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SAYA Brian & Dr. ONYANGO Jacob Olango

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SAYA Brian [1] & Dr. ONYANGO Jacob Olango[2]

[1]Masters Student, Jomo Kenyatta University of Agriculture and Technology, Department of Entrepreneurship, Technology, Leadership and Management in the School of Entrepreneurship, Procurement and Management, Kenya

[2]Lecturer, Jomo Kenyatta University of Agriculture and Technology, Department of Entrepreneurship, Technology, Leadership and Management in the School of Entrepreneurship, Procurement and Management, Kenya

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Abstract

Delays in the performance of road construction projects are pervasive and detrimental, frequently leading to time and cost overruns, compromised project quality, the escalation of disputes and litigation, and, in some instances, the complete abandonment of projects. The main aim of the study was to determine effect of the project contractors' capacity on performance of road construction projects in Uasin Gishu County. The study was guided by the following objectives; to assess the influence of the contractors' financial capacity on the performance of road construction projects in Uasin Gishu County and to determine the influence of human resource capacity on performance of road construction projects in Uasin Gishu County The study was guided by Theory of Constraints (TOC), Stakeholder Theory and Human Capacity Theory. The study adopted a descriptive research design. The target population for the research were 195 employees which comprised of resident engineers, assistant engineers, materials technicians, works inspectors, surveyors, project managers, procurement, administrators and accountants. The desired sample size for the study was 135 respondents, derived from the accessible population through proportionate stratified random sampling was used to select respondents using the formula by Yamane (1967) to obtain respondents from each cluster. A random sample from each cluster is taken in a number proportional to the clusters size compared with the population. The research instrument used in the study was questionnaire. A pilot study was carried out in Nandi County to ascertain the validity and reliability of research instruments. Descriptive and inferential statistics were used to analyze the data for the current study. The descriptive statistics for the study included, the mean, percentages, standard deviation and the frequencies. Inferential statistics for the study included correlation and

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multiple regression models. The researcher used Statistical Package for Social Science software version 24 in analyzing the raw data. Descriptive statistics were used to answer research questions while hypotheses were tested at 95% confidence level using inferential statistics. The study findings revealed that the β coefficients were all significant used for multiple regression as follows; contractors' financial capacity (β_2=.208, $p<0.05$) and human resource capacity (β_3=.194, $p<0.05$). The study concluded that contractors' financial capability and human resource capacity are crucial for road project success. Financial capacity is crucial for project quality and timeliness. Human resource management is essential for recruiting skilled personnel and maintaining professionalism. The study recommends that contractors awarded contracts for road construction should have financial and human resource, capacities as it enhances project performance.

1. Introduction

In the construction industry, project control aims to ensure timely, budget-compliant, and goal-achieving project completions, a complex task for project managers involving constant progress monitoring, plan evaluation, and corrective actions (Kivilä, Martinsuo & Vuorinen, 2017; Al-Hajj & Zraunig, 2018). The collective goal of all parties involved, whether in the public or private sector, is to finish projects on schedule, within budget, with high quality and safety (Lin & Liu, 2019). Timely project performance is crucial for success, influencing management decisions on budgets and targets, and contributing significantly to organizational competitiveness by achieving objectives within the stipulated time (Sinesilassie, Tabish & Jha, 2018; Minbaeva, 2018). Understanding critical success factors, particularly project timeliness, is essential for enhancing road construction project performance (Ahmadabadi & Heravi, 2019).

Financial capacity refers to an organization's ability to absorb losses using its own or borrowed funds without significant disruption, crucial for smooth construction project implementation (Mzid, Khachlouf & Soparnot, 2019). It encompasses available cash, bank credit, overdrafts, credit purchases, and work-in-progress, and includes resources needed for daily operations (Akali & Sakaja, 2018). Effective financial capacity management involves proper planning, sourcing, and control throughout construction, as mismanagement can impair productivity and profits (Mwantimwa, 2019). In the construction industry, assessing financial capacity is vital for procurement, requiring companies to prove financial stability through statements, financial ratios, and records of human capital, machinery, and equipment (Pawar, Bajad & Shinde, 2017). Companies must submit detailed financial ratios, employee records, and machinery condition reports to demonstrate their capability to manage projects efficiently, including maintaining equipment and fleet management (Nguyen, 2020; Pinto et al., 2020; Wang et al., 2021).

Human Resource Capacity refers to availability of knowledgeable, experienced, and skilled individuals in an organization or institution, either public or private, who perform precise tasks and responsibilities (Kariuki, 2019). The essence of management of any organization is to utilize effectively all the available human and physical resources, financial and technological resources. HRD is concerned with development of human capacity. Human capacity or human potential includes-aptitude, knowledge, values, skills of HR, responsiveness, loyalty and commitment, transparency, leadership development (Maleki Minbashrazgah & Shabani, 2019).

