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QUALITY MANAGEMENT PRACTICES AND THE PERFORMANCE OF RURAL ROAD CONSTRUCTION PROJECTS IN KISII COUNTY, KENYA

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ABSTRACT

Rural road construction projects in Kisii County face numerous challenges, resulting in significant delays and substandard infrastructure. In Kisii County, road construction projects would entail efficient planning, timely execution, and adherence to stringent quality management practices. This ensures that road projects are completed within the stipulated timelines, ensuring the timely delivery of essential infrastructure to the local communities. Such projects would not only enhance connectivity within the county but also facilitate economic growth, social development, and improved access to basic services for residents. The general objective of the study was to establish the influence of quality management practices on the performance of rural road construction projects in Kisii County, Kenya. The study was guided by the following specific objectives;-to determine the influence of quality planning practices on the performance of rural road construction projects in Kisii County and to establish the influence of quality continuous improvement practices on the performance of rural road construction projects in Kisii County, Kenya. This study adopted a descriptive survey design. The total population of this study was 75 employees from Kisii County. The target population of this study was 75 employees comprising constituency board committee members, KERRA staff, consultants, contractors, County Contractor Association members. The study adopted purposive and stratified sampling methods to get 63 respondents. Primary data was collected through a questionnaire. The study concludes that quality planning practices have a significant effect on performance of rural road construction projects in Kisii County, Kenya. The study also concludes that quality continuous improvement practices have a significant effect on performance of rural road construction projects in Kisii County, Kenya. The study recommends that quality planning process should culminate in the development of a quality plan, which is a document that describes how quality was achieved during the rural road construction projects. The study recommends that continuous improvement management consultants should always be available in the execution of road projects with information on how to enhance construction projects by implementing continuous improvement principles. The research also recommends that continuous improvement should contain expenditure tactics, timetables and delivery procedures, quality standards procedures, and more throughout plan implementation of rural road construction projects.

Key Words: Quality Management Practices, Quality Planning Practices, Quality Continuous Improvement Practices, Performance of Rural Road Construction Projects

Background of the Study

Quality management practices play a pivotal role in the successful execution of construction projects, with implications for both developed and developing nations. In the United States, for instance, studies have highlighted the importance of extensive quality management in infrastructure development. Study by Smith and Johnson (2020) demonstrated that adherence to stringent quality standards significantly enhanced the durability and safety of rural road construction projects in various states, positively impacting the overall performance of these projects. Such findings emphasize the global recognition of the critical relationship between quality management practices and the outcomes of infrastructure projects, serving as a relevant background for the investigation in Kenya.

In Singapore, a country renowned for its efficient infrastructure systems, provides further insights. The Singaporean government's commitment to stringent quality control measures in construction projects has been a foundation of the nation's success in building and maintaining high-quality roads in both urban and rural settings. The work of Tan et al. (2019) elucidates how a comprehensive approach to quality management has contributed to Singapore's reputation for robust and resilient road networks. This emphasizes the transferability of effective quality management practices across diverse geographical contexts and emphasizes their potential impact on rural road construction.

China stands out as a significant player with a vast and diverse landscape. Recent studies in China, such as the study conducted by Wang and Li (2021) have delved into the multifaceted aspects of quality management in the construction sector. Their findings elucidate the positive correlation between the implementation of effective quality management practices and the overall success of rural infrastructure projects. China's experience provides valuable lessons for regions facing similar challenges, including the potential relevance of adapted or localized quality management strategies.

The Rwandan government's initiatives, as explored by Nkurunziza and Uwihoreye (2019) highlight the integration of innovative quality management practices in construction projects. The emphasis on innovation and efficiency in Rwanda's infrastructure development underscores the potential for positive outcomes when quality management becomes an integral part of the project life cycle. This experience provides a relevant reference point for considering the broader impact of quality management practices on rural road construction projects.

