



**PROJECT MANAGEMENT PRACTICES AND PERFORMANCE OF WATER
PROJECTS IN NAIROBI CITY COUNTY, KENYA**

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ABSTRACT

Nairobi County faces 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 Nairobi 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 on performance of water projects in Nairobi city county, Kenya. Specifically, the study sought to establish the influence of project planning on performance of water projects in Nairobi city county, Kenya and to assess the influence of leadership competencies on performance of water projects in Nairobi city county, Kenya. This study was anchored on; Systems Theory and human capital theory. According to the Ministry of Water, Sanitation and Irrigation (2022), the study targeted 231 water projects. The unit of observation was the 1 project engineer and 1 site manager from each of the targeted water projects. The total target population was 462 project engineers and site managers. Yamane formula (1967) was used to determine the sample size since the population was less than 10,000. The study was administered with questionnaires of 214 respondents mention above. This research used a questionnaire to collect primary data. Fourteen questionnaires were piloted that represented 10% of the target population. The study collected quantitative data which was analysed using descriptive and inferential statistics using the Statistical Package for Social Sciences (SPSS) version 24. Multivariate linear regression was used to determine the relationship between the dependent and independent variables. The study concludes that project planning has a positive and significant effect on performance of water projects in Nairobi city county, Kenya. The study also concludes that leadership competencies have a positive and significant effect on performance of water projects in Nairobi city county, Kenya. The study recommends that project managers should prioritize comprehensive stakeholder engagement throughout the project planning process.

Key Words: Project Management Practices, Project Planning, Leadership Competencies

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. 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. 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" (OECD, 2018).

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 (Affare, 2019). 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 (Braendle, 2020). 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.

Internationally, 80% of management staff trusted that having Project management as a core capability helped them stay focused amid recession (Shrenash, Pimplikar & Sawant, 2017). Similarly, Mourshed, Chijioke and Barber (2019) report demonstrated that 58% of 1400 worldwide officials gave priority to strong discipline in project management for future development. Stakeholders are people or firms, such as proprietors, sponsors, organizations that perform, or the general population, who are effectively engaged with the project or whose interests might be emphatically or adversely influenced by the project implementation success.

Research on practice of Project Management by Frimpong et al. (2017) in Ghana, on the project management practice in Africa have revealed the causes of overruns for delay and cost in Nigerian construction projects. Studies by Ika *et al.* (2018) acknowledged the communication role in success of African projects. We are all aware of the issues on management of African project, because number of factors such as Corruption, bad government and inadequate capacity for (project) administration have been described as silent murders of African ventures and development (Collier, 2017; Moyo, 2017).

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%. 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. 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.

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 (Ondieki *et al.*, 2017). Nairobi County faces 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 Nairobi County have access to clean drinking water, which is significantly lower than the national average of 58%. 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%. Research has shown that project management practices influence project performance.

Water projects are usually expensive in terms of expertise, labour and financial resource. By not meeting the expected performance, water projects that are not functioning can result in a huge resource loss. Project failure rates in Kenya are high and the costs involved in starting and running them are equally high. The findings of an impact assessment on projects management practices showed that only 5 out of 36 project groups in Nairobi County funded in 2017 were partially active, while the rest had become defunct and could not be traced after cessation of funding. According to data from the Nairobi County Water and Sewerage Company, a significant percentage of water projects fail to meet their intended objectives within the stipulated timeframes and budgetary allocations. For instance, analysis indicates that over the past five years, approximately 30% of water projects in Nairobi County have experienced delays exceeding 12 months, leading to increased costs and decreased service delivery efficiency. Approximately 40% of water projects initiated between 2015 and 2020 experienced cost overruns exceeding 20% of the initial budget allocation. Furthermore, delays have plagued project timelines, with nearly 60% of projects exceeding their scheduled completion dates by an average of 12 months.

Several studies have been conducted on project management practices and project 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 management practices on performance of fast-moving consumer goods companies in Nairobi County, Kenya. Oballah, Waiganjo and Wachiuri (2015) researched on the effect of project management 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 Nairobi city county, Kenya. To fill the highlighted gaps, the current study sought to establish the influence of project management practices on performance of water projects in Nairobi city county, Kenya.