Globally, construction project delays are a widespread issue in global perspective, often leading to both cost and time overruns (Ika & Pinto, 2021). These delays negatively impact all parties

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involved, including owners, contractors, and consultants, and typically result from various factors such as weather conditions, which can halt progress indefinitely (Pan & Zhang, 2021). The repercussions of delays extend beyond financial costs, affecting project schedules and coordination with subcontractors, potentially influencing future projects (Zhang, Minchin Jr & Agdas, 2019). In Malaysia, only 30% of projects meet their scheduled deadlines, with overruns ranging from 10% to 30% (Eriksson et al., 2018). Delays often lead to extended timelines or accelerated work, incurring additional costs (Siati, Nzulwa & Kwena, 2019). Similarly, Singapore faces criticism for increasing project delays, while Indian construction projects frequently encounter time and cost overruns (Shrivastava et al., 2019). Public sector projects often suffer from extensive delays and budget excesses, particularly in traditional contract types where the lowest bidder is selected (Ali, 2018; Ongondo, Gwaya & Masu, 2019).

Regionally, delays and cost overruns are prevalent issues in construction projects across Africa. In Nigeria, a significant proportion of projects experience delays, with seven out of ten facing execution issues (Ofem Patrick Ewa & George Stephen, 2021). Pre-contract contingencies, typically 5-10% of costs, are often inadequate, leading to unforeseen financial burdens that clients may cover through loans (Udo et al., 2023). Cost overruns are common across various project types in Nigeria (Asiedu et al., 2019). Similarly, in Ghana, road construction, a crucial sector for the economy, faces delays and cost overruns, with a large portion of roads in poor condition despite substantial government investment (Owoo & Lambon-Quayefio, 2020; Meng & Nyantakyi, 2019). The road sector in Ghana is vital for transportation and economic connectivity (Poku-Boansi, 2020). Nigeria's road construction industry also suffers from extensive delays, affecting its economic contribution and overall project success (Sinesilassie et al., 2018; Onokala & Olajide, 2020). Delays impact profitability, investment, productivity, and client satisfaction, leading to legal and financial consequences (Muhammad & Johar, 2019).

In Kenya, road construction projects typically follow a traditional procurement system where a consultant civil engineer manages both design and construction on behalf of the client, completing the design before starting construction. Contractors are pre-qualified based on experience and performance, with the contract usually awarded to the lowest bidder using the FIDIC standard form (Omondi & Kinoti, 2020; Kagiri & Wainaina, 2018; Peters, Subar & Martin, 2019). While the roads subsector strategy promises improved road networks, challenges like delays, cost overruns, and disruptions have plagued projects, such as the Thika Superhighway, which saw costs rise significantly and completion dates extend (Njeri & Ngufi, 2021; Ehizuelen & Abdi, 2018). The robust construction industry in Kenya, attracting both local and foreign investments, contributes to employment and economic growth but also faces issues like project delays which can increase costs and result in project abandonment (Dzekashu & Anyu, 2021; Ruth, Lagat & Lilian, 2020).

Statement of the Problem

Delays in road construction projects are a significant issue, leading to time and cost overruns, diminished project quality, disputes, and sometimes even abandonment, which hampers economic growth and the realization of project benefits (Gyem, 2020). These delays represent an opportunity cost for both the community, which misses out on timely benefits, and the government, which incurs extra costs that could have been used elsewhere due to limited budgets (Rane, 2023). Research indicates that road projects funded by entities such as the World

Bank and the Kenyan Government often experience delays, as seen in the Waiyaki highway rehabilitation (Ruth & Lilian, 2020). For instance, the Thika Superhighway's cost increased from 26.44 billion to 34.45 billion, with the completion date extended by two years (Ehizuelen & Abdi, 2018).

In Uasin Gishu Region, out of thirteen major road projects, seven were assigned to Chinese firms, six of which are completed, while one is near completion. Conversely, none of the projects awarded to Kenyan firms or the one given to an Israeli firm have been finished (Kenya Rural Roads Authority, 2019; Simiyu, 2018). Delays in road projects are often attributed to issues like material shortages, design changes, and other logistical problems (Wambugu, 2013; Sinesilassie et al., 2018). Factors such as project management, coordination, and political issues also play a role (Mushori, 2020; Maina, 2022). Given the lack of specific studies on Uasin Gishu County, this research aims to explore how contractors' capacity affects the performance of road construction projects in Uasin Gishu County.

Objectives of the Study

The study was guided by the general as well as specific objectives;

General Objective

The main aim of the study was to determine effect of the project contractors' capacity on performance of road construction projects in Uasin Gishu County, Kenya.

Specific Objectives

i. To find out the effect of the contractors' financial capacity on the performance of road construction projects in Uasin Gishu County, Kenya.
ii. To establish the influence of human resource capacity on performance of road construction projects in Uasin Gishu County, Kenya.

Research Hypotheses

H_{01} Contractors' financial capacity has no significant influence on the performance of road construction projects in Uasin Gishu County, Kenya.

