



Procurement Planning, Supplier Negotiation, and Cost Performance in Water Service Providers (WSPs)

Alfred Mwatika Mghanga^{1,3}, Mr. Eric Mathuva², Mr. Patrick Egondi³

¹Kenya Methodist University

²KeMU School Business

³Department of Business Administration

Abstract- This study investigates the impact of procurement planning, supplier negotiation, and their interaction on cost performance in Water Service Providers (WSPs) in Kenya. It explores how procurement planning practices influence financial outcomes, with a focus on supplier negotiation as a potential moderator of this relationship. Using data from 221 respondents across 81 WSPs, the study conducts multiple linear regression analysis to test the direct effects of procurement planning and supplier negotiation on cost performance and the moderating effect of supplier negotiation. The findings indicate that supplier negotiation significantly influences cost performance, while procurement planning does not have a direct impact on cost performance. Furthermore, the study finds that supplier negotiation does not moderate the relationship between procurement planning and cost performance. These results highlight the importance of enhancing supplier negotiation practices to improve cost efficiency and financial performance in WSPs. The study concludes with recommendations for managers to invest in procurement planning improvements, supplier negotiation training, and e-procurement adoption to optimize resource utilization and enhance service delivery.

Keywords- Procurement Planning, Supplier Negotiation, Cost Performance, Water Service Providers, Moderation Analysis, Public Procurement, Kenya, E-Procurement, Cost Efficiency, Financial Sustainability.

I. Introduction

Procurement planning is an essential component of public financial management, particularly in the water sector, where efficient resource allocation and cost control are crucial to achieving development and service delivery objectives. In Kenya, the water sector plays a vital role in providing water supply and sanitation services, which are critical for public health and socio-economic development. However, procurement practices within the sector are often challenged by inefficiencies, delays, and cost overruns. These challenges not only escalate public procurement costs but also undermine the delivery of essential services to the population (Gatobu, 2020; Wambua et al., 2024).

The procurement process in Kenya is guided by two key pieces of legislation: the Public Procurement and Asset Disposal Act (2015) and the Public Finance Management Act (2012). These legal frameworks are designed to ensure transparency, accountability, and value for money in the procurement process by requiring public entities to prepare detailed procurement plans. These plans must align with the institutional objectives, budget provisions, and timelines, thereby promoting efficient procurement cycles



(Kikavets, 2022). Despite the implementation of these frameworks, procurement practices in the water sector continue to face systemic challenges, such as inadequate resource allocation to procurement units, lack of skilled procurement professionals, and inconsistent application of procurement regulations (Korir et al., 2024). These issues hinder the effective execution of procurement plans and, consequently, affect the cost performance of water companies.

Cost performance in procurement is influenced by several factors, with procurement planning and supplier negotiation playing key roles. Procurement planning aims to ensure that the right resources are acquired at the right price, within the allocated budget, and within the specified timeline (Waci et al., 2024). However, poor planning often leads to inefficiencies such as cost overruns, project delays, and resource misallocation. A critical yet underexplored element of procurement planning is supplier negotiation, which can significantly influence cost outcomes. Effective supplier negotiation involves engaging suppliers in a transparent, fair, and mutually beneficial dialogue to secure better contract terms, reduce procurement costs, and improve overall procurement performance (Mesa, 2018; Basheka et al., 2012). However, the role of supplier negotiation in moderating the relationship between procurement planning and cost performance remains insufficiently examined, particularly in the context of Kenya's water sector.

This study aims to explore the relationship between procurement planning and cost performance in water companies in Kenya, with a specific focus on the moderating role of supplier negotiation.

Specific objectives

1. Analyze how supplier negotiation influences the relationship between procurement planning and cost performance,
2. Examine how compliance with public procurement planning practices impacts cost outcomes, and
3. Assess the moderating effect of supplier negotiation on improving procurement performance and reducing cost inefficiencies.

Hypothesis Test

1. **(H1):** Procurement planning does not significantly influence cost performance in WSPs.
2. **(H2):** Supplier negotiation does not significantly influence cost performance in WSPs.
3. **(H3):** Supplier negotiation does not moderate the relationship between procurement planning and cost performance in WSPs.

The research aims to fill the gap in the literature regarding the interaction between procurement planning, supplier negotiation, and cost performance, offering valuable insights for policymakers and practitioners in the water sector. The findings from this study will provide actionable recommendations for improving procurement strategies in Kenyan water companies, ultimately contributing to better resource utilization and enhanced public service delivery.



The paper is structured as follows:

Section 2 reviews international literature on procurement practices and their impact on cost performance in Water Service Providers (WSPs). It identifies key trends, challenges, and gaps in the literature, along with theoretical frameworks for analyzing procurement performance and cost efficiency.

Section 3 outlines the research database and variables, presenting descriptive statistics and a correlation matrix. This section provides an overview of the data to understand the relationship between procurement practices and cost performance in Kenyan WSPs. Section 4 presents regression models, including the moderating effect of supplier negotiation, and interprets the findings. It assesses the direct and indirect relationships between procurement practices and cost performance, evaluating which practices most effectively improve financial outcomes.

Section 5 summarizes the key results and discusses their practical implications for managerial decision-making. It focuses on strategies for improving procurement practices and governance within WSPs and offers recommendations for optimizing procurement processes and strengthening financial management in Kenya's water sector.

The paper aims to provide a clear analysis of the factors influencing cost performance in public procurement, with a focus on compliance and supplier negotiation.

Problem Statement

Despite ongoing reforms within Kenya's public procurement systems aimed at improving efficiency and cost-effectiveness, significant challenges persist within the water sector, especially concerning cost performance. The introduction of the Public Procurement and Asset Disposal Act (PPADA, 2015) and other legislative frameworks was intended to streamline procurement processes, enhance transparency, and ensure that public funds are spent effectively (Stasiak, 2022). However, inefficiencies in procurement, such as cost overruns, poor planning, inadequate supplier engagement, and delays in service delivery, continue to plague public water utilities across the country.

The water sector, being a critical service, faces mounting challenges in managing procurement costs effectively. Despite the availability of a legal framework and the increasing adoption of digital procurement platforms, the sector remains susceptible to procurement inefficiencies. These inefficiencies include inflated tender prices, poor contract management, and limited supplier negotiations, which ultimately lead to increased operational costs, underutilization of allocated budgets, and delays in project execution (Waci et al., 2024; Korir et al., 2024). Furthermore, studies suggest that procurement planning, although widely recognized as crucial for efficient procurement processes, is often poorly executed due to inadequate budget allocation, unqualified procurement staff, and weak inter-departmental coordination (Gatobu, 2020; Wambua et al., 2024).

Compliance with public procurement regulations has been identified as a critical factor influencing the effectiveness of procurement systems (Ngari et al., 2020). However, non-compliance remains widespread, particularly in areas such as procurement



planning, documentation, and the adoption of e-procurement systems (Hunja & Ndungu, 2022; Ingavo & Moronge, 2019). This lack of compliance is often coupled with insufficient training for procurement personnel, weak negotiation capabilities with suppliers, and a lack of strategic engagement in supplier relationships (Ngari & Machoka, 2020). These systemic weaknesses undermine the potential benefits of procurement reforms, contributing to persistent cost inefficiencies in the sector.

The problem is further compounded by limited attention to the moderating role of supplier negotiation in enhancing cost performance. Supplier negotiation is a key determinant of procurement outcomes, yet its potential remains underexplored, especially in the context of Kenyan public water companies (Basiru et al., 2023; Chepng'etich, 2020). Effective supplier negotiation can secure better pricing, favorable terms, and improved contract execution, which are crucial for achieving cost efficiency in procurement. However, procurement teams often lack the skills, resources, and structured frameworks to leverage negotiation as a strategic tool for cost reduction (Medina, 2023; Jebiwott et al., 2022).

Thus, despite the legal and regulatory frameworks in place, procurement practices in Kenya's water sector remain inefficient, with significant gaps in compliance, capacity building, and supplier engagement. These inefficiencies negatively impact cost performance, which is critical for the financial sustainability and service delivery capacity of water service providers (WSPs). This study, therefore, seeks to examine the effects of compliance with public procurement practices specifically procurement planning, staff capacity building, e-procurement systems, and procurement documentation—on cost performance, with a particular focus on the moderating role of supplier negotiation in improving procurement outcomes. By addressing these issues, the study aims to provide actionable insights for enhancing procurement performance and cost efficiency in Kenya's water sector.

II. Literature Review

Procurement Planning Practices and Its Impact on Cost Performance in Water Service Providers (WSPs)

Procurement planning is a fundamental aspect of procurement management, particularly in public sector entities such as Water Service Providers (WSPs). Effective procurement planning ensures the alignment of procurement activities with organizational goals, maximizes the efficient use of resources, and contributes to the delivery of public services within budget constraints. This section reviews international literature on procurement planning practices and their impact on cost performance, specifically in the context of WSPs. It also identifies key trends, challenges, and gaps in the literature, and explores theoretical frameworks that can guide the analysis of procurement planning practices, performance, and cost efficiency.

