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Project Management Competency and Road Construction Project Completion in Selected Counties in Kenya

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Abstract

Purpose: The study sought to establish the relationship between project management competency and road construction project completion in selected counties in Kenya. The specific project management competency that were focused in the study comprised of leadership competency, communication competency, risk management competency and technical management competency.

Methodology: The study targeted 52 road construction projects in three counties comprising of Kitui, Machakos and Nairobi City County. The units of observation comprised of project managers, risk managers, road engineers, road technicians, government representatives, contractors, and local community leaders. A total of 213 respondents were targeted. The study relied on primary data which was gathered through 5-point Likert scale questionnaires. Data was analyzed through both inferential and descriptive statistics. The study employed MS Excel and Statistical Package for Social Scientists to analyze the data. The results of the study were displayed in form of tables and figures. Prior data collection, a pilot study was conducted to assess the reliability and validity of the questionnaires.

Findings: The study established that project management competency positively and significantly related with road construction project completion in selected counties in Kenya. Specifically, leadership competency, communication competency, risk management competency and technical management competency had a positive and significant relationship with road construction project completion. This was depicted by beta values of 0.241, 0.127, 0.204 and 0.334 and significant values of 0.000, 0.003, 0.000 and 0.000 respectively. The study concluded that leadership, communication, risk management, and technical management competencies have positive and significant relationships with road construction project completion in selected counties in Kenya. **Unique Contribution to Theory, Policy and Practice**: Based on the findings, the study recommends that telecommunication companies in KenyThe study recommended that county governments and road project managers strengthen these competencies through enhanced leadership practices, effective communication systems, systematic risk response mechanisms, and improved technical planning, resource management, cost control, and project monitoring.

Keywords: *Leadership Competency, Communication Competency, Risk Management Competency, Technical Management Competency and Project Completion*

Background of the Study

Road construction projects contribute to enhancements of both economic and social development of various countries in the world since construction processes entails interactions with almost all fields of human activities (Kinuthia & Muchelule, 2021). Accordingly, welfare, productivity and security of people living in both urban and rural areas highly depends of road developments that acts as link between communities and administrative centers such as county, national and sub-county centers. Road infrastructural developments are usually capital-intensive projects and shares economic features that enhances firms and households levels of productivity. A successful completion of a road construction project greatly relies on a combination of various events and interactions, whether scheduled or unscheduled together with changes in project participants and processes in the prevailing dynamic construction environment.

According to Shabani, Johansen, and Torp (2022), dynamisms, complexity and uncertainties that surrounds completion and implementation of road construction projects in both developed and developing nations poses challenges even to the most experienced project managers. The complexity surrounding completion of road construction projects comes as a result of involvement of various parties in the implementation stage. Prebanić and Vukomanović (2023) highlighted the parties involved as comprising of stakeholders, contractors, regulators, clients and the community. The process involved entails organizational risk assessment which aims at preventing possible disasters associated with the project, decision milestone which aims at anticipating the outcomes of the project and sequential iteration that focuses on ensuring usability of the completed project.

Alvarenga et al., (2020) noted that for a project to be completed successfully, there is a need for the implementing organ to bear project management competencies characteristics in specific areas surrounding the project. Competencies in areas such leadership, communication, risk management and technical management forms key basis which determines the level of success of a project in areas of delivery timelines, quality, and costs (Kinuthia & Muchelule, 2021).

The levels of effectiveness of the project management competencies in all stages of the project bears the capabilities of minimizing the much anticipated satisfactory status to beneficiaries. Marzagão and Carvalho (2020) posits that the process of implementing road construction projects must be in a position to handle effectively macro problems in areas of social, political, economic and internal institutional environment since the problems directly determines the navigation process of the project from initiation to implementation and finally to completion. Kinuthia and Muchelule (2021) advocates for existence of project management competencies to handle the problems in the best way possible to ensure the project attains the intended success on completion.

Statement of the Problem

County governments in Kenya allocate significant funds for road construction through the County Integrated Development Plans to improve infrastructure and socio-economic development.

However, many road construction projects consistently fail to meet their objectives in terms of timely completion, cost management, and quality standards. This persistent underperformance undermines the intended benefits and raises concerns about the efficiency of project implementation in selected counties (Project Management Institute, 2021).

In Machakos County, the implementation of road projects has been sub-optimal. The Tala-Donyo Sabuk road, projected to span 70 kilometers and scheduled for completion in 2018, achieved only 13.3 kilometers as of the project's evaluation in 2021, reflecting a low completion rate of 22.29% (KeRRA, 2021). Other road projects in the county, such as the Kimutwa–Makaveti–Kwamutisya road and the Kenol–Ngoleni–Kaani/Mutituni–Kaseve road, also recorded poor completion rates of 19.7% and 21.4%, respectively. Similarly, the Matuu-Ekalakal-Kangulu road, declared under construction, had not commenced work as of the same evaluation period.

In Kitui County, road construction projects face significant delays, cost overruns, and substandard outcomes despite substantial financial investments. For instance, over Ksh. 10 billion was allocated in the 2018/2019 Development Plan to construct and refurbish roads (Kitui County Integrated Development Plan, 2021). However, progress has been dismal. Out of a target to gravel 320 kilometers of roads by 2022, only 120 kilometers were completed, representing a 37.5% completion rate. Additionally, just 1.5 kilometers of the targeted 25 kilometers of roads were upgraded to bitumen standards, yielding a completion rate of 6% (Kitui County, 2023). These failures have been attributed to insufficient funds allocation, mismanagement, and other systemic issues.