In Kenya, infrastructure development has been a critical component of the country's socio-economic growth. A study by Mwangi and Ombui (2017) offers insights into the challenges and opportunities faced by the construction sector in Kenya. It emphasizes the need for effective quality management practices. Additionally it highlights the dynamic nature of the industry, influenced by factors such as government policies, technological advancements, resource allocation, stakeholder collaboration and the integration of international standards. This study focused on the importance of tailoring strategies to the county's distinct context, providing a foundation for the exploration into how selected quality management practices influence the performance of rural road construction projects in Kisii County, Kenya.

Statement of the Problem

Rural road construction projects in Kisii County face numerous challenges, resulting in significant delays and substandard infrastructure. According to data from the Kenya National Bureau of Statistics in 2023, a substantial portion of these projects experience delays exceeding the initially projected timelines, with an average delay of 30% beyond planned completion dates

(Bete, 2019). These delays are often attributed to factors such as inadequate funding, poor resource allocation, insufficient stakeholder collaboration and limited capacity within the construction industry. As a consequence, communities in Kisii County continue to grapple with poorly maintained roads, limited access to essential services, and hindered economic development.

The impact of these challenges is profound and far-reaching. Delayed completion of road projects not only disrupts the lives of residents but also exacerbates existing socio-economic inequalities within the county. Farmers face difficulties transporting their goods to markets, students encounter obstacles accessing schools, and healthcare providers struggle to reach patients in remote areas. Moreover, the substandard quality of road infrastructure poses safety risks for commuters, leading to increased road accidents and fatalities. Ultimately, the inability to address these challenges hampers the overall development trajectory of Kisii County, hindering its potential for growth and prosperity. Build up on this points to clearly show that there is a major problem with road construction projects (Kwasira, Wambugu, and Wanyoike, 2016).

In Kisii County, road construction projects ~~would~~ entails efficient planning, timely execution, and adherence to stringent quality management practices. This, ensures that road projects are completed within the stipulated timelines, ensuring the timely delivery of essential infrastructure to the local communities. Such projects would not only enhance connectivity within the county but also facilitate economic growth, social development, and improved access to basic services for residents. Additionally, well-constructed roads would contribute to enhanced safety for commuters, reduced vehicle maintenance costs, and increased agricultural productivity by enabling farmers to transport their produce to markets more efficiently.

Against this backdrop, the imperative for this study becomes evident. Understanding the underlying causes of the inefficiencies in rural road construction projects in Kisii County is essential for devising targeted interventions and strategies to improve the situation. By conducting a comprehensive investigation into the specific challenges facing quality management practices in road construction, this study aims to contribute to the body of knowledge on infrastructure development in Kenya.

Objectives of the Study

General Objective of the Study

The general objective of the study was to establish the relationship between quality management practices and performance of rural road construction projects in Kisii County, Kenya.

Specific Objectives of the Study

The study was guided by the following specific objectives;-

i. To determine the influence of quality planning practices on the performance of rural road construction projects in Kisii County, Kenya.

ii. To establish the influence of quality continuous improvement practices on the performance of rural road construction projects in Kisii County, Kenya.

Theoretical Review

Total Quality Management (TQM) Theory

A method of top leadership called total quality management (TQM) concentrates on providing customers with high-quality goods and services. As a quality management strategy, TQM engages

all employees in upholding high workplace standards throughout the board. Putting TQM into practice may help businesses gain a competitive edge and enhance staff efficiency. Because it offers a flexible system for putting into place successful quality and efficiency initiatives across all company functions, total quality management is crucial (Bednarek et al., 2020). It is commonly acknowledged that TQM originally appeared in the mid-1920s when Walter Shewhart created a quantitative survey strategy for quality management, which later became known as Statistical Process Control, even though there has not been a single authorized source (SPC). The word "quality" is typically associated with client pleasure. Consumers desire to receive the most value out of their purchases. Before buying things, consumers usually inspect them to ensure they fulfilled their criteria (Bednarek et al., 2020). Therefore, businesses and groups make an effort to guarantee that the products they launch or promote are adequately equipped to meet the customers' needs. Total quality management represents a company's culture, outlook, and organizational structure that aims to offer consumers products and services that satisfy their needs. The firm's processes must adhere to the contemporary cultural demands for quality in all areas, 20 with processes carried out accurately the first time and errors and waste eliminated. Therefore, this theory is relevant to the current study due to its significance in helping managers achieve a competitive edge against their peers by employing high-quality practices that bring satisfaction to the parties involved.