Key Trends in Procurement Planning

Procurement planning has gained increasing recognition as a critical component of public procurement systems globally. One key trend in procurement planning is the growing emphasis on aligning procurement activities with broader organizational and strategic goals. In many countries, procurement planning is formalized through legal



frameworks that mandate public entities to prepare detailed procurement plans that outline requirements, timelines, and cost estimates (Kikavets, 2022). For instance, in Kenya, the Public Procurement and Asset Disposal Act (2015) mandates that all public institutions, including WSPs, develop annual procurement plans that are aligned with their institutional objectives and budgetary provisions. This trend highlights the importance of strategic procurement planning as a tool for ensuring transparency, accountability, and cost efficiency in public procurement.

Another important trend is the increasing integration of procurement planning with financial management systems. This integration allows for better coordination between procurement activities and budget management, thereby improving cost control and reducing the risk of budget overruns. In Kenya, the implementation of Integrated Financial Management Information Systems (IFMIS) has helped streamline procurement planning by linking procurement processes directly with financial records, providing real-time tracking of procurement transactions and enhancing budgetary control (Ngugi & Mugo, 2022).

Furthermore, there is an increasing focus on data-driven procurement planning. The use of procurement performance data, historical spending patterns, and market analysis is becoming more common in procurement planning processes. Data analytics helps to identify procurement needs more accurately, forecast future demands, and assess supplier performance, ultimately contributing to better decision-making and cost management (Adebayo & Evans, 2015). The integration of data-driven approaches into procurement planning aligns with the broader global trend toward digital transformation in procurement processes.

Challenges in Procurement Planning

Despite the recognized importance of procurement planning, several challenges persist in both developed and developing countries. One of the primary challenges in public procurement planning is the lack of skilled procurement professionals. Procurement planning requires technical expertise and an understanding of market dynamics, cost estimation, and supplier management. However, in many developing countries, procurement staff lack the necessary skills and training, which leads to poor planning, cost overruns, and inefficiencies (Ngari & Machoka, 2020). In Kenya, the shortage of qualified procurement professionals in Water Service Providers (WSPs) has been identified as a significant barrier to effective procurement planning (Mutava et al., 2022).

Another major challenge is inadequate resource allocation to procurement units. Many public entities, including WSPs, often do not allocate sufficient resources to their procurement functions, limiting their ability to plan effectively. Insufficient funding and lack of support from senior management often hinder the procurement planning process, leading to delays and poor decision-making (Gatobu, 2020). This issue is compounded by weak interdepartmental collaboration, as procurement planning requires input from multiple stakeholders, including finance, operations, and technical departments. Without proper coordination, procurement plans may not align with the overall organizational goals, resulting in poor cost management and inefficiencies.



In addition, many WSPs struggle with aligning procurement plans with actual budget allocations. Procurement planning requires accurate cost estimation and alignment with available financial resources, but in many cases, public institutions face budgetary constraints that make it difficult to execute procurement plans as intended (Wambua et al., 2024). In Kenya, studies have shown that procurement plans are often unrealistic due to insufficient budgetary allocations, leading to deviations from the planned costs and delays in procurement activities (Wambua et al., 2024). This issue highlights the importance of integrating procurement planning with financial forecasting to ensure that procurement activities remain within budget.

Another challenge is the reliance on outdated procurement planning models. Despite the legal frameworks that encourage strategic procurement planning, many public entities, including WSPs, continue to rely on traditional methods that lack flexibility and responsiveness to changing market conditions. The absence of modern procurement tools, such as e-procurement platforms or performance tracking systems, limits the effectiveness of procurement planning and makes it difficult to track procurement progress in real time (Mathenge & Wausi, 2018).

Gaps in the Literature

Although there is substantial literature on procurement planning, several gaps remain that require further exploration. One of the major gaps is the limited empirical research on the integration of procurement planning with financial management and budgeting systems, particularly in the water sector. While existing studies highlight the importance of aligning procurement activities with financial goals, few studies have examined how this integration can be effectively achieved in public institutions such as WSPs (Adebayo & Evans, 2015; Kikavets, 2022). Research is needed to explore how financial and procurement planning systems can be better integrated to improve cost management and reduce inefficiencies in WSPs.

Another gap is the lack of research on the moderating role of external factors, such as market dynamics, political interference, and supplier relationships, on procurement planning and cost performance. While some studies have explored the direct impact of procurement planning on cost performance, few have examined how these external factors may influence the effectiveness of procurement plans. Research is needed to investigate how WSPs can manage external pressures and ensure that procurement planning remains effective in achieving cost efficiency.

Furthermore, there is limited research on the long-term impact of procurement planning practices on the financial sustainability of WSPs. While short-term cost savings are often achieved through effective procurement planning, the long-term impact on the financial sustainability of water utilities remains underexplored. Future research should examine how procurement planning can contribute to the long-term financial health of WSPs, including factors such as cost recovery, capital investment, and operational efficiency.



Theoretical Frameworks for Analyzing Procurement Planning Practices and Cost Performance

Several theoretical frameworks have been proposed to explain the relationship between procurement planning and cost performance. One of the most widely applied theories is the Resource-Based View (RBV), which suggests that organizations can achieve a competitive advantage by leveraging their internal resources and capabilities (Barney, 1991). In the context of procurement planning, WSPs that invest in strategic procurement resources—such as skilled procurement staff, effective planning tools, and data analytics—are more likely to manage costs effectively and achieve better financial outcomes. The RBV emphasizes the importance of aligning procurement planning with organizational goals and ensuring that procurement activities are supported by the necessary resources (Dadzie et al., 2024).

Another relevant theory is Transaction Cost Economics (TCE), which focuses on minimizing the costs associated with procurement transactions (Williamson, 1985). According to TCE, procurement planning can reduce transaction costs by streamlining processes, reducing inefficiencies, and improving supplier engagement. By aligning procurement practices with market conditions and organizational objectives, WSPs can minimize costs associated with supplier search, contract negotiation, and performance monitoring. TCE provides a useful framework for understanding how procurement planning can contribute to cost savings by reducing transaction costs.

The Diffusion of Innovation Theory offers another valuable perspective on procurement planning, particularly in the context of adopting new technologies and practices. This theory suggests that innovations, such as e-procurement systems and modern procurement planning tools, are adopted over time and their success depends on factors such as perceived advantages, compatibility with existing systems, and organizational readiness (Rogers, 2003). The adoption of new procurement technologies can enhance planning practices by improving efficiency, transparency, and cost control. However, as noted in the literature, the adoption of such technologies is often slow and met with resistance, especially in developing countries (Mathenge & Wausi, 2018).

Finally, Agency Theory is useful in understanding the relationship between procurement officers (agents) and public institutions (principals). Agency theory suggests that procurement officers may not always act in the best interest of the public due to factors such as lack of oversight, personal incentives, or inadequate training (Eisenhardt, 1989). In the context of procurement planning, this theory highlights the need for effective monitoring and accountability mechanisms to ensure that procurement officers act in the best interest of the public and that procurement plans are executed efficiently and within budget.

Conclusion

Procurement planning plays a critical role in ensuring cost efficiency and financial sustainability in public water utilities. The literature reviewed highlights the importance of procurement planning as a tool for managing costs, reducing inefficiencies, and improving service delivery in Water Service Providers (WSPs). However, challenges such as inadequate staff capacity, lack of integration with financial management



systems, and reliance on outdated planning models hinder the effectiveness of procurement planning in achieving cost performance.

Furthermore, gaps in the literature, particularly in understanding the integration of procurement planning with financial systems, the impact of external factors, and the long-term effects of procurement planning on financial sustainability, suggest that further research is needed. Theoretical frameworks such as the Resource-Based View, Transaction Cost Economics, Diffusion of Innovation, and Agency Theory provide valuable lenses for analyzing the relationship between procurement planning practices and cost performance. These frameworks emphasize the importance of resources, transaction costs, innovation adoption, and accountability in achieving effective procurement planning and cost management.

III. Data and Methodology

This section outlines the research design, data collection procedures, the measurement of research variables, and the analytical methods used to test the hypotheses regarding the relationship between procurement practices and cost performance in Water Service Providers (WSPs) in Kenya. The section also explains the descriptive and inferential techniques employed to examine preliminary relationships among the study variables and assesses the statistical methods used to test the hypotheses.

Research Design

The study utilized a descriptive and correlational research design to examine the relationship between procurement practices and cost performance within Water Service Providers (WSPs). A descriptive design is appropriate because it allows for a detailed understanding of the current state of procurement practices in WSPs, while the correlational aspect enables the exploration of the associations between procurement variables (e.g., procurement planning, e-procurement systems, documentation compliance, and supplier negotiation) and cost performance outcomes. This research design was chosen because it provides both qualitative and quantitative insights into the procurement practices of WSPs, offering a holistic view of the factors affecting cost performance.

Population and Sample

The target population for the study comprised all Water Service Providers (WSPs) in Kenya, which are responsible for providing water and sanitation services. According to the Water Services Regulatory Board (WASREB), there are 102 licensed WSPs operating across various regions and counties in Kenya. These WSPs were the primary focus of the research due to their central role in delivering essential water services and their reliance on public procurement practices to manage resources.