H_{02} Human resource capacity has no significant influence on performance of road construction projects in Uasin Gishu County, Kenya.

2. Literature Review

Theoretical Review

The research was anchored towards theory of constraints, stakeholders' theory and human capital theory.

Theory of Constraints (TOC)

Goldratt's (1984) Theory of Constraints posits that a system's performance is hindered by a small number of constraints, and at least one constraint always exists (Mabin & Balderstone, 2020). According to this theory, achieving higher goals is constrained by these limiting factors,

which can be internal (such as a system's inability to meet market demand) or external. To enhance overall throughput, it is crucial to identify and improve the flow through these constraints. For internal constraints, organizations should utilize the five focusing steps to address and resolve them (Adnan, 2020). This approach suggests that removing or alleviating the most limiting constraints will lead to improved system performance and goal attainment (Karakoç & Eser, 2021; Kumar, Maiti & Gunasekaran, 2018).

In project management, adhering to constraints such as scope, time, and budget is fundamental, while optimizing the allocation of resources to meet objectives presents a greater challenge (Lamb, Robert, Boyden, 2002). The Theory of Constraints is particularly pertinent in manufacturing and production, where it focuses on identifying and fully utilizing machinery or workstations with limited capacity (Urban, 2019). Effective application of TOC involves ensuring that constraints are always engaged and that all other processes align to support and maximize the constraint's output. This may require adjustments in scheduling, material flow, and workforce management to prevent idle time and enhance overall productivity (Haq, Gu, Liang & Abdullah, 2019).

Stakeholders' Theory

Stakeholder theory, introduced by Blair (1998) and further developed by Freeman, outlines how organizations interact with various constituencies that are crucial to their operation. Freeman defines stakeholders as any group or individual who can influence or be influenced by the firm's objectives, emphasizing that stakeholders possess some form of capital at risk, which creates a bond between them and the organization. Mohamed (2022) adds that this relationship involves a tie that strengthens the connection. Stakeholder theory posits that organizational success is achieved not merely through financial profit but by delivering value to a broad spectrum of stakeholders (Schaltegger et al., 2019). This aligns with Corporate Social Responsibility (CSR) and sustainability, suggesting that success is measured by the ability to satisfy diverse stakeholder interests beyond just financial gains (Yan et al., 2022).

The theory also highlights the need for firms to understand and manage the complex interplay of stakeholder influences. According to Odziemkowska and Henisz (2021), companies must address not only individual stakeholder concerns but also the collective impact of multiple stakeholders. This involves analyzing interdependent relationships within the stakeholder environment. The theory's debate between legitimacy and power is evident across various organizational theories, including agency and resource dependence (Dmytriyev et al., 2021). Critics argue that stakeholder theory struggles with balancing diverse stakeholder interests equitably, as some groups inevitably receive more attention or influence than others (Barney & Harrison, 2020; Miller, 2022). For project managers, developing a stakeholder management plan can help address these challenges by outlining stakeholder expectations and communication protocols, and prioritizing stakeholders based on their influence and interest (Dmytriyev et al., 2021).

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Human Capital Theory

Human capital theory, first articulated by Becker (1962) and Rosen (1976), suggests that individual workers can enhance their market value through education and training, as these investments in skills should theoretically increase their effectiveness and expertise (Rashidat & Akindele, 2020). The theory implies that the more education a worker receives, the greater their market value should become, correlating with the accumulation of credits. Becker's foundational work has significantly influenced the understanding of how human capital investments contribute to economic growth and individual prosperity, and it remains a pivotal concept in economics and education (Chijioke & Amadi, 2019).

Key assumptions of human capital theory include the notion that individuals make rational choices to invest in their education to maximize future earnings and economic benefits (England & Folbre, 2023). The theory also assumes that these investments enhance productivity and are akin to physical capital in their accumulation, depreciation, and transferability (Wright, 2021). Additionally, it presumes that investments in human capital are subject to risk and uncertainty, and that governmental policies and market forces can influence these investments, impacting overall economic development. Despite its relevance in guiding human resource management by emphasizing the value of education and skills (Alshammari, 2020; Flores, Xu & Lu, 2020), critics argue that the theory oversimplifies educational and labor market complexities, overlooks socio-economic barriers, and neglects the importance of non-market skills and broader societal impacts (Ndlovu & Ndebele, 2019; Hardy III, Day & Arthur Jr, 2019).

