RESOURCE MANAGEMENT AND IMPLEMENTATION OF CONSTRUCTION PROJECTS BY KENYA URBAN ROADS AUTHORITY IN NAIROBI CITY COUNTY, KENYA

Faith Mumbe Mbithi.
Department of Management Science, Kenyatta University, Kenya.
Lucy Ngugi, PhD.
Department of Management Science, Kenyatta University, Kenya.

©2026

International Academic Journal of Information Sciences and Project Management (IAJISPM) | ISSN 2519-7711

Received: 14th October 2026

Published: 9th November 2026

Full Length Research

Available Online at: https://iajournals.org/articles/iajispm_v3_i8_36_72.pdf

Citation: Mbithi, F. M., Ngugi, L. (2026). Resource management and implementation of construction projects by Kenya Urban Roads Authority in Nairobi city county, Kenya. *International Academic Journal of Information Sciences and Project Management, 3*(8), 36-72.

ABSTRACT

In Kenya, the road transport system is an important element for the country's development as it is among drivers of economic development and an important pillar for the implementation of the Big Four Development Programs. However, road construction projects were facing challenges of non-Completion. Most projects fail due to lack of adequate funds/financial constraints. Delayed project completion is another significant problem. The foremost purpose of the study was to assess the influence of resource management on the implementation of construction projects by the Kenya Urban Road Authority in the city of Nairobi. The study specific objectives were; to determine the influence of human resources, to determine the influence of financial resources, to evaluate the influence of technological resources and to determine the impact of physical resources on the execution of infrastructure projects at KURA in Nairobi City County, Kenya. The research was anchored by Stakeholder Theory, Resource Based-View (RBV) Theory, Theory of Change and SERVQUAL model. By using a descriptive research design, this research problem was investigated. The respondents were derived from KURA in Nairobi City County which would act as unit of analysis, consisted of 4 projects implemented by KURA from the year 2020 to 2023. Therefore, it comprised 388 respondents. To choose the sample respondents, a stratified sampling method was employed. This study utilized secondary and primary data. The study utilized a questionnaire as a means of data collection tool. The content validity test was hired to ascertain how well the data collection instrument was structured and to evaluate the reliability test of the questionnaire the investigator applied Cronbach's alpha, with a reliability index of at least 0.70. The collected data was analyzed descriptively and inferentially. Tables, bar graphs, pie charts, and written narratives were utilized to display the information. By presenting a cover letter to the university, the researcher asked for permission to gather data and acquire pertinent documents. Also necessary was a research license issued by the National Commission for Science, Technology, and Innovation. The data obtained from the participants was coded and safely stored away from those who were not involved in the research, thereby ensuring confidentiality. The study concludes that resource management practices have a significant influence on the success of project implementation at Kenya Urban Roads Authority in Nairobi City County. The results from model indicates a correlation coefficient (R) of 0.827, which signifies a strong positive relationship between the variables this suggesting that as the quality of resource management practices improves, project implementation success at KURA also improves. with a p-value of 0.000, which is less than the conventional alpha level of 0.05. This indicating the model is statistically significant, with human resources having the strongest influence, followed by financial, technological, and physical resources. The study recommended that Management should prioritize timely fund disbursement to project sites and enhance transparency in budget allocation and expenditure reporting. Digital financial management systems should be adopted to enable real-time budget tracking and

variance analysis. Similarly, KURA should establish more rigorous financial oversight mechanisms, including regular budget reviews, variance analysis, and corrective action protocols to prevent cost overruns and ensure value for money.

Keywords: Financial resource, Human resource, Physical resource, Project implementation, Resource management.

INTRODUCTION

Resource management evolved to play a critical part in the strategic transition of planning, organizing, cutting costs, managing projects, and handling human resources. According to Hyväri (2016), for the projects to acquire their end targets, they have to be dynamically rearranged and associated to account for changing environmental conditions. to fulfill project objectives, the need for better resource management is growing., which is driving increased effort and innovation in this area.

Globally, the construction field is essential to the growth of any country, and the state of a nation's physical infrastructure like its roads, bridges, and buildings—can be used to measure its economic progress (Ofori, 2015). Projects that the government has started and carried out have a significant economic impact in Asia, contributing roughly 10% of the country's GDP, making them essential to the region's economic performance. China has received international recognition for its successful urban development project planning and execution, and in 2018, it was acknowledged for achieving a 90 percent success rate in major development project implementation for the 2017–2018 fiscal year. Over 13.25% of the world's GDP is attributed to the construction sector, which is commonly regarded as amongst the greatest sectors globally. According to the World Bank (2022), a nation will have trouble meeting both its fundamental requirement and its aspirations to become competitive if it lacks the infrastructure necessary to promote green and inclusive expansion. Data shared from (GlobalData, 2023) reveals that major ongoing road upgrades are valued at $0.7 trillion, while new road-building projects worldwide are estimated to be worth $3.4 trillion. About half of all road investments worldwide are made in Asia-Pacific, with Europe and North America coming in second and third, respectively.

In Africa, road infrastructure supports economic transformation by connecting communities, facilitating trade, reducing transportation costs, and improving access to markets and essential services. Governments and development partners invest in road construction to promote economic development and improve living standards. Consequently, effective management of project resources is necessary to ensure that infrastructure investments achieve their intended benefits (Osei-Kyei & Chan, 2017). In Kenya, road infrastructure is a key component of national development and Vision 2030. However, road construction projects experience

challenges related to funding shortages, cost overruns, delayed completion, and administrative inefficiencies. These challenges emphasize the importance of effective resource management and implementation strategies in enhancing the performance of road infrastructure projects (Ochenge, 2018; Makori & Mundia, 2019).

Project implementation involves translating project plans into practical activities to achieve predetermined objectives. It requires appropriate coordination of activities, monitoring of progress, and adherence to project requirements. Project implementation success is commonly assessed through time, cost, and quality, which help determine whether a project has achieved its intended outcomes (Pinto & Slevin, 2016; Sambasivan & Soon, 2018). In project implementation, it is crucial to have a well-defined timeline that outlines key milestones and deadlines. The timeline act as a guide for the workers to stay on track and ensures that the project progresses smoothly towards completion (Anastasiu, Câmpian, & Roman, 2023). Beneficiary satisfaction is another important indicator that reflects how well the project satisfies the requirements and expectations of its intended beneficiaries. Optimal utilization of the set budget is another vital measure of project implementation, as it demonstrates efficient resource management and financial accountability. By closely monitoring budget allocations and expenditures throughout the project lifecycle, Project leaders are capable of spotting possible excess costs and this will prevent misuse of taxes from the citizens.

Resource management involves planning, allocating, coordinating, and controlling resources to achieve organizational and project objectives. In the context of road construction projects at the Kenya Urban Roads Authority (KURA), resource management encompasses four main dimensions: human resources, financial resources, physical resources, and technological resources. Effective coordination of these resources supports efficient project execution and improves the likelihood of achieving project objectives. The Kenya Urban Roads Authority (KURA) is responsible for developing, rehabilitating, maintaining, and managing urban roads in Kenya. Its functions include planning road construction projects, implementing road development policies, monitoring road utilization, and coordinating road-related activities with other authorities. These responsibilities support urban mobility, economic activity, and the development of transport infrastructure (KURA, 2020).

KURA has undertaken various urban road development and improvement projects, including works on Ngong Road, Lang'ata Road, and Outer Ring Road. These projects aim to improve traffic flow, enhance road safety, reduce congestion, and strengthen Nairobi's transportation network. However, their implementation may be affected by challenges such as land acquisition disputes, environmental concerns, inadequate funding, and bureaucratic inefficiencies (KURA, 2022).

Statement of the Problem

Road transportation is one of the main forces behind economic expansion and a crucial pillar in the achievement of the Big Four Development Agenda, Kenya's road transportation system is vital to the nation's development. Global road networks are essential for social, political, and economic transformation (KRB, 2017). However, road construction projects continue to face

major implementation challenges, particularly non-completion and delays. Many projects fail due to inadequate funding and financial constraints, which negatively affect project execution and service delivery. According to the Kenya Institute for Public Policy Research and Analysis (KIPPRA, 2021), projects implemented by the Kenya Urban Roads Authority frequently experience budget shortfalls that result in compromised project quality and incomplete works. In addition, delayed project completion remains a major concern affecting the effectiveness and efficiency of road infrastructure development. A key case is the Eastern Bypass expansion, which faced significant delays due to unresolved issues over land acquisition and the relocation of services, resulting in a two-year delay in project completion. (Office of the Auditor General, 2020).

Despite increased government budgetary allocations to the road sector, challenges relating to effective resource utilization and project completion persist. The Kenya Rural Roads Authority (2019) reported that several road projects experience cost overruns and delays beyond their approved budgets and schedules. These implementation challenges undermine the achievement of development targets and raise concerns about how project resources are planned, allocated, and managed. Therefore, effective management of available resources is necessary to enhance project efficiency and successful implementation.

Previous studies have examined project management and construction project performance. Chan and Kumaraswamy (2017) established that ineffective project management contributes to time and cost overruns, while Njau (2019) found that resource management positively influences construction project implementation in Kenya. Similarly, Mongina (2021) established a significant relationship between project management practices and the delivery of road improvement projects in Nairobi County. However, limited attention has been directed towards the specific influence of human, financial, physical, and technological resource management on road construction project implementation. This study therefore seeks to examine the effect of resource management on the implementation of construction projects at the Kenya Urban Roads Authority in Nairobi City County, Kenya, to address the existing knowledge gap.

Purpose of the Study

The main aim of this investigation was to assess how resource management impact construction project implementation at Kenya Urban Roads Authority in Nairobi City County, Kenya**.**

Specific Objectives

The study specific objectives were;

i. To examine the influence of human resources on implementation of construction projects at Kenya Urban Roads Authority in Nairobi City County, Kenya.
ii. To determine the influence of financial resources on implementation of construction projects at Kenya Urban Roads Authority in Nairobi City County, Kenya.

iii. To evaluate the influence of technological resources on implementation of construction projects at Kenya Urban Roads Authority in Nairobi City County, Kenya.
iv. To identify the influence of physical resources on implementation of construction projects at Kenya Urban Roads Authority in Nairobi City County, Kenya.