General Objective of the Study

The general objective of the study was to establish the influence of project management on performance of water projects in Nairobi city county, Kenya.

Specific Objectives of the Study

- i. To establish the influence of project planning on performance of water projects in Nairobi city county, Kenya.
- ii. To assess the influence of leadership competencies on performance of water projects in Nairobi city county, Kenya.

Theoretical Review

Systems Theory

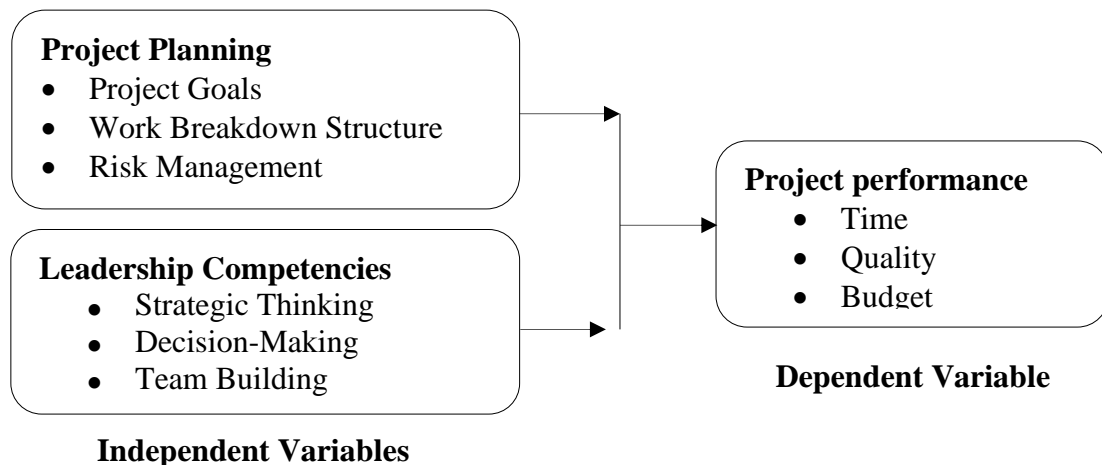
Systems theory was developed by Ludwig von Bertalanffy in (1972). Systems Theory is a conceptual framework that views organizations and phenomena as complex, interconnected systems composed of numerous components working together to achieve a common purpose. One key concept within Systems Theory is that 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 (Gitau, Abayo & Kibuine, 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. 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 (Chi & Bump, 2018). Systems Theory was used to establish the influence of project planning on performance of water projects in Nairobi city county, Kenya

Human Capital Theory

Human capital theory is a fundamental concept in economics and organizational theory that examines the value of investments in human capabilities. This theory was primarily developed by economists Gary Becker and Theodore Schultz (Turner & Müller, 2019). Theodore Schultz introduced the concept in the early 1960s, laying the foundation with his influential 1961 paper "Investment in Human Capital." Gary Becker further elaborated and formalized the theory in his seminal 1964 book "Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education." At its core, human capital theory posits that individuals and society derive economic benefits from investments in people, particularly through education, training, and health. These investments, termed as human capital investments, include activities such as education, training, health care, and migration, all of which improve individual productivity and economic value. The theory suggests that higher levels of education and training are associated with increased productivity, higher earnings, and overall economic growth (Kioko, 2019).

Conceptual Framework



Project Planning

Project goals are the foundation of project planning, serving as the guiding principles that define what the project aims to achieve. These goals provide clarity and direction, aligning the efforts of the project team towards a common purpose. In project planning, it is essential to establish SMART (Specific, Measurable, Achievable, Relevant, Time-bound) goals that are clearly defined and understood by all stakeholders. Specific goals outline the desired outcomes of the project, ensuring that the team focuses on delivering tangible results (Sau, 2018). Measurable goals enable progress tracking and performance evaluation, allowing stakeholders to assess the project's success against predetermined criteria. Achievable goals set realistic expectations and consider resource constraints, ensuring that the project remains feasible within the allocated budget, timeframe, and resources. Relevant goals are aligned with the project's overall objectives and stakeholders' expectations, contributing to its strategic significance and value. Time-bound goals establish clear deadlines and milestones, providing a sense of urgency and accountability to keep the project on track. By defining clear and meaningful project goals, project planning lays the groundwork for successful project execution and outcomes (Agustiawan, Coffey & Sutrisno, 2020).