Contingency Theory

The contingency theory of leadership was proposed by the Austrian psychologist Fred Edward Fiedler in his landmark 1964 article, "A Contingency Model of Leadership Effectiveness." The contingency theory emphasizes the importance of both the leader's personality and the situation in which that leader operates Contingency theory states that organizations are open systems that constantly interact with their environment and adapt to different environmental pressures. An organizational theory known as contingency theory holds that there is no optimum method to run a business, structure a team, or make different choices. However, the best way to proceed depends on inward and exterior circumstances. Contingent managers are adaptable in their decision-making and selection of straightforward methods to fit changes in the environment at a certain point in the firm's operation (McAdam *et al.*, 2019).

The Contingency Theoretical Framework of Fred Fiedler, a theorist, was based on the Contingency Trait Theory. According to Fiedler, a leader's efficacy and personality attributes are directly related. Fiedler said that specific managerial skills were helpful in a particular situation and that the management would need to alter. The ideas Fiedler's Contingency Theory puts out include: According to Fiedler's Contingency Theory, there isn't a single optimum method for managing a company. Secondly, Fiedler's Hypothesis according to leadership theory, a leader is required to recognize the governance framework that was most beneficial. Attain the corporation's objectives in a particular scenario.

Lastly, the least desirable colleague (LPC) scale, which gauges a manager's leadership perspective, is the fundamental part of Fiedler's Contingency Theory. Several other academics enhanced and expanded upon contingency theories. Mark Evans introduced, and Robert House modified the path-goal theory (McAdam *et al*., 2019). According to the theory, a manager must show followers the route and explain how to succeed as a unit. A specific set of leadership behaviors, such as accomplishment commitment and participatory leader behavior, in addition to the two behaviors stated above, are used to attain this. Due to its significance, this hypothesis is used in this study. This is because contingency theory is an effective instrument for forecasting

leadership performance inside an institution. According to the contingency theory, a manager should be matched with the circumstance since leadership styles are immutable.