Despite the critical role of project management competencies in successful project implementation, limited research exists in Kenya linking these competencies to the completion of road construction projects. Existing studies have primarily focused on other contexts or different types of projects. Usman (2021) demonstrated a positive relationship between project management competence and performance of mega projects in Pakistan. Similarly, Minjeong and Choi (2020) studied the impact of team members' competence on construction projects in Korea, while Tiluk et al. (2020) focused on project management skills in secondary school construction projects in West Pokot County, Kenya. These studies leave conceptual and contextual gaps, particularly regarding the relationship between project management competencies and road construction project completion. This study seeks to address these gaps by examining how project management competencies affect the road construction project completion, providing critical insights to enhance infrastructure delivery.

Objectives of the Study

i. To find out the relationship between leadership competency and road construction project completion in selected counties in Kenya

ii. To establish the relationship between communication competency and road construction project completion in selected counties in Kenya
iii. To examine the relationship between risk management competency and road construction project completion in selected counties in Kenya
iv. To determine the relationship between technical management competency and road construction project completion in selected counties in Kenya

Literature Review

Theoretical Review

Transformational Leadership Theory

Transformational Leadership Theory was first introduced by James MacGregor Burns in 1978 and later expanded by Bernard M. Bass in 1985. Burns (1978) conceptualized transformational leadership as a process in which leaders and followers engage in a mutual relationship that elevates both to higher levels of motivation and morality. According to Burns, transformational leaders do not merely focus on exchanges or transactions such as rewards for performance, but instead inspire followers to transcend their self-interest for the sake of organizational goals and collective success. Bass (1985) further developed the theory by operationalizing it and explaining how transformational leaders influence followers through four key dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. Idealized influence refers to leaders acting as role models who are admired and trusted; inspirational motivation involves articulating a clear and compelling vision; intellectual stimulation encourages innovation and problem-solving; and individualized consideration focuses on mentoring and supporting individual follower needs.

The theory posits that transformational leaders enhance followers' commitment, performance, and satisfaction by creating a strong sense of purpose and alignment with organizational goals (Bass & Riggio, 2006). In project environments, transformational leadership is critical because it fosters collaboration among diverse stakeholders, enhances team cohesion, and improves responsiveness to challenges such as delays, cost overruns, and resource constraints. Leaders who demonstrate high leadership competency under this framework are able to effectively communicate project visions, motivate project teams, and encourage adaptive problem-solving, all of which are essential for timely project completion.

In road construction projects in selected counties in Kenya, transformational leadership theory provides a strong explanatory foundation for understanding how leadership competency influences project completion. County governments often manage infrastructure projects involving multiple contractors, engineers, procurement officers, and community stakeholders, where coordination and motivation are key determinants of success. Leaders who exhibit transformational qualities are more likely to ensure that project teams remain focused on shared objectives, adhere to

schedules, and respond effectively to unforeseen project disruptions. This directly supports project completion by reducing inefficiencies and enhancing accountability across project phases. Therefore, transformational leadership theory underpins the objective by explaining how leadership competency enhances the likelihood of successful and timely completion of road construction projects in Kenya.

Stakeholders Theory

Stakeholder Theory was first formally introduced by R. Edward Freeman in 1984. The theory challenges the traditional view that organizations exist solely to maximize shareholder value and instead posits that organizations must consider the interests and expectations of all parties affected by their actions, including employees, customers, suppliers, communities, and government bodies (Freeman, 1984). According to Freeman (1984), an organization's success is determined by its ability to manage relationships with its diverse stakeholders effectively, balancing competing interests in a way that promotes long-term value creation. The theory emphasizes that stakeholders are not merely passive observers but active participants whose support, cooperation, or resistance can significantly influence organizational outcomes.

In project management, Stakeholder Theory is particularly relevant because construction projects, such as road infrastructure development, involve multiple stakeholders with varying interests, expectations, and levels of influence. These include county governments, contractors, engineers, local communities, funding agencies, and regulatory authorities. The theory suggests that effective stakeholder engagement and communication are essential for aligning these interests and minimizing conflicts that may hinder project progress (Freeman, Harrison, Wicks, Parmar, & de Colle, 2010). Communication competency becomes a critical mechanism through which stakeholder relationships are managed.

Stakeholder Theory supports the objective of examining the relationship between communication competency and road construction project completion by emphasizing that communication is the primary tool through which stakeholder expectations are understood and managed. In road construction projects, poor communication between project implementers and stakeholders often leads to misunderstandings, delays, cost overruns, and disputes over project scope and quality. Conversely, strong communication competency enhances transparency, builds trust, and facilitates timely decision-making, which improves coordination among stakeholders and contributes to successful project completion. Therefore, the theory provides a conceptual basis for arguing that communication competency is not just a managerial skill but a strategic function that directly influences how effectively stakeholders collaborate toward achieving project completion goals (Freeman et al., 2010).

