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PROJECT MANAGEMENT PRACTICES AND PERFORMANCE OF WATER PROJECTS IN METROPOLITAN COUNTIES IN KENYA

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ABSTRACT

Metropolitan counties face significant challenges in providing access to clean water and improved sanitation facilities to its residents. According to a study conducted by the Kenya National Bureau of Statistics (KNBS) in 2019, only 46% of households in Kajiado County have access to clean drinking water, which is significantly lower than the national average of 58%. The general objective of the study was to establish the influence of project management practices on performance of water projects in Metropolitan Counties in Kenya. Specifically, the study focused on establishing the influence of stakeholder management on performance of water projects in Metropolitan Counties in Kenya and assessing the influence of risk management on performance of water projects in Metropolitan Counties in Kenya. This study adopted a descriptive research design. The unit of analysis was 40 water projects from the Nairobi Metropolitan while the unit of observation was 502 respondents comprising of 361 project managers involved in the projects, 89 national government representatives and 52 surveyors. The study used Yamane formulae. The study will employ both the questionnaires and interview as the main collection instrument that contains both open ended and close ended questions. Quantitative data collected was analyzed using descriptive statistical techniques which are frequencies, mean, standard deviation. Inferential statistics which include Pearson correlation and the Regression Analysis Model was used to test the relationship between study variables. The significance of the model was tested at 5% level of significance. Data was analysed using Statistical Package for Social Sciences (SPSS) software. The study results were presented through use of tables and figures. The study concludes that stakeholder management has a significant effect on performance of water projects in Metropolitan Counties in Kenya. Further, the study concludes that risk management has a significant effect on performance of water projects in Metropolitan Counties in Kenya. The study recommends that the management of water projects in Metropolitan Counties should implement a structured stakeholder engagement framework that includes clear identification, communication, and feedback mechanisms for all key stakeholders—such as local communities, government agencies, donors, and private partners. Further, the study recommends that the management of water projects in Metropolitan Counties should strengthen risk management practices throughout the project lifecycle.

Key Words: Project Management Practices, Stakeholder Management, Risk Management, Performance of Water Projects, Metropolitan Counties

Background of the Study

According to the United Nations (UN), approximately 2.2 billion people worldwide lack access to safe drinking water, and 4.2 billion lack adequate sanitation facilities (UN, 2019). Various water and sanitation projects have been initiated in developed and developing countries to improve access to clean water and sanitation facilities (Muhammad *et al*, 2021). However, the success of these projects has varied, and poor project leadership practice has been identified as a significant challenge. According to United Nations (2018), 42% of people lack a basic water supply in Sub-Saharan Africa, and 72% lack basic sanitation. In addition, Africa is urbanizing rapidly and its urban population is expected to increase from 345 million in 2014 to 1.3 billion people by 2050 (Bashir, Xiaohua & Osei-Kyei (2024). Urbanization in Africa is not accompanied by a sufficient rate of economic growth and therefore there is a large and growing infrastructure and financing gap. "Investments will have to be increased by a multiple of existing amounts to meet the Sustainable Development Goals for poverty reduction and water and sanitation in Sub-Saharan Africa" (Safia *et al*, 2023).

According to the UNDP, official development assistance spending is not enough to address the existing water and sanitation needs or to meet the Millennium Development Goals (Jui-Sheng & Jung-Ghun, 2022). While there is an inadequate quantity of support for international development, there is also a problem associated with quality of aid and assistance. International development projects have a high rate of failure. Until 2000, 50% of World Bank projects in Africa were considered unsuccessful as measured by the Bank's overall project rating. The Independent Evaluation Group (IEG) of the World Bank estimates that 39% of all World Bank projects were unsuccessful in 2010 as measured by the IEG's overall rating (Alkhlaifat, Abdullah & Al-Khamaiseh, 2021). Between 1997 and 2007 a review of World Bank water and sanitation projects found that 33% of projects were unsuccessful using the same criteria for evaluation (Bourne, 2019). It can be inferred from the poor rate of project success that a better understanding of the causes of poor performance in these types of projects is required. International development projects are complex and the traditional understanding of performance and project management is not adequate to understand them (Onifade, Oluwaseyi & Ibrahim, 2023).