Conceptual Framework

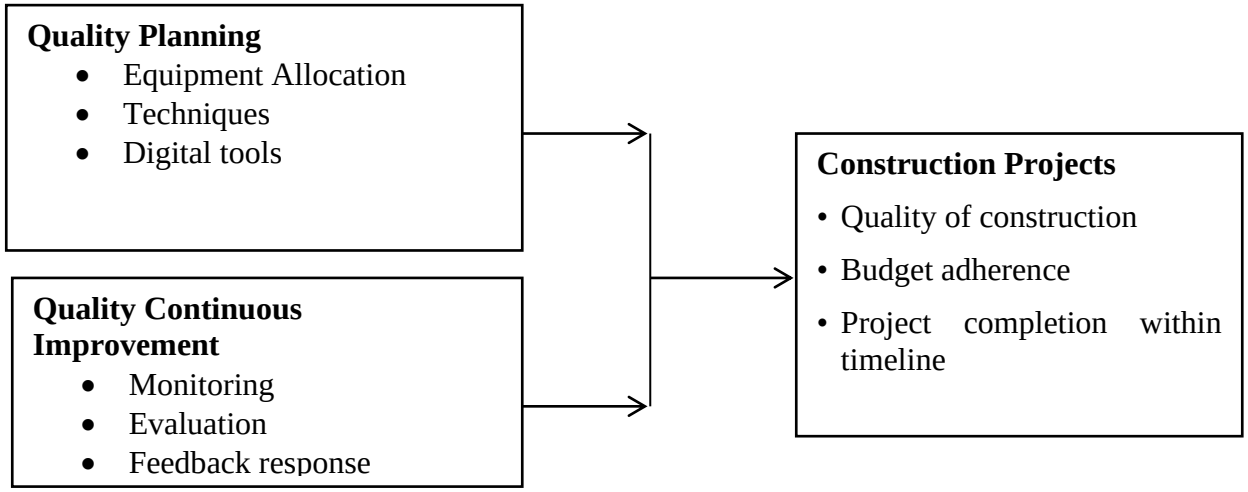

Figure 2. 1: Conceptual Framework

Empirical Review

Quality Planning Practices and Performance of Projects

Quality management activities, like any other aspect of business, must be well thought-out and directed. Strategies and action plans for managing quality must be properly coordinated and be aligned with other initiatives within the firm. This what quality planning entails. It is a process that seeks to provide a structured sequence of activities that should be completed in order to improve and sustain quality (Senaratne & Jayarathna, 2012). It entails providing a road map on how the organization intends to realize quality goals. The quality planning process should culminate in the development of a quality plan, which is a document that describes how quality was achieved during the project.

Quality Project planning establishes a reference for the execution of activities by providing a roadmap that guides the project team. During the planning process, an initial schedule is created that lists all the activities which must be accomplished, the time by which each task must be carried out, the responsible persons for completing each task and the expected deliverables. A fully completed plan is supposed to state what tasks are to be carried out, why the tasks are important, who will carry out what work and when the project is scheduled to be completed. It will also state the resources that are required and in order to be declared complete and successful and what criteria the project must meet (Wysocki and McGary, 2003).

Quality Project planning sets a reference1for the implementation of activities by establishing a blueprint that directs the project1team. Projects typically cover several different areas of operation, include numerous internal and external actors, and have multiple objectives. Since the 1980s, numerous practitioners and academics have acknowledged that the most crucial factors in organizational success are practices for human resource management (HRM), time management, resources utilization planning, and financial planning (Dvir, Raz, & Shenhar, 2003). The HRMPs are being updated in businesses today as they continue to expand on their strategic function. According to Wang and Li (2020), the most prevalent factors to project

failures are contractor non-payment or late payments, which typically result in low-quality projects as a result of short cuts taken by contractors as a cost-cutting measure. As a result, it is vital for lending agencies to play a crucial role in tracking expenses to guarantee value for money as part of the planning process. Project planning is critical to the success of road building programs because it aims to reduce project costs by ensuring that allocated services are used to their full potential. It eliminates irrationality, duplication of effort, and departmental tensions. It also inspires building management to be innovative and creative.

Githenya and Ngugi (2014) examined the determinants if housing projects implementation. Their study revealed that quality planning was among the significant factors that influenced housing project implementation. Ong'ondo (2016), in his study that investigated preconstruction planning in the Kenya construction industry, found that the most important issues that project managers ought to pay attention to include clarity of scope statement, clarity of performance benchmarks, competency of project teams, and clarity of roles. Wambugu (2013) also found that quality planning was one of the determinants of successful completion of rural electrification projects in Kenya.

Quality Continuous Improvement Practices and Performance of Projects

Quality improvement is also an important element in the quality management process. It entails taking deliberate actions aimed at raising the standards of quality (Huemann, 2004). Quality improvement is a popular concept in routine manufacturing and service activities. However, the concept is not so common in the project management setup because most practitioners view projects as independent and temporary undertaking. This perception is misleading especially in the context of construction project where contractors are involved in the implementation of multiple projects (Harnadez & Aspinwall, 2008). In such settings, quality lessons and improvement learnt in one project can be transferred to subsequent projects.

