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PROJECT PORTFOLIO MANAGEMENT AND PERFORMANCE OF ROAD PROJECTS IN NAIROBI CITY COUNTY, KENYA

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ABSTRACT

Despite a large amount of money channelled into the projects, only 30% could be accounted for, indicating the misappropriation of funds in the project organisations. Other problems, such as budget overruns and project delays, have been experienced because some funds are channelled to organisations outside Kenya while there needs to be more for the country. This study therefore sought to examine the effect of project portfolio management on the performance of Roads Projects in Nairobi City County, Kenya. Specifically the study sought to assess the influence of portfolio risk management on the performance of Roads Projects in Nairobi City County, Kenya, and to determine the effect of the Portfolio Strategic Management on the performance of Roads Projects in Nairobi City County, Kenya. This study used a descriptive research design to collect qualitative and quantitative data. The target population for this data included 118 existing road projects within Nairobi City County. This study employed primary data. A semi-structured questionnaire was used to collect primary data. A pilot study was conducted to test validity and reliability of the research instrument with 10% of the sample size hence 12 respondents. Quantitative data was analysed using SPSS Version 24.s. The study results were presented in tables. The study concludes that portfolio risk management has a positive and significant effect on the performance of Roads Projects in Nairobi City County, Kenya. The study also concludes that portfolio strategic management has a positive and significant effect on the performance of Roads Projects in Nairobi City County, Kenya. From the findings the study recommends that the management of road construction agencies should focus on strengthening the implementation of portfolio governance practices, emphasizing robust portfolio optimization, authorization, and oversight mechanisms for roads projects.

Key Words: Project Portfolio Management, Portfolio Risk Management, Portfolio Strategic Management, Performance, Roads Projects, Nairobi City County

Background of the Study

In recent years, the rapid urbanization and population growth experienced in Nairobi City County, Kenya, have placed immense pressure on the existing infrastructure, particularly the road networks (Muchelule, 2018). The need for efficient transportation systems to accommodate the increasing traffic volume, enhance connectivity, and promote economic development has become paramount. Consequently, the successful execution of road projects within Nairobi City County has become a critical concern for both local authorities and the broader community. Effective project management is widely acknowledged as a fundamental factor in ensuring the successful implementation of infrastructure projects, such as road construction and maintenance. However, the management of multiple projects, often referred to as project portfolio management (PPM), is an evolving concept that requires a strategic approach to prioritize, allocate resources, and coordinate the execution of various projects to achieve organizational goals (Bwisa, 2017).

The context of Nairobi City County presents a unique challenge for project portfolio management due to the diverse and complex nature of road projects, coupled with the ever-increasing demand for improved infrastructure. Historically, inadequate project management practices and resource constraints have led to project delays, cost overruns, and suboptimal project outcomes. These issues not only impact the transportation efficiency and overall urban development of the city but also have direct implications for the quality of life of its residents (Nkatha, 2018). Against this backdrop, the exploration of the relationship between project portfolio management and the performance of road projects in Nairobi City County is of significant importance. There is a need to investigate whether the adoption of robust project portfolio management practices can lead to better project outcomes, including timely completion, budget adherence, and improved quality of road infrastructure. Moreover, understanding the potential barriers and enablers to effective project portfolio management in the local context is essential for devising targeted interventions that address the unique challenges faced by Nairobi City County (Kinanu, 2016).

While the literature on project management and portfolio management is well-established, the application of these principles to the specific context of road projects within Nairobi City County remains relatively unexplored. This study aims to bridge this gap by examining the current state of project portfolio management practices in the county, assessing their impact on road project performance, and identifying strategies to enhance the management of road project portfolios. By doing so, this research seeks to contribute to the existing body of knowledge on project management and provide actionable insights for policymakers, local authorities, and project managers to enhance the efficiency and effectiveness of road project delivery in Nairobi City County (Nkatha, 2018). In summary, the study of project portfolio management and its influence on the performance of road projects in Nairobi City County is a timely and relevant endeavour that holds the potential to address critical infrastructure challenges, support urban development goals, and improve the overall quality of life for residents.