The Work Breakdown Structure (WBS) is a hierarchical decomposition of the project's scope into smaller, more manageable components, tasks, and deliverables. In project planning, developing a WBS involves breaking down the project's scope into distinct work packages that can be easily understood, assigned, and scheduled. The WBS organizes the project's activities into a logical structure, allowing the project team to identify dependencies, estimate resource requirements, and allocate responsibilities effectively (Inganda & Mulyungi, 2018). Each level of the WBS provides increasing detail and granularity, from the highest-level project phases or deliverables down to individual tasks or activities. By breaking down the project scope into manageable chunks, the WBS facilitates more accurate planning, scheduling, and budgeting, minimizing the risk of scope creep and ensuring that all project requirements are adequately addressed. Additionally, the WBS serves as a valuable communication tool, enabling stakeholders to visualize the project's scope and understand the interrelationships between different project components. Overall, the WBS plays a critical role in project planning by providing a structured framework for organizing and managing project activities, resources, and timelines (Hussain, *et al*, 2022).

Risk management is an essential component of project planning that involves identifying, assessing, mitigating, and monitoring potential risks and uncertainties that may impact the project's objectives. In project planning, it is crucial to conduct a thorough risk assessment to identify potential threats and opportunities that could affect the project's success. This involves analyzing internal and external factors, such as technical challenges, resource constraints, market dynamics, regulatory requirements, and environmental factors, that may pose risks to the project. Once risks are identified, they are assessed based on their probability of occurrence and potential impact on the project's goals, schedule, budget, quality, and stakeholders. Risk mitigation strategies are then developed to address identified risks, minimize their likelihood or impact, and capitalize on opportunities. These strategies may include risk avoidance, risk transfer, risk reduction, risk acceptance, or risk sharing, depending on the nature and severity of the risks (PokuaaAddo-Parker, *et al*, 2021).

Leadership Competencies

Leadership competencies refer to the specific skills, abilities, knowledge, and behaviors that effective leaders possess and demonstrate in order to achieve organizational goals and inspire others. These competencies encompass a broad range of capabilities that enable leaders to navigate complexities, make strategic decisions, and foster a positive work environment. Leadership competencies are essential for guiding teams and organizations towards success, often including traits such as emotional intelligence, communication skills, adaptability, problem-solving abilities, and the capacity to influence and motivate others (Adan, 2017).

Strategic Thinking involves the ability to envision the future and chart a course of action that aligns with the organization's long-term goals and objectives. Leaders with strong strategic thinking skills can analyze complex situations, identify emerging trends, and anticipate potential challenges and opportunities (Chege, & Bowa, 2020). This competency requires a deep understanding of the organization's internal strengths and weaknesses, as well as external factors such as market dynamics and competitive landscapes. By applying strategic thinking, leaders can formulate plans that capitalize on strengths, mitigate weaknesses, and position the organization for sustainable growth and success. Strategic thinking also fosters innovation by encouraging leaders to explore new ideas and approaches that can give the organization a competitive edge in the marketplace (Affare, 2019).

Decision-Making is the process of evaluating alternatives and choosing the most appropriate course of action to achieve organizational goals. Effective decision-making involves gathering relevant information, analyzing risks and benefits, and considering the impact on stakeholders before making a final choice. Leaders who excel in decision-making can make timely and well-informed decisions that align with the organization's strategic direction (Bourne, & Walker, 2018). This competency is critical in navigating uncertainties and complexities within the business environment. It also involves the ability to make tough decisions under pressure while balancing short-term needs with long-term goals. By demonstrating consistent and transparent decision-making practices, leaders can build trust and confidence among employees, fostering a culture of accountability and empowerment within the organization (Agustiawan, Coffey, & Sutrisno, 2020).