Conceptual Framework

The conceptual framework of the study is shown in Figure 1

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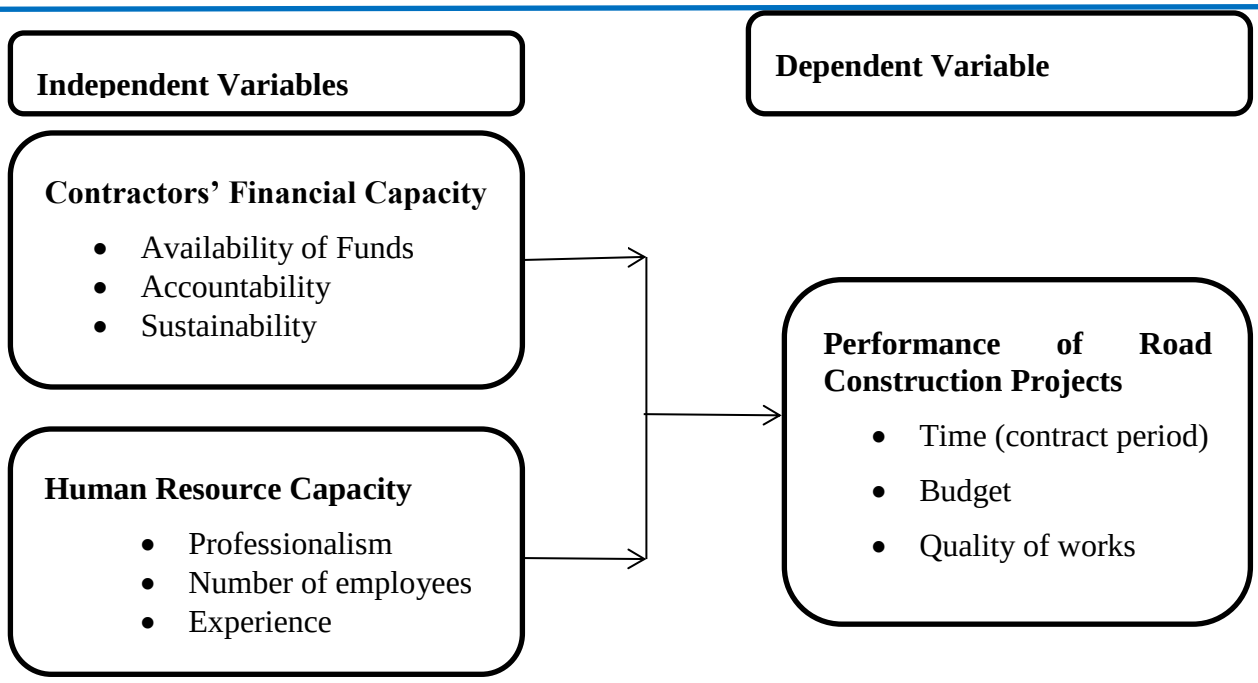

Figure 1: Conceptual Framework

Empirical Literature Review

Contractors' Financial Capacity

In Zambia, Kaliba, Muya, and Mumba (2019) pinpointed several major causes of quality deficiencies in road construction projects, including insufficient and irregular funding from clients, poor financial oversight by contractors, extended delays between feasibility studies and project execution, inadequate supervision, and contractor incompetence or lack of capacity. In contrast, factors affecting construction quality during the execution phase in the Indian construction sector involve financial constraints, a shortage of skilled labor, subpar construction techniques, time limitations, ineffective communication, and weather conditions. The study however was done in Zambia unlike the current study which is done in Kenya.

In water projects in Kenya, Kanda, Muchelule, and Mamadi (2016) discovered that factors related to clients such as owner interference, decision-making capability, and scope changes as well as consultant-related factors such as site supervision, control over sub-contractors, supervisory skills, skilled personnel, coordination abilities, experience, and decision-making skills have a notable impact on project quality. Conversely, consultant factors like supervisory skills and experience also play a critical role in influencing project quality. Delays in payment at the upper levels of the hierarchy can have a cascading effect down the contract chain. Specifically, delays in payment for completed work can disrupt contractors' cash flow, potentially leading to delays in payments to sub-contractors, workers, suppliers, and service providers. However, the study did not address financial capacity, which is a focus of the current research.

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Mushori et al. (2018) identified that indigenous construction firms in Nigeria often face under-capitalization issues. Similarly, Bhattacharya (2021) found that limited working capital is a major operational hurdle for contractors in London. Eja and Ramegowda (2020) recommended that Chinese contractors should ensure they plan and allocate funds for entire projects to prevent interruptions due to financial shortages. Their research also highlighted that robust legal and financial institutions can provide firms with better access to finance and growth opportunities. Ansari (2019) argued that access to finance is crucial for small firms to compete effectively with larger companies. Boadu et al. (2020) suggested offering lower-cost credit to established contractors in the industry.

In the context of Nigerian construction, Tirkaso (2022) noted that proactive effort by contractors is essential, as mismanagement can negatively impact productivity and profitability. Adequate financial capacity is crucial to maintain working capital and fund current assets to ensure road construction projects stay within budget and schedule. Hasan and Jha (2019) emphasized that for small contractors in China, who lack fixed assets and diversification, having sufficient project finance is vital for project success. Cash flow issues can also delay progress, as observed by Ikediashi and Okolie (2022) in large-scale construction projects in Malaysia. Conversely, in Kenya, many contractors are not well-established within the road construction sector.