Statement of the Problem

Road projects are essential or economic growth. Improving roads will result in better access to social services, including health clinics, and increase non-agricultural, income generating activities and travel from peri-urban to urban locations to work in services and construction in the informal sector. For every one billion Kenya shilling spent on road infrastructure by the government, GDP growth increases by 4.5%. In the FY2023/24, the government allocated Sh244 billion towards road construction and maintenance (Kenya Roads Board, 2023). Despite a large amount of money channelled into road projects, only 30% could be accounted for (LGP, 2019), indicating the misappropriation of funds in the project organisations. Other problems, such as budget overruns and project delays, have been experienced because some funds are channelled to organisations outside Kenya while there needs to be more for the country. According to a survey by (KPMG,

2019), only 39.4% of road projects in Kenya were finished within stated timeframes and budgets. A recent study by Mongina (2021) estimated that approximately 48% of road projects in Nairobi County had cost overruns and 54% experience delays. In addition, 20% experienced cost overruns.

Previous studies on project portfolio management primarily focused on organizational performance in business organizations, overlooking critical project-specific factors such as risk management and portfolio strategic management. For instance, research by Okechukwu and Egbo (2017), Muchelule (2017), Bwisa (2017), and Muchelule (2018) emphasized organizational performance rather than project-specific elements. Similarly, Beata and Bogacz (2017) analyzed project portfolio management in NGOs in Poland using different variables from those examined in this study. Locally, Nkatha (2018) investigated project portfolio management practices influencing county projects but overlooked the specific context of NGOs. Additionally, Kinanu (2016) explored project portfolio management practices in Nairobi County governments, but the overall contribution of project factors to project success remained underexplored. While project success is often attributed to various factors such as project mission, technology, and top management support, the specific contribution of project portfolio management remains insufficiently explored. Therefore, this study addresses the three identified gaps in existing research: limited generalizability due to studies being confined to specific countries and sectors, overlooking crucial aspects of project portfolio management, and inadequate exploration of the specific contribution of effective project portfolio management practices to road project performance. This research aims to enhance understanding and provide valuable insights into effective project management practices in the context of road projects in Kenya, with a particular focus on Nairobi City County.

Objectives of the Study

The following specific objectives guided the study: -

i. To examine the influence of portfolio risk management on the performance of Roads Projects in Nairobi City County, Kenya.
ii. To examine the influence of the Portfolio Strategic Management on the performance of Roads Projects in Nairobi City County, Kenya.

LITERATURE REVIEW

Theoretical Review

Resource-Based Theory

Penrose's resource-based perspective (RBV) became widely accepted, showing how companies could better utilise their resources and expand their capabilities to gain a competitive advantage in the market (Rugman & Verbeke, 2002). To actively expand these aptitudes, companies must have sound portfolio governance, stakeholder engagement, functional portfolio risk management and well-designed portfolio strategic managers (Dagnino, 2012). The most extensively used and influential management theory is the resource-based approach (RBV). According to the resource-based approach, strategic value is created when an organisation either generates or buys a resource with ex-post strategic value, resulting in improved performance and maximum profits (Dagnino, 2012). The theory aims to identify the long-term competitive advantages of a company's internal resources through sustained competitive advantage (SCA).

