Project resource mobilization and the performance of road infrastructure projects by local contractors in Nairobi City County, Kenya

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Abstract

Despite significant government investments in road infrastructure projects within Nairobi City County—such as budget allocations for road expansions, upgrades, and maintenance—many projects face persistent challenges, including delays, cost overruns, and subpar quality. The underperformance of these projects hampers local economic growth and exacerbates urban poverty and unemployment. This study examined the effect of project resource mobilization on the performance of road infrastructure projects executed by local contractors in Nairobi City County, Kenya. Anchored in resource dependency theory and guided by the positivism philosophy, the study adopted both descriptive and explanatory research designs. The target population comprised 165 road infrastructure projects undertaken between 2015 and 2022, with respondents including 165 local contractors, three senior monitoring and evaluation officials from KENHA, KURA, and KERRA, and one senior officer from the county public works department. Given the small population, a census approach was used to collect data from all 169 respondents. Primary data was gathered using a semi-structured questionnaire based on a 5-point Likert scale. The findings revealed that project resource mobilization had a positive and significant impact on the performance of road infrastructure projects in Nairobi City County. The study concludes that adequate resource mobilization enhances project efficiency and recommends strengthening financial and material resource allocation frameworks to improve project outcomes.

1.0 Introduction

The construction of road infrastructure plays a critical role in enhancing economic growth, improving transportation systems, and facilitating connectivity across regions. In Kenya, the development of road infrastructure is especially important due to the rapid urbanization in cities such as Nairobi, where the demand for efficient transportation systems is increasingly vital (Republic of Kenya, 2019). Road infrastructure is essential for supporting trade, enhancing mobility, and connecting various regions, thus contributing significantly to the overall development of the country. However, the performance of road infrastructure projects in Kenya, especially those managed by local contractors, faces several challenges, particularly with respect to resource mobilization (Gachanja, 2020; Onyango , 2022).

Local contractors play a key role in the execution of road infrastructure projects in Nairobi City County. They are often tasked with the responsibility of constructing and maintaining critical road networks, yet they often face challenges in mobilizing the necessary resources for the successful completion of projects. Resource mobilization refers to the process of securing and organizing the financial, human, material, and technological resources required for the effective implementation of a project (Musyoka & Ochieng, 2021). The ability of local contractors to mobilize these resources efficiently directly influences the quality, timeliness, and cost-effectiveness of the road infrastructure projects they undertake (Mwega & Mullei, 2021). However, local contractors often face various limitations that hinder their capacity to mobilize the necessary resources. These include inadequate access to capital, limited technical skills, and shortages in skilled labor (Gikonyo, 2022).

In Nairobi City County, the demand for road infrastructure has increased significantly due to the growing population and expanding urban area. This has created an urgent need for efficient and effective road construction and maintenance. Local contractors, who are expected to meet these demands, often face difficulties in acquiring the required financial resources, equipment, and labor to execute projects successfully. Additionally, fluctuations in the cost of materials, delays in procurement, and inefficiencies in the supply chain further complicate the resource mobilization process for these contractors (Gachanja, 2020). Despite these challenges, the role of local contractors in road infrastructure development is indispensable, and their performance is crucial in addressing the growing infrastructure needs of Nairobi City County.

The performance of road infrastructure projects is typically evaluated through several key indicators, including project completion time, cost management, quality of work, and overall stakeholder satisfaction (Mwangi & Kihoro, 2020). Resource mobilization, as a fundamental aspect of project management, plays a central role in determining the success or failure of a project (Musyoka & Ochieng, 2021). The ability to effectively mobilize resources ensures that road construction projects are completed within the stipulated time frames, remain within budget, and meet the required quality standards. However, despite the importance of resource mobilization, there is limited research on how it impacts the performance of road infrastructure projects, particularly in the context of local contractors in Nairobi City County (Nyaboke & Njeri, 2021). This gap in research highlights the need for an in-depth examination of the relationship between resource mobilization and project performance, particularly as it pertains to local contractors operating in Kenya's urban environment.

Several factors influence the ability of local contractors to mobilize resources effectively. Financial limitations are one of the most significant barriers, as local contractors often

struggle to secure sufficient funding for large-scale infrastructure projects (Gikonyo, 2022). The lack of access to adequate financing options can lead to delays in the procurement of materials, machinery, and labor, ultimately affecting the overall project timeline and quality. Additionally, the scarcity of skilled labor and technical expertise in the local construction industry further hampers the ability of contractors to mobilize resources efficiently (Mwega & Mullei, 2021). Furthermore, the regulatory environment, including procurement procedures and standards set by government agencies, can create barriers that complicate resource mobilization for local contractors (Gachanja, 2020).