Contingency Theory

Contingency Theory was originally developed by Fred Fiedler in 1964 through his work on leadership effectiveness, where he argued that there is no single best way to manage or lead an organization Instead, the effectiveness of a management approach depends on how well it fits the specific situational context (Fiedler, 1964). Later scholars such as Lawrence and Lorsch (1967) expanded the theory by emphasizing that organizational structures and management practices must align with environmental uncertainty, task complexity, and technological conditions to achieve optimal performance. In essence, Contingency Theory posits that organizational success is contingent upon the alignment between internal managerial capabilities and external environmental conditions rather than adherence to universal principles of management.

The central idea of Contingency Theory is that organizations operate in dynamic and uncertain environments, and therefore managers must adapt their strategies, structures, and competencies to suit situational demands. This means that what works effectively in one project or environment may not necessarily work in another. The theory highlights the importance of flexibility, situational awareness, and adaptive decision-making in enhancing organizational performance (Donaldson, 2001). In project management, uncertainty is often high due to factors such as fluctuating costs, weather conditions, regulatory changes, contractor performance variability, and unforeseen technical challenges. As a result, project success depends heavily on how well project managers adapt their competencies, especially in areas such as risk management, to these varying conditions.

Contingency Theory is relevant in explaining the relationship between risk management competency and road construction project completion in selected counties in Kenya. Risk management competency involves the ability of project managers to identify, assess, mitigate, and monitor risks throughout the project lifecycle. According to Contingency Theory, the effectiveness of such competency is not absolute but depends on the complexity and uncertainty of the project environment. In Kenyan county road construction projects, risks such as delayed funding, political interference, procurement inefficiencies, and environmental disruptions vary significantly across regions and projects. Therefore, project managers who possess strong risk management competencies are better able to adapt their strategies to these varying conditions, leading to improved project completion rates. The theory thus supports the objective by explaining that successful road project completion is contingent upon how effectively risk management competencies are applied in response to situational challenges rather than simply possessing the competency in isolation (Fiedler, 1964; Lawrence & Lorsch, 1967; Donaldson, 2001).

Project Management Competency Theory

Project Management Competency Theory is grounded in the broader field of competency-based management and was significantly developed through the works of scholars such as Boyatzis (1982), who is widely credited with formalizing the concept of managerial competencies. Boyatzis (1982) defined competency as an underlying characteristic of an individual that is causally related

to effective or superior performance in a job, including traits, skills, self-image, social roles, and knowledge. In project management, this theory has been further refined by various scholars and professional bodies such as the Project Management Institute, which has emphasized that successful project delivery is strongly dependent on the possession and application of appropriate competencies by project managers (PMI, 2021).

The theory posits that project success is not solely determined by tools, methodologies, or organizational structures, but significantly by the competencies of individuals managing the project. These competencies include technical competencies (such as planning, scheduling, cost control, risk management, and quality management), behavioral competencies (such as leadership, communication, and teamwork), and contextual competencies (such as understanding the project environment and governance structures) (Crawford, 2005). The theory argues that higher levels of project management competence lead to improved project performance outcomes, including timely completion, cost efficiency, quality delivery, and stakeholder satisfaction.

Technical Management Competency incorporates the ability of project managers to apply specialized knowledge, tools, and techniques to effectively manage project processes. This includes skills in work breakdown structures, resource allocation, project scheduling techniques, budgeting, procurement planning, and monitoring and evaluation systems. According to Müller and Turner (2010), technical competencies are essential in ensuring that project activities are properly coordinated and that constraints of time, cost, and scope are effectively managed.

In relation to road construction projects, Project Management Competency Theory provides a strong explanatory framework for understanding how technical management competency influences project completion. Road construction projects are highly technical, resource-intensive, and time-bound, requiring precise planning and execution. When project managers possess strong technical competencies, they are better able to develop realistic project plans, anticipate risks, monitor progress effectively, and implement corrective actions when deviations occur. This directly enhances the likelihood of project completion within the stipulated time, budget, and quality standards.