RBV ignores the moderately performing firms and concentrates on top performers with attributes that indicate superior performance. The underlying assumption under this theory is that all the organisation's resources should be diverse and dormant, implying that each organisation has different capabilities and competencies regardless of size. The intangible assets are difficult to imitate, thereby giving rise to the immobility factor. These unique attributes enable a firm to have a competitive advantage. This theory has been criticised because it has no managerial implications,

limited applicability, and that competitive advantage cannot be sustained. The major setbacks of this theory are the casual ambiguity which hinders the connection between resources and competitive advantage. This ambiguity prevents outsiders from analysing their rivals' success and trying to replicate the same—the heterogeneity of the firm as an assumption, especially when identifying tacit elements of resources. Portfolio diversification by any firm demands that for any firm to enjoy a competitive advantage, it should strengthen its intangible assets due to their difficulty to imitate (Dagnino, 2012).

Transaction Cost Theory (TCT)

According to (Cuypers *et al*., 2020) the study seeks to explain the linkage between project transactions and governance practices using the transaction cost theory (TCT). Portfolio management presents structures implemented to reduce costs in converting "input" to "output" through projects. As reported by William (1985), the balance necessary in an organisational governance system towards cutting down the cost to the organisation is through economising existing resources and scales, e.g. portfolio management. Therefore, the link between Transaction costs economics (TCE) and corporate governance is portfolio management. Williamson's TCE states that distinct governance structures are crucial in different transaction forms. There exist three prospective research chances in his dynamic aspects. Combining the effects of this fundamental alteration requires a precise understanding of the procedure and prudence from managers to make consistent governance choices with TCT logic and suitable in the long run. Such governance would include sound portfolio governance decisions, thorough portfolio strategic management and inclusion of relevant stakeholders (Cuypers et al., 2021). Nairobi City County should ensure that the managers practice such dynamic aspects to run their projects effectively.

Conceptual Framework

A conceptual framework represents the relationship of the research variables, explaining the present state of affairs and outlining the possible solution to the investigated problems (Varpio et al., 2020). The conceptual framework outlines the relationship between the variables central to the study.

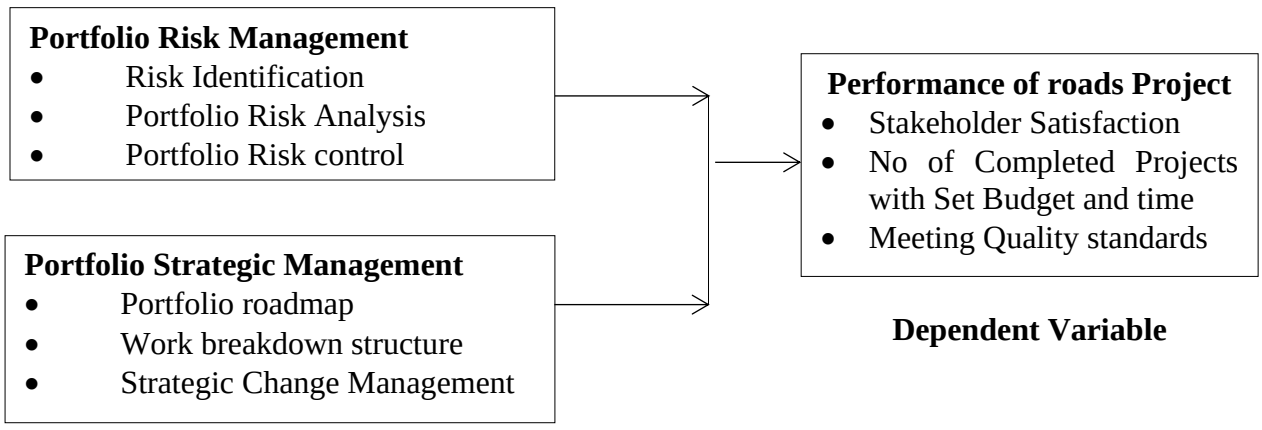

Figure 2.1: Conceptual Framework

Portfolio Risk Management

Wideman (2016) defines uncertainty as a lack of knowledge about future events, whether favorable or unfavorable, and argues that risk management should act on a region of uncertainties delimited by total certainty in one extreme, and by total uncertainty, at the opposite end. Still, according to the author, most decisions are made in a scenario of incomplete or non-existent information, thus