THEORETICAL LITERATURE REVIEW

The Resource-Based View Theory

Birger Wernerfelt first proposed it in 1984, and Jay B. later developed and improved it. Barney, 1991. This theory of organizational management is used to determine an organization's strategic resources (Kavuvu, 2011). Resources are the key to superior organizational performance, according to the resource-based view theory, so it is far more practical to take advantage of outside opportunities by repurposing existing resources rather than attempting to learn new skills for every opportunity. According to this view, a company's materials are the touchable and intangible assets that it owns or controls, such as financial-resources, physical resources, human, and intellectual property. These capitals are the foundation upon which a company's capabilities are built. One of the key implications of the RBV approach is the importance of resource allocation. Companies must allocate their resources effectively to maximize their value creation potential. This requires careful consideration of which resources to use, how to use them, and how to combine them with other resources to create new capabilities.

The approach was relevant in this study since it was a management theory that concentrate on the capabilities and internal assets of an organization as sources of sustained advantage over competitors. This theory when applied to human resources, suggests that a company's employees and their capabilities, like knowledge, skills, and experience, can be considered valuable strategic assets that can provide a sustainable competitive advantage and ensure efficient resource utilization on execution of construction projects. Financial resources are crucial in funding the projects, allowing for the procurement of materials, labor, and equipment necessary to execute high-quality roads and infrastructure developments (Gerhart & Feng, 2021). The RBV highlights that effective financial management ensures timely project completion while maintaining cost efficiency. In support of RBV, technological resources play a pivotal role in modernizing construction processes, improving precision, and ensuring sustainability. By adopting advanced construction technologies and software, the KURA can enhance project quality & reduce delays. Lastly, tangible resources, such as construction equipment, machinery, and road-building items, are indispensable for the smooth execution of projects. Thus, the RBV underscores the strategic importance of effectively managing these resources to guarantee the fruitful sustainability and execution of construction projects.

Stakeholder Theory

R. Edward Freeman came up with this idea in 1984. Business organizations, according to the theory, deal with a variety of stakeholders. Freeman introduced the concept to provide a

framework for analyzing the relationships and responsibilities that organizations have with their various stakeholders, rather than focusing solely on shareholders. Standards and values in company management are covered by the stakeholder theory, a theory of corporate ethics and firm management. It characterizes and highlights the collections that are involved in a project, as well as offering strategies and recommendations on how management could consider the interests of various groups into account. When determining the direction and actions of organizations, It is crucial to consider the expectations of the general public, suppliers, consumers, employees and their unions, and the government and its agencies. In addition to being advantageous to the organization, Thompson, Strickland, and Gamble (2007) contend that an organization's strategy-making and strategy-execution efforts should also be in line with those of its stakeholders.

Freeman's work emphasized that enterprise should take consideration the impacts and demands of everyone affected by their choices, such as the environment, workers, suppliers, communities, and buyers, alongside the interests of shareholders. This broader view aims to create value for all stakeholders, thereby fostering long-term success of projects and ethical practices. Incorporating stakeholder theory into government project management fosters a more inclusive, transparent, and accountable process (Freeman, 2023). By recognizing and communicating the different interests of all parties., government projects is able to perform at higher levels, satisfaction, and sustainability. This approach not only aids in accomplishment project goals more effectively besides in building stronger community relations and trust in government institutions.

The approach was therefore important to the investigation for incorporating stakeholder perspectives into the project implementation process allows county governments to align their projects with the desires and anticipations of the community, raising the possibility of sustainability and project success. Stakeholder theory encourages greater accountability within county government projects by holding officials responsible for considering and integrating stakeholder interests into decision-making processes.

SERVQUAL model

First proposed by Parasuraman, Berry, and Zeithaml in 1985, the SERVQUAL model is a widely used paradigm for assessing service quality. This approach was designed to measure the gap between customers' expectations and their perceived actual service experience. The first ten dimensions of service quality were identified as follows: responsiveness, competence, communication, courtesy, security, credibility, reliability, tangibles and comprehending the customer. Afterwards, these were boiled down to five essential components: tangibles (the actual structures, physical look and tools); reliability (the ability to provide promised services consistently); attentiveness (the readiness to help customers and offer timely service); reliability (the staff's expertise and demeanor and their capability to build confidence); and empathy (the capacity to show consumers compassion and personalized attention).

The SERVQUAL model played a crucial role in understanding project implementation and service provision since it offers a structured method for recognizing and tackling gaps in service

quality. Through the utilization of this framework, organizations can synchronize their strategic efforts with what customers anticipate, ultimately enhancing service provision and boosting customer satisfaction. Furthermore, it points out specific areas needing enhancement, which facilitates improved resource distribution and more informed decision-making. Within the public sector, SERVQUAL can be implemented to assess the efficacy of service delivery programs, guaranteeing that strategic goals are fulfilled and customer loyalty is increased.

EMPIRICAL LITERATURE REVIEW

Human Resources and Project Implementation

A study was conducted in Nigeria to evaluate the association between company achievement and human resources while accounting for the moderating influence of organization-based self-esteem (OBSE). A basic random sampling method was utilized to choose a sample of 286 Nigerian employees. Using SPSS 19 software, the gathered data were examined using moderated regression analysis and Pearson correlation. The outcome signified that human resources and secondary school teachers' performance were positively correlated. Research gap: the previous investigation applied SPSS 19 V to analyze the statistics, while the current study will utilize SPSS 21 version, this improving the strength of the outcomes and uncovers potential patterns that were previously undetectable due to software limitations.

Project performance for road infrastructure is vital to the expansion and development of any economy. Nevertheless, many road infrastructure projects in developing countries lack adequate funding, and a greater proportion of road projects constructed by local firms in these countries have. not only failed to meet quality requirements but also had delays and cost overruns (Njeru and Kirui, 2022). The Kenya National Highways Authority's development projects in Nairobi City County were studied in relation to human resources. The Kenya National Highways Authority has been working on ten road infrastructure in Nairobi City County since 2019, using a descriptive approach was chosen to target the accessible population. Project managers, site engineers, and team members made up the sample of 175 respondents in this study. The case employed semi-structured questionnaire to gather primary information. With the supervisors' assistance, the validity of the study tools was evaluated. To discover the reliability, the utilization of Cronbach's alpha coefficient was employed. It was deemed satisfactory with a coefficient of 0.7 or higher. Descriptive and inferential statistics were used to examine the results. The relationship among the variables was ascertained with the execution of multiple regression analyses. The outcomes of the case showed that the implementation of construction projects carried out by the KeNHA in Nairobi was positively correlated with human resources. Contextual gap: the previous case was performed at KeNHA, while the present will be conducted at KURA to bridge the gap in a different scope by building on the insights gained from KENHA's national-level findings. KURA is now focusing on solutions tailored for cities and urban environments, reflecting a shift in scale and scope.

Given an example of road construction in Kirinyaga County, Kenya, Ngangu's (2018) case studied how human resources affected road project performance. This survey employed a number of theories, including Organization Performance Theory, HRM Practices, and Theory

of Competitive Advantage. This study had a conceptual model and an empirical review. The gathering of Primary information was via the use of a questionnaire and a descriptive survey approach. The correctness of the primary information was verified via secondary statistical validation. The correctness of the primary data was checked via secondary data validation. The sample size was 58, and the target population was 71. SPSS was used to examine the data. Charts & Frequency tables were applied in the presentation. The conclusions showed that a p-value was important amongst the dependent and independent variables and this clearly indicated the influence of the construction projects. Methodologically, this study used 71 respondents as the target population, while the current study will use 384 respondents to increase the external validity of the outcomes and make stronger claims about the broader applicability of the results.

Financial Resources and Project Implementation

In this study, Aradukunda and Sikubwabo (2024) analyze how the performance of a project is affected by the management of financial resources. Project failure in Kigali City was caused by inadequate project performance measurement and the misappropriation of public funds, particularly in the surrounding villages and subdivisions. Assessing the effect of financial resources on the achievement of the project in Kigali City was the aim of the case project. In addition to using both the resource dependency and financial literacy theories, the population included 312 Kigali City workers, from whom a sample of 175 employees was chosen via a stratified sampling method. To accomplish these goals, the literature on the topic was reviewed, consisting of research gap analyses, conceptual reviews, theoretical frameworks, and definitions of important terms. Interview guides, documents, and questionnaires were used to collect data. Data processing techniques included editing, coding, and tabulation. Descriptive statistics were also used for analysis. The results showed a significant correlation between the City of Kigali's project performance and the management of its financial resources. Regression analysis showed significant coefficients that showed how Kigali City's project performance was affected by financial resource management. Interestingly, financial resource control has the second-strongest impact on project performance, after financial resource planning. Contextually, this study was anchored by different theories, which had distinct theoretical foundations, and to fill this gap, the current case will use the Resource-Based View (RBV) Theory, Stakeholder Theory & Theory of Change.

According to Nabibya et al., (2023) studied the effect of Financial Resources on carrying out infrastructure projects in Kenya's Kakamega public high schools. The target audience included Sub-County Education officers, chairpersons, Parents Association chairpersons, and principals. Respondents were chosen using a purposive sample technique and stratified sampling. A sum of 316 respondents were chosen for the sample, including 101 principals, 101 chairpersons from boards of management, 101 chairpersons from parents' associations, and 13 Sub-County Education officers. An interview schedule and questionnaires served to gather primary data from the target. Based on the inferences and interpretations drawn from the respondents' comments, content analysis was utilized to qualitatively evaluate the information. Equally inferential alongside descriptive statistical formulae were applied to scrutinize the questionnaire data. Frequencies, percentages, means, and standard deviations were all part of

descriptive statistics. Multiple regression analysis and linear regression analysis were examples of inferential statistics. Financial resources and the execution of infrastructure projects have a major positive impact. Thus, more infrastructure projects were implemented as a result of increased financial resources. Research gap, the study utilized both questionnaires and an interview schedule to assemble primary data, while the current investigation will primarily major with questionnaire alone. Researchers can reach a larger sample size more efficiently and cost-effectively.