Team Building encompasses the process of creating and nurturing a cohesive and high-performing team. Effective team building involves developing strong relationships among team members, fostering open communication, and promoting a shared sense of purpose and collaboration. Leaders who prioritize team building understand the importance of leveraging diverse skills and perspectives within the team to achieve collective goals. This competency also involves identifying and addressing potential conflicts or barriers that may impede team performance (Bourne, 2019). By creating a supportive and inclusive team environment, leaders can enhance morale, motivation, and job satisfaction among team members. Strong team building skills enable leaders to cultivate a culture of innovation and continuous improvement, where team members feel empowered to contribute their best efforts towards achieving organizational success (Ashley, 2017).

Empirical Review

Project Planning and Project Performance

Agustiawan, Coffey and Sutrisno (2020) conducted a study on the role of project culture in achieving the performance of Indonesian toll road projects. The study used a case study approach. The case studies were based on data collected through examining archives, responses to the questionnaire, and formal interviews with project participants from the client, contractor, and subcontractor organizations. The study found that project parties put in place collaboration as their main concern and found prevalence of goal-oriented, people-oriented, and cooperative dimensions. The study concluded that there is no fixed dimension of culture in Indonesian toll road infrastructure projects.

Tuyishime and Nyambane (2021) conducted a study on planning and project performance in public institutions in Rwanda. A case of establishment of a frequency spectrum management and monitoring system project in Rwanda. The study used causal research design. Target population comprised of 145 respondents from Rwanda Utilities Regulatory Authority. The study found that there was a positive significant linear relationship between planning and projects performance. The study concluded that planning practices influences project performance.

Muute and James (2019) investigated on the project planning practices and performance of construction projects in Nairobi City County, Kenya. Descriptive research design was adopted in this study. The target population was one hundred and twenty-five construction projects within Nairobi City County. The study found that all material resources allocated were in use and that project output had been well defined and quality projects' planning was being carried out effectively. The study concluded that human resource planning, time management, material resource planning and financial resource planning positively and significantly contributes to performance of the construction projects.

Leadership Competencies and Project Performance

Turner and Müller (2019) focused on the impact of leadership styles and competencies on project success. Their study primarily involved a comprehensive literature review and empirical studies. They synthesized findings from a variety of sources, including published research articles, books, and case studies, to identify key leadership competencies that correlate with successful project outcomes. The target population for this study consisted of project managers and teams across multiple industries, such as construction, IT, and healthcare. The findings highlighted that specific leadership competencies, particularly emotional intelligence, effective communication skills, and the ability to inspire and motivate teams, are crucial predictors of project success.

Kioko (2019) conducted a study focusing on the role of emotional intelligence (EI) in project management. Their research employed a survey methodology combined with quantitative analysis. They administered structured questionnaires to project managers, assessing their emotional intelligence and the performance of their projects. The target population included project managers from various sectors, including engineering, IT, and manufacturing, across multiple countries. The study found a strong positive correlation between high levels of emotional intelligence in project managers and improved project performance. Project managers with high EI were better at fostering team cohesion and achieving successful project outcomes.

Yang, Huang, and Wu (2020) conducted a study on the relationship between leadership styles, specifically transformational leadership, and project success. This research used a cross-sectional survey design and statistical analysis. Surveys were distributed to project managers and team members to collect data on leadership behaviors and project outcomes. The target population comprised project managers and team members from various industries, including finance, construction, and IT, primarily in Taiwan. The study concluded that transformational leadership, which involves inspiring and motivating team members to transcend their own self-interests for the project's benefit, was positively associated with project success. This leadership style fostered innovation, creativity, and a higher level of commitment among team members.

RESEARCH METHODOLOGY

Research Design

The descriptive research design was employed where data was collected one point in time. Creswell and Creswell (2017) notes that a descriptive survey seeks to obtain information that describes existing phenomena by asking questions relating to individual perceptions and attitudes.