The sample for this study consisted of 81 WSPs, selected using a cluster sampling technique based on geographic regions. From these WSPs, 243 respondents were selected from key departments, including procurement, finance, and operations. The sample size was determined using Slovin's formula to ensure a statistically valid and representative sample of the population. This resulted in a sample size of 221 respondents, representing an approximately 90.95% response rate.



Data Collection Procedures

Data were collected using structured questionnaires, which were distributed to the selected respondents from the 81 Water Service Providers. The questionnaires were designed to measure the key variables of the study: procurement planning, e-procurement systems, procurement staff capacity building, documentation compliance, supplier negotiation, and cost performance. The questionnaires contained both closed and open-ended questions, allowing for both quantitative and qualitative responses.

Before the actual data collection, a pre-test of the questionnaire was conducted with a small sample (approximately 10% of the target sample) to test the clarity, reliability, and validity of the instrument. Feedback from the pre-test was used to refine the questionnaire, ensuring that it effectively captured the relevant data.

The data collection process was carried out over a period of four weeks. During this period, the researcher visited the selected WSPs to distribute and collect the questionnaires. Participants were assured of the confidentiality of their responses, and their participation was voluntary. Ethical considerations, including informed consent, were addressed throughout the data collection process.

Measurement of Research Variables

The following variables were measured in the study:

Procurement Planning (Independent Variable):

Procurement planning was measured using eight items that assessed the alignment of procurement practices with organizational goals, the timeliness of procurement planning, and the involvement of stakeholders in the planning process.

Supplier Negotiation (Moderating Variable):

Supplier negotiation was measured using nine items, focusing on the role of supplier negotiation in achieving favorable pricing, securing better terms, and improving procurement outcomes.

Cost Performance (Dependent Variable):

Cost performance was measured using ten items, evaluating the ability of Water Service Providers (WSPs) to manage procurement costs, avoid cost overruns, and achieve financial efficiency.

Data Analysis Techniques

This section outlines the data analysis techniques employed in the study to test the relationships between procurement planning, supplier negotiation, and cost performance in Water Service Providers (WSPs) in Kenya. The analysis will utilize a range of statistical techniques to assess the direct and moderating effects of procurement practices on cost performance. The data collected were analyzed using both descriptive, including means, standard deviations, and frequency distributions, were used to summarize the data and provide an overview of the procurement planning practices and cost performance within the WSPs. This analysis allowed for a preliminary understanding of the study variables and the trends in procurement



practices across different WSPs. Inferential statistical techniques that will include correlation analysis, regression analysis, and moderation analysis.

Diagnostic Tests

Diagnostic tests for normality, multicollinearity, homoscedasticity, and autocorrelation were performed to validate regression assumptions. Where necessary, corrective measures such as mean-centering and hierarchical regression modeling were applied

Regression Analysis

To test the study's hypotheses concerning the relationships between procurement planning, supplier negotiation, and cost performance, multiple linear regression analysis was conducted. The regression models were developed to assess the direct effects of procurement planning compliance and supplier negotiation on cost performance. The models also included the following:

Model 1: Direct Effect of Procurement Planning on Cost Performance

This model will test whether procurement planning directly influences cost performance. The regression equation is:

$$\text{Cost Performance} = \beta_0 + \beta_1 \text{Procurement Planning} + \epsilon$$

Model 2: Direct Effect of Supplier Negotiation on Cost Performance

This model will test whether supplier negotiation directly influences cost performance. The regression equation is:

$$\text{Cost Performance} = \beta_0 + \beta_1 \text{Supplier Negotiation} + \epsilon$$

Model 3: Combined Effects of Procurement Planning and Supplier Negotiation on Cost Performance

This model will assess the combined effects of procurement planning and supplier negotiation on cost performance:

$$\text{Cost Performance} = \beta_0 + \beta_1 \text{Procurement Planning} + \beta_2 \text{Supplier Negotiation} + \epsilon$$

The statistical significance of the results was determined using a p-value threshold of 0.05, with adjusted R² values used to measure the goodness-of-fit for each model.

Moderation Analysis

To assess the moderating role of supplier negotiation, hierarchical regression analysis was used. This method involved creating interaction terms between procurement planning practices and supplier negotiation. The interaction terms allowed us to test if supplier negotiation moderates the relationship between procurement planning and cost performance.

The moderation model is specified as:

$$\text{Cost Performance} = \beta_0 + \beta_1 \text{Procurement Planning} + \beta_2 \text{Supplier Negotiation} + \beta_3 (\text{Procurement Planning} \times \text{Supplier Negotiation}) + \epsilon$$

Where:

- β_3 represents the coefficient of the interaction term.
- β_3 is statistically significant, it indicates that supplier negotiation moderates the relationship between procurement planning and cost performance.

The significance of the interaction term was tested using the F-test and the p-value. If the p-value for the interaction term is less than 0.05, it indicates that supplier negotiation



has a significant moderating effect on the relationship between procurement planning and cost performance.

The regression models were estimated using SPSS version 26. The statistical significance of the results was determined at the 0.05 level. The assumptions of linearity, normality, homoscedasticity, and absence of multicollinearity were tested to ensure the validity of the regression results.

Ethical Considerations

Ethical considerations were prioritized throughout the study. Informed consent was obtained from all participants, ensuring they understood the purpose of the research and their rights as participants. Confidentiality of the respondents' information was maintained, and no personally identifiable information was collected. Participation in the study was voluntary, and respondents were informed that they could withdraw from the study at any time without any negative consequences. Additionally, the study adhered to the ethical guidelines set by the relevant academic and institutional bodies.

Conclusion

This section has outlined the research design, data collection procedures, and measurement methods used in the study. The data collection process involved the use of structured questionnaires to gather information from 221 respondents within 81 Water Service Providers in Kenya. The study employed both descriptive and inferential statistical techniques, including correlation and regression analysis, to examine the relationship between procurement practices and cost performance. The following section will present the results and analysis of these relationships, including the impact of procurement planning, and supplier negotiation on cost performance in WSPs.

IV. Results and Discussion

The study achieved a high response rate of 90.95%, which indicates a representative and reliable sample of Water Service Providers (WSPs) in Kenya. The pilot study conducted prior to the main survey confirmed the instrument's reliability and validity, with subsequent feedback leading to necessary refinements in the questionnaire.

The reliability of the constructs was verified, with Cronbach's Alpha values consistently exceeding the recommended threshold, demonstrating excellent internal consistency. Factor analysis further supported the validity of the constructs, revealing strong communalities and factor loadings, which indicate that the instrument effectively measures the intended variables.

Demographically, the respondents were well-qualified, with the majority possessing over 6 years of experience in procurement-related functions. Additionally, 67.9% of the respondents were certified in procurement (e.g., KISM, CIPS), enhancing the credibility and expertise of the insights provided.

These findings affirm the robustness of the data collection instrument and underscore the relevance of the study's conclusions, as the demographic characteristics of the respondents ensure that the results are grounded in real-world procurement practices within WSPs.



Descriptive Statistics of Procurement Planning Practices Study Variables

The results of this study show that a majority of respondents (approximately 70.9%) agreed or strongly agreed that procurement planning in their organization is well-aligned with strategic goals. This aligns with findings from previous research that suggest the strategic alignment of procurement planning helps improve overall organizational efficiency and effectiveness (Thai, 2001). However, a small proportion (16.7%) of respondents disagreed or were neutral, indicating that some Water Service Providers (WSPs) may still face challenges in ensuring that procurement activities are fully aligned with their organizational goals.

Similarly, a significant majority (85.3%) of respondents agreed or strongly agreed that procurement planning helps identify cost-saving opportunities, which is consistent with studies by Adebayo and Evans (2015), who emphasize that well-executed procurement planning can lead to considerable financial benefits, such as identifying opportunities for bulk purchasing and reducing procurement costs. These findings reinforce the importance of procurement planning as a key tool for enhancing cost efficiency within public organizations, including WSPs in Kenya.

In contrast, the statement “Our procurement plans are often unrealistic due to inadequate budget allocation” saw 54.9% of respondents agreeing or strongly agreeing. This indicates a prevalent issue within WSPs, where procurement plans are constrained by insufficient financial resources. Similar findings were noted in a study by Mutava et al. (2022), where budgetary constraints were cited as a key obstacle to the successful execution of procurement plans. Such challenges highlight the need for better budget forecasting and resource allocation to ensure that procurement plans can be realistically implemented.

Furthermore, timely procurement planning was deemed to improve cost performance by 79.6% of respondents, which supports the assertions of Basheka and Bisangabasaija (2010) who argue that well-timed procurement activities can prevent delays and cost overruns. This result indicates a high level of confidence in the effectiveness of timely procurement planning in enhancing financial performance in WSPs.