According to the Kenya National Water Services Strategy (2018 - 2022), sustainable water access levels in Kenya were estimated to be at 60%, while sanitation was estimated at 68% (Harouna, 2022). According to Minyiri and Muchelule (2018), a closer look at Kenya's water projects leaves no doubt that performance is a challenge. This is evident in most of the water projects that have been undertaken over time with little impact despite the resources used. People lack proper services because systems fail, often because not enough resources are invested to appropriately build and maintain them, and also because of the stress that the fast growing population places on the existing infrastructure (Ofori, 2022). In Kajiado County, 50% of the water projects implemented were successfully completed. This indicates that various water projects face enormous challenges of implementation. In Kakamega, Kanda, Muchelule and Mamadi (2016) established that project leadership practices influence project implementation (Kilinga, Jugindar & Noraini, 2023).

Statement of the Problem

Despite the importance of water and sanitation projects in improving public health and overall wellbeing, many areas in Kenya still face numerous challenges in this regard (Ollows, 2022). Metropolitan counties face significant challenges in providing access to clean water and improved sanitation facilities to its residents. According to a study conducted by the Kenya National Bureau of Statistics (KNBS) in 2019, only 46% of households in Kajiado County have access to clean drinking water, which is significantly lower than the national average of 58% (Musau & Kirui, 2023). Moreover, the same study found that only 23% of households in the

county have access to improved sanitation facilities such as flush toilets or ventilated improved pit latrines (VIPs), which is also lower than the national average of 30%. The lack of access to these basic needs has resulted in a high incidence of waterborne diseases in Kajiado County. Research has shown that project leadership practices influence project performance (Magagan & Ngugi, 2021).

Several studies have been conducted on project management and firm performance. For instance, Otunga (2021) conducted a study on factors affecting the performance of fast-moving consumer goods firms listed on Nairobi securities Exchange. Achola and Were (2018) conducted a study on the influence of project planning practices on performance of fast-moving consumer goods companies in Nairobi County, Kenya. Oballah, Waiganjo and Wachiuri (2015) researched on the effect of project leadership practices on organizational performance in public health institutions in Kenya. Nevertheless, none of these studies showed the relationship between project management practices and performance of water projects in in metropolitan counties in Kenya. To fill the highlighted gaps, the current study sought to establish the influence of project management practices on performance of water projects in metropolitan counties in Kenya.

Objectives of the Study

General Objective of the Study

The general objective of the study was to establish the influence of project management practices on performance of water projects in Metropolitan Counties in Kenya.

Specific Objectives of the Study

i. To establish the influence of stakeholder management on performance of water projects in Metropolitan Counties in Kenya.
ii. To assess the influence of risk management on performance of water projects in Metropolitan Counties in Kenya.

LITERATURE REVIEW

Introduction

Theoretical Review

Stakeholders Theory

The stakeholder theory was developed by Blair (1995) who was seeking new models of corporate governance for the 21st century. The premise of the theory is that focus on shareholders has not provided exhaustive and effective corporate governance. This theory hence advocates for the inclusion of interested parties, financial institutions, consumer groups, media, employees and the public in devising an effective corporate governance model that will be able to make the organization effectively accountable to all interested parties (Fuller, 2020).

The theory proposes that organizations should manage relationships with all stakeholders in a way that considers their needs, concerns, and contributions. This approach contrasts with traditional theories that prioritize the interests of shareholders above all else. Instead, stakeholder theory emphasizes the interconnectedness and interdependence between the organization and its various stakeholders (Mwesigwa *et al*, 2020). Stakeholder theory promotes ethical decision-making by encouraging organizations to consider the potential impact of their actions on all stakeholders, including those who may be marginalized or vulnerable. This involves weighing the interests of different stakeholders and striving to minimize harm while maximizing benefits (Ontita & Kinyua, 2020). This study used Stakeholders Theory to establish the influence of stakeholder management on performance of water projects in Metropolitan Counties in Kenya

Systems Theory

Systems theory was developed by Ludwig von Bertalanffy in (1972). Systems Theory is a conceptual framework that views organizations and phenomena as complex, interconnected systems composed of numerous components working together to achieve a common purpose (Purwatiningsih *et al*, 2022). One key concept within Systems Theory is that of a "system," which can be any entity, organization, or process with interconnected and interdependent components. These components, referred to as elements or subsystems, work together to form a unified whole. In the context of public secondary schools in Nairobi City County, Kenya, a school can be viewed as a system with interconnected elements, including students, teachers, administrators, curriculum, infrastructure, and community relationships (Wyk, Dahmer & Custy, 2020).