Conceptual Framework

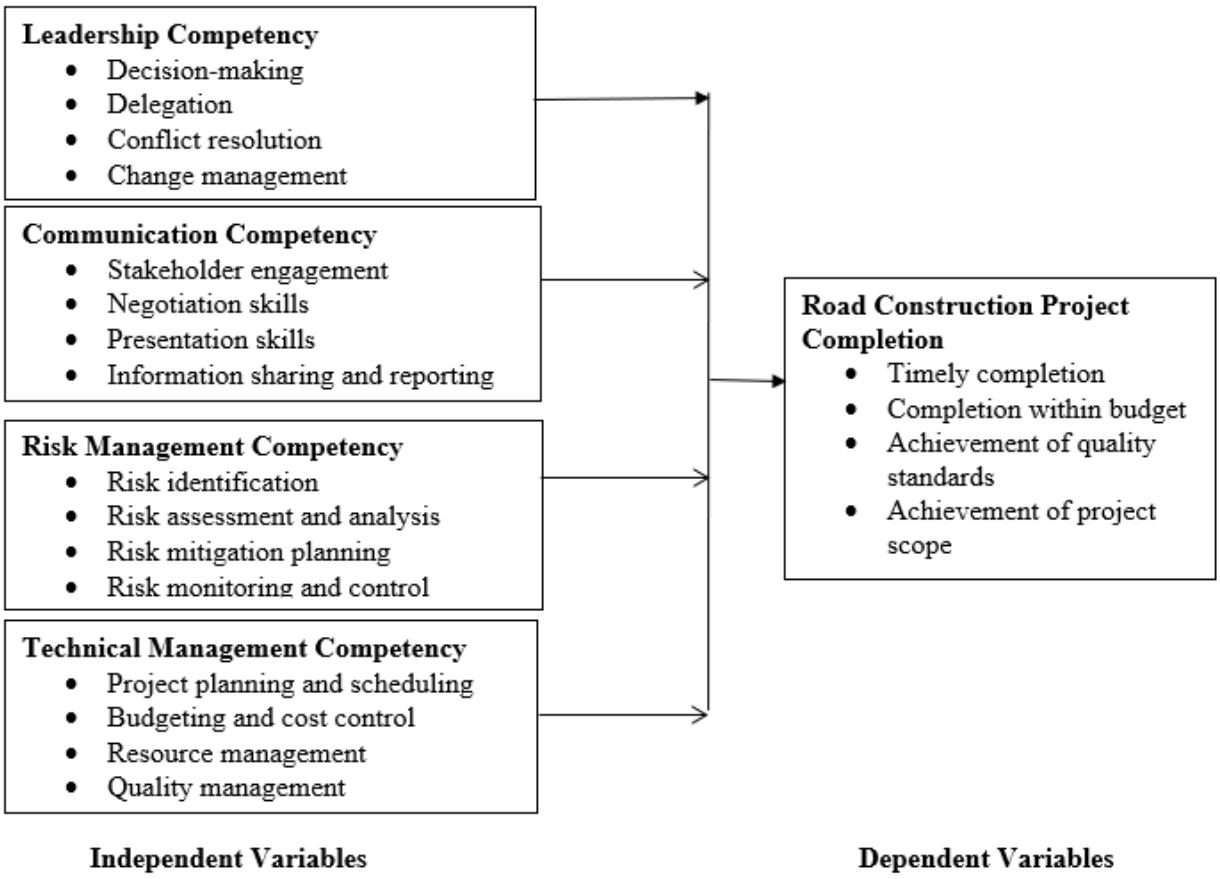


Figure 1: Conceptual Framework

Research Methodology

The study adopted a descriptive survey design. The target population of the study comprised all 63 insurance firms registered under Insurance Regulatory Authority (2024). In this study, the units of analysis comprised of 52 road construction projects in three counties comprising of Kitui, Machakos and Nairobi City County. The unit of observation comprised of 213 individuals involved in the implementation of road construction projects. The study employed a census approach. For the purposes of collecting primary data, the study adopted a 5-point Likert-scale questionnaire with a scale of 1-5 where 5= Strongly Agree, 4 = Agree, 3 =Neutral 2 = Disagree 1 = Strongly Disagree. In order to summarize and relate data from administered surveys, descriptive statistics including percentages, means, and standard deviations was used. The SPSS (Statistical Package for Social Scientists) V22 application was used to analyze the data. A multiple regression analysis that revealed the relationship between the dependent and independent variables were used to refine the data. When a intend to determine if one variable (independent) predicts another one

(dependent), regression analysis is used (Saunders et al., 2020). The model for this study was as illustrated below:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \boldsymbol{\varepsilon}$

Where;

Y = Road Construction Project Completion, X_1 = Leadership Competency, X_2 = Communication Competency, X_3 = Risk Management Competency, X_4 = Technical Management Competency, β_0 = Regression Constant or Intercept, $\beta_1, \beta_2, \beta_3$ and β_4= coefficients of various independent variables and ε =error term assumed to be normally distributed with a zero variance.

Results

Response Rate

The study issued 213 questionnaires to the targeted respondents of the study comprising of project managers, risk managers, road engineers, road technicians, government representatives, contractors and local community leaders. 165 questionnaires were fully filled and returned for analysis. This accounted for a response rate of 77.5%. The response rate was considered adequate for analysis because response rates of 50% are considered adequate, 60% good, and 70% or above very good for survey research, indicating that the obtained response rate was sufficient to yield reliable findings (Morgan, 2020).

Descriptive Results

Leadership Competency

Table 1 presents the descriptive results on leadership competency. The results show that respondents were neutral with the statements that project leaders were able to make timely decisions during road construction projects (Mean=3.188, std.dev=1.629) and that delegation of duties among project team members was effectively done (mean=2.570, std.dev=1.519). Similarly, there was a neutral stance amongst respondents on the statements that project leaders handled conflicts arising within the project team in a structured manner (mean=2.655, std.dev=1.556) as well as the fact that leadership approaches were adjusted when project conditions changed (mean=2.636, std.dev=1.542). Respondents consequently displayed a neural stance with the statements that decision-making processes involved relevant project stakeholders where necessary (mean=2.624, std.dev=1.540), that responsibilities were clearly assigned to different members of the project team (mean=2.636, std.dev=1.519) as well as the fact that leadership practices supported adaptation to changes in project scope or environment (mean=2.667, std.dev=1.416). The sentiment that conflict resolution mechanisms were applied to address disputes during project execution attained a disagree stance as depicted by a mean of 2.406 and std.dev of 1.522. Overall, all the statements on leadership competency attained a neutral stance as depicted by a mean of

2.673 and std.dev of 1.530. According to Ochoa Pacheco et al. (2023), leadership competencies significantly influence project outcomes because they enhance team performance, stakeholder engagement, and the achievement of project goals.