Pestana, Alves, & Barbosa (2014) demonstrated that it is possible to apply Lean methodology to identify and eliminate quality gaps in construction projects. The authors utilized the action research design where the used the Lean methodology to map deficiencies in the administrative processes of two construction projects. This processes enabled the teams managing the two projects to plan improvement efforts. Taner (2013) also provided evidence that shows successful application of Six Sigma in large-scale construction projects in Turkey. The study several factors were key to the successful application of Six Sigma including leadership and commitment of top management, linking quality initiatives to customers, and linking quality initiatives to suppliers.

Mungu (2021) evaluated the impact of continuous improvement strategies on road building construction projects in Narok County, Kenya. A descriptive research approach was used in the project. There were 100 participants in the research including road engineers, supervisors, inspectors, surveyors, and contractors. The research concentrates on finished infrastructure improvements, new road construction, and road upgrades in the research region. For the initial gathering of data, the research used a survey and delivered a questionnaire. Before conducting the proper analysis, the information-gathering equipment was pilot tested to ensure that it was valid and accurate for data gathering. The study's goal was to collect both qualitative and quantitative data. Thematic analysis was employed to study the statistical data, while descriptive and inferential studies were performed to investigate the quantitative information. Before undertaking hypothesis testing, the research performed diagnostic tests to ensure that the circumstances, variables, and anticipated assumptions were met. It was discovered that there was a considerable positive association between project management approaches and road project delivery. According to the findings of the research, continuous improvement methods accounted

for 77.20% of road project performance. This meant that continuous improvement approaches should be considered to enhance the effectiveness of road projects. The findings demonstrated that all continuous improvement methods had a favorable and substantial link with road project delivery in Bomet County, Kenya. The extent of the impact, nevertheless, varied depending on the individual continuous improvement approaches. The most significant impact was made by project planning, followed by project M&E, project financing, and lastly risk assessment. As a result, this research offers continuous improvement management consultants who participated in the execution of road projects with information on how to enhance construction projects by implementing continuous improvement principles. The primary suggestions were that road construction managers adopt project management methods to establish continual development.

RESEARCH METHODOLOGY

Research Design

This study adopted a descriptive survey design with quantitative and qualitative approaches. Kothari (2004) defines descriptive survey design as the process of describing, recording, analyzing and reporting the existing conditions. Tavakoli (2012) notes that descriptive survey design examines at individuals, groups, institutions, methods and materials in order to describe, classify, analyze and interpret the entities and the events in various fields of inquiry (Gay, Mills & Airasian, 2006).

Target Population

The total population of this study was 75 employees from Kisii County. The total population of a study refers to a comprehensive category of individuals, cases or items that possess some common evident characteristics to be studied (Mugenda & Mugenda, 2009). The target population of this study was 75 employees comprising constituency board committee members, KERRA staff, consultants, contractors, County Contractor Association members. According to Kasomo (2006) the target population refers to all items or people to be considered in the research which constitute a universe.

Table 1: Target Population

Section	Target Population
Constituency Road Committee Members	20
Kenya Rural Road Authority(KeRRA) Staff	8
Consultants	4
Contractors (Prequalified Contractors)	39
Kisii Contractor Association (Executive members)	4
TOTAL	**75**

Sampling Technique and Sample Size

Sampling involves the process of identifying a few units from the whole population to represent the common characteristics and their results to be generalized to the whole population. Sampling frame refers to the total number of items where a representative sample is drawn from, for the study (Saunders, Lewis, & Thornhill, 2007). Sampling design is a research plan that shows how cases are to be selected for either observation or as respondents. The study adopted purposive and stratified sampling methods. Since studying a whole 75 target population posed time and financial challenges to the researcher, Krejci and Morgan (1970) formula was adopted.

Research Instruments and Procedures

In this study primary data was collected through a questionnaire. The questionnaire was appropriate tool since it allowed quick and efficient data collection. It also allowed descriptive, correlation and inferential statistical analysis of the data to be collected (Saunders, Lewis, & Thornhill, 2007). The instrument was preferable to the targeted population since it is literate and can easily interpret the questions to capture reliable information. Likert scale was used in the questions assessing the degree of the respondents' agreement with particular variables of the study. The questionnaires were designed to have both closed and open-ended questions to capture complete views of the respondents for wider generalization. The researcher used questionnaires to collect data from the 63 employees.