A crucial aspect of Systems Theory is the recognition that changes in one part of the system can have cascading effects on other parts. For instance, alterations in the curriculum might impact teaching methods, which in turn affect students' learning experiences and outcomes (Otieno *et al*, 2020). Understanding these interconnections is vital for effective management and decision-making in complex systems like educational institutions. Moreover, Systems Theory introduces the idea of feedback loops, where information about the system's performance is fed back into the system to modify and adjust its functioning. In the context of public secondary schools, feedback mechanisms can involve assessments, evaluations, and communication channels that allow for continuous improvement based on the information received (Kiptoo, Kariuki & Ocharo, 2020). Systems Theory was used to establish the influence of risk management on performance of water projects in Metropolitan Counties in Kenya.

Conceptual Framework

A conceptual framework is a structure or system of concepts that provides a foundation for understanding, analyzing, and interpreting a specific subject or phenomenon. It is a set of interconnected ideas, principles, and theories that form a coherent and comprehensive perspective on a particular topic (Svinicki, 2019). It is a diagram that explains the relationship between dependent and independent variables.

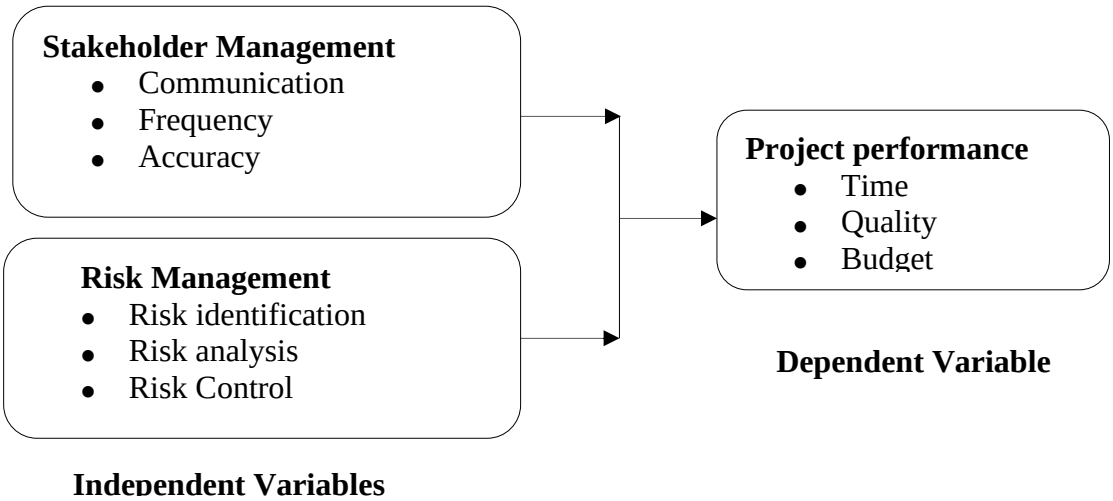

Figure 2. 1: Conceptual Framework

Stakeholder Management

Stakeholder management is the process of identifying, analyzing, and managing the expectations and interests of individuals or groups who have a stake or interest in a particular

project, initiative, or organization (Fuller, 2020). This practice is essential for ensuring that stakeholder concerns are addressed in a manner that aligns with the project's goals. Stakeholders can range from internal participants, such as employees and managers, to external entities, such as investors, customers, suppliers, regulatory bodies, and even the community at large (Mwesigwa *et al*, 2020). Successful stakeholder management involves clear communication, regular updates, and active engagement to ensure that all parties are informed, involved, and supportive of the project's progression. Effective stakeholder management contributes to project success by reducing resistance, fostering cooperation, and ensuring that expectations are realistic and met throughout the project lifecycle (Ontita & Kinyua, 2020).

Communication is the exchange of information, ideas, or feelings between individuals or groups. In any organization, project, or team, effective communication is essential for ensuring that everyone involved is aligned with the goals, expectations, and progress of a task or initiative (Kinyua, 2020). It involves not just the transmission of information but also its understanding, feedback, and response. Effective communication relies on clarity, active listening, empathy, and timely delivery of messages. It can take various forms, including verbal communication (spoken or written), non-verbal communication (such as body language and facial expressions), and digital communication (via emails, video calls, or messaging platforms) (Abiero, 2020). In the context of business or project management, communication is vital for preventing misunderstandings, addressing concerns promptly, and building trust among stakeholders. Poor communication, on the other hand, can lead to confusion, inefficiencies, and even project failure. The tone and style of communication must be tailored to the audience, ensuring that messages are both accessible and appropriate for the intended recipients (Fuller, 2020).