Table 1: Descriptive Statistics on Leadership Competency

Leadership Competency	Mean	Std.Dev
Project leaders are able to make timely decisions during road construction projects.	3.188	1.629
Delegation of duties among project team members is effectively done.	2.57	1.519
Project leaders handle conflicts arising within the project team in a structured manner.	2.655	1.556
Leadership approaches are adjusted when project conditions change.	2.636	1.542
Decision-making processes involve relevant project stakeholders where necessary.	2.624	1.54
Responsibilities are clearly assigned to different members of the project team.	2.636	1.519
Conflict resolution mechanisms are applied to address disputes during project execution.	2.406	1.522
Leadership practices support adaptation to changes in project scope or environment.	2.667	1.416
Overall	**2.673**	**1.53**

Communication Competency

Table 2 presents the descriptive results on communication competency. The results show that respondents were in agreement with the statements that project stakeholders were engaged regularly during road construction projects (mean=3.552, std.dev=1.544) and that negotiations between project teams and stakeholders were conducted effectively (mean=3.594, std.dev=1.522). Respondents however showed a neutral stance with the sentiments that project-related information was communicated clearly to relevant parties (mean=2.927, std.dev=1.576) and that project progress updates were presented in a structured and understandable manner (mean=3.036, std.dev=1.623).

Consequently, there was a neutral stance on the statements that communication channels supported timely sharing of project information (mean=3.121, std.dev=1.513) and that feedback from stakeholders was incorporated into project communication processes (mean=3.073, std.dev=1.516). Additionally, a neutral response was observed on the sentiments that meetings were used effectively to communicate project issues and progress (mean=3.121, std.dev=1.699) as well as the fact that reporting of project activities was done consistently throughout the project lifecycle (mean=3.176, std.dev=1.461). On overall, the statements on communication competency attained a neutral stance as depicted by a mean of 3.2 and std.dev of 1.557. The results tallies with Changalima and Mwagike (2024) who noted that where communication flows are clear, timely,

and well-coordinated, construction project implementation becomes more efficient, reducing delays and enhancing project completion performance.

Table 2: Descriptive Statistics on Communication Competency

Communication Competency	Mean	Std.Dev
Project stakeholders are engaged regularly during road construction projects.	3.552	1.544
Negotiations between project teams and stakeholders are conducted effectively.	3.594	1.522
Project-related information is communicated clearly to relevant parties.	2.927	1.576
Project progress updates are presented in a structured and understandable manner.	3.036	1.623
Communication channels support timely sharing of project information.	3.121	1.513
Feedback from stakeholders is incorporated into project communication processes.	3.073	1.516
Meetings are used effectively to communicate project issues and progress.	3.121	1.699
Reporting of project activities is done consistently throughout the project lifecycle.	3.176	1.461
Overall	**3.200**	**1.557**

Risk Management Competency

Table 3 presents the descriptive results on risk management competency. The results show that respondents were in agreement with the statements that potential risks in road construction projects were identified at early stages (mean=3.521, std.dev=1.556) and that risk assessment was conducted before major project decisions were made (mean=3.588, std.dev=1.414). Similarly, showed an agree stance with the statements that risk analysis tools or techniques were applied during project planning (mean=3.606, std.dev=1.455) and that project risks were continuously monitored throughout the project lifecycle (mean=3.515, std.dev=1.364). However, a neutral stand was observed on the statements that mitigation measures were developed for identified project risks (mean=3.152, std.dev=1.633) and that risk response strategies were implemented during project execution (mean=3.061, std.dev=1.525). Remarkably, the statements that adjustments were made when new risks emerge during implementation and risk control measures were reviewed regularly to ensure effectiveness further attained a neutral stance (mean=3.073, std.dev=1.610 and mean= 3.055, std.dev=1.284) respectively. The overall response mean for the statements on risk management competency was 3.321 and std.dev of 1.480 implying an overall neutral stance on the statements. Accprding to Kirira et al. (2022), projects with higher levels of risk management competency experienced fewer delays and better adherence to budget and quality standards.

Table 3: Descriptive Statistics on Risk Management Competency

Risk Management Competency	Mean	Std.Dev
Potential risks in road construction projects are identified at early stages.	3.521	1.556
Risk assessment is conducted before major project decisions are made.	3.588	1.414
Risk analysis tools or techniques are applied during project planning.	3.606	1.455
Mitigation measures are developed for identified project risks.	3.152	1.633
Risk response strategies are implemented during project execution.	3.061	1.525
Project risks are continuously monitored throughout the project lifecycle.	3.515	1.364
Adjustments are made when new risks emerge during implementation.	3.073	1.610
Risk control measures are reviewed regularly to ensure effectiveness.	3.055	1.284
Overall	**3.321**	**1.480**

Technical Competency

Table 4 presents the descriptive results on technical competency. The results show that respondents were in agreement with the statements that project activities were planned and scheduled in a structured manner (mean=3.515, std.dev=1.633) and that budget estimates were developed and used to guide project implementation (mean=3.503, std.dev=1.618). Respondents further agreed with the sentiments that quality standards were considered during project execution (mean=3.503, std.dev=1.492) and that technical standards were followed in executing construction activities (mean=3.558, std.dev=1.516). respondents however had a neutral stand with the statements that project resources were allocated based on project requirements (mean=2.873, std.dev=1.609) and that project timelines were monitored against planned schedules (mean=2.939, std.dev=1.659).