Target Population

This study targeted Water projects in Nairobi City County. According to the Ministry of Water, Sanitation and Irrigation (2022), there are 231 water projects. The study therefore targeted the 231 water projects. The unit of observation comprised of 1 project engineer and 1 site manager

from each of the targeted water projects. The total target population was 462 project engineers and site managers.

Sample Size and Sampling Technique

Yamane formula (1967) was used to determine the sample size since the population was less than 10,000 (Yamane, 1967). Where: n indicates the sample size; N indicates the population under study (462); and e indicates the margin error (0.05)

$$n = \frac{N}{(1 + N(e)^2)}$$

$$n = \frac{462}{(1 + 462(0.05)^2)}$$

$$n = 214$$

Thus, the study was administered with questionnaires of 214 respondents mention above. The study used simple random sampling to select a sample of 214 project engineers and site managers from the target population. With simple random sampling, each unit of the population has an equal probability of inclusion in the sample (Creswell, 2014).

Table 3.2 Sample Size

Category	Target Population
Project engineers	107
Managers	107
Total	214

Data Collection Instrument

Data was collected using a self-administered semi-structured questionnaire. Semi-structured questionnaires were used since they enable the researcher collect quantitative data. Questionnaires are a good method because they provide clarifications seek by respondents and they can be collected immediately after they are completed. Structured questionnaires are easy to administer, analyze and are economical in terms of time and money.

Pilot Study

A pilot study which is a small-scale preliminary investigation is conducted before the actual study. Its primary purpose is to test various aspects of the research design, procedures, and feasibility to ensure that the main study is conducted effectively. It allows to identify potential challenges, refine research protocols, estimate sample sizes, assess the quality of data collection methods, and anticipate any logistical or ethical issues that may arise. The findings from a pilot study inform the design and implementation of the actual research project, ultimately enhancing its validity and reliability. The proposed pilot study was conducted Kiambu County with a sample size of 22 project engineers and site managers from 40 water projects in the county.

Data Analysis and Presentation

Data obtained from the field was coded, cleaned, and entered into the computer for analysis using the SPSS version 25. The data was summarized in order to see emerging trends and issues around specific themes, which are dependent on the variables and objectives. Presentation of data was done in form of quantitative and qualitative reports which was presented in forms of tables and essay. For the quantitative reports, the tables consisted of mean and standard deviation values that were used to make interpretation of the analysis. Percentage, mean and

standard deviation were used to show the frequency of responses. Tables were used to display the rate of responses and to facilitate comparison. Qualitative reports were presented in form of essay which were discussed as per the study objectives aligned with the theories and empirical study.

Descriptive statistics include frequency, percentages, mean and standard deviation. Inferential statistical analysis to used was multiple regression and correlation analysis. The significant of each independent variable was tested at a confidence level of 95%.

Multiple regression Analysis was used in this study because it uses the independent variables in predicting the dependent variable. It is a statistical tool attempting to establish whether some variables can be used together in predicting a particular variable (Mugenda & Mugenda, 2018).

ANALYSIS AND INTERPRETATION OF DATA

Descriptive Statistics

Project Planning and Project Performance

The first specific objective of the study was to establish the influence of project planning on performance of water projects in Nairobi city county, Kenya. The respondents were requested to indicate their level of agreement on statements relating to project planning and performance of water projects in Nairobi city county, Kenya. The results were as presented in Table 4.1.

From the results, the respondents agreed that they understand the importance of developing a detailed project plan before starting project execution (M=3.928, SD= 0.891). In addition, the respondents agreed that they believe that project planning significantly impacts project success (M=3.911, SD=0.863). Further, the respondents agreed that they are familiar with the key components of a project plan (e.g., scope, schedule, resources) (M=3.896, SD= 0.764). The respondents also agreed that they use project management tools/software to facilitate project planning activities (e.g., Microsoft Project, JIRA) (M=3.881, SD= 0.657). The respondents agreed that adequate resources (time, budget, personnel) are allocated for project planning activities in their projects (M=3.874, SD=0.886). The respondents agreed that they have access to training or resources that help them improve their project planning skills (M=3.861, SD=0.794). In addition, the respondents agreed that they are involved in the development of project plans within their team (M=3.749, SD=0.876).