Frequency refers to the rate or interval at which communication occurs within a given context, whether it be a project, a business operation, or any collaborative effort. The frequency of communication plays a crucial role in maintaining the flow of information, ensuring that all stakeholders are kept up to date on developments, and preventing gaps in understanding (Mwesigwa *et al*, 2020). For example, frequent communication in a project helps ensure that team members are aligned on goals and tasks, aware of changes in timelines or resources, and able to address issues promptly before they escalate. On the other hand, excessive communication, especially when it lacks relevance or purpose, can lead to information overload and inefficiencies (Ontita & Kinyua, 2020). Striking the right balance is key—communication should occur often enough to maintain clarity and momentum but not so often that it overwhelms or distracts team members. The ideal frequency will depend on the nature of the project, the urgency of the tasks, and the communication preferences of the stakeholders involved. Regular updates, meetings, and feedback loops are common tools to maintain the appropriate frequency of communication (Kinyua, 2020).

Accuracy in communication is the quality of being correct, precise, and free from error. It is a critical element of effective communication, particularly in contexts where decisions, actions, or strategies are based on shared information (Abiero, 2020). Inaccurate or misleading communication can lead to misunderstandings, wrong assumptions, and poor decision-making, which can ultimately derail projects, damage relationships, or waste resources. To ensure accuracy, communicators must verify their facts, use clear and precise language, and tailor their message to avoid ambiguity (Fuller, 2020). Additionally, it is important to double-check the details, especially when conveying technical data or instructions. Accuracy also involves ensuring that the right information is delivered to the right people at the right time. Inaccuracies can arise from misinterpretation, miscommunication, or simple human error, which is why effective feedback loops and clarification are crucial. Ensuring accuracy in communication builds trust and credibility, reduces risks, and fosters smooth collaboration among team members or stakeholders (Mwesigwa *et al*, 2020).

Risk Management

Risk management is the systematic process of identifying, assessing, and prioritizing potential risks to a project, business, or organization, followed by the application of resources to minimize, monitor, and control the likelihood or impact of these risks (Purwatiningsih *et al*, 2022). This process is crucial in anticipating uncertainties that could negatively affect the project's objectives and developing strategies to mitigate these risks. Risks can stem from various sources, including financial instability, operational inefficiencies, natural disasters, technological failures, or legal issues. By identifying risks early, organizations can take proactive measures to avoid or reduce their impact. Risk management typically involves creating risk mitigation plans, setting up monitoring systems, and establishing response protocols. Effective risk management enhances decision-making, ensures the sustainability of projects, and protects organizational assets (Wyk, Dahmer & Custy, 2020).

Risk identification is the first step in the risk management process and involves recognizing potential risks that could affect a project, business, or organization. This process requires a thorough examination of all aspects of an operation to identify threats, uncertainties, or challenges that might hinder progress or negatively impact outcomes (Otieno *et al*, 2020). Risks can stem from a variety of sources, including financial instability, operational issues, regulatory changes, technological failures, natural disasters, or human error. It's crucial to involve stakeholders, subject matter experts, and key personnel during the identification process to ensure that all potential risks are considered (Kiptoo, Kariuki & Ocharo, 2020). Effective risk identification helps organizations anticipate potential problems before they arise and enables them to take appropriate actions to address or mitigate these risks. Tools such as brainstorming sessions, SWOT analysis (Strengths, Weaknesses, Opportunities, Threats), and risk workshops are commonly used to aid in this process (Mwangi, 2020).

Risk analysis is the next step after identifying risks, involving a deeper assessment of each risk's likelihood and potential impact. This step helps prioritize the risks based on their severity and the probability of their occurrence. Risk analysis involves evaluating both the probability of the risk happening and the consequences it could have if it does occur (Purwatiningsih *et al*, 2022). There are typically two types of analysis used: qualitative and quantitative. Qualitative analysis focuses on categorizing risks and assessing their potential impact based on subjective judgment, while quantitative analysis uses numerical data and statistical methods to estimate risk probabilities and financial impacts. Through risk analysis, organizations can gain a clearer understanding of the potential dangers they face and how they might affect resources, timelines, budgets, or other critical factors. This process is crucial for effective decision-making, as it helps allocate resources efficiently to address the most significant risks Wyk, Dahmer & Custy, 2020).