Additionally, neutral responses were attained on the statements that cost control measures were applied during project implementation (mean=2.861, std.dev=1.696) and that project resources were managed to ensure efficient utilization (mean=2.945, std.dev=1.657). On overall, statements on technical competency attained a mean of 3.212 and a std.dev of 1.610 implying an overall neutral stand on the statements. The results tallies with Zhang and Liu (2021) findings which established that technical competency aspects such as technical planning, engineering knowledge, and problem-solving ability had a positive and statistically significant relationship with project completion time performance.

Table 4: Descriptive Statistics on Technical Competency

Technical Competency	Mean	Std.Dev
Project activities are planned and scheduled in a structured manner.	3.515	1.633
Budget estimates are developed and used to guide project implementation.	3.503	1.618
Project resources are allocated based on project requirements.	2.873	1.609
Quality standards are considered during project execution.	3.503	1.492
Project timelines are monitored against planned schedules.	2.939	1.659
Cost control measures are applied during project implementation.	2.861	1.696
Project resources are managed to ensure efficient utilization.	2.945	1.657
Technical standards are followed in executing construction activities.	3.558	1.516
Overall	**3.212**	**1.610**

Road Construction Project Completion

Table 5 presents the descriptive results on road construction project completion. The results show that respondents were in agreement with the statements that road construction projects were completed within the planned timelines (mean=4.085, std.dev=1.171) and that projects were completed within the approved budget (mean=3.945, std.dev=1.284). Consequently, respondents agreed that completed projects met the required quality standards (mean=3.824, std.dev=1.297) and that project deliverables aligned with the initial project scope (mean=3.752, std.dev=1.437). Similarly, an agree stand was observed on the statements that delays were minimized during project execution (mean=3.818, std.dev=1.411) as well as the fact that cost overruns were effectively controlled in projects (mean=3.836, std.dev=1.317).

On the statements that the final output met stakeholder expectations and that project objectives were achieved as initially defined in project plans attained an agree stand as shown by mean of 3.921, std.dev=1.406 and mean 3.848, std.dev=1.309 respectively. All statements on road construction project completion attained an overall response mean of 3.879 and std.dev=1.329 implying that all respondents agreed with the statements. According to Kinuthia and Muchelule (2021), a successful completion of a road construction project greatly relies on a combination of

various events and interactions, whether scheduled or unscheduled together with changes in project participants and processes in the prevailing dynamic construction environment.

Table 5: Descriptive Statistics on Road Construction Project Completion

Road Construction Project Completion	Mean	Std.Dev
Road construction projects are completed within the planned timelines.	4.085	1.171
Projects are completed within the approved budget.	3.945	1.284
Completed projects meet the required quality standards.	3.824	1.297
Project deliverables align with the initial project scope.	3.752	1.437
Delays are minimized during project execution.	3.818	1.411
Cost overruns are effectively controlled in projects.	3.836	1.317
The final output meets stakeholder expectations.	3.921	1.406
Project objectives are achieved as initially defined in project plans.	3.848	1.309
Overall	**3.879**	**1.329**

Inferential Statistics

Correlation Analysis

The purpose of the correlation analysis was to establish existence of correlations between the independent and dependent variables of the study. Table 6 presents the correlation analysis results. The results show that leadership competency and road construction project completion in selected counties in Kenya positively and significantly correlates. This is depicted by a correlation vale of 0.315 and a significant value of 0.000. The results imply that enhancing aspects of leadership competency in the execution of road construction projects enhances the completion levels. The results were in tandem with Ćwiąkała et al. (2025) who established that leadership competency directly influences team dynamics and project execution efficiency, which are critical for successful project completion.

The results additionally established that communication competency and road construction project completion in selected counties in Kenya positively and significantly correlates. This is depicted by a correlation vale of 0.224 and a significant value of 0.004. The results imply that enhancing aspects of communication competency in the execution of road construction projects enhances the

completion levels. The results concurs with Muneer et al. (2022) who established that effective communication management had a statistically significant positive relationship with construction project success, and that project managers with strong competencies enhanced the effectiveness of communication processes, leading to improved coordination, reduced misunderstandings, and timely project completion.

The results consequently revealed that risk management competency and road construction project completion in selected counties in Kenya positively and significantly correlates. This is depicted by a correlation vale of 0.254 and a significant value of 0.001. The results imply that enhancing aspects of risk management competency in the execution of road construction projects enhances the completion levels. The results were consistent with Bundeh et al. (2024) who established that competency in applying risk-sharing and transfer strategies improves project implementation effectiveness and completion performance.