The successful mobilization of resources is essential for the effective performance of road infrastructure projects. When local contractors can effectively manage the mobilization of financial resources, human resources, materials, and equipment, they can ensure the timely and high-quality completion of projects (Mwangi & Kihoro, 2020). Conversely, poor resource mobilization can lead to cost overruns, delays, and substandard work, which not only impacts the contractors' reputation but also delays critical infrastructure development for the city (Musyoka & Ochieng, 2021). Therefore, understanding the effect of resource mobilization in the context of local contractors in Nairobi was vital for improving the overall performance of road infrastructure projects in the region.

Road Infrastructure Projects in Nairobi City County, Kenya

Nairobi City County boasts a complex road infrastructure system, serving as a key economic and transportation hub in East Africa. The city's road network encompasses a variety of roads including highways, arterials, local roads, expressways, and bypasses, catering to both intra-city and inter-city traffic. Ongoing efforts are directed towards upgrading and expanding Nairobi's road infrastructure in response to rapid urbanization and population growth. These initiatives aim to alleviate traffic congestion, improve road safety, and enhance overall transportation efficiency (Aboagye et al., 2022).

Recent studies (Aboagye, Kissi, Acheampong, & Badu, 2022) have highlighted deficiencies in the quality of road infrastructure projects undertaken by local contractors in Nairobi City County. Furthermore, a significant number of these projects have encountered delays and exceeded their budget allocations (Jiang, 2020). According to a World Bank report (2019), smaller road projects typically target completion within 3-4 years, while larger ones may extend up to 5-6 years (Aboagye, Kissi, Acheampong, & Badu, 2022). Nairobi City County was selected for this study due to widespread challenges related to project delays, budget overruns, and substandard quality associated with initiatives managed by local contractors.

Problem Statement

The construction sector is a crucial driver ofKenya's economic growth, contributing 5.5% to the GDP (KNBS, 2022). This growth is largely fueled by substantial government investments in road infrastructure, such as KeNHA's plan to construct 13,138.73 km of roads at KSh 20.46 billion, and KeRRA's allocation of KSh 10.81 billion for maintaining 28,343 km of roads during the fiscal year 2016/2017. Despite these significant investments, road infrastructure projects in Kenya face major challenges, with about 55% of them experiencing delays, cost overruns, or failure to meet quality standards (Michugu, 2020). These issues are attributed to factors such as inadequate financial resources, limited technical skills, and ineffective project management among local contractors (Oprong, 2020).

While studies like Ochenge (2018) and Akali (2018) have explored project management practices and contractor capacity in specific regions, there is limited research on the effect of project resource mobilization strategies on the performance of road infrastructure projects. Nairobi City County, with its high volume of construction activities, presents a unique context due to the pivotal role of local contractors in executing government-funded road projects. Despite their involvement, the performance of these contractors often falls short, with many struggling to complete projects on time, within budget, and according to required quality standards (Oprong, 2020).

This study sought to address this gap by examining the effect of project resource mobilization on the performance of road infrastructure projects implemented by local contractors in Nairobi City County. Additionally, the study investigated how government regulations and organizational culture moderated and mediated the relationship between resource mobilization strategies and project performance, providing a comprehensive understanding of the factors that influenced the success of road infrastructure projects in the region.

Objective

To examine the effect of project resource mobilization on the performance of road infrastructure projects by local contractors in Nairobi City County, Kenya.

Hypothesis

H_{01}: Project resource mobilization has no significant effect on the performance of road infrastructure projects by local contractors in Nairobi City County, Kenya.

2.0 Literature Review

Theoretical Review

Pfeffer and Salancik established resource dependence theory in 1978, and its key premise was that the availability of resources from the external sources typically affects the effectiveness of an entity (Başar, Yilmaz, Karaca, Lapçn, & Başar, 2020). According to the notion, an organization's resource capacity is a crucial factor of task and project success. Supporters of the idea, such as Alhassan, Zyambo, and Boakye (2021), stated that an entity must have appropriate resources for the execution of a project or the attainment of defined objectives. The entity finds resources that are critical to the attainment of company goals, such as funds, skilled people resources, materials, and equipment. Nevertheless, some critics of the theory, like Ansmann et al. (2021), contend there are entities that have achieved success despite having no resources, suggesting the importance of considering variables such as, the culture of the organization, effectiveness of management, and the execution of suitable tactics. Although such criticisms are justified provided the theory's basic assumptions, it is critical to remember that having the necessary resources must be combined with additional drivers like a friendly workplace atmosphere and a plan that is effective.