Addo (2018) conducted a study in Ghana revealing that both small and large contractors struggle to secure funding due to inadequate collateral and asset structures that fail to attract lenders. The research highlighted that the government's payment system negatively impacts small contractors, who, lacking reserves, rely heavily on an inconsistent payment process. Accumulated unpaid bills for completed work are a major cause of incomplete projects. Bolton et al. (2022) analyzed the construction sector in New Zealand and categorized payment issues into three types: delays in processing certificates, reductions in the value of certificates or invoices, and non-payment. The effectiveness and output of construction projects are closely linked to the timeliness and consistency of payments (Judi & Mustaffa, 2023). Similarly, Yap and Skitmore (2018) found that in Malaysia, delays are prevalent, especially in government projects, with fluctuations in material costs and cash flow problems significantly impacting contractors.

Human Resource Capacity

Mousa and Othman (2020) observed that a lack of human resources impacts various aspects of construction, including project timelines, costs, and work quality. They highlighted that such shortages could hinder the financial gains intended from these projects. Hamouche (2023) clarified that the issue is not merely a lack of workers but rather a deficiency in adequately trained, skilled, and dedicated personnel for specific roles. Vooren (2022) identified factors contributing to this shortage, including insufficient training and retraining, an aging workforce, and a lack of appeal for the industry among young people. According to Ayodele et al. (2020), the effectiveness of the construction sector heavily depends on the quality and availability of its human resources. Clarke (2018) defined individuals with specialized construction skills gained through training or practical experience as a crucial component of human resource capacity. Pathirana (2020) emphasized that skilled workers are essential to the construction industry's survival and growth due to their direct involvement in construction activities. In Kenya, despite numerous government construction projects, there is a significant shortage of

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skilled workers, exacerbated by the upgrading of middle-level colleges to universities, which has further diminished the development of skilled personnel.

Johari and Jha (2020) highlighted that the impact of skilled labor in construction is evident in the quality of the final products, especially in road construction projects where technical expertise is crucial. Skilled personnel contribute to reduced poor quality, enhanced productivity, timely performance, and minimized cost and time overruns in these projects. Hayat (2018) suggested that defective or unsatisfactory work is often due to poor workmanship resulting from unskilled labor. Furthermore, having a robust human resource capacity improves efficiency, reduces accidents, lessens management burdens, and increases organizational stability. Margherita and Braccini (2023) identified that the shortage of human resources can be attributed to rising demands driven by ongoing infrastructural development.

The study by Wamui (2019) highlighted the critical role that human resource availability plays amidst the increasing demands on construction contractors to deliver high-quality, cost-effective, and timely projects. The industry's need for a larger workforce is evident, as it can help mitigate inefficiencies caused by poorly executed projects. According to Anwar and Abdullah (2021), the quality and availability of human resources are essential for the construction sector's effectiveness. The shortage of skilled workers poses a significant threat to the economic stability of many countries globally.

To support sustained economic growth, training for capacity building is essential, as human capital is a contractor's most valuable asset (Capozza & Divella, 2019). Many contractors, however, prioritize financial gains and neglect the importance of investing in their workforce. Mahapatro (2021) noted that in Nigeria, the lack of focus on worker training is a major issue. Ibrahim (2023) argues that inadequate training and retraining programs in construction firms lead to skill deficiencies, reduced productivity, and inefficiency. Enhancing human resource development is crucial for transforming the construction industry from its outdated practices to a more modern, efficient sector through worker and manpower advancement.

In Malaysia, Sambasivan and Soon (2017) identified several factors causing delays in infrastructure projects. These include inadequate planning by contractors, subpar site management, lack of experience, irregular payment schedules for completed tasks, ineffective subcontractor management, erratic communication among stakeholders, and shortages of materials, equipment, and labor. Additionally, a government report attributed delays to changes in project design, unstable financial resources, and contractors' inability to fulfill their commitments. Key contributors to delays—accounting for approximately 80% were identified as poor contractor management, delays in material procurement, substandard technical performance, and rising material costs. This study, however, was conducted in Malaysia, whereas the current research is based in Kenya.

3. Research Methodology

Research Design

The study employed a descriptive survey design, characterized by its focus on detailing particular attributes of a broad group of people, objects, or institutions using questionnaires (Jaeger, 2014). This method was deemed suitable as it involved gathering data at a single moment from numerous participants. Descriptive research aims to obtain information that

addresses questions regarding the present condition of the subject or issue being examined (Orodho, 2013). The researcher was of the opinion that a descriptive research design is suitable for this investigation. This study aimed in determining the effect of the project contractors' capacity on performance of road construction projects in Uasin Gishu County.

Target Population

The target population comprised all employees working on road construction projects within Uasin Gishu County. There were 13 road projects in Uasin Gishu County under review during the period of the study. The accessible population for the research consisted of 195 employees.