Pilot Study

The researcher conducted pilot testing of the questionnaires to determine the validity and reliability on a small scale and similar group so as to correct any potential problems that might pose challenges during the actual study. The major role of the pilot test is to check on the appropriateness of proposed data collection instrument in terms of language use, type of questions asked and efficiency of distribution methods of data collection tools. The accuracy of data to be collected largely depends on the reliability and validity of data collection instruments (Kombo & Tromp, 2006). Pilot test refers to a small-scale test of the instrumentation to be adopted on the large-scale study (Kothari, 2004). The pilot test enabled the researcher to determine the logistic plans for the final study and determine the reasonable time required to fill the questionnaire (Gathii *et al.*, 2019).

The questionnaires were in Kisii County on the respondents who did not form part of the study sample. The limitations of pilot studies include possibilities of making inaccurate assumptions in the final research as a result of faulty piloting as well as challenges of contamination of the full research (Van Teijlingen & Hundley, 2002). Pilot testing was done within the month of June, 2024 and it yielded a coefficient of 0.895 then it had a high degree of reliability. The findings of the pilot test were used to test reliability of the study (Kasomo, 2006). It was suggested that 1.0 - 1.5 % of the target population was sufficient enough to conduct a pilot test and for this study the researcher used 1.5 % of 705 as a target population giving an estimate of 10 questionnaires (Mugenda & Mugenda, 2009).

Data Analysis and Presentation

Primary data from the field was edited to check the errors in the raw data. Responses from the field underwent coding to translate them into specific categories. Tabulation of data involved recording in quantifiable terms using descriptive statistics to enable the researcher meaningfully describe a distribution of scores (Nueman, 1997). Data processing is a systematic process of organizing the groups of raw data in a way that can enable valuable analysis (Orodho, 2005). The background information was summarized and responses interpreted using tables, pie charts and percentages. Data was analyzed through descriptive and inferential statistics. Frequencies were also form part of descriptive statistics. The data from questionnaires was analyzed with the aid of the Statistical Package for Social Sciences (SPSS) due to speedy and accurate analysis of data. Qualitative data from the interview schedules and the focused group discussions was analyzed through content analysis and triangulations respectively (Collins & Hussey, 2014).

The quantitative results score was compared with the responses from qualitative research findings to gain an insight on the assessment. For the analysis of the relationships of the independent variables on the dependent variable, the researcher conducted a correlation analysis

to determine the degree of the relationship between each of the independent variables of quality management practices and the dependent variable (performance of rural road construction projects). Regression analysis was done to determine the extent of that relationship between the independent variables and the dependent variable. Presentation of results was done through tables.

RESULTS AND DISCUSSION

Descriptive Statistics

Quality Planning

The study's first objective is to determine the influence of quality planning practices on the performance of rural road construction projects in Kisii County, Kenya. Various statements on quality planning were identified and the respondents were asked to indicate the extent they agree with each of the identified statements using a scale of 1 to 5 where; 1= SD - Strongly Disagree 2=D - Disagree, 3=N - Neutral, 4=A - Agree and 5= SA - Strongly Agree. Mean and standard deviation were calculated for ease of comparison and generalization of findings.

Table 2: Quality Planning

Statement	%	1	2	3	4	5	Mean	StD
Timely allocation of equipment's enhances quality planning during rural road construction projects	%	6.19	2.86	10.95	18.57	61.43	4.26	1.15
Quality planning encompasses adoption of effective techniques which enhances performance of rural road construction projects	%	3.33	0.95	8.57	15.24	71.90	4.51	0.94
Quality planning requires adoption of digital tools which enhances performance of rural road construction projects	%	0.95	4.29	17.14	20.00	57.62	4.29	0.96
Quality planning enhances performance of rural road construction projects	%	1.90	3.81	5.71	22.38	66.19	4.47	0.91

From table 2 respondents indicated that timely allocation of equipment's enhances quality planning during rural road construction projects which was supported by mean score of 4.26 and standard deviation of 1.15 providing that 61.43% of the respondents strongly agreed and 18.57% of the respondents agreeing. The study provided that Quality planning requires adoption of digital tools which enhances performance of rural road construction projects with a mean score of 4.29 and standard deviation of 0.96 indicating that 57.62% of the respondents agreed strongly and 20.00% of the respondents agreeing.