The resource dependence theory is significant to this research because it gives the theoretical knowledge that an organization's capacity to complete a project, in this case, road infrastructure projects, is determined by its possession of resources. Finance, as well as
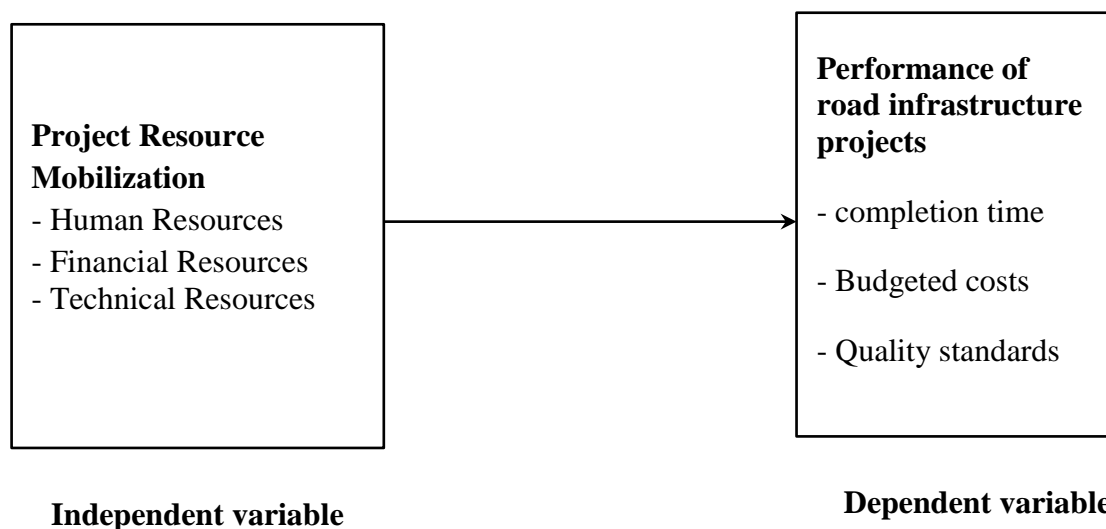
skilled workers as a consequence of training, and a supply of equipment and supplies are some of the recognized important resources that influence the effective execution of road infrastructure projects. A contractor's skill level is considered a key factor in their capability to manage road infrastructure projects. Experienced contractors are expected to have the necessary resources to reduce the completion time for road construction projects, along with good project planning and assessment. Similarly, when the state possesses the requisite resources in terms of skilled personnel and technical expertise to conduct thorough oversight and evaluation of road construction projects, it contributes to the successful completion of such projects.

Empirical Review

Several studies have explored factors influencing road infrastructure project implementation, focusing on financial constraints, resource mobilization, and governance. Johnson and Lee (2020) found that limited financial access hindered construction projects in Ainamoi Sub-county, though their study overlooked other critical factors such as skill shortages and resource mobilization beyond finance. Similarly, Karanja (2021) examined public-private partnerships (PPPs) in Kenya, highlighting financing as a key success factor but neglecting the role of personnel training and knowledge management.

Comparative studies by Zhang and Smit (2020) in France and Italy, as well as Sato et al. (2022) in Japan, emphasized regulatory frameworks and PPPs but did not fully account for local political conditions, community engagement, or workforce capacity. Likewise, Schroeder and Klein (2022) in Germany and Martin et al. (2019) in the USA found that strategic resource allocation enhanced cost efficiency and timeliness, though these findings may not directly apply to other economic and regulatory contexts.

In Africa, studies by Oluwaseun and Adebayo (2021) in Nigeria and Ndiaye and Muthama (2021) in South Africa identified financial planning and stakeholder engagement as crucial to project success but did not fully explore technological innovation and project management competency. Musa and Kariuki (2023) examined donor-funded infrastructure projects in Kenya, revealing the benefits of effective resource mobilization but failing to address governance, policy alignment, and technological advancements. Andersson and Hager (2021) in Sweden highlighted the impact of project management competency on road construction but did not consider the broader influence of governance and resource mobilization. Similarly, Wang et al. (2018) in China linked effective resource mobilization to project quality and sustainability but did not address regulatory issues and stakeholder engagement. Overall, while these studies provide valuable insights, they exhibit contextual gaps due to their country-specific focus and conceptual gaps by overlooking key factors such as governance, workforce development, and adaptability in road infrastructure project implementation.