Table 4. 1: Project Planning and Project Performance

	Mean	Std. Deviation
I understand the importance of developing a detailed project plan before starting project execution.	3.928	0.891
I believe that project planning significantly impacts project success.	3.911	0.863
I am familiar with the key components of a project plan (e.g., scope, schedule, resources).	3.896	0.764
We use project management tools/software to facilitate project planning activities (e.g., Microsoft Project, JIRA).	3.881	0.657
Adequate resources (time, budget, personnel) are allocated for project planning activities in our projects.	3.874	0.886
I have access to training or resources that help me improve my project planning skills.	3.861	0.794
I am involved in the development of project plans within my team	3.749	0.876
Aggregate	3.871	0.819

Leadership Competencies and Project Performance

The fourth specific objective of the study was to assess the influence of leadership competencies on performance of water projects in Nairobi city county, Kenya. The respondents were requested to indicate their level of agreement on various statements relating to leadership competencies and performance of water projects in Nairobi city county, Kenya. The results were as presented in Table 4.2.

From the results, the respondents agreed that they are able to articulate a clear vision for the future of their team/organization (M=3.953, SD= 0.805). In addition, the respondents agreed that they actively engage in strategic thinking to anticipate future challenges and opportunities (M=3.844, SD=0.866). Further, the respondents agreed that they understand how organizational goals align with broader industry trends and market dynamics (M=3.785, SD= 0.765). The respondents agreed that they make timely and well-informed decisions that align with organizational objectives (M=3.690, SD=0.687). The respondents also agreed that they effectively analyze complex problems and develop viable solutions (M=3.687, SD=0.781). In addition, the respondents agreed that stakeholders perceive them as a decisive leader who can navigate uncertainties effectively (M=3.677, SD=0.818). Further, the respondents agreed that they are skilled at persuading others and gaining buy-in for initiatives or changes (M=3.651, SD=0.564).

Table 4. 2: Leadership Competencies and Project Performance

	Mean	Std. Dev.
I am able to articulate a clear vision for the future of my team/organization.	3.953	0.805
I actively engage in strategic thinking to anticipate future challenges and opportunities.	3.844	0.866
I understand how organizational goals align with broader industry trends and market dynamics.	3.785	0.765
I make timely and well-informed decisions that align with organizational objectives.	3.690	0.687
I effectively analyze complex problems and develop viable solutions.	3.687	0.781
Stakeholders perceive me as a decisive leader who can navigate uncertainties effectively.	3.677	0.818
I am skilled at persuading others and gaining buy-in for initiatives or changes.	3.651	0.564
Aggregate	3.755	0.755

Correlation Analysis

The present study used Pearson correlation analysis to determine the strength of association between independent variables (project planning and leadership competencies) and the dependent variable (performance of water projects in Nairobi city county, 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. 3: Correlation Coefficients

		Project Performance	Project Planning	Leadership Competencies
Project Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	194		
Project Planning	Pearson Correlation	.825**	1	
	Sig. (2-tailed)	.003		
	N	194	194	
Leadership Competencies	Pearson Correlation	.845**	.174	1
	Sig. (2-tailed)	.000	.067	
	N	194	194	194

From the results, there was a very strong relationship between project planning and performance of water projects in Nairobi city county, Kenya ($r = 0.825$, p value =0.003). The relationship was significant since the p value 0.003 was less than 0.05 (significant level). The findings are in line with the findings of Agustiawan, Coffey and Sutrisno (2020) who indicated that there is a very strong relationship between project planning and project performance.

The results also revealed that there was a very strong relationship between leadership competencies and performance of water projects in Nairobi city county, Kenya ($r = 0.845$, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the results of Turner and Müller (2019) who revealed that there is a very strong relationship between leadership competencies and project performance

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (project planning and leadership competencies) and the dependent variable (performance of water projects in Nairobi city county, Kenya)

Table 4. 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.925	.855	.854	.592

a. Predictors: (Constant), project planning and leadership competencies

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.855. This implied that 85.5% of the variation in the dependent variable (performance of water projects in Nairobi city county, Kenya) could be explained by independent variables (project planning and leadership competencies).