The study revealed that Quality planning encompasses adoption of effective techniques which enhances performance of rural road construction projects which was supported by a mean of 4.51 and standard deviation of 0.94 indicating that 71.9% of the respondents strongly agreed and 15.24% agreeing with the statement. The findings in the study provided that Quality planning enhances performance of rural road construction projects which had a mean of score of 4.47 and standard deviation of 0.91 where 66.19% of the respondents were agreeing with the statement. From the finding this implies that quality planning enhances performance of rural road construction projects in Kisii County, Kenya.

The study findings concurs with Wambugu (2013) who also found that quality planning was one of the determinants of successful completion of rural electrification projects in Kenya. The study results are also in support of Githenya and Ngugi (2014) who examined the determinants if

housing projects implementation. Their study revealed that quality planning was among the significant factors that influenced housing project implementation.

Quality Continuous Improvement

The second objective of study was to determine the influence of quality continuous improvement on performance of rural road construction projects in Kisii County, Kenya. The respondents were required to indicate to which to what extent quality continuous improvement influence performance of rural road construction projects in Kisii County, Kenya. A scale of 1 to 5 where; 1= SD - Strongly Disagree 2=D - Disagree, 3=N - Neutral, 4=A - Agree and 5= SA - Strongly Agree. Mean and standard deviation were calculated for ease of comparison and generalization of findings.

Table 3: Quality Continuous Improvement

Statement	%	1	2	3	4	5	Mean	StD
The County Government ensures there is adequate monitoring during rural road construction projects	%	1.43	6.67	11.90	80.00	2.86	3.68	0.62
The County Government ensures there is adequate project evaluation during rural road construction projects	%	5.71	1.90	23.81	42.86	25.71	3.81	1.02
The County Government ensures there is adequate feedback response mechanism during rural road construction projects	%	0.95	3.81	10.95	70.48	13.81	3.92	0.69
Quality continuous improvement enhances performance of rural road construction projects	%	4.29	5.71	20.95	66.19	2.86	3.58	0.82

The finding is shown in Table 3 provides that County Government ensures there is adequate monitoring during rural road construction projects with a mean score of 3.68 and standard deviation 0.62, where 80.00% of the respondents agreed with the statement

The study further provided that County Government ensures there is adequate project evaluation during rural road construction projects which had a mean score of 3.81 and standard deviation of 1.02 with of the respondents agreeing 42.86% while 25.71% of the respondents strongly agreeing to the statement that County Government ensures there is adequate project evaluation during rural road construction projects.

The result noted that County Government ensures there is adequate feedback response mechanism during rural road construction projects by a mean of 3.92 and standard deviation of 0.69 where 70.48 percent agreeing to the statement. The study indicated that Quality continuous improvement enhances performance of rural road construction projects which had a mean score of 3.58 and standard deviation of 0.82 where 66.19% of the respondents agreed. From the study finding this implies that Quality continuous improvement enhances performance of rural road construction projects.

The study results are in support of Nicholas *et al.,* (2020) the amount to which continuous improvement strategies impact project success can be used to assess their success. As a result of the accepted standards of delivering successful projects while also satisfying client objectives, continuous improvements must be highlighted to keep optimum project outcomes. Therefore, the purpose of this research was to determine how continuous improvement approaches influence the results of road infrastructure projects in Abuja, Nigeria.