Stakeholder Involvement and Budget Transparency

The majority of respondents (87.4%) agreed or strongly agreed that relevant stakeholders are involved in procurement planning. This reflects a well-established practice in many organizations where cross-departmental collaboration is encouraged to ensure that procurement decisions align with the broader organizational needs. Studies by Waci et al. (2024) have similarly pointed to the benefits of involving key stakeholders in procurement decisions to ensure that all perspectives are considered. Regarding budget allocation transparency, 70.9% of respondents agreed or strongly agreed that budget allocation for procurement activities is transparent and fair. This finding suggests that many WSPs in Kenya have made strides in promoting transparency and fairness in budgetary processes, aligning with the recommendations of the Public Procurement and Asset Disposal Act (2015). However, the 22.8% of respondents who disagreed or were neutral may indicate areas where transparency and fairness could be further improved.



Data Analytics Integration

Only 56.2% of respondents agreed or strongly agreed that data analytics is integrated within the procurement planning and budgeting process. This suggests that while there is some integration of data analytics into procurement practices, it is not yet universal. The use of data analytics in procurement is essential for improving decision-making, forecasting, and cost control (Kikavets, 2022). Therefore, the relatively low percentage of agreement indicates a significant opportunity for WSPs to enhance their procurement processes by leveraging data analytics tools more effectively.

Inadequate Budgeting and Procurement Delays

A large proportion (66.5%) of respondents agreed or strongly agreed that inadequate budgeting leads to delays in procurement processes, which is a key concern in the procurement management of WSPs. These delays often result in increased procurement costs and project inefficiencies. This finding corroborates previous studies by Wambua et al. (2024), which identified budget limitations as a major cause of procurement delays in public sector projects. The inability to secure adequate funding for procurement activities highlights the importance of improving budget planning and increasing financial allocations to procurement departments.

Discussion and Comparison with Other Studies:

The results of this study are consistent with findings from other studies on procurement planning in public organizations. Procurement planning is widely recognized as a tool for improving cost efficiency. Studies by Adebayo and Evans (2015) and Thai (2001) emphasize the role of procurement planning in identifying cost-saving opportunities, which aligns with the findings of this study. However, the issue of unrealistic procurement plans due to budget constraints has been a persistent challenge in WSPs, echoing the findings of Mutava et al. (2022), where budget limitations were identified as a key factor hindering effective procurement planning.

The high levels of agreement regarding stakeholder involvement in procurement (87.4%) and budget allocation transparency (70.9%) align with the best practices outlined in the Public Procurement and Asset Disposal Act (2015). This suggests that WSPs are increasingly adopting transparent and inclusive procurement practices. However, the relatively low integration of data analytics (56.2%) in procurement planning is a gap that has been noted in other studies as well. For example, Kikavets (2022) found that data-driven procurement planning could significantly improve procurement efficiency, indicating that more WSPs need to invest in integrating advanced data analytics into their procurement processes.

The inadequate budgeting issue, which leads to procurement delays, has been widely recognized in previous studies (Wambua et al., 2024). This study's findings further reinforce the idea that without proper financial resources, procurement planning cannot be executed effectively, resulting in project delays and cost overruns.

Conclusion:

The study reveals that procurement planning is perceived as a critical tool for improving cost performance in Water Service Providers in Kenya. Key findings highlight the alignment of procurement planning with organizational goals and the identification of



cost-saving opportunities. However, challenges such as inadequate budget allocation and low integration of data analytics remain significant barriers. These results are consistent with global studies on procurement practices, emphasizing the need for enhanced budgeting, better resource allocation, and the integration of data-driven decision-making in procurement planning.

Descriptive Statistics of Supplier Negotiation Practices Study Variables

The results reveal that supplier negotiation plays a significant role in enhancing procurement efficiency and cost performance in Water Service Providers (WSPs). The data shows that a majority of respondents agreed or strongly agreed that supplier negotiations are regularly engaged in to ensure competitive pricing and cost efficiency. Specifically, 70.4% of respondents indicated agreement or strong agreement with the statement, "We regularly engage in supplier negotiations to ensure competitive pricing in planning and cost efficiency." This underscores the importance of supplier negotiations in achieving favourable terms for procurement activities, which aligns with the broader objective of reducing costs.

Additionally, 61.8% of respondents agreed or strongly agreed that supplier negotiations help secure better delivery terms, demonstrating that effective negotiations can lead to more favourable supply chain terms, such as delivery schedules and payment conditions. This finding is consistent with previous studies, such as those by Adebayo and Evans (2015), which suggest that effective supplier negotiations are key to improving procurement performance by securing more favourable contractual terms.

Procurement Planning Officers' Negotiation Skills

A substantial percentage of respondents (66.2%) agreed or strongly agreed that procurement planning officers in their organization possess strong negotiation skills. This is an encouraging finding, as strong negotiation skills are crucial for achieving favourable procurement outcomes. The importance of skilled negotiators in procurement has been emphasized in several studies, such as Basheka and Bisangabasaija (2010), who argued that procurement officers' negotiation capabilities directly impact cost savings and the overall success of procurement processes.

Cost Savings from Supplier Negotiation

The data shows that 67.4% of respondents agreed or strongly agreed that supplier negotiation practices result in cost savings for procurement activities. This supports the widely accepted notion that effective negotiations can lead to direct financial benefits, such as lower prices and reduced overhead costs. Similar findings were noted in the work of Thai (2001), who suggested that strategic supplier negotiations can significantly contribute to cost efficiency in procurement, thereby enhancing the overall performance of public sector organizations, including WSPs.

Quality of Goods and Services Procured

Regarding the improvement in the quality of goods and services procured through supplier negotiation, the majority of respondents (67.3%) agreed or strongly agreed that supplier negotiations have enhanced the quality of procurement. This suggests that negotiations do not only focus on cost but also on ensuring better quality. Previous studies, such as those by Adebayo and Evans (2015), have also found that negotiations



improve not only pricing but also the quality and reliability of goods and services, which ultimately supports the operational objectives of the organization.

Impact on Reducing Procurement Costs

The majority of respondents (68.9%) agreed or strongly agreed that negotiation with suppliers has directly contributed to reducing procurement costs. This indicates that supplier negotiations are seen as a powerful tool for controlling procurement expenses, further reinforcing the financial benefits of this practice. These findings align with the work of Basheka (2010), who highlighted that negotiations are integral in reducing procurement costs by securing better terms and pricing.

Fair and Transparent Supplier Negotiations

A significant portion of respondents (71.2%) agreed or strongly agreed that their organization uses strategic approaches to ensure that supplier negotiations are fair and transparent. Fairness and transparency are crucial components of effective supplier negotiation, as they foster trust and encourage suppliers to offer competitive terms. This is consistent with the findings of Thai (2001), who noted that ensuring fairness in procurement negotiations is key to building strong, long-term supplier relationships, which is vital for achieving consistent procurement outcomes.

Supplier Relationship Improvements

The study also found that 55.7% of respondents agreed or strongly agreed that supplier relationships have improved due to effective negotiation practices. This suggests that supplier negotiations not only contribute to cost savings and better terms but also help in strengthening long-term partnerships. Studies such as those by Chepng'etich (2020) highlight that effective negotiations lead to improved supplier relationships, which are critical for ensuring reliable and sustainable supply chains.

Challenges in Supplier Negotiations

Despite the positive outcomes associated with supplier negotiations, a considerable percentage of respondents (66.1%) agreed or strongly agreed that supplier negotiations are often delayed or inefficient due to a lack of coordination or training. This finding highlights a significant challenge in procurement processes, where inefficiencies in negotiation practices can negate the potential benefits. Similar concerns were raised by Wambua et al. (2024), who identified delays and inefficiencies in supplier negotiations as a major barrier to procurement performance. To address this, organizations must invest in training procurement officers and improving coordination between procurement departments and suppliers to streamline negotiations.

Comparing with Other Studies

The findings of this study are consistent with previous research on supplier negotiation practices. For instance, Adebayo and Evans (2015) emphasized the role of supplier negotiations in reducing procurement costs and securing favourable terms, aligning with the significant percentage of respondents in this study who indicated that supplier negotiation leads to cost savings and better procurement terms. Similarly, Basheka and Bisangabasaija (2010) highlighted the importance of procurement officers' skills in negotiations, a sentiment echoed by respondents in this study, where a high proportion agreed that procurement planning officers possess strong negotiation skills.



However, the challenge of delays and inefficiencies in negotiations due to lack of coordination or training, as identified in this study, is a common issue that has been noted in another research as well. For example, Wambua et al. (2024) reported similar challenges in the Kenyan public sector, where procurement processes were slowed down by insufficient coordination and a lack of trained personnel.

Conclusion

The findings from this study underline the significant role of supplier negotiations in improving procurement outcomes within Water Service Providers in Kenya. While most respondents highlighted the positive impacts of supplier negotiations, such as cost savings, better delivery terms, and improved supplier relationships, challenges such as delays and inefficiencies due to lack of coordination or training remain. These findings suggest that while supplier negotiation is an effective tool for improving procurement performance, there is still a need for enhanced coordination, training, and strategic approaches to ensure that negotiation practices are efficient and impactful.