A survey by Mugorewase and Kwena, (2020) considered the impact of external financial resources on Rwandan project implementation. Equally secondary & primary information were employed in the investigation. The questionnaire was completed by 190 out of 360 personnel who were involved in building projects in the Nyarugenge district. The information was analyzed via SPSS, and inferential as well as descriptive statistics were utilized to present the findings. This research validates a positive control amongst project implementation and financial resources. Gap, the previous study explored the effect of external financial capital on project implementation in Rwanda, shedding light on the role of financial resources in determining project outcomes. However, this study had a limited scope, focusing solely on external financial resources and project implementation in Rwanda, leaving a knowledge gap on the wider aspects of resource management and its effect on project implementation in other contexts. Specifically, the case did not explain the influence of resource management on construction projects in Kenya, a country with a unique set of challenges and opportunities for construction firms.

Physical Resources and Project Implementation

Katonon and Moi, (2023) examined the variables that affect how well national government constituency-funded initiatives are carried out in Nairobi, Kenya. The particular goals are to identify the influence of resource mobilization on the completing of these roads industry in the Embakasi South Constituency. This case's theoretical basis was built on project implementation theory, Stakeholder Theory, and RBV. This survey utilized a descriptive approach and stratified random sampling, the study collected both primary and secondary data, which were analyzed using SPSS. The findings revealed a significant positive relationship between physical resources and project implementation ($r = 0.251$, $p = 0.047$). Contextual gap, the case was investigated on education sector whereas this research will be conducted at road infrastructure projects. By combining insights from both studies from different sectors, researchers can develop a much interpreting of the use of resource management in implementation of project.

The investigation by Yusuf, (2022), sought to determine how resource management impacted the development projects were performed out in Mogadishu, Somalia. The resource-based view served as the study's compass. Targeting 1045 project technical advisors, project coordinators, employees, and citizens of the Productive Sector Development Project, a descriptive survey design was chosen. 289 participants were chosen as the survey sample by stratified random sampling. A tool was applied as the instrument to assume the respondents' concerns. coefficients of Cronbach- Alpha were calculated to demonstrate reliability, and the supervisor's

and the experts' opinions were used to guarantee validity. inferential and descriptive methods were used to scrutinize the applicants' opinions. It was anticipated that the study's findings would show how important and beneficial efficient resource management is to the execution of development initiatives. The study found that of projects in Mogadishu, was significantly predicted by time resource, financial, human resource, and physical resource. It concluded that resource management signifies a key role in putting development into practice. Study gap, the previous study was carried in Mogadishu in Somalia while the ongoing investigation will be conducted in Kenya to cross the literature gap in different study scope.

A study by Mwakajo and Kidombo, (2017) determined how the physical resource affected the results of construction projects received funding from the Embu government in Kenya. This study employed correlation and descriptive survey designs. The analytical unit consisted of the seven (7) road construction projects underway as of 2023 that were initiated by the Embu government in 2017. Thirty employees from the Embu County Government's planning department, 67 contractors and supervisors, and 70 community leaders who were chosen from particular regions among the seven (7) county government-funded building projects made up the target population. The observation group consisted of 167 responders in total. Via stratified random sampling, the size of 117 was established by a scientific methodology. Means, Regression analysis and standard deviations were utilized to guide the information analysis of the questionnaire responses, which were collected using SPSS version 24. According to the results, most respondents stated that the county possessed equipment that was only marginally required to finish the county's building projects. The research found that the distribution of physical resource capacity should be based on job and efficiency needs. Geographically, the case was carried in Embu County while this investigation will be conducted in Nairobi County and will help to outline existing phenomena in different location.

Technology Resources and Project Implementation

Due to rising competition in the industry, stakeholders are becoming more interested in the use and acceptance of technology in Kenya's construction business, particularly in Nairobi City County, as it can improve project quality, lower project costs, and speed up delivery. Maruti and colleagues, (2024). Thus, determine how specific digital technologies affected the functionality of building projects in Kenya, using Nairobi City County as a case study. Rogers', (1962) diffusion of innovation theory and Moore's (1999) technology adoption life cycle theory serve as the foundation for the study's literature. Descriptive survey research was employed for this study. Engineers' quantity surveyors, Architects, manager of project, are within the construction industry's stakeholders who were the target population. The sampled construction projects were megaprojects with budgets of at least Ksh. 500,000 million. 50 construction projects were chosen by the researcher using the purposive selection method, and two questionnaires were given to each site. One hundred responders made up the intended sample size. Structured questionnaires, site observations, and a review of pertinent project documentation were used to gather data. The SPSS and descriptive statistics were employed to examine the data. Results: digital technologies significantly enhance construction project management and design while also raising project quality. Methodologically, the previous

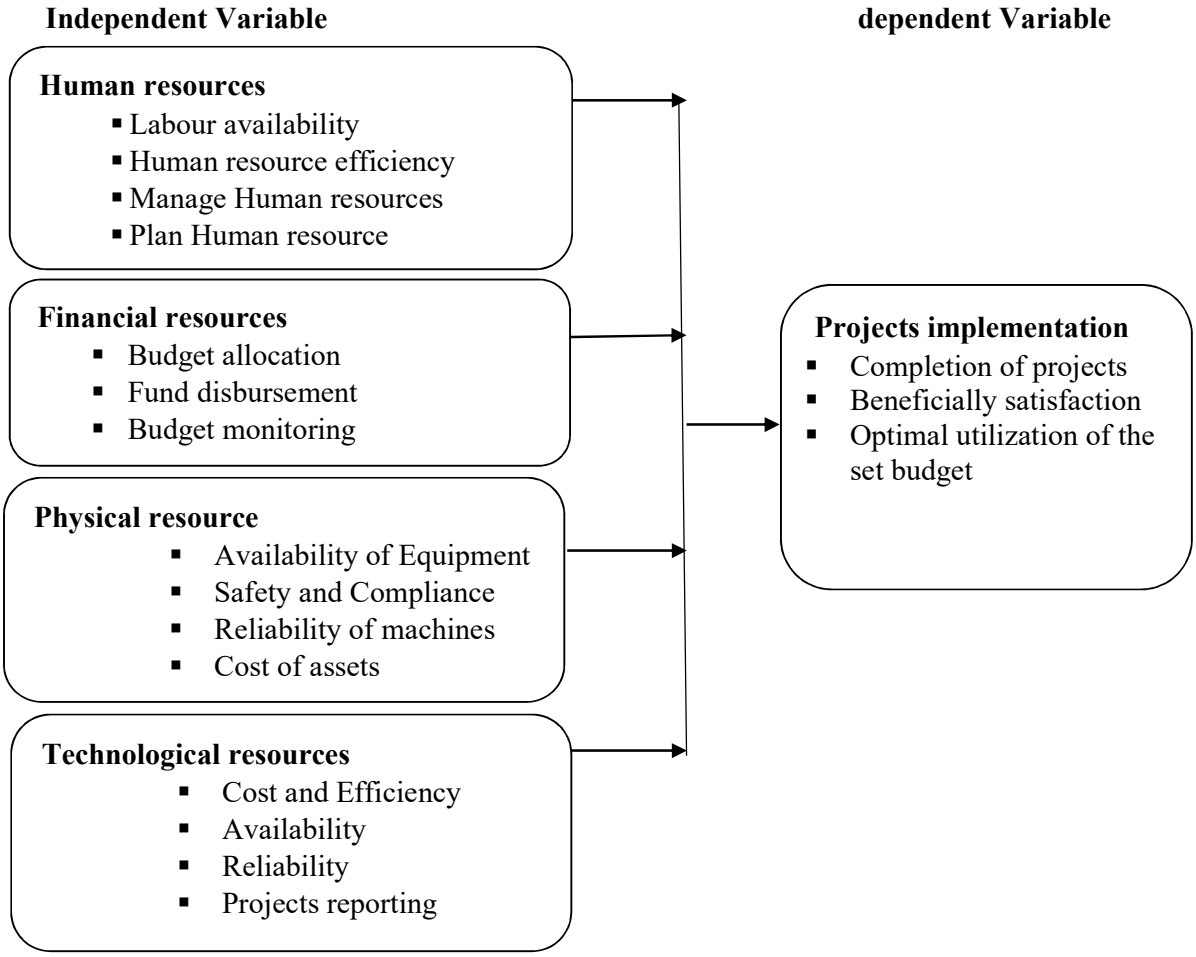
study utilized purposive sampling method while this research will apply simple random technique to source the sample.

Globally, innovative technologies have had a huge impact on a number of different areas. Still, there's no denying that the construction sector is falling behind in terms of technology adoption. Accordingly, the objective of this investigation was to examined the many new technologies applied in Ghana's construction field (Kissi, Aigbavboa & Kuoribo, 2023). The study identified new innovative in the construction firm while taking stakeholder issues and strategies into consideration. It did this by combining a quantitative research strategy with a pragmatic research philosophy. The pragmatic researcher is free to select any procedures, methods, and strategies that best fit the purposes of the case. Using a structured tool survey, information was gathered from 80 construction stakeholders. Using a one-sample t-test and mean score ranking, descriptive statistics was applied for the analysis. The investigation outcomes revealed that by leveraging modern technologies, construction firms can significantly boost operational efficiency, mitigate risks, and reduce overall project costs. Methodological gap, the previous case used pragmatism research philosophy, the present will use descriptive design to describe and summarize existing phenomena, often by providing an overview of what is happening or how things are related.

A case by Ng'etich and Kipkorir, (2023) ascertain how the adoption of technology resources affected the Bomet's Government of project implementation in the country. The survey approach utilized was cross-sectional. The respondents consisted of 141 county government workers, including administrators, directors of various departments, county chief officers, and members of the executive committee. Using stratified random sampling, 106 respondents were chosen, and the sample size was calculated using Yamane's formula. The data was gathered using a structured questionnaire, and both descriptive and inferential statistics were used for the analysis. The content validity of the survey instruments was determined through a pilot study. The Cronbach's alpha method of calculating the coefficient of reliability was done using the SPSS software. The outcomes proved that implementation was meaningfully impacted by technology adoption. Methodologically gap, in the previous case, stratified random was utilized to safeguard that specific subgroups among the population were shown proportionally in the sample. To bridge this gap, the current investigation will use simple random sampling to choose targets. Each individual in the population has an equal probability of being selected thanks to this technique, offering a more straightforward and less resource-intensive approach.