Conceptual Framework

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┌─────────────────────┐                    ┌─────────────────────┐
│                     │                    │ Performance of      │
│                     │                    │ road infrastructure │
│                     │                    │ projects            │
│ Project Resource    │                    │                     │
│ Mobilization        │                    │ - completion time   │
│ - Human Resources   │──────────────────▶ │                     │
│ - Financial Resources│                   │ - Budgeted costs    │
│ - Technical Resources│                   │                     │
│                     │                    │ - Quality standards │
│                     │                    │                     │
└─────────────────────┘                    └─────────────────────┘

    Independent variable                       Dependent variable
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3.0 Methodology

The research employed a positivist philosophy, which asserts that scientific knowledge is valid only when it is supported by observable and empirical evidence (Crossan, 2003). A quantitative research approach was adopted for this study to test hypotheses and examine the relationships between project resource mobilization and the performance of road infrastructure projects by local contractors in Nairobi City County, Kenya. According to Creswell (2008), quantitative research is ideal for studies that involve the collection and analysis of numerical data to describe, explain, and predict phenomena. The sample size of 169 respondents was determined based on a census method, which ensured full coverage of all relevant stakeholders involved in road infrastructure projects in Nairobi City County. This approach was chosen to enhance the rigor and reliability of the study's conclusions.

The study focused on a population of 165 road infrastructure projects in Nairobi City County executed by local contractors between 2015 and 2022. The respondents consisted of 165 local contractors, three senior monitoring and evaluation officials from the Kenya National Highways Authority (KENHA), the Kenya Urban Roads Authority (KURA), and the Kenya Rural Roads Authority (KERRA), as well as one senior officer from the county public works department. Given the small population, a census method was used, collecting data from all 169 respondents to ensure comprehensive coverage of those involved in the mobilization of resources for road infrastructure projects.

The current study utilized a combination of descriptive and explanatory research designs. Descriptive research design was applied to quantify the influence of resource mobilization on the performance of road infrastructure projects. Additionally, an explanatory design was used to examine the relationships between project resource mobilization and project performance. The data was collected through structured questionnaires, which were administered to contractors and officials using a 5-point Likert scale to ensure consistency in responses. Data collected through the surveys was processed and analyzed using the Statistical Package for Social Sciences (SPSS) version 20.0. Descriptive statistics, including

means, standard deviations, and frequencies, were used to summarize the data. Linear regression analysis was utilized to determine the impact of various resource mobilization factors on the performance of road infrastructure projects.

The linear regression model used in this study was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where:

Y = performance of road infrastructure projects; β_0 = the intercept; β_1 = The coefficients for Project Resource Mobilization; X_1 = Values of the independent variable (Project Resource Mobilization) and ε = The error term.

4.0 Findings

The respondents were surveyed to evaluate road infrastructure project performance concerning budget compliance, timeliness, and meeting quality standards. The survey findings are detailed in Table 1.

Table 1: Performance of Road Projects

	Mean	Std Dev
Complete projects within the budgeted cost	2.9	1.07
Complete projects within the time limit.	2.3	1.21
Complete road projects that attain desired quality.	2.8	1.32
Aggregate score for performance of road projects.	**2.9**	**1.41**

Source: Survey Data (2025)

Table 1 presents an aggregate performance rating of 2.9 for road infrastructure projects, with a standard deviation of 1.41. The mean score for staying within budget was 2.9, indicating moderate agreement, with a standard deviation of 1.07. Meeting time deadlines received a mean score of 2.3, also indicating moderate agreement, with a standard deviation of 1.21. Achieving desired quality standards received a mean score of 2.8, reflecting moderate agreement, with a standard deviation of 1.32.

Descriptive Results for Project resource mobilization

The study's independent variable was project resource mobilization. Participants were surveyed to evaluate their agreement with statements assessing different dimensions of project resource mobilization, including financial, human, and technical aspects. Table 2 presents a detailed summary of the respondents' feedback on these indicators.