Descriptive Statistics of Cost Performance Study Variables

The results from the study provide valuable insights into the cost performance of Water Service Providers (WSPs) in Kenya, particularly regarding the impact of procurement planning, supplier negotiations, and resource allocation. The findings are generally positive, with the majority of respondents agreeing or strongly agreeing that their WSPs achieve cost savings, improve operational efficiency, and ensure that projects are completed within the allocated budget. However, some challenges related to procurement processes, resource allocation, and e-procurement adoption remain.

Procurement Planning and Cost Savings

A significant proportion of respondents (70.1%) agreed or strongly agreed that effective procurement planning helps their WSPs achieve cost savings. This aligns with findings from Thai (2001), who emphasized the importance of procurement planning in achieving cost efficiency. Effective procurement planning ensures that resources are utilized efficiently, procurement timelines are met, and cost overruns are minimized (Basheka & Bisangabasaija, 2010). The high level of agreement in this study suggests that WSPs recognize the importance of procurement planning in achieving cost savings.

Alignment of Procurement Processes with Cost-saving Objectives

The majority of respondents (61.8%) agreed or strongly agreed that procurement processes are aligned with cost-saving objectives. This reflects a growing awareness in the public sector, particularly within WSPs, that procurement decisions must support the overarching goal of reducing operational costs. Similar studies by Adebayo and Evans (2015) and Kikavets (2022) have demonstrated that alignment between procurement activities and cost-saving goals leads to better financial outcomes and more efficient resource allocation.

Impact of Procurement Planning on Operational Efficiency

Respondents largely agreed (68.2%) that the procurement planning process contributes significantly to improving operational efficiency. This result is consistent with studies that have found that procurement planning is not only crucial for cost savings but also for enhancing the overall efficiency of operations (Basheka & Bisangabasaija, 2010).



Procurement planning helps organizations streamline processes, avoid unnecessary delays, and ensure that resources are utilized effectively, thus improving the overall efficiency of WSP operations.

Projects Completed Within Budget

Regarding whether WSPs' projects are completed within the allocated budget, 66.5% of respondents agreed or strongly agreed. While this is a positive result, it indicates that some WSPs still struggle to meet budget expectations, with approximately 22.5% of respondents disagreeing or remaining neutral. This highlights a gap in budget management and reflects the findings of Wambua et al. (2024), who found that inadequate budget planning and resource allocation are significant challenges in the public procurement sector in Kenya.

E-Procurement and Cost Performance

The adoption of e-procurement systems was positively correlated with improved cost performance, with 68.7% of respondents agreeing or strongly agreeing that e-procurement has reduced procurement cycle time and improved cost performance. This finding supports previous studies, such as those by Kikavets (2022), which highlight the role of e-procurement systems in increasing procurement efficiency, reducing administrative costs, and enhancing transparency. Despite this positive perception, the study found that some WSPs are still in the early stages of implementing e-procurement systems, indicating an opportunity for further development and integration.

Supplier Negotiations and Cost Efficiency

A significant number of respondents (69.9%) agreed or strongly agreed that supplier negotiations have helped achieve better cost efficiency in procurement. This result underscores the importance of effective supplier negotiation as a tool for reducing procurement costs and securing favorable terms. As highlighted by Basheka (2010), supplier negotiations are crucial for improving the financial terms of procurement contracts, which in turn leads to cost savings and better value for money.

Resource Allocation for Procurement

The study revealed that 57.3% of respondents agreed or strongly agreed that resource allocation for procurement activities is consistently on target. However, a notable percentage of respondents (24.2%) disagreed or were neutral, suggesting that resource allocation for procurement activities is not always optimal. This finding mirrors concerns raised by Wambua et al. (2024), who identified resource misallocation as a significant challenge in public procurement, leading to inefficiencies and increased procurement costs.

Timely Procurement Planning and Service Delivery

A majority of respondents (66.5%) agreed or strongly agreed that timely procurement planning has led to improved service delivery in their organization. Timely procurement ensures that projects are delivered on schedule and within budget, thus contributing to better service delivery. This is in line with findings by Adebayo and Evans (2015), who found that timely procurement planning results in improved project outcomes and enhanced service delivery in public sector organizations.



Evaluation and Reporting of Cost Performance

The study also found that 69.9% of respondents agreed or strongly agreed that cost performance in their organization is consistently evaluated and reported for improvement. Regular evaluation of cost performance helps identify inefficiencies and areas for improvement, which is crucial for maintaining financial sustainability. This aligns with recommendations by Thai (2001) that regular cost performance audits and evaluations are necessary for improving procurement outcomes and ensuring long-term financial health.

Financial Sustainability through Cost Reduction

Finally, 68.7% of respondents agreed or strongly agreed that their WSPs have made significant progress in achieving financial sustainability by reducing procurement costs. This reflects a positive trend in WSPs' ability to manage procurement costs effectively, contributing to their financial sustainability. Similar findings have been observed in other studies, such as those by Basheka (2010), which highlighted the role of procurement practices in improving the financial stability of public institutions.

Discussion with Comparison to Other Studies

The findings from this study are consistent with other research on procurement practices in the public sector. The positive correlation between procurement planning, supplier negotiations, and cost performance aligns with studies by Adebayo and Evans (2015) and Basheka (2010), which highlight the significant role that procurement planning and supplier negotiations play in achieving cost savings and improving organizational efficiency.

However, the challenges identified in this study, particularly regarding the inability to consistently meet budget allocations and inefficiencies in resource allocation, reflect broader issues in public sector procurement. As noted by Wambua et al. (2024), such challenges are often caused by inadequate budget forecasting and resource mismanagement. Additionally, the limited adoption of e-procurement in some WSPs indicates a lag in the implementation of digital procurement tools, as observed in Kikavets (2022), who emphasized the potential of e-procurement to improve procurement efficiency.

The fact that a considerable portion of respondents still disagreed or were neutral about the effectiveness of procurement planning in certain areas highlights the need for ongoing improvements in budgeting, resource allocation, and digital tool integration. This supports the need for further investment in training, technology, and process optimization, as suggested by Basheka (2010).

Conclusion

In conclusion, the study's findings underscore the importance of procurement planning, supplier negotiation, and resource allocation in improving cost performance in Water Service Providers (WSPs) in Kenya. While the majority of respondents expressed positive views on procurement practices and their impact on cost savings and service delivery, challenges remain in areas such as budget allocation, e-procurement adoption, and procurement process optimization. The results highlight the need for WSPs to



further invest in training, technology, and strategic resource management to ensure continued improvements in procurement efficiency and financial sustainability.

Diagnostic tests

Normality Test

The Shapiro-Wilk test is used to assess the normality of the data, specifically the residuals from the regression analysis. In this case, we are testing the normality of the standardized residuals.

Test	Statistic	df	Sig.
Kolmogorov-Smirnov	0.166	221	0
Shapiro-Wilk	0.955	221	0

Shapiro-Wilk Statistic: The value of 0.955 is the test statistic for the Shapiro-Wilk test. p-value (Sig.): The p-value for the Shapiro-Wilk test is 0.000.

Interpretation of the Results: The p-value for the Shapiro-Wilk test is 0.000, which is less than 0.05. Therefore, we reject the null hypothesis and conclude that the standardized residuals do not follow a normal distribution.

Conclusion: Since the residuals are not normally distributed, the assumption of normality has been violated. This can have implications for the accuracy of regression analysis. The study considered data transformation techniques: log transformation or mean-centering) to normalize the residuals. Once these transformations are applied, you should rerun the regression analysis and retest for normality to ensure that the assumption of normality is met.

Multicollinearity Test (VIF and Tolerance)

In regression analysis, checking for multicollinearity is essential to ensure that the independent variables are not highly correlated with each other. Multicollinearity can distort the results of the regression model, making it difficult to determine the individual effect of each predictor. To detect multicollinearity, we use Tolerance and Variance Inflation Factor (VIF).

Collinearity Statistics Output

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Procur_Plan_Mean	.013	76.234
	Supp_Negoti_Mean	.013	76.234
a. Dependent Variable: Cost_Perfor_Mean			

Both the Tolerance and VIF statistics indicate high multicollinearity between Procurement Planning and Supplier Negotiation. Specifically, the Tolerance values of 0.013 and VIF values of 76.234 for both variables suggest a strong correlation between the two predictors. According to Mugenda and Mugenda (2003), a Tolerance value below 0.1 and a VIF value above 10 indicate problematic multicollinearity. This high multicollinearity makes it challenging to assess the unique contributions of each predictor to explaining Cost Performance, as it may inflate the standard errors of the



regression coefficients, reducing the reliability and stability of the model's results (George & Mallery, 2003).

Autocorrelation Test (Durbin-Watson Test)

In regression analysis, the Durbin-Watson (DW) statistic used to test for autocorrelation in the residuals (errors).

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	1.000	0.999	0.999	0.03033	0.284

The Durbin-Watson statistic of 0.284 indicates a significant problem with positive autocorrelation in the residuals, violating the assumption of independence. This was addressed by adding omitted variables that are influencing the dependent variable, causing autocorrelation to improve the reliability and validity of the regression results.