Conceptual framework

The figure below presents the interrelationship between the study's independent variables and dependent variable. Project implementation is the dependent variable, and financial resources, human resources, physical resource and technological resources are the independent factors.



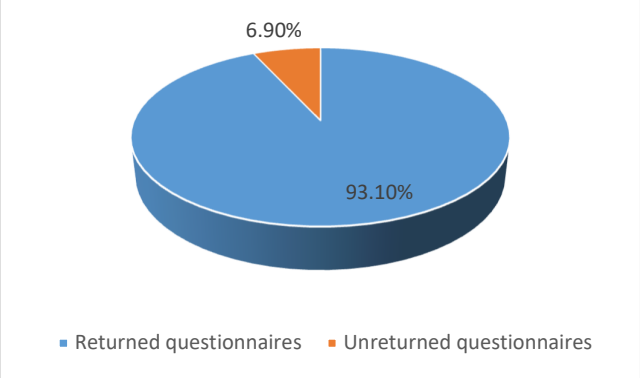
The research was anchored by Stakeholder Theory, Resource Based-View (RBV) Theory, Theory of Change and SERVQUAL model. By using a descriptive research design, this research problem was investigated. The respondents were derived from KURA in Nairobi City County which would act as unit of analysis, consisted of 4 projects implemented by KURA from the year 2020 to 2023. Therefore, it comprised 388 respondents. To choose the sample respondents, a stratified sampling method was employed. This study utilized secondary and primary data. The study utilized a questionnaire as a means of data collection tool. The content validity test was hired to ascertain how well the data collection instrument was structured and to evaluate the reliability test of the questionnaire the investigator applied Cronbach's alpha, with a reliability index of at least 0.70. The collected data was analyzed descriptively and inferentially. Tables, bar graphs, pie charts, and written narratives were utilized to display the information. Statistical package for social sciences (SPSS) version 23 was used in the analysis of data. Regression analysis was used to show the linear relationship between variables. By presenting a cover letter to the university, the researcher asked for permission to gather data and acquire pertinent documents. Also necessary was a research license issued by the National

Commission for Science, Technology, and Innovation. The data obtained from the participants was coded and safely stored away from those who were not involved in the research, thereby ensuring confidentiality.

RESULTS AND DISCUSSIONS

Response Rate

From the 116 questionnaires distributed to the targeted respondents, 108 were appropriately completed and returned, yielding a response rate of 93.1%. This rate is regarded as exceptionally satisfactory for research purposes. According to Mugenda and Mugenda (2019), a response rate of 50% is acceptable for analysis and reporting, 60% is regarded as acceptable, whereas 70% or more is considered exceptional. As a result, the study's response rate might be categorized as excellent.



Source: Field Data (2025)

Reliability Results

To gauge the questionnaire's internal consistency and reliability, Cronbach's Alpha coefficient was utilized. An analysis was conducted using 0.7 as a benchmark value considered as an acceptable reliability value. The subsequent section presents the reliability results for each variable evaluated.

Research Variables	Alpha Score	No. of Items	Remarks
Human Resources	0.827	9	Reliable
Financial Resources	0.819	8	Reliable
Physical Resources	0.808	9	Reliable
Technological Resources	0.815	9	Reliable
Project Implementation	0.822	6	Reliable

Source: Field Data (2025)

The findings presented above demonstrate that all the research variables achieved Cronbach's Alpha values above the acceptable threshold of 0.7, indicating that the questionnaire items used to measure each construct were internally consistent and reliable. Human resources recorded

the highest reliability score (0.827), followed closely by project implementation (0.822), while the other variables; financial resources (0.819), technological resources (0.815), and physical resources (0.808) also demonstrated strong reliability. These results align with Nunnally and Bernstein's (2024) recommendation that an alpha coefficient of 0.7 or higher is sufficient for reliability in social science research. Similar findings were reported by Tavakol and Dennick (2011), who emphasized that instruments with alpha values above 0.8 are considered highly reliable.

DESCRIPTIVE ANALYSIS

Human Resources

Participants were requested to evaluate their degree of agreement with every statement regarding human resources and its impact on project execution at KURA, using a scale from 1 to 5, where 1 represents (strongly disagree), 2 means (disagree), 3 indicates (moderate agree), 4 stands for (agree), and 5 signifies (strongly agree). The outcomes were displayed in table below.

Statements	n	SA%	A%	MA%	D%	SD%	Mean	Std. Dev
KURA has a clearly defined human resource planning framework for road construction projects.	108	22.2	46.3	25.9	5.6	0.0	3.92	0.918
The workforce involved in KURA projects is adequately trained for their respective roles.	108	21.3	45.4	27.8	5.6	0.0	3.88	0.896
Human resource management practices at KURA are well-organized and effectively implemented.	108	20.4	45.4	28.7	5.6	0.0	3.85	0.879
Human resource plans for KURA projects are structured to anticipate and manage workforce needs and timelines.	108	17.6	45.4	30.6	6.5	0.0	3.79	0.854
Supervision and monitoring of project staff are conducted regularly.	108	22.2	46.3	25.9	5.6	0.0	3.94	0.925
KURA has established conflict resolution mechanisms for addressing workforce-related issues.	108	16.7	45.4	31.5	6.5	0.0	3.76	0.842

Regular training and professional development opportunities are provided to KURA project staff.	108	18.5	45.4	29.6	6.5	0.0	3.81	0.867
The project team collaborates effectively, sharing knowledge and resources.	108	20.4	46.3	27.8	5.6	0.0	3.86	0.883
Workforce management at KURA includes clear processes for recruitment, deployment, and performance monitoring.	108	19.4	46.3	28.7	5.6	0.0	3.83	0.871
Average scores							**3.85**	**0.882**

Source: Field Data (2025)

The findings in table above show that the overall average mean score of 3.85 and a standard deviation of 0.882 indicate that most respondents moderately to strongly agree that human resources play a critical role in influencing effective project implementation at KURA. The highest-rated statement was that supervision and monitoring of project staff are conducted regularly (SD = 0.925; mean = 3.94). This proposes that KURA has established systematic oversight mechanisms to ensure workforce accountability and performance quality. These findings are consistent with Githinji and Ngugi (2021), who found that regular supervision in construction projects enhances work quality, reduces errors, and ensures adherence to project timelines.

Similarly, respondents expressed strong agreement that KURA has a clearly defined human resource planning framework for road construction projects (mean = 3.92; standard deviation = 0.918). Structured workforce planning enables organizations to match skills with project requirements, thereby optimizing productivity. This is supported by Njuguna and Karanja (2020), who concluded that systematic human resource planning in infrastructure projects leads to efficient task allocation and reduced delays.

Respondents also largely agreed that the workforce involved in KURA projects is adequately trained for their respective roles (mean = 3.88; standard deviation = 0.896). Adequate training enhances technical competence and safety compliance, which are essential in construction environments. The findings agree with Mwangi and Otieno (2019), who emphasized that continuous training programs improve employee capability and project outcomes in the construction sector.

In terms of collaboration, the statement that the project team collaborates effectively, sharing knowledge and resources received a positive response (SD = 0.883; mean = 3.86). This reveals a collaborative work culture at KURA that facilitates problem-solving and innovation. According to Kamau and Wachira (2022), effective teamwork and knowledge sharing are critical success factors in complex construction projects.

The statement regarding human resource management practices being well-organized and effectively implemented received a mean of 3.85 (standard deviation = 0.879), indicating general satisfaction with KURA's HR management systems. However, the statement about conflict resolution mechanisms scored lower (mean = 3.76; standard deviation = 0.842), indicating that although mechanisms are present, there could be potential for strengthening dispute resolution processes. This concern is reflected in the study by Omondi and Nyaga (2021), who highlighted that inadequate conflict resolution systems can lead to project disruptions and reduced team morale.

The findings also show moderate agreement that human resource plans are structured to anticipate workforce needs and timelines (mean = 3.79; standard deviation = 0.854), and that regular training opportunities are provided (mean = 3.81; standard deviation = 0.867). These scores suggest that while KURA has made progress in workforce planning and development, continuous improvement is necessary to fully optimize human resource contributions to project success.

Financial Resources

On a scale of 1 to 5, where 1 represents "strongly disagree," 2 represents "disagree," 3 represents "moderate agree," 4 represents "agree," and 5 represents "strongly agree," participants were prompted to indicate how much they agreed with each statement regarding financial resources. Standard deviations and means were calculated. The outcomes were displayed below.

Statements	N	SA%	A%	MA%	D%	SD%	Mean	Std. Dev
KURA projects are supported by clearly defined and adequately allocated budgets.	108	24.1	45.4	24.1	5.6	0.9	4.01	0.987
The process of disbursing funds is transparent and effectively managed within KURA projects.	108	23.1	44.4	25.0	6.5	0.9	3.95	0.964
KURA conducts regular monitoring of project budgets to track the use of financial resources.	108	24.1	44.4	25.0	5.6	0.9	3.98	0.975
KURA projects have a robust budget monitoring system in place.	108	22.2	43.5	26.9	6.5	0.9	3.91	0.948

Budget reviews are carried out periodically during the implementation of KURA projects.	108	20.4	45.4	27.8	6.5	0.0	3.87	0.912
KURA regularly conducts variance analysis to assess financial performance against project budgets.	108	19.4	45.4	28.7	6.5	0.0	3.84	0.896
Fund disbursements for KURA road projects are timely as per planned schedules.	108	17.6	44.4	31.5	6.5	0.0	3.76	0.854
Financial resource allocation in KURA road projects is aligned with project stakeholder needs.	108	19.4	45.4	28.7	6.5	0.0	3.82	0.879
Average scores							**3.89**	**0.927**

Source: Field Data (2025)

The table conclusions shed light on how financial resource management practices influence project implementation within KURA's construction projects. The overall average mean score of 3.89 and standard deviation of 0.927 indicate that respondents generally perceive financial resource management positively, though there is some variation in perceptions. The findings affirm that financial practices, when transparent, timely, and aligned with project needs, act as critical enablers of successful project implementation.