Table 2: Descriptive Results for Project Resource Mobilization

	Mean	STD
Financial Resource Mobilization		
The firm identifies the financial resources required to accomplish a particular project.	3.5	0.96
Efforts are made to acquire the identified financial resources that will facilitate the accomplishment of a road infrastructural project.	3.2	0.91
The acquired resources are allocated effectively to support a particular road infrastructural project's specific activities and tasks.	2.9	1.07
The financial resources are used efficiently and effectively to achieve the intended project goals.	3.1	1.02
Aggregate score for Financial Resource Mobilization	**3.2**	**0.99**

Human Resource Mobilization	Mean	STD
The firm attracts qualified individuals to join the organization or project	3.2	1.08
The firm ensures that new employees or team members are properly integrated into the organization	3.3	1.09
The firm identifies the skills, competencies, and qualifications required for various roles within the organization or project	3.2	1.23
The firm allocates human resources to different roles responsibilities based on the organization's needs, project requirements, and individual capabilities	2.9	1.25
The firm assigns specific tasks, projects, or responsibilities to team members based on their skills, experience, and strengths	2.9	1.31
Aggregate score for Human Resource Mobilization	**3.1**	**1.19**

Technical Resources Mobilization	Mean	STD
The firm identifies the equipment and tools required to accomplish a particular road infrastructural project.	3.0	1.30
Efforts are made to acquire the identified equipment and tools that will facilitate the accomplishment of a project.	3.4	1.08
The acquired equipment and tools are allocated effectively to support a particular road infrastructural project's specific activities and tasks.	3.8	1.09
The equipment and tools are used efficiently and effectively to achieve the intended project goals.	3.1	1.20
Aggregate score for Technical Resources Mobilization	**3.3**	**1.17**

Aggregate score for Project Resource Mobilization	**3.2**	**1.12**

Source: Survey Data (2025)

The results from Table 2 indicate respondents' levels of agreement regarding different aspects of project resource mobilization. For financial resource mobilization, there was moderate agreement that the organization identifies and acquires necessary funds for road

infrastructure projects (Mean = 3.5; Standard Deviation = 0.96). Efforts to obtain these resources were also moderately agreed upon (Mean = 3.2; Standard Deviation = 0.91). Respondents also moderately agreed that allocated financial resources are effectively used for project activities (Mean = 2.9; Standard Deviation = 1.07) and achieve project goals efficiently (Mean = 3.1; Standard Deviation = 1.02). Overall, the mean score and standard deviation for Financial Resource Mobilization were 3.2 and 0.99, respectively.

For human resource mobilization, respondents indicated a moderate level of agreement regarding the organization's effectiveness in attracting qualified individuals to join the project (Mean = 3.2; Standard Deviation = 1.08) and ensuring seamless integration of new employees into the team (Mean = 3.3; Standard Deviation = 1.09). They also moderately agreed that the organization identifies the necessary skills, competencies, and qualifications for various project roles (Mean = 3.2; Standard Deviation = 1.23). Respondents similarly agreed to a moderate extent that human resources are allocated according to organizational needs and individual capabilities (Mean = 2.9; Standard Deviation = 1.25) and that specific tasks are assigned based on team members' skills and experience (Mean = 2.9; Standard Deviation = 1.31). Overall, the mean score and standard deviation for Human Resource Mobilization were 3.1 and 1.19, respectively.

Regarding technical resource mobilization, respondents generally agreed to varying extents on different aspects. They moderately agreed that the organization identifies necessary equipment and tools for road infrastructure projects (Mean = 3.0; Standard Deviation = 1.30) and makes efforts to procure them (Mean = 3.4; Standard Deviation = 1.08). Respondents strongly agreed that the acquired equipment and tools are effectively allocated to support project activities (Mean = 3.8; Standard Deviation = 1.09). They also moderately agreed that these resources are used efficiently to achieve project goals (Mean = 3.1; Standard Deviation = 1.20). Overall, the mean score and standard deviation for Technical Resource Mobilization were 3.3 and 1.17, respectively.

The overall average score and standard deviation for Project Resource Mobilization are 3.2 and 1.12, respectively. Mean scores exceeding 2.5 on a five-point Likert scale indicate the significance of the indicators in measuring resource mobilization. Moreover, the relatively consistent standard deviation values suggest that respondents generally agreed on the importance of these indicators for measuring resource mobilization in road infrastructure projects. These results align with prior research emphasizing the critical role of effective resource mobilization in achieving project objectives.

Inferential Analysis Results

The findings are summarized in Table 3.