Table 4. 5: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	12.027	2	6.014	86.23	.000 ^b
1 Residual	6.553	191	.035		
Total	18.580	193			

a. Dependent Variable: performance of water projects in Nairobi city county, Kenya

b. Predictors: (Constant), project planning and leadership competencies

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 86.23 while the F critical was 2.419. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of project planning and leadership competencies on performance of water projects in Nairobi city county, Kenya.

Table 4. 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error			
1	(Constant)	0.298	0.077		3.870	0.002
	project planning	0.374	0.095	0.375	3.937	0.001
	leadership competencies	0.379	0.097	0.378	3.907	0.002

a Dependent Variable: performance of water projects in Nairobi city county, Kenya

The regression model was as follows:

$$Y = 0.298 + 0.374X_1 + 0.379X_2 + \epsilon$$

According to the results, project planning has a significant effect on performance of water projects in Nairobi city county, Kenya ($\beta_1=0.374$, 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 Agustawan, Coffey and Sutrisno (2020) who indicated that there is a very strong relationship between project planning and project performance.

In addition, the results revealed that leadership competencies has significant effect on performance of water projects in Nairobi city county, Kenya ($\beta_1=0.379$, 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 results of Turner and Müller (2019) who revealed that there is a very strong relationship between leadership competencies and project performance.

Conclusions

The study concludes that project planning has a positive and significant effect on performance of water projects in Nairobi city county, Kenya. Findings revealed that project goals, work breakdown structure and risk management influences performance of water projects in Nairobi city county, Kenya.

The study also concludes that leadership competencies have a positive and significant effect on performance of water projects in Nairobi city county, Kenya. Findings revealed that strategic thinking, decision-making and team building influences performance of water projects in Nairobi city county, Kenya.

Recommendations

The study recommends that project managers should prioritize comprehensive stakeholder engagement throughout the project planning process. This entails actively involving community members, local authorities, non-governmental organizations (NGOs), and relevant government agencies from the initial stages of project conception to implementation and maintenance phases

The study also recommends that project managers should cultivate and empower leadership with strong community engagement competencies. Effective leadership in water projects requires individuals who can build relationships, foster collaboration, and inspire stakeholders toward shared goals. Leaders should possess skills in communication, negotiation, and conflict resolution to navigate the diverse interests and challenges inherent in such projects.