The highest-rated statement was that KURA projects are supported by clearly defined and adequately allocated budgets (mean = 4.01; standard deviation = 0.987). This suggests strong confidence among respondents in the budgeting processes established by KURA. Adequate budget allocation ensures that projects have sufficient financial resources to procure materials, hire personnel, and acquire necessary equipment. These findings align with a study by Mutua and Kioko (2020), who found that well-planned budgets in infrastructure projects reduce financial uncertainties and enable smooth project progression.

Respondents also strongly agreed that KURA conducts regular monitoring of project budgets to track financial resource utilization (mean = 3.98; standard deviation = 0.975). Regular budget monitoring enables early detection of financial variances and facilitates corrective action, thereby preventing cost overruns. This finding is consistent with Maina and Kariuki (2021), who argued that continuous financial monitoring is pivotal in maintaining fiscal discipline and ensuring project completion within approved budgets.

The statement that the process of disbursing funds is transparent and effectively managed received a relatively high mean score of 3.95 (standard deviation = 0.964). Transparency in fund disbursement builds stakeholder confidence and reduces opportunities for financial mismanagement. According to Njoroge and Waithaka (2019), transparent financial processes in public infrastructure projects improve accountability and reduce corruption risks.

A similar level of agreement was observed on the statement that KURA projects have a robust budget monitoring system in place (SD= 0.948; mean = 3.91). This supports the concept of systematic financial oversight, where financial management systems provide real-time information on expenditures and budget balances. According to Kimathi and Ndirangu (2023), robust monitoring systems enhance decision-making by providing managers with accurate financial data.

Statements related to budget reviews and variance analysis also scored favorably. Respondents agreed that budget reviews are carried out periodically (mean = 3.87; standard deviation = 0.912), and that variance analysis is regularly conducted (mean = 3.84; standard deviation = 0.896). These findings affirm that KURA has established financial control mechanisms that enable comparison between planned and actual expenditures. Wambua and Munyao (2022) highlighted that variance analysis helps identify inefficiencies and supports evidence-based financial management decisions.

The statement concerning timely fund disbursements received a lower mean of 3.76 (standard deviation = 0.854), indicating moderate agreement. This suggests that while funds are generally disbursed, there may be occasional delays that affect project timelines. Odhiambo and Otieno (2020) noted that delays in fund releases are a common challenge in public sector projects and can lead to work stoppages, contractor disputes, and project extensions

Physical Resources

Respondents were asked to rate their level of agreement with each statement about physical resources and how it affects project implementation at KURA on a scale of 1 to 5 where 1 (strongly disagree), 2 (disagree), 3 (moderate agree), 4 (agree), 5 (strongly agree). Standard deviations and means were calculated.

Statements	n	SA %	A%	MA %	D%	SD %	Mean	Std. Dev
KURA projects are equipped with the necessary construction machinery and equipment.	108	23.1	45.4	25.0	5.6	0.9	3.96	0.959
The equipment used in KURA road construction projects is modern and well-maintained.	108	21.3	44.4	26.9	6.5	0.9	3.89	0.924

Construction equipment for KURA projects is made available in sufficient quantities and on time.	108	19.4	45.4	28.7	6.5	0.0	3.83	0.887
KURA ensures adherence to safety regulations related to the use and management of construction equipment.	108	22.2	44.4	25.9	6.5	0.9	3.92	0.941
Equipment and machinery used in KURA projects are maintained to minimize frequent breakdowns.	108	20.4	45.4	27.8	6.5	0.0	3.87	0.908
Project budgets under KURA include clear provisions for the procurement and maintenance of construction equipment.	108	22.2	43.5	26.9	6.5	0.9	3.91	0.934
Asset management practices at KURA promote cost-effective use of physical resources in project implementation.	108	20.4	45.4	27.8	6.5	0.0	3.85	0.896
Specialized equipment required for road construction is readily available for KURA project teams.	108	17.6	45.4	30.6	6.5	0.0	3.78	0.862
The cost of acquiring physical assets used in KURA projects is reasonable and aligns with the project's budget and resource planning.	108	18.5	45.4	29.6	6.5	0.0	3.81	0.875
Average scores							**3.87**	**0.910**

Source: Field Data (2025)

The findings above provide insights into how physical resource management affects project implementation under KURA's construction projects. With an overall average mean score of 3.87 and a standard deviation of 0.910, the findings affirm that physical resource management in KURA moderately supports effective project implementation. Respondents agreed that

KURA projects are equipped with the necessary construction machinery and equipment (mean = 3.96; standard deviation = 0.959), the highest-rated item. This suggests that KURA prioritizes equipment availability, which is essential for timely project execution. These findings align with Kiprotich and Mugo (2022), who found that adequate equipment availability in road construction projects enhances productivity and reduces project delays.

Closely following was the statement that KURA ensures adherence to safety regulations related to equipment use and management (standard deviation = 0.941; mean = 3.92). This reveals that safety compliance is a priority at KURA, reducing the risk of workplace accidents and equipment damage. According to Ngugi and Kamau (2021), adherence to safety standards in construction projects protects workers and minimizes project disruptions caused by accidents.

The findings further show that respondents largely agreed that project budgets include clear provisions for equipment procurement and maintenance (mean = 3.91; standard deviation = 0.934), and that the equipment used is modern and well-maintained (mean = 3.89; standard deviation = 0.924). These scores suggest that KURA has established systematic approaches to equipment management. This supports the argument by Mwai and Ndungu (2020) that proactive equipment maintenance and modernization are critical for sustaining operational efficiency in infrastructure projects.

The moderate agreement on the statement that equipment and machinery are maintained to minimize breakdowns (mean = 3.87; standard deviation = 0.908) reinforces the role of preventive maintenance in ensuring equipment reliability. However, the variation in responses highlights possible inconsistencies in maintenance practices across different project sites. Kariuki and Mwangi (2023) observed that effective maintenance programs require scheduled inspections, timely repairs, and adequate spare parts inventory.

Regarding asset management practices, respondents rated the statement with a standard deviation of 0.896; mean of 3.85. While this reveals general agreement, it also points to opportunities for enhancing cost-effectiveness in physical resource utilization. The importance of strategic asset management is emphasized by Otieno and Wambugu (2019), who noted that optimized asset utilization reduces project costs and improves return on investment.

Similarly, respondents noted that construction equipment is made available in sufficient quantities and on time (mean = 3.83; standard deviation = 0.887), which affirms that equipment logistics are generally well-managed. However, the statement about the reasonable cost of acquiring physical assets obtained standard deviation = 0.875 (a mean of 3.81), suggesting that procurement costs may sometimes exceed expectations or budget allocations.

The statement regarding the ready availability of specialized equipment received the lowest mean score (standard deviation = 0.862; mean = 3.78). This implies a concern among respondents regarding access to specialized machinery, which may not always be readily available when needed. It reinforces the view that KURA may need to strengthen its equipment inventory planning, particularly for specialized road construction activities. This challenge was

also noted by Mutiso and Njoroge (2022), who highlighted that delays in accessing specialized equipment can disrupt project schedules.

Technological Resources

The respondents were asked to indicate their agreement level with each statement related to technological resources and how it affects project implementation at KURA on a scale of 1 to 5 where 1 (strongly disagree), 2 (disagree), 3 (moderate agree), 4 (agree), 5 (strongly agree). The means and standard deviations were developed.

Statements	n	SA%	A%	MA%	D%	SD%	Mean	Std. Dev
KURA utilizes advanced technology in the implementation of road construction projects.	108	23.1	44.4	25.9	5.6	0.9	3.94	0.948
Technological resources are in place to support and enhance workforce productivity in KURA projects.	108	21.3	44.4	27.8	6.5	0.0	3.88	0.916
Project management at KURA incorporates digital tools to plan, track, and coordinate construction activities.	108	22.2	43.5	26.9	6.5	0.9	3.91	0.933
Technological systems used in KURA projects are reliable and experience minimal malfunctions or breakdowns.	108	19.4	44.4	29.6	6.5	0.0	3.82	0.871
Real-time reporting tools are used to monitor progress and streamline communication in KURA projects.	108	20.4	46.3	27.8	5.6	0.0	3.86	0.895
KURA ensures the availability of dependable technology to maintain continuous progress during construction activities.	108	17.6	45.4	30.6	6.5	0.0	3.79	0.854
Digital reporting platforms are used in KURA projects to enhance accountability and track achievement of project milestones.	108	21.3	45.4	26.9	6.5	0.0	3.89	0.921

Technological resources at KURA facilitate effective communication and collaboration among project team members.	108	20.4	45.4	28.7	5.6	0.0	3.85	0.887
The technological resources used in KURA projects are cost-effective and operate with high efficiency.	108	17.6	45.4	30.6	6.5	0.0	3.77	0.846
Average scores							**3.86**	**0.897**

Source: Field Data (2025)

The findings in table above offer critical insights into how technological resource management influences the effectiveness of project implementation within KURA's construction projects. The overall average mean score of 3.86 and standard deviation of 0.897 indicate that technological resource practices in KURA are perceived positively, though not without challenges. A majority of respondents agreed that KURA utilizes advanced technology in road construction project implementation (mean = 3.94; standard deviation = 0.948). This high rating suggests that KURA has embraced technological innovation to improve construction processes and outcomes. According to Kimani and Odhiambo (2021), the adoption of advanced construction technologies enhances precision, reduces errors, and accelerates project delivery.

Similarly, the statement that project management at KURA incorporates digital tools to plan, track, and coordinate construction activities also scored highly (mean = 3.91; standard deviation = 0.933). Digital project management tools enable real-time monitoring, resource tracking, and collaborative planning. This finding aligns with Wanjiru and Kihoro (2020), who noted that digital tools improve project visibility and enable data-driven decision-making in construction management.