Sample Size and Sampling Technique

Sample size is the smallest unit that is representatively selected from the target population. The sampling method is a suitable approach employed for choosing a subset from the overall population under consideration (Kara, 2020). The study adopted Yamane (1967) formula to calculate the sample size of 135 employees for the study. This study employed proportionate stratified random sampling. In this technique, the population was stratified into a number of non-overlapping subpopulations or strata and sample items were selected from each stratum. To obtain sample of 135 from nine (9) clusters, proportional distribution was performed in each cluster to obtain respondents. Simple random sampling was used to identify the specific respondents to participate in the research.

Data Collection Instruments

The researcher utilized a questionnaire as the primary data collection tool, incorporating both open-ended and close-ended questions. Open-ended questions allowed respondents to freely express their opinions, while close-ended questions provided a list of predetermined options for responses. The questionnaire was designed with a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). It was divided into two sections: Section A gathered demographic information, including gender, age, education, and years of service, to understand sample characteristics affecting perceptions. Section B focused on the impact of contractors' capacities—financial, human resources on the performance of road construction projects in Uasin Gishu County, Kenya.

Pilot Testing

Pilot test is a min study is conducted prior to the actual inquiry and it seeks to validate the questions to ensure it is reliable. The pilot study was conducted at road projects in Nandi County, in which the researcher distributed 14 questionnaires, representing 10% of the total sample size, in line with Ondiek's (2008) recommendation that at least 10% of the sample should be used for pilot studies.

Data Analysis and Presentation

Once data was fully gathered from respondents, it was keyed into excel so that relevant checks are conducted for quality and consistency. It was then exported to Statistical Package for Social

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Sciences version 24 for computation. Descriptive and Regression analysis was conducted to make relevant inferences and the model was specified below;

$$y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \varepsilon_i$$

Where

Y= performance of road construction projects,

B_0 = Constant

β_1 and β_2 are Coefficients

X_1= contractors' financial capacity

X_2= human resource capacity

ε = error term

4. Data Analysis and Presentation

Presentation and Discussion of Descriptive Statistics

This section presents the findings on the specific objective variables of the study.

Contractors' Financial Capacity

The study sought to assess the influence of the contractors' financial capacity on the performance of road construction projects in Uasin Gishu County. Responses were elicited on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 neutral; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree. A total of 7 statements were used to determine the influence of the contractors' financial capacity on the performance of road construction projects and responses elicited on a 5-point Likert scale as shown in Table 1.

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Table 1: Descriptive Statistics on Contractors' Financial Capacity

Statement		SA	A	N	D	SD	Mean	Sd
1. At the onset of the project, contractor's financial capacity is a key consideration	F	29	52	4	18	11	3.61	1.29
	%	25.4	45.6	3.5	15.8	9.6		
2. Availability of finance and budgetary allocation have a significant positive relationship with project quality.	F	37	48	5	15	9	3.78	1.25
	%	32.5	42.1	4.4	13.2	7.9		
3. Payment delays to contractors affect the completion time of construction projects.	F	36	47	6	17	8	3.75	1.24
	%	31.6	41.2	5.3	14.9	7.0		
4. Cash flow throughout the project is essential to ensure projects are completed on time	F	34	48	4	19	9	3.69	1.28
	%	29.8	42.1	3.5	16.7	7.9		
5. Funding problems in general complicate contractors' capacity on performance of road construction projects	F	32	54	7	12	9	3.77	1.20
	%	28.1	47.4	6.1	10.5	7.9		
6. Poor financial and business management affect negatively contractors' capacity on performance of road construction projects	F	34	41	11	15	13	3.60	1.34
	%	29.8	36.0	9.6	13.2	11.4		
7. Accountability of project finances can affect the performance of the project	F	32	49	7	17	9	3.68	1.25
	%	28.1	43.0	6.1	14.9	7.9		

The study results highlight that 71% of participants believe contractor financial capacity is crucial at the project's onset, while 25.4% disagree. The average rating was 3.61 with a standard deviation of 1.29, underscoring this view. Owolabi et al. (2020) identify five critical factors influencing the bankability of PPP megaprojects: the contractor's experience, financial strength, proven technology, independent technical consultants, and fixed-price turnkey contracts.

Similarly, 74.6% of participants agreed that finance and budgetary allocations positively impact project quality, though 21.1% disagreed. The mean rating was 3.78 with a standard deviation of 1.25. Keng'ara and Makina (2020) also found a positive relationship between intense budgetary processes and organizational performance. Additionally, 72.8% agreed that payment delays affect project completion times, with an average rating of 3.75 and a standard deviation of 1.24. Rachid et al. (2019) highlight key delay causes, including slow change orders and ineffective planning.

Furthermore, 71.9% agreed that consistent cash flow is essential for timely project completion, with a mean rating of 3.67 and a standard deviation of 1.28. Omopariola et al. (2020) found payment delays and inadequate budgetary control as major issues causing cash flow problems.