The results remarkably established that technical management competency and road construction project completion in selected counties in Kenya positively and significantly correlates. This is depicted by a correlation vale of 0.519 and a significant value of 0.000. The results imply that enhancing aspects of technical management competency in the execution of road construction projects enhances the completion levels. The results tallies with Kowalski and Novak (2022) who established that technical competency in areas such as construction technology selection, project scheduling tools, and contract technical interpretation significantly influenced project completion outcomes.

Table 6: Correlation Results

		Leadership Competency	Communication Competency	Risk Management Competency	Technical Management Competency	Road Construction Project Completion
Leadership Competency	Pearson Correlation	1				
	Sig. (2-tailed)					
Communication Competency	Pearson Correlation	-.061	1			
	Sig. (2-tailed)	-.436				
Risk Management Competency	Pearson Correlation	.095	-.074	1		
	Sig. (2-tailed)	.225	.345			
Technical Management Competency	Pearson Correlation	-.058	.172	-.067	1	
	Sig. (2-tailed)	.459	.027	.393		
Road Construction Project Completion	Pearson Correlation	.315	.224	.254	.519	1
	Sig. (2-tailed)	.000	.004	.001	.000	
	N	165	165	165	165	165

Regression Analysis

The purpose of the regression model was to establish the existence of relationship between the independent variables (leadership competency, communication competency, risk management competency and technical management competency) and the dependent variable (road construction project completion). A 95% confident level was employed in the study. The

regression analysis resulted into three outputs: Model Summary, Analysis of Variance (ANOVA) and regression coefficients.

The model summary was utilized in assessing the degree of relationship between independent variables the dependent variable and further to show the percentage accounted by the independent variables on the dependent variable. Table 7 outlines the results. From the table, the R-value was 0.697 implying existence of a strong relationship between project management competency and road construction project completion. Similarly, the R-Square value was 0.486 implying that 48.6% of road construction project completion in the selected counties can be explained by leadership competency, communication competency, risk management competency and technical management competency.

Table 7: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.697[a]	.486	.473	.630

a. Predictors: (Constant), Leadership Competency, Communication Competency, Risk Management Competency and Technical Management Competency

Table 8 presents the Analysis of Variance (ANOVA) results. The ANOVA was incorporated aiming at assessing whether the model connecting the independent variables with the dependent variable was statistically significant. According to the results, the significant value was 0.000 which was less than 0.05, confirming the statistical significance of the model. The model was therefore considered fit for the study.

Table 8: ANOVA

Model		Sum of Squares	df	Mean Square	f	Sig.
1	Regression	59.986	4	14.997	37.734	.000[b]
	Residual	63.589	160	0.397		
	Total	123.575	164			

Dependent Variable: Road Construction Project Completion
Predictors: (Constant), Leadership Competency, Communication Competency, Risk Management Competency and Technical Management Competency

The regression coefficients were utilized to evaluate how the dependent variable changes when an independent variable is changed. The results presented in table 9 show that leadership competency bear a positive and significant relationship with road construction project completion in selected

counties in Kenya. This is shown by a beta value of 0.241 and significant value of 0.000<0.05. The results imply that increasing aspects of leadership competency with one unit increases the levels of road construction project completion with 0.241 units. The results concur with Muchiri and Mose (2022) who established that leadership skills, leadership experience, leadership control, and leadership style had a significant positive influence on road construction project completion.

The results further established that show that communication competency bear a positive and significant relationship with road construction project completion in selected counties in Kenya. This is shown by a beta value of 0.127 and significant value of 0.003<0.05. The results imply that increasing aspects of communication competency with one unit increases the levels of road construction project completion with 0.127 units. The results were in tandem with Muneer et al. (2022) who established that communication competency was essential in ensuring smooth project execution and reducing delays in construction projects.

The results additionally revealed that show that risk management competency bear a positive and significant relationship with road construction project completion in selected counties in Kenya. This is shown by a beta value of 0.204 and significant value of 0.000<0.05. The results imply that increasing aspects of risk management competency with one unit increases the levels of road construction project completion with 0.204 units. The results concur with Kirira et al. (2022) who noted that integrating formal risk management processes into project execution enhances road project completion outcomes.

The results consequently established that technical management competency bear a positive and significant relationship with road construction project completion in selected counties in Kenya. This is shown by a beta value of 0.334 and significant value of 0.000<0.05. The results imply that increasing aspects of technical management competency with one unit increases the levels of road construction project completion with 0.334 units. According to Muriuki and Moronge (2020), technical competency of project managers and staff bear a positive and significant effect on road project completion.

Table 9: Regression Coefficient

	Unstandardized Coefficients		Standardized Coefficients		
Predictors	**B**	**Std. Error**	**Beta**	**T**	**sig.**
(Constant)	1.077	.257	4.196		.000
Leadership Competency	.241	.042	5.796	.331	.000
Communication Competency	.127	.042	3.011	.174	.003
Risk Management Competency	.204	.043	4.724	.270	.000
Technical Management Competency	.334	.037	9.127	.527	.000

Dependent Variable: Road Construction Project Completion

From the initial model of the study, the optimal model becomes:

Road Construction Project Completion = **1.077** + **0.334** (Technical Management Competency) + **0.241** (Leadership Competency) + **0.204** (Risk Management Competency) + **0.127** (Communication Competency)

From the optimal model, road construction project completion in the selected counties was at 1.077 units while holding all factors constant. Additionally, technical management competency accounted for the highest relationship with road construction project completion followed by leadership competency, then risk management competency and finally communication competency. However, the variables positively and significantly related with road construction project completion.