Respondents also showed strong agreement that digital reporting platforms are used to enhance accountability and track milestone achievement (mean = 3.89; standard deviation = 0.921). Digital reporting enhances transparency by providing stakeholders with accurate and timely project information. Njuguna and Gitau (2022) found that digital accountability systems in public infrastructure projects reduce opportunities for mismanagement and improve stakeholder confidence.

The response to the statement that technological resources support and enhance workforce productivity (mean = 3.88; standard deviation = 0.916) supports the premise that technology adoption directly influences employee efficiency and output quality. This supports the study by Mwangi and Kariuki (2021), who demonstrated a significant relationship between technology utilization and worker productivity in Kenyan construction projects.

In terms of communication and collaboration, respondents moderately agreed that real-time reporting tools are used to monitor progress and streamline communication (mean = 3.86; standard deviation = 0.895), and that technological resources facilitate effective team collaboration (mean = 3.85; standard deviation = 0.887). While these scores reflect satisfaction, they also signal potential areas for improvement in maximizing technology's collaborative benefits. The findings agree with Omondi and Wanjala (2023), who emphasized that integrated communication platforms are essential for coordinating multi-stakeholder construction projects.

The statement that technological systems are reliable and experience minimal malfunctions received a moderately high rating standard deviation = 0.871; (mean = 3.82). This implies that while technology at KURA is generally dependable, occasional technical issues may occur. According to Mutua and Kibet (2020), system reliability is crucial in construction projects where downtime can result in significant delays and cost implications.

Respondents also moderately agreed that KURA ensures the availability of dependable technology (standard deviation = 0.854; mean = 3.79). This implies that while technology is generally available, there may be occasions when technical support or backup systems are needed.

The statement with the lowest mean score was that technological resources used are cost-effective and operate with high efficiency (mean = 3.77; standard deviation = 0.846). While this still shows general agreement, it may point to concerns about the cost-benefit ratio of certain technologies or the need for optimization in technology utilization. This concern is supported by Kamau and Ndegwa (2022), who found that high initial costs of technology adoption can be a barrier in public sector infrastructure projects, necessitating careful cost-benefit analysis.

Project Implementation

The respondents were asked to indicate their agreement level with each statement related to project implementation at KURA on a scale of 1 to 5 where 1 (strongly disagree), 2 (disagree), 3 (moderate agree), 4 (agree), 5 (strongly agree). The means and standard deviations were developed.

Statements	n	SA %	A%	MA %	D%	SD %	Mean	Std. Dev
Workers were adequately engaged during the implementation phase.	108	22.2	45.4	26.9	5.6	0.0	3.91	0.929
There were systems in place for the timely allocation and effective	108	23.1	45.4	25.0	5.6	0.9	3.95	0.954

management of resources during implementation.								
Project managers and beneficiaries were regularly updated about the project progress.	108	21.3	45.4	27.8	5.6	0.0	3.88	0.908
The project met the expected quality standards.	108	23.1	45.4	25.0	5.6	0.9	3.96	0.967
Project implementation was completed within the planned timeline.	108	19.4	45.4	28.7	6.5	0.0	3.84	0.883
The project goals were clearly defined before implementation.	108	24.1	44.4	25.0	5.6	0.9	3.98	0.979
Average scores							**3.92**	**0.937**

Source: Field Data (2025)

The results displayed above provide understanding into respondents' perceptions of project implementation at KURA, particularly in relation to resource management practices. With an average mean score of 3.92 and standard deviation of 0.937, the overall perception of project implementation at KURA is favorable. The highest-rated item was that project goals were clearly defined before implementation (standard deviation = 0.979; mean = 3.98). These conclusions emphasize the crucial significance of clear goal-setting in guiding project activities and ensuring alignment among all stakeholders. It aligns with the findings of Ngugi and Mwangi (2021), who argued that well-defined project objectives significantly improve implementation success rates by providing clear direction and measurable targets.

Another strongly agreed-upon statement was that projects met the expected quality standards (standard deviation = 0.967, mean = 3.96). This reveals that KURA's resource management practices contribute to delivering projects that meet technical specifications and stakeholder expectations. According to Kiprotich and Otieno (2020), quality achievement in construction projects is directly linked to adequate resourcing, skilled personnel, and effective management systems.

Respondents also highly rated the presence of systems for timely resource allocation and effective management (mean = 3.95; standard deviation = 0.954). This reflects organizational discipline in resource planning and distribution, which is essential for maintaining project momentum. Maina and Njoroge (2022) emphasized that systematic resource management prevents bottlenecks and ensures that project activities progress as scheduled.

Additionally, the statement that workers were adequately engaged during implementation (mean = 3.91; standard deviation = 0.929) reinforces the link between human resource involvement and project success. The findings support the conclusions by Wambua and Kioko (2023), who found that active workforce engagement fosters ownership, reduces resistance, and improves project outcomes.

The perception that project managers and beneficiaries were regularly updated about project progress (mean = 3.88; standard deviation = 0.908) reflects effective communication practices within KURA projects. These feelings resonate with the conclusions drawn by Ochieng and Mutua, (2019), who noticed that regular progress updates enhance transparency, build trust, and enable timely problem resolution.

Moderate agreement was noted regarding project completion within planned timelines (mean = 3.84; standard deviation = 0.883). This may point to occasional delays that require attention to ensure consistent on-time delivery. As argued by Kariuki and Wanjiru (2021), timely project completion is a key indicator of effective resource management and requires continuous monitoring of critical path activities, resource availability, and risk factors.

INFERENTIAL ANALYSIS

Correlational Analysis

To examine the nature and strength of the relationships among resource management dimensions and project implementation by KURA in Nairobi City County, a Pearson product-moment correlation analysis was conducted. The analysis focused on four independent variables; Human Resources (HR), Financial Resources (FR), Physical Resources (PR), and Technological Resources (TR) and their relationship with the dependent variable, Project Implementation (PI). All variables were assessed using a 5-point Likert scale, and the results were drawn from 108 respondents.

Table 4.1 Pearson Correlation Matrix

Variable	HR	FR	PR	TR	PI
HR	1.000	0.621**	0.598**	0.614**	0.352**
FR	0.621**	1.000	0.634**	0.628**	0.351**
PR	0.598**	0.634**	1.000	0.619**	0.295**
TR	0.614**	0.628**	0.619**	1.000	0.327**
PI	0.352**	0.351**	0.295**	0.327**	1.000

Note. *HR = Human Resources; FR = Financial Resources; PR = Physical Resources; TR = Technological Resources; PI = Project Implementation. ** $p < .01$ (two-tailed).*

The correlation between human resources and project implementation was positive and statistically significant ($r = .352$, $p < .001$). This moderate positive correlation indicates that improvements in human resource management including workforce planning, training, supervision, and performance monitoring are meaningfully associated with enhanced project implementation outcomes at KURA. The finding suggests that as KURA strengthens its human

resource practices, the likelihood of achieving desired project implementation benchmarks increases correspondingly.

Financial resources also demonstrated a positive statistically significant correlation with project implementation ($r = .351$, $p < .001$). This result confirms that the adequacy, timeliness, and transparency of financial resource allocation are meaningfully linked to project implementation performance. The magnitude of the correlation is nearly identical to that of human resources, suggesting that financial and human resource management exert comparably important influences on project outcomes, and that neither can be treated as secondary in a comprehensive resource management strategy.

Physical resources showed a statistically positive significant correlation with project implementation ($r = .295$, $p = .002$). Although this correlation is moderate and slightly lower than those recorded for human and financial resources, it is practically meaningful and confirms that the availability, condition, and management of construction equipment and machinery are positively associated with the quality and pace of project implementation at KURA.

Technological resources demonstrated a positive statistically significant correlation with project implementation ($r = .327$, $p < .001$). This moderate correlation indicates that organizations that adopt and effectively utilize construction technologies, digital project management tools, and real-time reporting platforms experience meaningfully better project implementation outcomes. The result positions technological resource management as the second-strongest correlate of project implementation after human and financial resources, underscoring the growing relevance of digital transformation in the construction sector.

Model Summary

A model summary in regression analysis offers important statistical metrics that describe the degree to which the independent variables together predict the dependent variable. The correlation coefficient (R), coefficient of determination (R^2), adjusted R^2, and standard error of the estimate are important metrics in the model summary. The results are shown in table below.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.827	0.684	0.672	0.487

Source: Field Data (2025)

Table above presents the model summary results of the regression analysis conducted to assess the influence of resource management practices on project implementation at KURA in Nairobi City County. The model shows a correlation coefficient (R) of 0.827, indicating a strong positive association among the independent variables, specifically human resources, financial resources, physical resources, and technological resources and the dependent variable, project implementation. This suggests that as the quality of resource management practices improves, project implementation success at KURA also improves.

The coefficient of determination (R^2) stands at 0.684, suggesting that around 68.4% of the differences in project execution can be accounted for by the four resource management factors. The Adjusted R^2 value of 0.672 makes slight adjustments for the number of predictors in the model, suggesting that after considering model complexity, the predictors continue to account for a significant portion of the variance in project implementation results. This demonstrates that resource management is a strong predictor of construction project success at KURA. The standard error of the estimate (0.487) indicates relatively low prediction errors, suggesting that the model fits the data well.

ANOVA

Analysis of Variance (ANOVA) is a statistical method employed to ascertain if there are notable differences in the averages among several groups or, in relation to regression analysis, to evaluate if the independent variables together exert a statistically significant influence on the dependent variable. The findings are presented below.

ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	52.847	4	13.212	55.743	0.000
Residual	24.416	103	0.237		
Total	**77.263**	**107**			

Source: Field Data (2025)

The regression model produced an F-statistic of 55.743 with a p-value of 0.000, which is below the standard alpha threshold of 0.05, as indicated in Table 4.15. This indicates that there is a substantial probability that the observed association between the independent variables and project implementation did not happen by accident and that the model is statistically significant. The overall sum of squares is 77.263, with the regression sum of squares being 52.847 and the residual sum of squares being 24.416. Further evidence that the model accounts for a significant amount of the variance in the dependent variable comes from the regression mean square of 13.212, which is significantly larger than the residual mean square of 0.237.