Risk control, the final step in the risk management process, involves developing strategies to mitigate or manage identified and analyzed risks. This includes implementing measures to prevent risks from occurring, reducing their impact if they do happen, or preparing contingency plans to manage their consequences (Otieno *et al*, 2020). Risk control strategies can vary widely depending on the nature of the risks and the context in which they are present. Some common strategies include risk avoidance (changing plans to eliminate the risk), risk reduction (implementing measures to lessen the likelihood or severity of the risk), risk transfer (shifting the risk to a third party, such as through insurance or outsourcing), and risk acceptance (acknowledging the risk and taking no immediate action if it's deemed tolerable) (Kiptoo, Kariuki & Ocharo, 2020). Effective risk control requires ongoing monitoring and adjustment to ensure that risks are being managed appropriately as circumstances change. By implementing robust risk control measures, organizations can reduce the likelihood of negative impacts, safeguard their resources, and ensure continued progress toward their objectives (Mwangi, 2020).

Empirical Review

Stakeholder Management and Project performance

Fuller (2020) conducted a social responsiveness approach to stakeholder management: lessons from the Canadian banking sector. This paper explores the relationship between business objectives and social responsiveness toward stakeholders in terms of stakeholder management activity. It employs an empirical grounded study of the Canadian banking sector that involved semi-structured interviews combined with archival documents analysis. Findings suggest managers in mature industries with business growth-oriented objectives and a proactive responsiveness toward stakeholders are likely to engage in stakeholder management activities commonly associated with corporate social responsibility. The study concluded that this paper highlights new competitive opportunities for managers seeking to overturn a market leader and conversely represents a threat to the strategic security of dominant firms

Mwesigwa *et al* (2020) conducted a study on the effect of antecedents of stakeholder management in public private partnership projects in Uganda. The purpose of this paper is to assess stakeholder management antecedents in public private partnership (PPP) projects in Uganda. This study is cross sectional and quantitative in nature. Data were collected by means of a questionnaire survey from a sample of 94 PPP projects in Uganda. Results from the study show that the key antecedents of stakeholder management include; communication, engagement, commitment and trust. Conclusions imply that once there is effective communication among stakeholders, stakeholder management becomes possible

Ontita and Kinyua (2020) conducted a study on the role of stakeholder management on firm performance: an empirical analysis of commercial banks in Nairobi City County, Kenya. This study therefore sought to examine the role of stakeholders' management on performance of Commercial banks in Nairobi City County. The study was anchored on Resource Based View and stakeholders' theory. Descriptive research design was utilized for this study. The target population was commercial banks in Nairobi City County. The study found out that stakeholder management affected performance of Commercial Banks in Kenya. Management of Commercial banks should formulate policies that provide guidance on execution of activities relating to stakeholder management. The study found out stakeholder management positively influences the performance of commercial banks in Kenya

Kinyua (2020) conducted a study on the effect of stakeholder management strategies and financial performance of deposit taking SACCOS in Kenya. This study sought to establish the relationship between stakeholder management strategies and the financial performance of deposit taking SACCOS in Kenya. The study found that it has been argued that stakeholder management is decisive in determining whether or not a company is or will remain successful, and that it has direct environment and bottom line result of an organization. The conclusion was that stakeholder management strategies significantly influenced financial performance of DTSs.

Abiero (2020) conducted a study on the effect of challenges of stakeholder management in implementation of Sondu Miriu hydro-electric power project in Kenya. This study sought to establish challenges of stakeholder management in the implementation of Sondu Miriu Hydro Power Project in Nyanza province, Kenya. The research design used in this study was a survey method. It was considered appropriate as it enabled different factors or variables to be identified at a particular point in time. The study has concluded that the best approach from addressing complaints that may have been raised was incorporation of the local community and other stakeholders into the project implementation.