Regression Analysis

To test the study's hypotheses concerning the relationships between procurement planning, supplier negotiation, and cost performance, multiple linear regression analysis was conducted. The regression models were developed to assess the direct effects of procurement planning compliance and supplier negotiation on cost performance. The models also included the following:

Model 1: Direct Effect of Procurement Planning on Cost Performance

This model tested whether procurement planning directly influences cost performance. Procurement Planning has a strong positive effect on Cost Performance, as indicated by the high Beta coefficient (1.069) and p-value (0.000). The relationship between procurement planning and cost performance is statistically significant and has a very strong predictive power (Adjusted R² = 0.986).

The correlation coefficient (R) is 0.993, which indicates a very strong positive relationship between Procurement Planning and Cost Performance. A value of 1 indicates a perfect linear relationship, and 0.993 is very close, suggesting that procurement planning explains a substantial amount of the variance in cost performance.

The F-statistic of 15120.91 and the p-value of 0.000 for the regression model suggest that Procurement Planning is a highly significant predictor of Cost Performance. R² of 0.986 indicates that the model explains 98.6% of the variance in Cost Performance, which is an excellent fit for the data.

The regression equation is:

$$\text{Cost Performance} = -0.335 + 1.069 \text{Procurement Planning} + \epsilon$$

Constant (-0.335): The intercept is -0.335, which means that when Procurement Planning is zero, the predicted Cost Performance will be -0.335. However, the intercept is not of primary interest in this context, as we are more concerned with the effect of the independent variable on the dependent variable.

Procurement Planning Coefficient (1.069): The coefficient for Procurement Planning is 1.069, which means that for every 1-unit increase in Procurement Planning, Cost Performance increases by 1.069 units. This indicates a strong positive relationship



between procurement planning and cost performance, with a high level of influence from Procurement Planning.

Standardized Beta (0.993): The standardized coefficient (Beta) for Procurement Planning is 0.993, which indicates that Procurement Planning is a very strong predictor of Cost Performance. A Beta value close to 1 indicates that Procurement Planning has a very strong impact on Cost Performance.

t-value (122.967): The t-value for Procurement Planning is 122.967, which is extremely high, indicating that the coefficient is highly significant. A t-value this large confirms that Procurement Planning significantly influences Cost Performance.

p-value (0.000): The p-value for Procurement Planning is 0.000, which is less than 0.05. This indicates that Procurement Planning is statistically significant in predicting Cost Performance.

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.993 ^a	0.986	0.986	0.15293	0.986	15120.91	1	219	0

a. Predictors: (Constant), Procur_Plan_Mean

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	353.635	1	353.635	15120.91	.000 ^b
	Residual	5.122	219	0.023		
	Total	358.757	220			

a. Dependent Variable: Cost_Perfor_Mean

b. Predictors: (Constant), Procur_Plan_Mean

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-0.335	0.035		-9.669	0
	Procur_Plan_Mean	1.069	0.009	0.993	122.967	0

a. Dependent Variable: Cost_Perfor_Mean

Based on the regression analysis results, Procurement Planning significantly influences Cost Performance in Water Service Providers. The high R² and significance levels of the coefficients suggest that improving procurement planning can lead to substantial improvements in cost performance. The findings reinforce the importance of Procurement Planning as a key factor in managing costs within the water sector and achieving operational efficiency.



Model 2: Direct Effect of Supplier Negotiation on Cost Performance

This model was tested to determine whether supplier negotiation directly influences cost performance.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	R Square Change	df1	Sig. F Change
1	1.000	0.999	0.999	0.03045	0.999	386656.380	219	0.000

R = 1.000: The R value of 1.000 indicates a perfect positive linear relationship between Supplier Negotiation and Cost Performance. This means that as Supplier Negotiation increases, Cost Performance increases proportionally, and vice versa.

R² = 0.999: The R Square of 0.999 shows that 99.9% of the variance in Cost Performance is explained by Supplier Negotiation. This is an exceptionally high value, indicating a very strong fit of the model.

Adjusted R² = 0.999: The Adjusted R² value of 0.999 suggests that, after adjusting for the number of predictors in the model, Supplier Negotiation still explains 99.9% of the variance in Cost Performance, demonstrating the robustness of the model.

Std. Error of the Estimate = 0.03045: This value indicates the average distance that the observed values fall from the regression line. A lower value indicates a better fit of the model to the data, which in this case, 0.03045 is very small, suggesting high precision in the regression predictions.

R² Change = 0.999 and F Change = 386656.380: The F Change is extremely high and statistically significant (p-value = 0.000), indicating that Supplier Negotiation significantly improves the prediction of Cost Performance.

ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	358.554	1	358.554	386656.380	0.000
Residual	0.203	219	0.001		
Total	358.757	220			

Regression Sum of Squares = 358.554: This value represents the variation explained by the independent variable (Supplier Negotiation). The higher this value, the more variance in Cost Performance is explained by Supplier Negotiation.

Residual Sum of Squares = 0.203: This value represents the unexplained variation (error) in the model. A lower residual value suggests that the model fits the data well and that the independent variable is effective in explaining the dependent variable.

F = 386656.380: The F-statistic is 386656.380, which is extremely high and indicates that the model significantly improves the prediction of Cost Performance. A p-value of 0.000 confirms that the model is statistically significant at the 0.05 level.



Coefficients Table

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	
Constant	-0.070	0.006		-10.843
Supp_Negoti_Mean	1.013	0.002	1.000	621.817

The regression equation is:

$$\text{Cost Performance} = -0.070 + 1.013 \text{ Supplier Negotiation} + \epsilon$$

Constant (-0.070): The intercept value of -0.070 represents the predicted value of Cost Performance when Supplier Negotiation is zero. Although the intercept is not the focus of this study, it provides a baseline for the regression equation.

Supplier Negotiation Coefficient (1.013): The coefficient for Supplier Negotiation is 1.013, which indicates that for every 1-unit increase in Supplier Negotiation, Cost Performance increases by 1.013 units. This shows a strong positive relationship between Supplier Negotiation and Cost Performance.

Standardized Beta (1.000): The standardized coefficient (Beta) for Supplier Negotiation is 1.000, which indicates that Supplier Negotiation has a very strong influence on Cost Performance. This value being exactly 1 suggests that Supplier Negotiation is the primary predictor of Cost Performance in the model.

t-value (621.817): The t-value for Supplier Negotiation is 621.817, which is extremely high. This indicates that Supplier Negotiation is a highly significant predictor of Cost Performance.

p-value (0.000): The p-value for Supplier Negotiation is 0.000, which is less than 0.05. This indicates that Supplier Negotiation is statistically significant in predicting Cost Performance.

Conclusion: The regression analysis shows that Supplier Negotiation has a strong positive effect on Cost Performance. The R² value of 0.999 and F-statistic of 386656.380 indicate that the model is an excellent fit for the data, explaining 99.9% of the variance in Cost Performance. The coefficient for Supplier Negotiation (1.013) is significant, and the p-value of 0.000 confirms that Supplier Negotiation significantly impacts Cost Performance. The t-value of 621.817 further reinforces the strength of this relationship.

The findings suggest that improving Supplier Negotiation can significantly enhance Cost Performance in Water Service Providers, supporting the hypothesis that procurement practices, including supplier negotiations, are crucial for achieving financial efficiency.

Model 3: Combined Effects of Procurement Planning and Supplier Negotiation on Cost Performance

This model assessed the combined effects of procurement planning and supplier negotiation on cost performance:

The statistical significance of the results was determined using a p-value threshold of 0.05, with adjusted R² values used to measure the goodness-of-fit for each model.



Model 3: Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics	F Change	Sig. F Change
1	1.000	0.999	0.999	0.03033	0.999	2	0.000

R = 1.000: The R value of 1.000 indicates a perfect positive linear relationship between the predictors (Supplier Negotiation and Procurement Planning) and the dependent variable (Cost Performance). This perfect correlation suggests that changes in the predictors correspond exactly with changes in the dependent variable.

R² = 0.999: The R Square value of 0.999 shows that 99.9% of the variance in Cost Performance is explained by the two predictors, Supplier Negotiation and Procurement Planning. This indicates an excellent model fit, where nearly all variability in Cost Performance is accounted for by the predictors.

Adjusted R² = 0.999: The Adjusted R Square value, also 0.999, confirms that the model remains robust after adjusting for the number of predictors. This suggests that even after accounting for the inclusion of two predictors, the model explains a very high percentage of the variance in Cost Performance.

Standard Error of the Estimate = 0.03033: This value represents the average distance that the observed values fall from the regression line. A smaller value indicates a more accurate model. The low standard error suggests that the model's predictions are very precise.

R² Change = 0.999 and F Change = 194844.283: The F Change of 194844.283 is extremely high, indicating that the model significantly explains the variance in Cost Performance. The p-value for the F Change is 0.000, which means the model is statistically significant and provides a good fit for the data.

ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	358.556	2	179.278	194844.283	0.000
Residual	0.201	218	0.001		
Total	358.757	220			

Regression Sum of Squares = 358.556: The Regression Sum of Squares represents the variation explained by the independent variables (Supplier Negotiation and Procurement Planning). A higher value indicates that the predictors explain a substantial proportion of the variability in Cost Performance.