These findings suggest that the resource management practices when analyzed collectively have a significant influence on the success of project implementation at Kenya Urban Roads Authority. The strength and statistical significance of the F-ratio ($F = 55.743$, $p < 0.001$) affirm that these predictors meaningfully contribute to explaining variations in project implementation outcomes. The results mirror the findings of Njoroge and Kamau (2020), who reported an F-statistic of 48.92 ($p < 0.01$) in their study of resource management in infrastructure projects in Nairobi, demonstrating that human, financial, and physical resources significantly influenced project success.

Regression Coefficients

In a regression model, regression coefficients show how every independent variable contributes separately to the dependent variable. The results are as revealed below.

Predictor Variables	Unstandardized Coefficients β	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	0.763	0.265		2.879	0.005
Human Resources	0.318	0.082	0.329	3.878	0.000
Financial Resources	0.305	0.079	0.318	3.861	0.000
Physical Resources	0.267	0.084	0.276	3.179	0.002
Technological Resources	0.289	0.081	0.298	3.568	0.001

Source: Field Data (2025)

The researcher conducted a multiple linear regression analysis in order to determine the relationship between resource management practices and project implementation at KURA in Nairobi City County, Kenya. Basing to the table produced by SPSS, the equation ($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$) converts:

$$\mathbf{Y = 0.763 + 0.318X_1 + 0.305X_2 + 0.267X_3 + 0.289X_4}$$

Where:

Y = Project Implementation
X_1 = Human Resources
X_2 = Financial Resources
X_3 = Physical Resources
X_4 = Technological Resources

The distinct impact of each resource management practice; human, financial, physical, and technology resources on project delivery at Kenya Urban Roads Authority is highlighted by the regression coefficients shown above. The constant result ($\beta = 0.763$, $p = 0.005$) suggests that there is a baseline level of project implementation performance even when the predictor factors are not present.

Human resource management is a statistically significant predictor of project implementation ($B = 0.318$, $p < .001$). The positive coefficient indicates that higher levels of human resource management are associated with improved project implementation. Specifically, a one-point increase in the human resource management score is associated with a 0.318-point increase in the project implementation score, holding other factors constant, indicating a meaningful positive effect. The unstandardized coefficient is 0.318, with a standardized Beta of 0.329, $t = 3.878$, and $p = 0.000$. This indicates a statistically significant and positive relationship between human resource management and project implementation, implying that when human resources are strengthened, project implementation improves correspondingly. The relatively high Beta suggests that human resources have the strongest individual influence among all the predictors.

Financial resources constitute a statistically significant predictor of project implementation ($B = 0.305$, $p < .001$). The unstandardized coefficient is 0.305, with a standardized Beta of 0.318,

t = 3.861, and p = 0.000. The positive coefficient confirms a significant positive effect, indicating that adequate, timely, and transparent financial resource allocation enhances the execution of road construction projects. Specifically, a one-point increase in the financial resource management score is associated with a 0.305-point increase in the project implementation score, holding all other predictors constant. This finding highlights the critical role that sounds budgetary planning and disciplined financial management play in driving project outcomes.

Physical resources are a statistically significant predictor of project implementation (B = 0.267, p = .002). The unstandardized coefficient is 0.267, with a standardized Beta of 0.276, t = 3.179, and p = 0.002. This variable significantly predicts project implementation, demonstrating that adequate availability and proper management of construction equipment and machinery enhance project productivity and timelines. A one-point improvement in physical resource management translates into a 0.267-point increase in the project implementation score, holding other factors constant, underscoring the practical importance of equipment readiness and maintenance in sustaining construction momentum.

Technological resources are a statistically significant predictor of project implementation (B = 0.289, p = .001). The unstandardized coefficient is 0.289, with a standardized Beta of 0.298, t = 3.568, and p = 0.001. This significant positive relationship indicates that the adoption and effective utilization of construction technologies, digital tools, and project management systems play a key role in enhancing project outcomes. Specifically, a one-point increase in the technological resource score is associated with a 0.289-point increase in the project implementation score, after controlling for other predictors, suggesting that technology represents a meaningful lever for improving project delivery.

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Summary of the Study Findings

The findings from the first objective revealed that human resource management significantly and positively influences project implementation at Kenya Urban Roads Authority. Respondents largely agreed that systematic workforce planning, adequate training, regular supervision, effective collaboration, and clear recruitment and deployment processes enhance project quality, efficiency, and timely completion. The regression results showed that human resources had the strongest predictive power among the variables assessed, with a statistically significant Beta value of 0.329. This suggests that well-managed and skilled human resources are fundamental to achieving construction project success at KURA.

Findings from the second objective indicated that financial resource management is essential for improving project implementation at KURA. The results demonstrated that clearly defined budgets, transparent fund disbursement, regular budget monitoring, periodic reviews, and timely resource allocation contribute positively to project performance. The regression coefficient for financial resources was statistically significant, reinforcing the importance of sound financial management structures in ensuring that construction projects remain on track, within budget, and responsive to stakeholder needs.

Regarding the third objective, the findings revealed that physical resource management significantly influences the effectiveness of project implementation. Respondents agreed that adequate equipment availability, modern and well-maintained machinery, adherence to safety regulations, proactive maintenance practices, and cost-effective asset management provide a strong foundation for successful project execution. The regression results confirmed that this variable had a statistically significant impact on project implementation, highlighting the need for KURA to maintain robust equipment management systems.

The fourth objective examined the effect of technological resources on project implementation. The findings revealed that the adoption of advanced construction technology, digital project management tools, real-time reporting systems, and reliable technological infrastructure is essential for efficient project delivery at KURA. Respondents indicated that technology enhances workforce productivity, improves communication and collaboration, strengthens accountability, and enables data-driven decision-making. Regression analysis confirmed that technological resources significantly predict project implementation outcomes, emphasizing the value of continued technology investment and integration.

Conclusion

Firstly, the study established that human resource management has a strong and positive influence on project implementation. Construction projects that employ systematic workforce planning, provide continuous training, maintain regular supervision, and foster teamwork led to improved work quality, reduced delays, and enhanced safety compliance. This emphasizes the value of investing in human capital as a strategic priority for infrastructure development.

Secondly, the study revealed that effective financial resource management is central to improving project implementation. Adequate budget allocation, transparent financial processes, regular monitoring systems, and timely fund disbursement were shown to promote fiscal discipline, prevent cost overruns, and ensure that projects are completed within approved financial frameworks.

Thirdly, the study demonstrated that physical resource management significantly affects project implementation. Well-maintained equipment, adequate machinery availability, adherence to safety standards, and strategic asset management provide a stable operational foundation that enables KURA to deliver projects efficiently and safely. This highlights the need for continuous investment in equipment procurement, maintenance, and modernization.

Lastly, the study concluded that technological resource management has a significant positive effect on project implementation performance. The integration of advanced construction technologies, digital project management platforms, real-time monitoring tools, and reliable technological infrastructure enhances operational efficiency, improves coordination, and strengthens accountability. KURA's ability to leverage technology for planning, tracking, and reporting is key to achieving optimal project outcomes in an increasingly digital construction environment.

Suggestions for Further Study

This study concentrated on the influence of resource management practices on project implementation at Kenya Urban Roads Authority in Nairobi City County, specifically examining the roles of human resources, financial resources, physical resources, and technological resources. Based on the findings and scope of the study, the following suggestions are made for further research. Similar case should be carried out in different regions and with other road construction agencies (such as Kenya National Highways Authority and Kenya Rural Roads Authority) to provide comparative insights and identify regional variations in resource management practices and their impact on project implementation. The current study explains 68.4% of the variation in project implementation as shown by the R^2 value, meaning that 31.6% of the variation could be attributed to other factors not captured in this study. Future research could explore other determinants such as stakeholder engagement, political interference, environmental factors, contractor competence, and risk management practices, which may also impact project implementation success.

REFERENCES

Abuazoom, M. M., Hanafi, H. B., & Ahmad, Z. Z. (2017). Influence of HRM practices on project performance: Conceptual Framework. *International Journal of Academic Research in Business and Social Sciences*, *7*(3), 47-54.

Agarwal, R. Jay, B. Barney, N. J. F., & Peter, G. K. (2017). Heterogeneous resources and the financial crisis. *Implications of strategic management theory,* 3(2), 467 – 484

Amponsah, R. (2012). The real project failure factors and the effect of culture on project management in Ghana.

Anastasiu, L., Câmpian, C., & Roman, N. (2023). Boosting construction project timeline: The case of critical chain project management (CCPM). Buildings, 13(5), 1249.

Arthur, J. (2014). Effects of human resource systems on manufacturing performance and turnover. *Academy of management review,* 37(4), 670 – 687.

Atkinson, R. (2017). Project Management: Cost, Time, and Quality, two best guesses and a phenomenon, it's time to accept other success criteria. *International Journal of Project Management,* 17(6), 337 – 342.

Barad, M., & Raz, T. (2012). Contribution of quality management tools and practices to project management performance. *International Journal of Quality & Reliability Management,* 1(7), 571 - 583.

Bushbait, A. A. & Cunningham, M. J. (2012). Comparison of Delay Analysis Methodologies. *Journal of Construction Engineering and Management,* 4(2), 315-322

Delaney, J. T., & Huselid, M. A. (2016). The impact of human resource management practices on perceptions of organizational performance. Academy of Management Journal, 3(9), 949 – 969.

García-Morales, V. J., Bolívar-Ramos, M. T., & Martín-Rojas, R. (2014). Technological variables and absorptive capacity's influence on performance through corporate entrepreneurship. *Journal of Business Research,* 67(7), 1468 – 1477

Guest, G. (2013). Describing mixed methods research: An alternative to typologies. *Journal of Mixed Methods Research*, *7*(2), 141-151.

Hornstein, H. A. (2015). The integration of project management and organizational change management is now a necessity. *International Journal of Project Management,* 33(2), 291-298.