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75.5% believe funding issues complicate contractors' performance, supported by a mean rating of 3.77 and a standard deviation of 1.20. Aziz and Abdel-Hakam (2016) confirm this, noting correlations between various project roles and performance challenges. Lastly, 65.8% agreed that poor financial management negatively affects contractor performance, with an average rating of 3.60 and a standard deviation of 1.34, aligning with Omopariola et al. (2020). Most respondents (71.1%) also acknowledged that financial accountability impacts project performance, supported by Lee et al. (2021) through their findings on digital twin and blockchain frameworks.

Human Resource Capacity

The study sought to determine the influence of human resource capacity on performance of road construction projects in Uasin Gishu County. Responses were elicited on a 5-point Likert scale of 1-5 where: 1–strongly disagree; 2–disagree; 3-neutral; 4-agree; 5-strongly agree. Analysis of the response mean scores was conducted on the continuous scale <1.5 represents strongly disagree; with 1.5-2.4 disagree; while 2.5-3.4 neutral; with 3.5- 4.5 being agree and finally >4.5 represented strongly agree. A total of 7 statements were used to determine the influence of human resource capacity on performance of road construction projects in Uasin Gishu County and responses elicited on a 5-point Likert scale as shown in Table 2.

Table 2 Descriptive Statistics on Human Resource Capacity

Statement		SA	A	N	D	SD	Mean	SD
1. All sections of the project have enough experienced workers	F	31	57	3	14	9	3.76	1.21
	%	27.2	50.0	2.6	12.3	7.9		
2. All staff are recruited according to their relevance in education and skills	F	40	49	5	10	10	3.86	1.21
	%	35.1	43.0	4.4	8.8	8.8		
3. Staff management can affect the performance of projects	F	39	53	3	11	8	3.91	1.18
	%	34.2	46.5	2.6	9.6	7.0		
4. A high level of professionalism is being observed in the projects	F	36	49	4	14	11	3.75	1.29
	%	31.6	43.0	3.5	12.3	9.6		
5. Staff on site are compensated according to their skills and education	F	43	46	3	14	8	3.89	1.24
	%	37.7	40.4	2.6	12.3	7.0		
6. Enough is done to ensure projects have adequate qualified personnel on site to implement the projects	F	36	52	4	15	7	3.83	1.19
	%	31.6	45.6	3.5	13.2	6.1		
7. The staff on site are trained regularly to ensure they are well acquainted with the project information	F	40	43	9	13	9	3.81	1.25
	%	35.1	37.7	7.9	11.4	7.9		

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The study results indicated that a majority of respondents, 78 out of 101 (77.2%), agreed that all sections of the project have sufficiently experienced workers, while 23 respondents (20.2%) disagreed. This was supported by a mean rating of 3.76 and a standard deviation of 1.21, suggesting a general agreement on the adequacy of experienced workers. Alsharef et al. (2021) noted that risk management measures, including safety protocols and COVID-19-specific procedures, were broadly adopted to mitigate project risks.

In terms of recruitment, 89 respondents (78.1%) agreed that staff are recruited based on their educational relevance and skills, with a mean rating of 3.86 and a standard deviation of 1.21. This aligns with Carenzo et al. (2020), who emphasized the importance of preparedness and training in healthcare settings during the COVID-19 pandemic, highlighting dedicated ICU units, pre-triage procedures, and comprehensive staff training. Additionally, 92 respondents (80.7%) agreed that staff management impacts project performance, as reflected by a mean rating of 3.91 and a standard deviation of 1.18, echoing Anwar and Abdullah's (2021) findings on the positive effects of decentralization on organizational performance.

Furthermore, 85 respondents (74.6%) observed a high level of professionalism in projects, with a mean rating of 3.75 and a standard deviation of 1.29. This is supported by Farashah et al. (2019), who found that certification enhances professionalism through increased self-efficacy. Compensation based on skills and education was affirmed by 89 respondents (78.1%), with a mean rating of 3.89 and a standard deviation of 1.24, aligning with Nguyen et al. (2020), who highlighted the importance of motivation factors, leadership, and compensation in employee performance. Similarly, 88 respondents (77.3%) agreed that adequate qualified personnel are on-site, and 83 respondents (72.8%) agreed that regular training ensures staff are well-informed about project details, with mean ratings of 3.83 and 3.81, respectively. This is consistent with Olanrewaju et al. (2022) on knowledge in project lifecycles and Wu et al. (2022) on the need for training and collaboration in healthcare settings.

Presentation and Discussion of Regression Results

In order to achieve the main objective which was to determine effect of the project contractors' capacity on performance of road construction projects in Uasin Gishu County, regression analysis was carried out. The findings are presented in subsequent sections.

Table 3: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.685[a]	.470	.450	.56516

*a Predictors: (Constant), contractors' financial capacity, human resource capacity, Dependent Variable: project performance.

The study results in Table 3 revealed the model summary which provides the coefficient of determination (R2) which revealed proportion of the variance in the dependent variable that is

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predictable from the independent variable and correlation coefficient (R) of 0.685 which revealed that there was 68.5% degree of association between the performance of road construction projects and contractors' machinery capacity and human resource capacity.