Conclusions and Recommendations

Conclusions

The study concluded that leadership competency plays an important role in the completion of road construction projects in selected counties in Kenya. Although respondents expressed generally neutral perceptions regarding several leadership practices, the significant positive relationship established through correlation and regression analysis indicated that stronger leadership competency is associated with improved project completion. The findings therefore suggested that effective project leadership, particularly through timely decision-making, appropriate delegation

of responsibilities, effective conflict management, stakeholder involvement, clear definition of roles, and adaptability to changes in project conditions, is essential for enhancing the likelihood of completing road construction projects successfully. The relatively weak application of conflict resolution mechanisms further suggested an area requiring attention to strengthen leadership effectiveness and project execution.

The study concluded that communication competency is an important determinant of road construction project completion in selected counties in Kenya. Despite respondents having generally neutral perceptions regarding the effectiveness of communication practices, the significant positive relationship between communication competency and project completion demonstrated that improvements in communication are associated with better project completion outcomes. Effective communication among project teams, contractors, clients, and other stakeholders facilitates timely sharing of project information, coordination of activities, clarification of responsibilities, resolution of emerging issues, and incorporation of stakeholder feedback. Consequently, strengthening communication channels, reporting practices, meetings, progress updates, and stakeholder engagement could enhance coordination and contribute to the timely and successful completion of road construction projects.

The study concluded that risk management competency significantly contributed to the completion of road construction projects in selected counties in Kenya. While the findings indicated that project teams were relatively effective in identifying, assessing, analysing, and monitoring risks, less consistency was observed in the development and implementation of mitigation and response measures. Nevertheless, the significant positive relationship established between risk management competency and project completion demonstrated that stronger risk management practices were associated with improved completion outcomes. The study therefore concluded that road construction projects were more likely to achieve successful completion when project teams systematically identified and assessed risks and, more importantly, translated risk assessments into timely response, mitigation, and control measures that were continuously reviewed as project conditions change.

The study concluded that technical management competency is a significant contributor to the completion of road construction projects in selected counties in Kenya. Although respondents generally agreed that technical management practices such as project planning, scheduling, budgeting, quality management, and adherence to technical standards were evident, some uncertainty existed regarding resource allocation, timeline monitoring, cost control, and efficient resource management. The significant positive relationship between technical management competency and project completion nevertheless demonstrated that stronger technical management practices were associated with improved project completion. The study therefore concluded that effective technical planning and scheduling, realistic budgeting, adherence to quality and technical standards, efficient allocation of resources, close monitoring of project

timelines, and effective cost control were essential for enhancing the successful completion of road construction projects.

Recommendations

The study recommended that county governments, project owners, and road construction project managers should strengthen leadership competency by enhancing timely decision-making, effective delegation, clear definition of roles and responsibilities, stakeholder involvement, and adaptability to changes in project scope and operating conditions. Particular attention should be given to strengthening conflict resolution mechanisms within project teams to ensure that disagreements and emerging disputes are addressed promptly before they affect project progress. Project leaders should also be provided with appropriate leadership and conflict management training to improve their ability to coordinate diverse project stakeholders, manage emerging challenges, and maintain effective working relationships throughout the project lifecycle. These measures would strengthen leadership effectiveness and contribute to improved completion of road construction projects.

The study recommended that county governments, project owners, and project management teams should strengthen communication systems throughout the implementation of road construction projects. This can be achieved by establishing clear and reliable communication channels, providing regular and accurate project progress updates, standardizing reporting procedures, and ensuring that project meetings are conducted consistently and documented appropriately. Project managers should also establish mechanisms for obtaining, addressing, and communicating responses to stakeholder feedback to improve coordination and reduce misunderstandings. Strengthening communication competencies among project personnel through appropriate training can further enhance information sharing, coordination, stakeholder engagement, and timely resolution of project issues, thereby improving project completion.

The study recommended that road construction project managers and county governments should strengthen the practical implementation of risk management beyond risk identification, assessment, analysis, and monitoring. Greater emphasis should be placed on developing specific risk mitigation measures, implementing appropriate risk response strategies, and regularly reviewing the effectiveness of risk controls. Project teams should maintain updated risk registers that clearly assign responsibility for managing identified risks and specify the actions required when risks occur or new risks emerge. Regular risk review meetings should also be undertaken throughout the project lifecycle to ensure that risk responses remain relevant to changing project conditions. Strengthening these practices would enable project teams to respond to risks more effectively and reduce disruptions that may delay project completion.

The study recommended that county governments, project owners, and project managers should strengthen technical management practices by improving project planning and scheduling,

resource allocation, budget preparation, cost control, quality management, and monitoring of project timelines. Particular attention should be given to areas where respondents expressed uncertainty, especially efficient allocation and management of project resources, timely monitoring of project schedules, and application of cost control measures. Project managers should establish systematic mechanisms for tracking physical and financial progress against approved plans and budgets so that deviations can be identified and corrected promptly. Continuous adherence to technical and quality standards should also be maintained throughout construction. Strengthening these technical management practices would improve project control and contribute to timely and successful completion of road construction projects.

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