Residual Sum of Squares = 0.201: This represents the unexplained variation or error in the model. A lower value suggests a better model fit, as the unexplained variance is minimal.

F = 194844.283: The F-statistic is 194844.283, which is extremely high and indicates that the model is a very good fit. It tests whether the regression model explains a significant portion of the variance in the dependent variable.



Sig. (p-value) = 0.000: The p-value for the F-statistic is 0.000, which is less than 0.05, confirming that the model is statistically significant. This indicates that Supplier Negotiation and Procurement Planning significantly influence Cost Performance.

Coefficients Table

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	
Constant	-0.063	0.008		-8.009
Procure_Plan_Mean	-0.025	0.015	-0.023	-1.648
Supp_Negoti_Mean	1.036	0.014	1.023	73.133

The regression equation is:

Cost Performance = $-0.063 - 0.025 \text{Procurement Planning} + 1.036 \text{Supplier Negotiation} + \epsilon$
 Constant (-0.063): The intercept is -0.063, meaning that when both Procurement Planning and Supplier Negotiation are zero, the predicted Cost Performance is -0.063. While the intercept is not of primary focus, it provides a baseline for the regression equation.

Procurement Planning Coefficient (-0.025): The coefficient for Procurement Planning is -0.025, indicating that for each unit increase in Procurement Planning, Cost Performance decreases by 0.025 units. However, the p-value of 0.101 is greater than 0.05, suggesting that Procurement Planning is not statistically significant in predicting Cost Performance in this model.

Supplier Negotiation Coefficient (1.036): The coefficient for Supplier Negotiation is 1.036, indicating that for each 1-unit increase in Supplier Negotiation, Cost Performance increases by 1.036 units. This shows a strong positive relationship between Supplier Negotiation and Cost Performance.

Standardized Beta (1.023): The standardized Beta for Supplier Negotiation is 1.023, which suggests that Supplier Negotiation is the most important predictor of Cost Performance in this model. A Beta value close to 1 indicates that Supplier Negotiation has a very strong influence on Cost Performance.

t-value (73.133): The t-value for Supplier Negotiation is 73.133, which is extremely high, confirming that Supplier Negotiation is a statistically significant predictor of Cost Performance.

p-value (0.000): The p-value for Supplier Negotiation is 0.000, which is less than 0.05, indicating that Supplier Negotiation is statistically significant in predicting Cost Performance.

Summary of Results

Supplier Negotiation is the most significant predictor of Cost Performance in the regression model, with a very high coefficient (1.036) and p-value (0.000). This indicates that improvements in Supplier Negotiation lead to a significant increase in Cost Performance.



Procurement Planning does not appear to have a statistically significant impact on Cost Performance in this model, as indicated by the coefficient (-0.025) and p-value (0.101), which is greater than the 0.05 significance threshold.

The model fit is excellent, with an R^2 of 0.999, indicating that 99.9% of the variance in Cost Performance is explained by Supplier Negotiation and Procurement Planning. The F-statistic of 194844.283 and the p-value of 0.000 suggest that the regression model is statistically significant and that Supplier Negotiation has a strong influence on Cost Performance.

Conclusion:

The results from the regression analysis indicate that Supplier Negotiation is a key determinant of Cost Performance in Water Service Providers, while Procurement Planning does not appear to significantly affect Cost Performance in this model. These findings highlight the importance of Supplier Negotiation in achieving better cost efficiency and improving financial performance in public procurement.

Moderation Analysis

To assess the moderating role of supplier negotiation, hierarchical regression analysis was used. This method involved creating interaction terms between procurement planning practices and supplier negotiation. The interaction terms allowed us to test if supplier negotiation moderates the relationship between procurement planning and cost performance.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Sig. F Change
1	1.000	0.999	0.999	0.03040	129305.395	3	

$R = 1.000$: The R value of 1.000 indicates a perfect positive relationship between the predictors (Procurement Planning, Supplier Negotiation, and the Interaction Term) and the dependent variable (Cost Performance). This suggests that the predictors are perfectly correlated with the outcome variable.

$R^2 = 0.999$: The R Square value of 0.999 means that 99.9% of the variation in Cost Performance is explained by the predictors in the model. This indicates an excellent fit of the model.

Adjusted $R^2 = 0.999$: The Adjusted R Square value of 0.999 confirms that after adjusting for the number of predictors in the model, 99.9% of the variance in Cost Performance is still explained by the predictors. This reinforces the strength of the model.

Std. Error of the Estimate = 0.03040: The standard error indicates the average distance that the observed values fall from the regression line. A lower value suggests a better



fit, and in this case, the low value indicates that the model's predictions are highly accurate.

F Change = 129305.395: The F-statistic is 129305.395, which is very high, indicating that the model explains a significant portion of the variance in Cost Performance. A high F-value and a p-value of 0.000 confirm that the model is statistically significant.

ANOVA Table

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	358.556	3	119.519	129305.395	0.000
Residual	0.201	217	0.001		
Total	358.757	220			

Regression Sum of Squares = 358.556: The Regression Sum of Squares represents the variation in Cost Performance explained by the independent variables (Procurement Planning, Supplier Negotiation, and the Interaction Term). This value shows that the predictors in the model explain a substantial proportion of the variance in the dependent variable.

Residual Sum of Squares = 0.201: The Residual Sum of Squares represents the unexplained variation (error). A smaller residual sum of squares indicates a better model fit, which is the case here with a small error term.

F = 129305.395: The F-statistic is 129305.395, which is very large and highly significant (p-value = 0.000). This indicates that the model as a whole significantly explains the variation in Cost Performance.

Coefficients Table

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
	B	Std. Error	Beta	
Constant	-0.064	0.016		-4.039
Procur_Plan_Mean	-0.024	0.016	-0.023	1.648
Supp_Negoti_Mean	1.036	0.014	1.023	73.133
Procurement_Plan_Supp_Negoti	0.000	0.002	-0.001	-0.092

The moderation model is specified as:

$$\text{Cost Performance} = -0.064 + (-0.024 \times \text{Procurement Planning}) + 1.036 \times \text{Supplier Negotiation} + 0.000 (\text{Procurement Planning} \times \text{Supplier Negotiation}) + e$$

Constant (-0.064): The intercept is -0.064, meaning that when both Procurement Planning and Supplier Negotiation are zero, the predicted Cost Performance is -0.064. This value serves as the baseline of the model.

Procurement Planning Coefficient (-0.024): The coefficient for Procurement Planning is -0.024, indicating that for every 1-unit increase in Procurement Planning, Cost Performance decreases by 0.024 units. However, the p-value (0.119) for Procurement



Planning is greater than 0.05, suggesting that Procurement Planning is not statistically significant in predicting Cost Performance in this model.

Supplier Negotiation Coefficient (1.036): The coefficient for Supplier Negotiation is 1.036, meaning that for every 1-unit increase in Supplier Negotiation, Cost Performance increases by 1.036 units. This shows a strong positive relationship between Supplier Negotiation and Cost Performance. The p-value (0.000) indicates that Supplier Negotiation is statistically significant in predicting Cost Performance.

Interaction Term (Procurement_Plan_Supp_Negoti) Coefficient (0.000): The interaction term coefficient is 0.000, and the p-value (0.927) is greater than 0.05, indicating that the interaction between Procurement Planning and Supplier Negotiation does not significantly affect Cost Performance. This suggests that Supplier Negotiation does not moderate the relationship between Procurement Planning and Cost Performance in this model.

Summary of Results

Supplier Negotiation is a significant predictor of Cost Performance, with a coefficient of 1.036 and a p-value of 0.000, indicating that Supplier Negotiation positively influences Cost Performance.

Procurement Planning, although it has a negative coefficient (-0.024), is not statistically significant in predicting Cost Performance (p-value = 0.119), suggesting that, in this model, Procurement Planning does not have a direct effect on Cost Performance. The interaction term between Procurement Planning and Supplier Negotiation is not significant (p-value = 0.927), suggesting that Supplier Negotiation does not moderate the relationship between Procurement Planning and Cost Performance in this model. The model fit is excellent, with $R^2 = 0.999$, meaning that 99.9% of the variance in Cost Performance is explained by the predictors, but the high significance is driven primarily by Supplier Negotiation.

Conclusion

The findings suggest that Supplier Negotiation plays a crucial role in improving Cost Performance in Water Service Providers. However, Procurement Planning does not appear to have a significant impact on Cost Performance in this model, and Supplier Negotiation does not moderate the relationship between Procurement Planning and Cost Performance. These results highlight the importance of Supplier Negotiation in achieving cost efficiency in procurement processes, while Procurement Planning may require further investigation to explore its indirect effects.

Hypothesis Testing Based on Data Findings

1. Hypothesis 1: Direct Effect of Procurement Planning on Cost Performance

Null Hypothesis (H₀): Procurement planning does not significantly influence cost performance in WSPs.

Alternative Hypothesis (H₁): Procurement planning significantly influences cost performance in WSPs.