This is supported by coefficient of determination also known as the R square of 0.470. This means that contractors' machinery capacity and human resource capacity explain 47.0% of the variations in the dependent variable which is performance of road construction projects. The results further imply that the model applied to link the relationship of the variables was satisfactory. The outcomes of the Analysis of Variance are outlined and presented in Table 4 below.

Table 4: ANOVA Results

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	30.832	2	7.708	24.132	.000[b]
Residual	34.816	109	.319		
Total	65.648	111			

*a Predictors: (Constant), contractors' financial capacity, human resource capacity

The study findings revealed that the F test value was 24.132. Further the study result revealed the significance value was less than 0.05 thus the model was fit to be fitted in regression model. This implies the independent variables are good predictors of performance of road construction projects. This further imply that the performance of road construction projects can be regressed against the contractors' machinery capacity and human resource capacity.

Table 5: Coefficients and Significance

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	**Std. Error**	**Beta**		
(Constant)	.885	.291		3.040	.003
Contractors' financial capacity(X_1)	.208	.091	.212	2.272	.025
Human resource capacity(X_2)	.194	.079	.229	2.443	.016

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The study presented study results on statistical significance of each individual regression coefficient. The β coefficients were all significant used for multiple regression as follows; contractors' financial capacity (β2=.208, p<0.05) and human resource capacity (β3=.194, p<0.05). A unit increase in contractors' machinery capacity caused 0.208-unit increase in performance of road construction projects. A unit increase human resource capacity caused 0.194-unit increase in performance of road construction projects. Therefore, the multiple regression model equation was developed from the coefficient as shown in equation

From Table 5, the following regression model is fitted:

$$\mathbf{Y= 0.885+0.208X_1+0.194X_2+\varepsilon}$$

Where Y= Project Performance

X_1= Contractors' financial capacity

X_2= Human resource capacity

ε = error term

Hypotheses Testing

H_{01}: Contractors' financial capacity has no significant influence on performance of road construction projects in Uasin Gishu County. The regression results in Table 6 indicate that there is significant influence of contractors' financial capacity on performance of road construction projects with a beta coefficient of 0.208 and significance of (p= 0.025). The study rejected the null hypothesis and concluded that contractors' financial capacity has a positive significant influence on performance of road construction projects in Uasin Gishu County.

H_{02}: Human resource capacity has no significant influence on performance of road construction projects in Uasin Gishu County. The regression results in Table 6 indicate that there is significant influence of human resource capacity on performance of road construction projects with a beta coefficient of 0.194 and significance of (p= 0. 016). The study rejected the null hypothesis and concluded that human resource capacity has a positive significant influence on performance of road construction projects in Uasin Gishu County.

Table 6 Summary of hypothesis Results

	Hypotheses	Coeff	p-value	Decision
H_{01}	Contractors' financial capacity has no significant influence on performance of road construction projects in Uasin Gishu County.	.208	.025	Rejected the null hypothesis
H_{02}	Human resource capacity has no significant influence on performance of road construction projects in Uasin Gishu County.	.194	.016	Rejected the null hypothesis

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5. Conclusion and recommendations

Conclusion

In conclusion, the research has offered in-depth understanding of the diverse elements affecting the performance of road construction projects in Uasin Gishu County. By thoroughly analyzing the contractors' financial capacity and human resource capacity, numerous significant insights have been revealed.

Contractors' Financial Capacity

The study elucidates the critical role of contractors' financial capacity, emphasizing its influence on project quality, timeliness, and overall performance. Adequate funding, timely payment, and effective cash flow management are identified as crucial factors in ensuring project viability and success.

Human Resource Capacity

Human resource capacity emerges as a pivotal determinant of project performance, with a focus on recruiting skilled personnel, maintaining professionalism, and providing ongoing training. The presence of experienced workers, coupled with effective management practices, is deemed essential for project success and efficiency.

Recommendations of the Study

Contractors' Financial Capacity

The study noted that contractors' financial capacity had significant effect on road construction project. This study recommends implementing thorough financial assessments during the contractor selection process to ensure they have sufficient resources to complete projects without delays. Establishing financial stability benchmarks and offering financial management training for contractors can help mitigate risks associated with cash flow issues. Additionally, incorporating financial performance criteria into contract evaluation can incentivize better financial practices, ultimately leading to more reliable project delivery and higher quality outcomes.

Human Resource Capacity

The findings of the study confirmed that human resource capacity has positive and significant relationship with road construction project performance. Based on this finding, the study recommends to prioritize the development of human resource capacity. This includes comprehensive training programs for technical skills, project management, and safety protocols, as well as fostering a culture of continuous learning and improvement. Investing in advanced training and certifications, ensuring adequate staffing levels, and promoting strong leadership can significantly improve project efficiency, reduce delays, and enhance overall quality. By equipping the workforce with the necessary skills and knowledge, and providing supportive management structures, road construction projects can achieve better performance and sustainability outcomes.

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