to reusable products }
5) Could you please through more light on the key procurement planning practices implemented in programs and projects of Ministry of Works and Transport?

➤ Probe on; {forecasting, developing Work Plan, Plan overviewing and Risk planning}.
6) Could you please comment on the key procurement contracting practices implemented in programs and projects of Ministry of Works and Transport? ➤ Probe on; {Contract design, Contract supervision and Contract closure}.
7) What role do e-procurement systems play in enhancing transparency, efficiency, and environmental sustainability at the Ministry? ➤ Probe on; (green criteria in bidding systems)
8) In your opinion, do you think public procurement practices (procurement planning, procurement contracting and e-procurement systems) positively affect the environmental sustainable practices implemented at Ministry of Works and Transport?
10) Any last remarks as we wind up?

“Thank you so much for the time and valuable information shared to me”