Risk Management and Project performance

Purwatiningsih *et al* (2022) conducted a study on the effect of Examining Leadership Capabilities, Risk Management Practices, and Organizational Resilience: The Case of State-Owned Enterprises in Indonesia. This study aims to assess the role of leadership in Indonesia's State-Owned Enterprises in bringing the companies to be resilient amid uncertainties and a dynamic environment based on dynamic capability theory. The empirical findings enrich the knowledge on the relationship between enterprise resilience, leadership capability, and risk management practice. These results enable management SOEs and their subsidiaries and policymakers to develop strategies and a policy framework to create and develop enterprise resilience and help SOEs navigate safely and triumphantly in uncertain and disruptive business environments. This research adds to the growing body of knowledge on risk management and enterprise resilience from a dynamic capability theory view, especially in public organizations (state-owned enterprises) operating in emerging markets

Wyk, Dahmer and Custy (2020) conducted a study on the effect of Risk management and the business environment in South Africa As an emerging market, South Africa poses a challenging array of long-term political, economic, financial and operational risks to investors. The study findings Managerial responses to anticipate and mitigate risks include matching mode of entry with risk tolerance, superior intelligence and lobbying, maintaining low tolerance for corruption, selecting appropriate financial instruments and balancing shareholder and stakeholder interests. The study concluded that Risk management in SA requires the identification of specific risks and their adverse impact on business

Otieno *et al* (2020) conducted a study on the effect of influence of enterprise risk management on organizational performance: evidence from Kenyan state-owned corporations. The study conceptualized the association between performance of state corporations (SCs) in Kenya and their enterprise risk management (ERM). The study used structured questionnaire to collect data in a cross-sectional survey design approach. Data was collected from 92 state corporations in Kenya. Descriptive and inferential statistics were used in analysis of the collected data. The results from the study established that ERM had a statistically significant influence on organizational performance. The study concluded that matching the contingent factors and adoption of strategic risk management in an organization enables it to accomplish the envisioned outcomes

Kiptoo, Kariuki and Ocharo (2020) conducted a study on the effect of credit risk management and profitability of commercial banks in Kenya. This study examined the relationship between risk management and the financial performance of insurance firms in Kenya over the period 2013–2020. The data was collected from 51 Insurance firms licensed to operate in Kenya as of 31 December 2020. The findings also indicate that operational risk management positively and significantly affects financial performance. This study conclusion investigated the relationship between risk management and financial performance of 51 Insurance Firms in Kenya.

Mwangi (2020) conducted a study on the effect of credit risk management on the financial performance of commercial banks in Kenya. This study sought to review the effect of credit risk management on the financial performance of commercial banks. The design was appropriate because the study involved an in depth study of credit risk management and the relationship between the two variables i.e. credit risk management and the financial performance of commercial banks was described extensively. This study found that there is a significant relationship between financial performance (in terms of profitability) and credit risk management (in terms of loan performance and capital adequacy). The study concluded that credit risk management in the commercial banks is improving and evolving, but much still needs to be done

RESEARCH METHODOLOGY

This study adopted a descriptive research design. This design was preferable for this study because it enables the researcher to undertake a breadth of observations on phenomenon under study. Besides, it provides accurate descriptive analysis of the characteristics of the population from which the study sample is drawn to make inferences about it. In addition, this study adopted a positivist research paradigm. The unit of analysis was 40 water projects from the Nairobi Metropolitan while the unit of observation was 502 respondents comprising of 361 project managers involved in the projects, 89 national government representatives and 52 surveyors. The study used Yamane formulae (Yamane 1967) to determine the appropriate sample size for this study. Therefore, the sample size of the study was 190 respondents.

The study employed questionnaires as the main collection instrument that contained close ended questions. Quantitative data collected was analysed by the use of descriptive statistics using SPSS (Version, 25) and presented through percentages, means, standard deviations and frequencies. The information was displayed by use of bar charts, graphs and pie charts and in prose-form. This was done by tallying up responses, computing percentages of variations in response as well as describing and interpreting the data in line with the study objectives and assumptions through use of SPSS (Version 25) to communicate research findings. Correlation analysis is the statistical tool that can be used to determine the level of association of two variables (Levin & Rubin, 2019). The study conducted a correlation analysis to establish the strength of the relationship between the independent and the dependent variable.

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

The sample size of the study was 190 respondents. The questionnaires were dropped off and picked up later after they were filled by the respondents. Out of 190 questionnaires which were distributed, 166 were duly filled and returned. The drop-off and pick-up-later method yielded the high response rate of 87.4% According to Kumar (2019) indicates that a response rate of 60% and above is acceptable for analysis. This implies that the response rate of 87.1% was adequate for analysis, drawing conclusions and reporting.