Table 3: Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.892[a]	.797	.784	6.74710

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6179.343	1	6179.343	135.741	.000[b]
	Residual	6282.216	141	45.523		
	Total	**12461.559**	**142**			

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	7.853	2.342		3.353	.001
Project resource mobilization	.220	.082	.233	2.671	.008

a. Dependent Variable: Performance of road infrastructure projects

The R-squared value in Table 3 indicates that project resource mobilization explain 79.7% of the variation in the performance of road infrastructure projects in Nairobi County, Kenya. This suggests that the remaining variability in performance is influenced by factors beyond project resource mobilization. Despite this, the significant R-squared value affirms the substantial role of these strategies in project performance, indicating a positive influence. ANOVA was employed to assess the regression model's significance, with a p-value ≤ 0.05 considered statistically significant. The results in Table 3 show a p-value of 0.000, indicating strong evidence that the regression model predicts the dependent variable significantly. Furthermore, the F-test results reveal an F-critical value of 3.94 and an F-calculated value of 33.935, indicating a robust linear relationship between the independent and dependent variables. This confirms that changes in the independent variables are closely associated with changes in road infrastructure project performance.

In summary, the regression model is statistically significant, supported by a p-value of 0.000. The regression equation for the relationship between project resource mobilization and project performance in Nairobi County, Kenya is:

$$\textbf{PRI} = 7.853 + 0.220\textbf{PRM}$$

Where **PRI** = Performance of road infrastructure projects, **PRM** = Project resource mobilization

The study investigated the effect of project resource mobilization on performance of road infrastructure projects undertaken by local contractors in Nairobi City County, Kenya. The null hypothesis (H_{01}) posited no significant effect of project resource mobilization on project performance. However, regression analysis results in Table 3 revealed a beta coefficient of 0.220 with a corresponding p-value of 0.008. This beta coefficient suggests a positive relationship between project resource mobilization and project performance, indicating that increased mobilization of resources is associated with enhanced performance in road

infrastructure projects. Given the p-value of 0.008 (p < 0.05), project resource mobilization is considered statistically significant in explaining variations in project performance. Consequently, the null hypothesis was rejected, affirming that project resource mobilization significantly influences road infrastructure project performance in Nairobi City County, Kenya.

The findings align closely with existing research. Mmadi (2023) emphasizes the role of innovative financing and transparent budgeting in improving project outcomes in developing countries like Malawi, supporting the study's conclusions on resource mobilization strategies. Similarly, Kaba and Assaf (2019) discuss how funding limitations in Sub-Saharan Africa can adversely affect project performance, underscoring the significance of robust resource mobilization strategies identified in this study. Moreover, Ochenge (2018) examined local firms in Kenya and found that effective resource mobilization enhances road infrastructure project performance, further validating the study's results. Research by Khattak and Mustafa (2019) on modern tools in Chinese construction companies reinforces the transformative impact of technology on project efficiency and quality, echoing the benefits highlighted in this study. Finally, Stephen (2019) investigated technical resources in Kenya, supporting the adoption of efficient information systems in project management to ensure timely and satisfactory project delivery, aligning with the study's findings on effective resource utilization.

5.0 Conclusions

The study concludes that project resource mobilization significantly influences the performance of road infrastructure projects by local contractors in Nairobi City County, Kenya. The findings indicate that effective mobilization of resources, including financial, human, and technical resources, directly contributes to the successful completion of road projects. Contractors who demonstrate efficient resource mobilization are more likely to complete projects on time, within budget, and to the required quality standards. The relationship between resource mobilization and project performance is strongly supported by statistical evidence, showing a clear positive correlation between the availability and effective use of resources and improved project outcomes. Furthermore, the study reveals that resource mobilization not only impacts project timelines and costs but also strengthens the contractors' ability to manage unforeseen challenges, such as resource shortages and delays, contributing to the overall success of road infrastructure projects.

6.0 Recommendations

To enhance the performance of road infrastructure projects by local contractors in Nairobi City County, Kenya, effective resource mobilization is essential. Contractors should adopt strategic resource planning to ensure the availability of financial, human, and material resources at each project stage, minimizing delays and cost overruns. Strengthening financial management through timely funding, budgeting, and oversight will further enhance project delivery. Investing in workforce capacity building is crucial, as a skilled workforce improves productivity and efficiency. Additionally, fostering strong relationships with suppliers ensures the timely delivery of quality materials, reducing project disruptions. Leveraging modern technologies, such as project management software, can optimize resource tracking and scheduling, enhancing efficiency.

Collaboration with stakeholders, including government agencies, clients, and suppliers, is vital for smooth project execution. Effective communication and coordination help address challenges and improve resource mobilization. By implementing these strategies, contractors can significantly enhance project outcomes, ensuring timely and efficient road infrastructure development that benefits both the industry and the community.

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