References

- Adan, H. (2017). *Influence of Stakeholders' Role on Performance of Constituency Development Fund Projects; A Case of Isiolo North Constituency, Kenya*. Unpublished Masters' Thesis, University of Nairobi.
- Affare, M.A.W. (2019). *An Assessment of Project Communication Management on Construction Projects in Ghana* (Doctoral Dissertation). Kwame Nkrumah University of Science and Technology.
- Bell, E., & Bryman, A. (2007). The ethics of management research: an exploratory content analysis. *British Journal of Management*, 18(1), 87-99.
- Bhattacharjee, A. (2012). *Social Science Research: Principles, Methods, and Practices*. New York: Free Press.
- Blackstone, J. (2010). Theory of Constraints – A Status Report. *International Journal of Production Research*, 39(6)53-80.
- Boermans, M.A., & Roelfsema, H. (2012). A Resource-Based View of Internationalization in Emerging Economies. In: Marinov, M.A., Marinova, S.T. (eds) *Impacts of Emerging Economies and Firms on International Business*. Palgrave Macmillan, London.
- Buba, S. P. G., & Tanko, B. L. (2017). Project Leadership and Quality Performance of Construction Projects. *International Journal of Built Environment and Sustainability*, 4(2).
- Chua, D., Kog, Y.C., & Loh, P.K. (2019). Critical Success Factors for Different Project
- Collis, J. & Hussey, R. (2014). *Business research: a practical guide for undergraduate and postgraduate students* 4th Ed. New York: Palgrave Macmillan.
- Cooke-Davies, T. (2002). The “real” success factors on projects. *International journal of project management*, 20(3), 48-69.
- Creswell, J.W. (2014). *Research design. Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks CA: Sage.
- Filippone, M. (2016). A guide for effective public involvement. *Journal for communication and project management*, 454-470.
- Githinji, C. N, Ogolla, P & Kithika, S. (2020). Influence of stakeholder's involvement on project performance. A case study of Kenya ferry services. *The Strategic Journal of Business & Change Management*, 7(3) 738-756.
- Greener, S. (2018). Research Limitations: The Need for Honesty and Common Sense. *Interactive Learning Environments*, 26(5) 567-568.
- Gul, W, Masood, K, Sadiq, I & Saeed, B. (2022). Examining the impact of leadership competencies on the performance of projects: The mediating effect of job satisfaction. *Sustainable Business and Society in Emerging Economies*, 4(1), 97-114.
- Hutton, G., Haller, L., & Bartram, J. (2007). Global cost-benefit analysis of water supply and sanitation interventions. *Journal of water and health*, 5(4), 481–502.
- Ika, A., Diallo, A. & Thuillier, D. (2014). Critical success factors for World Bank projects: An empirical investigation. *International Journal of Project Management*, 30 (2) 105–116.
- Imran, A., Luqman, M., & Zaki, A. (2016). Impact of human capital practices on project success. Kuwait Chapter of Arabian. *Journal of Business and Management Review*, 5(6), 1-16.

- Kanda, E. K., Muchelule, Y., & Mamadi, S. (2016). Factors Influencing Completion of Water Projects in Kakamega County, Kenya. *International Journal of Research in Management, Science & Technology*, 4(2), 1-5.
- Karani, C.M. (2017). *Factors Impacting Delivery Reliability of Kenyan Construction Industry: A Survey of Road Projects and Project Managers' Perceptions*. Unpublished Masters' Thesis, University of Nairobi.
- Kerzner, H. (2022). *Project management metrics, KPIs, and dashboards: a guide to measuring and monitoring project performance*. John Wiley & sons.
- Madani, R. A. (2019). Analysis of educational quality, a goal of education for all policy. *Higher Education Studies*, 9(1), 100-109.
- Muhamamd, M. M & Santosa, B. (2019). Analysis implementation of the project management tools and techniques PT. XYZ in Indonesia. *Journal of Proceeding Series*, 5(1), 506-509.
- Mukamugenga, A & Nkechi, E. I. (2022). Project implementation practices and project performance in Rwanda: a case of Masaka farm supported by Africa to Africa Green Solutions Ltd. *International Journal of Scientific and Research Publications*, 12(10), 621-630.
- Ogohi, C. D. (2019). Effect of project management on the performance of selected construction firms in Nigeria. *Journal of Research in Business and Management*, 7(2), 8-13.
- Ojie, F. N. (2019). The role of effective communication in the management of projects: a case of Alemu Nigeria Enterprises Limited. *International Journal of Innovative Research and Development*, 5(13), 197-207
- Oke, A. E & Gbadura, I. H. (2019). An examination of project management leadership styles of Nigerian quantity surveyors. *Journal of Building Performance*, 1(1), 57-63.
- Sau, E. D. (2018). Leadership competencies for sustaining international development projects: perceptions of Ghanaian project workers. *Journal for Studies in Management and Planning*, 4(6), 199-212.
- Solanke, O & Olatunji, L. (2020). Resource allocation in higher education: a case study of selected polytechnics in Nigeria. *International Proceedings of Economics Development and Research*, 83(1), 1-11.
- Takim, R & Adnan, H. (2019). The management of stakeholders' needs and expectations in the development of construction project in Malaysia. *Modern Applied Science*, 3(5), 167-175.
- Umulisa, A, Mbabazize, M & Shukla, J. (2018). Effects of project resource planning practices on project performance of Agaseke project in Kigali, Rwanda. *International Journal of Business and Management Review*, 3(5), 29-51.