Descriptive Statistics

Stakeholder Management and Project Performance

The first specific objective of the study was to establish the influence of stakeholder management on performance of water projects in Metropolitan Counties in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to stakeholder management and performance of water projects in Metropolitan Counties in Kenya. The results were as shown in Table 1.

From the results the respondents agreed that project communication with stakeholders is clear and easy to understand (M=3.892, SD= 0.898). In addition, the respondents agreed that stakeholders are informed about project progress in a timely manner (M=3.871, SD= 0.881). Further, the respondents agreed that regular meetings and check-ins are conducted to keep stakeholders engaged (M=3.866, SD= 0.532). From the results, the respondents agreed that the frequency of communication meets the expectations of key stakeholders (M=3.762, SD= 0.815). In addition, the respondents agreed that information shared with stakeholders is accurate and up-to-date (M=3.749, SD= 0.578). Further, the respondents agreed that reports and updates reflect the actual status of the project (M=3.733, SD= 0.677).

Table 1: Stakeholder Management and Project Performance

	Mean	Std. Deviation
Project communication with stakeholders is clear and easy to understand.	3.892	0.898
Stakeholders are informed about project progress in a timely manner.	3.871	0.881
Regular meetings and check-ins are conducted to keep stakeholders engaged.	3.866	0.532
The frequency of communication meets the expectations of key stakeholders.	3.762	0.815
Information shared with stakeholders is accurate and up-to-date.	3.749	0.578
Reports and updates reflect the actual status of the project.	3.733	0.677
Aggregate	**3.813**	**0.730**

Risk Management and Project Performance

The second specific objective of the study was to assess the influence of risk management on performance of water projects in Metropolitan Counties in Kenya. The respondents were requested to indicate their level of agreement on various statements relating to risk management and performance of water projects in Metropolitan Counties in Kenya. The results were as shown in Table 2.

From the results the respondents agreed that a comprehensive risk register is maintained throughout the project (M=3.842, SD= 0.914). In addition, the respondents agreed that stakeholders are actively involved in the identification of project risks (M=3.817, SD= 0.781). Further, the respondents agreed that risks are evaluated in terms of their potential impact and likelihood (M=3.736, SD= 0.842). From the results, the respondents agreed that appropriate tools and techniques are used to assess the severity of identified risks (M=3.722, SD=0.897). In addition, the respondents agreed that effective mitigation strategies are developed for the most critical risks (M= 3.679, SD= 0.680). Further, the respondents agreed that risk response plans are implemented and monitored regularly (M=3.681, SD=0.545).

Table 2: Risk Management and Project Performance

	Mean	Std. Deviation
A comprehensive risk register is maintained throughout the project.	3.842	0.914
Stakeholders are actively involved in the identification of project risks.	3.817	0.781
Risks are evaluated in terms of their potential impact and likelihood.	3.736	0.842
Appropriate tools and techniques are used to assess the severity of identified risks.	3.722	0.897
Effective mitigation strategies are developed for the most critical risks.	3.679	0.680
Risk response plans are implemented and monitored regularly.	3.681	0.545
Aggregate	**3.746**	**0.777**

Project Performance

The respondents were requested to indicate their level of agreement on various statements relating to performance of water projects in Metropolitan Counties in Kenya. The results were as shown in Table 3.

From the results the respondents agreed that the project is completed within the scheduled timeline (M=3.779, SD= 0.966). In addition, the respondents agreed that milestones and deadlines are consistently met throughout the project (M=3.756, SD= 0.712). Further, the respondents agreed that quality control processes are consistently applied during the project (M=3.743, SD= 0.765). From the results, the respondents agreed that stakeholders are satisfied

with the quality of the outcomes (M=3.676, SD= 0.621). In addition, the respondents agreed that The project is completed within the approved budget (M=3.644, SD=0.871). The respondents also agreed that there is a clear understanding of project requirements from the start (M=3.592, SD=0.888).