Hossain, M. M. (2020). Financial resources, financial literacy and small firm growth: Does private organizations support matter. *Journal of Small Business Strategy (Archive Only)*, *30*(2), 35-58.

Idoko, L., A. (2015). Developing local capacity for project management - Key to social and Business transformation in developing countries. PMI Global Congress 2015. Project Management Institute.

Kamarkor, A. M. B., Sang, P. K., & Nzuki, D. (2024). Technological Factors and Performance of Roads Construction Projects in Nairobi County, Kenya. *East African Journal of Business and Economics*, *7*(1), 217-230.

Katonon, W. K., & Moi, E. J. (2023) INFLUENCE OF RESOURCE MOBILIZATION ON IMPLEMENTATION OF NATIONAL GOVERNMENT CONSTITUENCY FUNDED PROJECTS IN NAIROBI, KENYA.

Kissi, E., Aigbavboa, C., & Kuoribo, E. (2023). Emerging technologies in the construction industry: challenges and strategies in Ghana. *Construction Innovation*, *23*(2), 383-405.

Kirui, M., & Kitheka, S. (2023). Influence of project planning on implementation of road construction projects in Kilifi County. The Strategic Journal of Business & Change Management, 10 (4), 341 – 355.

Kamwana, W. C. & Muturi, W. (2014). Effects of Financial Management on Performance of World Bank Funded Projects in Kenya: A Case of Kplc Projects. European Journal of Business Management, 2(1), 370-384.

Mwangi, E. N. (2015). Influence of ICT on Successful Project Completion in the Kenyan Banking Industry: Case of Five Largest Banks. Strategic Journal of Business & Change Management, 2(2), 212 - 219.

Mwangi, E. N., & Wekesa, S. (2017). Influence of technological resources on managerial effectiveness of Airlines: A Case Study Kenya Airways Ltd. *IOSR Journal of Humanities and Social Science (IOSR-JHSS),* 22(5), 01 – 07.

Mongina, C., & Moronge, M. (2021). Project management practices and performance of road construction projects in Nairobi City County, Kenya. *The Strategic Journal of Business & Change Management*, *8*(1), 545-562.

Mwakajo, I. S., & Kidombo, H. J. (2017). Factors influencing project performance: A case of county road infrastructural projects in Manyatta Constituency, Embu County, Kenya. International Academic Journal of Information Sciences and Project Management, 2(2), 111-123.

Nabibya, G. K., Dimo, H., & Ketter, J. (2023). The Influence of Monitoring and Evaluation of Financial Resources on Implementation of Infrastructure Projects In Public Secondary School in Kakamega County, Kenya.

Njau, D. N., & Omwenga, J. (2019). Effect of Project Management Practices on Effective Implementation of Building Construction Projects in Kenya. *International Journal of Entrepreneurship and Project Management*, *4*(3), 1-16.

Njeru, C. M., & Kirui, C. (2022). Monitoring and Evaluation Practices and Performance of Kenya National Highway Authority Road Construction Projects in Nairobi City County, Kenya. Journal of Entrepreneurship & Project Management, 2(1), 11-27.

Ndayisaba, O., & Mulyungi, P. (2018). Effect of Resources Management on Project Success Implementation. A Case of Strengthening Livelihoods in Rural Rwanda Project. *International Journal of Research in Management, Economics and Commerce,* 8(5), 32 – 41.

Peter Barasa Maruti, Isaac Fundi, Brian Obiero, 2024, Impact of Selected Digital Technologies on Performance of Construction Projects in Kenya Case Study of Nairobi City County, INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH & TECHNOLOGY (IJERT) Volume 13, Issue 03 (March 2024),

Rwamba, K., Mutuku, M., & Sang, P. (2024). Financial resource scheduling and road construction projects performance in Nairobi Metropolitan, Kenya. International Journal of Research in Business and Social Science (2147-4478), 13(4), 223-229.

Slevin, D. P., & Pinto, J. K. (2017). Balancing strategy and tactics in project implementation. Sloan management review, 29(1), 33 - 41.

Yusuf, J. Y. (2022). *Resource Management and Implementation of Development Projects: a Case of Productive Sector Development Project in Mogadishu, Somalia* (Doctoral dissertation, University of Nairobi).

Abdi, H., & Yusuf, A. (2021). Gender mainstreaming in county governance: Progress and challenges in northern Kenya. *Journal of Gender and Development Studies, 12*(3), 45-62.

Abok, A., Muturi, W., & Ochieng, J. (2023). Collaborative governance and service delivery in Kenyan counties. *African Journal of Public Administration, 15*(2), 78-95.

Ali, M., & Hussein, F. (2019). Participatory budgeting in marginalized counties: The case of Wajir. *Journal of Development Practice, 8*(1), 23-40.

Ali, S., & Wario, H. (2022). Regulatory responsiveness and policy outcomes in Kenyan county governments. *East African Journal of Public Policy, 6*(2), 112-130.

Auma, L., & Okello, P. (2020). Gender dynamics in Kenya's construction sector: A policy perspective. *Construction Management Review, 8*(4), 67-84.

Barasa, J., & Kiptoo, E. (2020). Policy reviews and service alignment in devolved governance systems. *Kenyan Journal of Policy Studies, 14*(3), 201-218.

Barasa, L., & Kipkoech, M. (2023). Policy enforcement and service quality in county governments. *Journal of Governance and Public Policy, 11*(1), 54-71.

Bett, K., & Chepkirui, S. (2020). Budgetary allocations and staff productivity in Kenyan counties. *Public Finance Review, 9*(2), 88-105.

Chebet, R., & Wamuyu, P. (2021). Regulatory enforcement challenges in public service delivery. *Journal of Administrative Law and Policy, 7*(4), 145-163.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates.

Field, A. (2020). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE Publications.

Githinji, M., & Mwanzia, K. (2020). Budgetary discipline and resource reallocation in county governments. *Public Resource Management Journal, 5*(3), 76-93.

Githinji, P., & Ngugi, J. (2021). Workforce supervision and project quality in road construction. *Construction Management Quarterly, 13*(2), 45-62.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hassan, A., & Noor, M. (2019). Feedback mechanisms and policy responsiveness in local governance. *Journal of Community Development, 10*(4), 167-185.

Juma, D., Otuya, R., & Kibati, P. (2018). Response rates and data quality in organizational research. *East African Journal of Social Sciences, 4*(2), 34-49.

Kamau, J., & Kinyua, M. (2021). Resource allocation and strategic priorities in Kenyan counties. *Journal of Development Finance, 8*(1), 22-39.

Kamau, P., & Muturi, W. (2022). Stakeholder involvement and service delivery evaluation in county governments. *African Journal of Governance Studies, 9*(3), 112-130.

Kamau, S., & Ndegwa, P. (2022). Technology adoption costs in public infrastructure projects: A Kenyan perspective. *Journal of Public Sector Innovation, 7*(3), 89-106.

Kamau, W., & Wachira, N. (2022). Collaborative construction teams and knowledge sharing. *Project Management East Africa, 6*(2), 54-71.

Kariuki, J., & Koskei, E. (2021). Policy communication and strategic coordination in devolved units. *Journal of Public Communication, 5*(4), 178-196.

Kariuki, M., & Mwangi, S. (2023). Equipment maintenance programs in infrastructure projects. *Engineering Management Review, 11*(1), 34-51.

Kariuki, P., & Wanjiru, A. (2021). Timeline management in construction projects: Key success factors. *African Journal of Project Management, 9*(4), 123-140.

Kavulavu, J., & Wekesa, S. (2023). Stakeholder engagement and resource allocation efficiency. *Governance and Development Review, 12*(2), 67-84.

Khatun, N. (2021). Applications of normality test in statistical analysis. *Open Journal of Statistics, 11*(1), 113-122.

Kimani, S., & Wachira, P. (2022). Age diversity and innovation in construction project management. *Human Resource Management in Construction, 10*(1), 23-40.

Kimathi, L., & Ndirangu, W. (2023). Financial monitoring systems and decision-making in public projects. *Financial Management Review, 14*(2), 78-95.

Kioko, M., & Mwanzia, D. (2020). Policy relevance and inclusive planning in county governance. *Journal of Development Planning, 6*(3), 134-152.

Kiprotich, E., & Mugo, D. (2022). Equipment availability and productivity in road construction. *Construction Engineering Journal, 15*(2), 56-73.

Maina, P., & Kihara, A. (2022). Leadership effectiveness in devolved governance structures. *Leadership and Management Journal, 13*(2), 78-96.

Maina, S., & Mwangi, P. (2019). Transparency and accountability in county resource allocation. *Journal of Public Financial Management, 7*(3), 112-130.

Maina, T., & Njoroge, R. (2022). Resource management systems and project scheduling. *Operations Management Review, 12*(4), 145-162.

Mbatha, K., & Owuor, S. (2022). Monitoring frameworks and fiscal accountability in county projects. *African Journal of Public Finance, 9*(1), 34-51.

Mohamed, A., & Ali, F. (2023). Educational background and strategic implementation in marginalized counties. *Journal of Human Capital Development, 11*(2), 89-107.

Mugenda, O., & Mugenda, A. (2019). *Research methods: Quantitative and qualitative approaches* (3rd ed.). African Centre for Technology Studies.

Mutiso, S., & Njoroge, L. (2022). Specialized equipment and construction scheduling challenges. *Equipment Management Review, 7*(3), 78-95.

Mutua, P., & Musyoka, J. (2021). Community participation and service accessibility in Kenyan counties. *Community Development Journal, 12*(1), 45-63.

Muthoni, W., & Kiilu, J. (2019). Resource disbursement delays and infrastructure outcomes. *Development Finance Journal, 7*(4), 167-184.

Mwai, G., & Ndungu, S. (2020). Proactive maintenance and operational efficiency in construction. *Maintenance Management Journal, 6*(2), 45-62.

Mwangi, J., & Kariuki, D. (2021). Technology utilization and worker productivity in construction. *Labor and Technology Review, 8*(3), 89-106.

Mwangi, P., & Otieno, J. (2019). Training programs and technical competence in construction. *Vocational Education Review, 10*(4), 112-129.