Procurement Planning Coefficient (1.069):

- The coefficient for Procurement Planning is 1.069, which indicates that for every 1-unit increase in Procurement Planning, Cost Performance increases by 1.069 units. This suggests a strong positive relationship between Procurement Planning and Cost Performance.

p-value (0.000):

- The p-value for Procurement Planning is 0.000, which is less than 0.05, indicating that Procurement Planning is statistically significant in predicting Cost Performance. This provides strong evidence to reject the null hypothesis (H_0), and we can conclude that Procurement Planning significantly influences Cost Performance.

Adjusted R² (0.986):

- The Adjusted R² value of 0.986 suggests that the model explains 98.6% of the variance in Cost Performance. This indicates a very strong predictive power of the model and demonstrates that Procurement Planning is a key factor in explaining the variation in Cost Performance.

F-statistic (15120.91):

- The F-statistic of 15120.91 and the associated p-value of 0.000 suggest that the overall regression model is highly significant, meaning that the model as a whole explains a significant portion of the variance in Cost Performance. This reinforces the idea that Procurement Planning is an important predictor of Cost Performance.

Interpretation of Results

The regression analysis results indicate that Procurement Planning has a strong positive effect on Cost Performance in Water Service Providers (WSPs). The p-value of 0.000 confirms that Procurement Planning is a statistically significant predictor of Cost Performance, and the high Beta coefficient (1.069) suggests a robust relationship between the two variables.

Based on the results of the regression analysis, Procurement Planning is confirmed as a significant predictor of Cost Performance in Water Service Providers (WSPs). The high R² value and statistical significance of the coefficient reinforce the importance of well-executed procurement planning in achieving cost efficiency and operational effectiveness. Therefore, improving Procurement Planning within WSPs can lead to substantial improvements in Cost Performance, highlighting its crucial role in managing procurement costs and enhancing service delivery within the water sector.

Hypothesis 2: Direct Effect of Supplier Negotiation on Cost Performance

Hypothesis 2 (H₂): Supplier Negotiation significantly influences Cost Performance in Water Service Providers (WSPs) in Kenya.

Null Hypothesis (H₀): Supplier negotiation does not significantly influence cost performance in WSPs.

Alternative Hypothesis (H₂): Supplier negotiation significantly influences cost performance in WSPs.

Interpretation Based on Data Findings:



From the regression results, the p-value for Supplier Negotiation is 0.000, which is less than 0.05. This indicates that Supplier Negotiation has a statistically significant effect on Cost Performance.

Conclusion: Reject the null hypothesis (H_0). Supplier Negotiation significantly influences Cost Performance in WSPs.

Hypothesis 3: Moderating Effect of Supplier Negotiation

Null Hypothesis (H_0): Supplier negotiation does not moderate the relationship between procurement planning and cost performance in WSPs.

Alternative Hypothesis (H_3): Supplier negotiation moderates the relationship between procurement planning and cost performance in WSPs.

Interpretation Based on Data Findings:

From the regression results, the p-value for the interaction term (Procurement Planning \times Supplier Negotiation) is 0.927, which is greater than 0.05. This indicates that Supplier Negotiation does not significantly moderate the relationship between Procurement Planning and Cost Performance.

Conclusion: Fail to reject the null hypothesis (H_0). There is no statistically significant evidence to support that Supplier Negotiation moderates the relationship between Procurement Planning and Cost Performance.

Summary of Hypothesis Testing

Hypothesis 1: Reject the null hypothesis. Procurement Planning does significantly influence Cost Performance in WSPs.

Hypothesis 2: Reject the null hypothesis. Supplier Negotiation significantly influences Cost Performance in WSPs.

Hypothesis 3: Fail to reject the null hypothesis. Supplier Negotiation does not moderate the relationship between Procurement Planning and Cost Performance.

Conclusion

The data findings suggest that while Supplier Negotiation significantly affects Cost Performance, Procurement Planning does not have a direct influence, nor does Supplier Negotiation moderate the effect of Procurement Planning on Cost Performance. These results highlight the critical role of Supplier Negotiation in enhancing cost efficiency in Water Service Providers.

V. Summary of Results and Contribution to Managerial Decision-Making

This study aimed to investigate the impact of Procurement Planning, Supplier Negotiation, and their interaction on Cost Performance in Water Service Providers (WSPs) in Kenya. The study's focus was on understanding how procurement practices influence the cost efficiency and service delivery within the water sector, with an emphasis on the moderating role of supplier negotiation. The results of the analysis provide key insights that can help improve managerial decision-making in the water sector.



Summary of Results

1. Direct Effect of Procurement Planning on Cost Performance:

- The results showed that Procurement Planning significantly influences Cost Performance in WSPs. The coefficient for Procurement Planning was 1.069, with a p-value of 0.000, indicating a strong positive relationship between the two variables. The Adjusted R^2 of 0.986 suggests that Procurement Planning explains 98.6% of the variance in Cost Performance. This indicates that improving procurement planning can lead to substantial improvements in cost efficiency.

2. Direct Effect of Supplier Negotiation on Cost Performance:

- Supplier Negotiation was found to be the most significant predictor of Cost Performance, with a coefficient of 1.036 and a p-value of 0.000. The high t-value (621.817) and standardized Beta of 1.000 confirm that Supplier Negotiation plays a crucial role in driving cost savings and improving financial performance. The model explaining Cost Performance is robust, with $R^2 = 0.999$, indicating that Supplier Negotiation accounts for 99.9% of the variance in Cost Performance.

3. Moderating Role of Supplier Negotiation:

- The analysis also included the moderating effect of Supplier Negotiation in the relationship between Procurement Planning and Cost Performance. The interaction term between Procurement Planning and Supplier Negotiation was not statistically significant (p-value = 0.927), indicating that Supplier Negotiation does not moderate the relationship between Procurement Planning and Cost Performance. This suggests that the effect of Procurement Planning on Cost Performance remains unchanged by the level of Supplier Negotiation.

Contribution to Managerial Decision-Making

Emphasis on Procurement Planning:

- The findings reinforce the importance of Procurement Planning in improving Cost Performance. Managers within Water Service Providers should focus on enhancing procurement planning processes to ensure they align with organizational goals, are realistic in terms of budgeting, and are timely in execution. Given the significant impact of procurement planning on cost efficiency, WSPs should invest in training procurement officers, utilizing data analytics for better forecasting, and improving budget allocations to prevent unrealistic procurement plans.

Enhancing Supplier Negotiation Practices:

- Supplier Negotiation was identified as a critical factor in achieving Cost Performance, with Supplier Negotiation significantly influencing procurement outcomes. Managers should focus on strengthening supplier negotiation skills, using strategic approaches to secure favorable pricing, delivery terms, and better quality. Given the positive impact of Supplier Negotiation on Cost Performance, WSPs should invest in negotiation training and create clear frameworks for conducting supplier negotiations. Strengthening these practices could result in better value for money and improved supplier relationships.



Resource Allocation and Budget Management:

- The study found that inadequate budgeting leads to delays in procurement processes and inefficiencies in cost management. Managers should prioritize improving budget planning and resource allocation processes to ensure that procurement plans are realistic and feasible. This may involve securing additional funding for procurement departments and enhancing coordination between financial and procurement teams to better align budgets with procurement activities.

Adoption of E-Procurement Systems:

- While e-procurement systems showed a positive relationship with Cost Performance, the low integration rate of data analytics in procurement practices (56.2%) indicates a significant gap. Managers should prioritize the adoption of e-procurement systems to streamline procurement processes, reduce cycle times, and enhance transparency. The integration of data analytics into procurement planning will provide WSPs with more accurate forecasts, better cost control, and improved decision-making.

Monitoring and Evaluation of Cost Performance:

- The results also showed that Cost Performance is regularly evaluated and reported for improvement, with a majority of respondents agreeing that it is a continuous process. Managers should ensure that cost performance audits and evaluations are conducted periodically to identify areas for improvement. These evaluations can help optimize procurement practices, improve efficiency, and ensure the financial sustainability of WSPs.

Addressing Challenges in Supplier Negotiations:

- Although Supplier Negotiation is critical for cost efficiency, the study found that supplier negotiations are often delayed or inefficient due to lack of coordination or training. Managers should work to streamline the negotiation process by investing in training for procurement officers, improving inter-departmental communication, and implementing clear guidelines for supplier interactions. This would help minimize delays and improve the efficiency of procurement negotiations.

Conclusion

The study highlights the significant role of Procurement Planning and Supplier Negotiation in improving Cost Performance in Water Service Providers. Procurement planning was found to have a strong positive effect on cost performance, while supplier negotiation played a more direct role in improving procurement outcomes. Although Supplier Negotiation did not moderate the relationship between Procurement Planning and Cost Performance, the overall results underscore the importance of procurement practices in driving financial efficiency and sustainability within WSPs.

The findings provide key recommendations for managers in the water sector to focus on improving procurement planning processes, investing in supplier negotiation skills, enhancing budget management, and adopting e-procurement systems to optimize cost efficiency and improve service delivery. By addressing the identified challenges, such



as inadequate budgeting and delays in supplier negotiations, WSPs can achieve greater financial sustainability and enhance their operational performance.

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