Table 3: Project Performance

	Mean	Std. Deviation
The project is completed within the scheduled timeline.	3.779	0.966
Milestones and deadlines are consistently met throughout the project.	3.756	0.712
Quality control processes are consistently applied during the project.	3.743	0.765
Stakeholders are satisfied with the quality of the outcomes.	3.676	0.621
The project is completed within the approved budget.	3.644	0.871
There is a clear understanding of project requirements from the start.	3.592	0.888
Aggregate	**3.698**	**0.804**

Inferential Statistics

Inferential statistics in the current study focused on correlation and regression analysis. Correlation analysis was used to determine the strength of the relationship while regression analysis was used to determine the relationship between dependent variable (performance of water projects in Metropolitan Counties in Kenya) and independent variables (stakeholder management, risk management).

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (stakeholder management, risk management) and the dependent variable (performance of water projects in Metropolitan Counties in Kenya). Pearson correlation coefficient range between zero and one, where by the strength of association increase with increase in the value of the correlation coefficients.

Table 4: Correlation Analysis

		Project Performance	Stakeholder Management	Risk Management
Project Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	166		
Stakeholder Management	Pearson Correlation	.864	1	
	Sig. (2-tailed)	.002		
	N	166	166	
Risk Management	Pearson Correlation	.876**	.184	1
	Sig. (2-tailed)	.001	.021	
	N	166	166	166

**. Correlation is significant at the 0.01 level (2-tailed).

From the results, there was a very strong relationship between stakeholder management and performance of water projects in Metropolitan Counties in Kenya (r = 0. 864, p value =002). The relationship was significant since the p value 0. 002 was less than 0.05 (significant level). The findings are in line with the findings of Sanggoro, Widyaningsih and Bintoro (2020) who indicated that there is a very strong relationship between stakeholder management and project performance.

Further, the results revealed that there is a very strong relationship between risk management and performance of water projects in Metropolitan Counties in Kenya (r = 0. 876, p value =0. 001). The relationship was significant since the p value 0. 001) was less than 0.05 (significant level).The findings are in line with the findings of Njeri and Ngugi (2021) that there is a very strong relationship between risk management and project performance.

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (stakeholder management, risk management) and the dependent variable (performance of water projects in Metropolitan Counties in Kenya).

Table 5: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.237	0.061		3.885	0.000
	Stakeholder Management	0.381	0.099	0.382	3.848	0.000
	Risk Management	0.372	0.097	0.373	3.835	0.001

a Dependent Variable: performance of water projects in Metropolitan Counties in Kenya

The regression model was as follows:

$$\mathbf{Y = 0.237+0.381X_1 + 0.372X_2 +\varepsilon}$$

According to the results, stakeholder management has a significant effect on performance of water projects in Metropolitan Counties in Kenya (β_1=0.381, p value= 0. 000). The relationship was considered significant since the p value 0. 000 was less than the significant level of 0.05. The findings are in line with the findings of Sanggoro, Widyaningsih and Bintoro (2020) who indicated that there is a very strong relationship between stakeholder management and project performance.

Furthermore, the results revealed that risk management has significant effect on performance of water projects in Metropolitan Counties in Kenya (β1=0.372, p value=0. 001). The relationship was considered significant since the p value 0. 001) was less than the significant level of 0.05. The findings are in line with the findings of Njeri and Ngugi (2021) that there is a very strong relationship between risk management and project performance.

Conclusions

The study concludes that stakeholder management has a significant effect on performance of water projects in Metropolitan Counties in Kenya. The study findings revealed that communication, frequency and accuracy influences performance of water projects in Metropolitan Counties in Kenya.

Further, the study concludes that risk management has a significant effect on performance of water projects in Metropolitan Counties in Kenya. The study findings revealed that: risk identification, risk analysis and risk control influences performance of water projects in Metropolitan Counties in Kenya.

Recommendations

The study recommends that the management of water projects in Metropolitan Counties should implement a structured stakeholder engagement framework that includes clear identification,

communication, and feedback mechanisms for all key stakeholders—such as local communities, government agencies, donors, and private partners.

Further, the study recommends that the management of water projects in Metropolitan Counties should strengthen risk management practices throughout the project lifecycle. This includes identifying potential risks early—such as funding delays, community opposition, environmental challenges, or technical failures—and developing proactive mitigation strategies.

Suggestions for Further Studies

This study was limited to the influence of project management practices on performance of water projects in Metropolitan Counties in Kenya hence the study findings cannot be generalized to project performance in other projects in Kenya. The study therefore suggests further studies on the influence of project management practices on performance of all projects in Metropolitan Counties in Kenya.

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