Inferential Statistics

Correlation Analysis

The study sought to establish the strength of the relationship between independent and dependent variables of the study. Pearson correlation coefficient was computed at 95 % confidence interval (error margin of 0.05). Table 4 illustrates the findings of the study.

Table 4: Correlation Matrix

		Performance of Rural Construction Projects
Quality Planning	Pearson Correlation	.529**
	Sig. (2-tailed)	.000
	N	50
Quality Continuous Improvement	Pearson Correlation	.715**
	Sig. (2-tailed)	.000
	N	50

As shown on Table 4, the p-value for quality planning was found to be 0.000 which is less than the significant level of 0.05, ($p<0.05$). The result indicated that Pearson Correlation coefficient (r-value) of 0.529, which represented an average, positive relationship between quality planning and performance of rural road construction projects in Kisii County, Kenya.

As shown on Table 4, the p-value for quality continuous improvement was found to be 0.000 which is less than the significant level of 0.05, ($p<0.05$). The result indicated that Pearson Correlation coefficient (r-value) of 0.715, which represented a strong, positive relationship between continuous improvement and performance of rural road construction projects in Kisii County, Kenya.

Multiple Linear Regression

Multiple linear regressions were computed at 95 % confidence interval (0.05 margin error) to show the multiple linear relationship between the independent and dependent variables of the study.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.549[a]	.276	.263	3.01213

a. Predictors: (Constant), quality planning and quality continuous improvement

Table 4 shows that the coefficient of correlation (R) is positive 0.529. This means that there is a positive correlation between quality management on performance of rural road construction project in Kisii County. The study found that factors of quality management such as quality planning, quality assurance practices, quality training practices and quality continuous improvement causes a variation of 73.4% of performance of rural road construction project in Kisii County. The coefficient of determination (R Square) indicates that 27.6% of performance of rural road construction project in Kisii County, Kenya is influenced by quality management practices. The adjusted R2 however, indicates that 26.3% of performance of rural road construction project in Kisii County, Kenya is influenced by quality management practices leaving 73.7% to be influenced by other factors that were not captured in this study.

Table 5: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	681.733	4	171.691	11.193	.000[b]
	Residual	1771.234	46	16.869		
	Total	2452.967	50			

Table 5 shows the Analysis of Variance (ANOVA). The p-value is 0.000 which is < 0.05 indicates that the model is statistically significant in predicting how quality management practices affect performance of rural road construction projects in Kisii County. The results also indicate that the independent variables are predictors of the dependent variable.

Table 6: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	23.722	2.638		16.453	.000
Quality Planning	.509	.123	.693	3.442	.000
Quality Continuous Improvement	1.018	.178	.734	5.031	.000

Y = 23.722+ 0.509X1 + 1.018X2

The results in table 6 indicate that all the independent variables have a significant positive effect on performance of rural road construction projects in Kisii County. The most influential variable is quality continuous improvement with a regression coefficient of 1.018 (p-value = 0.000), followed by quality planning with a coefficient of 0.509 (p-value = 0.000) According to this model when all the independent variables values are zero, performance of rural road construction projects in Kisii County will have a score of 23.722.

Conclusion

The study concludes that quality planning practices have a significant effect on performance of rural road construction projects in Kisii County, Kenya. The study findings revealed that equipment allocation, techniques and digital tools influence performance of rural road construction projects in Kisii County, Kenya.

The study also concludes that quality continuous improvement practices have a significant effect on performance of rural road construction projects in Kisii County, Kenya. The study findings revealed that monitoring, evaluation and feedback response mechanisms influence performance of rural road construction projects in Kisii County, Kenya

Recommendations

The study recommends that quality planning process should culminate in the development of a quality plan, which is a document that describes how quality was achieved during the rural road construction projects.

The study recommends that continuous improvement management consultants should always be available in the execution of road projects with information on how to enhance construction projects by implementing continuous improvement principles. The research also recommends that continuous improvement should contain expenditure tactics, timetables and delivery

procedures, quality standards procedures, and more throughout plan implementation of rural road construction projects.

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