increasing the level of uncertainty in their results. According to Ward & Chapman (2018) uncertainties are part of projects and must be considered as indecisive situation, hesitation, or lack of complete information. Uncertainty refers to situations of ambiguity and variability. Ambiguities are related to lack of information (lack of project data, stakeholder's behavior, premises, estimates, trends). The variability is linked to the possible variations of project's performance (cost, life cycle, functional requirements fulfillment). Since risks arise from uncertainties, the authors suggest that managing uncertainties rather than risks provides a much broader view, allowing the identification of risks and opportunities at the origin.

Risk management contributes to a more conscious decision-making process, through the risk identification, analysis and treatment (Flanagan & Norman, 2019). Consequently, risk management must be initiated together with the project and must become an ongoing process throughout its life cycle (Ward & Chapman, 2016). However, managing project risks alone is not enough to ensure that strategic objectives will be achieved, since organizations usually must manage multiple projects simultaneously to maintain their flexibility and efficiency (Olsson, 2018). Hence, risk management must be strategically conducted and continuously follow the portfolio management to reduce uncertainties and contribute to the success of strategic plan implementation of the organizations (Sanchez et al, 2018)

Portfolio Strategic Management

Strategic Management is a concept that concerns making decisions and taking corrective actions to achieve long-term targets and goals of an organization (Bakar *et al*, 2018). It is a set of decisions and actions that result in the formulation and implementation of plans designed to achieve a company's objectives (Pearce & Robinson, 2015). Strategic management practices therefore include strategic planning; strategy implementation and strategy evaluation and control, which have in the past studies been seen to influence the competitive positioning of the firm in the industry, thus determine the performance (Johnson, 2019). Generally, strategic management practices can improve efficiency in various organizations (Bakar *et al,* 2018).

Strategic management practice consists of four basic elements, strategy formulation, implementation, evaluation and control (Wheelen & Hunger, 2018). It is within these four elements that strategic management practices are manifested and is also described as the strategic management process. Strategy formulation is the development of long-range plans for the effective management of environmental opportunities and threats, in light of corporate strengths and weaknesses (Wheelen & Hunger, 2018). It includes defining the corporate mission, specifying achievable objectives, developing strategies and setting policy guidelines. Strategy implementation is the process through which strategies are put into action throughout the organization by deriving short-term objectives from the long-term objectives and further deriving the functional tactics from the business strategy. This process assists management in identifying the specific immediate actions that must be taken in the key functional areas to implement the business strategy (Pearce & Robinson, 2018). Strategy evaluation and control is the process of comparing the actual performance against the desired performance. Strategy evaluation involves setting control processes to continuously review, evaluate and provide feedback concerning the implemented strategies to determine if the desired results are being accomplished such that corrective measures may be taken if warranted (Steiner, 2019).

Empirical Review

Portfolio Risk Management and Project Performance

Zanfelicce and Rabechini (2017) researched on the influence of risk management on the project portfolio success. The object of study was the new products project portfolio of an organization from the industrial sector, manufacturer of durable goods. The findings revealed a low intensity of project portfolio risk management. This is aligned with the bibliometric survey results and with

the evidence from the investigation performed on the case study unit. In order to evaluate the risk management influence over the portfolio success, this article proposes a matrix which suggests the risk management intensity associated with the project portfolio management processes. The proposed matrix application can be considered a contribution element to deepen the knowledge of the risk management influence on the project portfolio success.

According to the literature reviewed in this article, risk management provides different benefits to the organizations when integrated in the project portfolio. Among the benefits provided, Sanchez *et al.* (2018) said that there is an increase of information transparency, Lee *et al.* (2019) argue that it improves the company's ability to deal with risks and McFarlan (2019) emphasizes that risk management provides deeper information for decision making, improving its outcome. Deepening the benefits analysis, Teller & Kock (2018) affirm that risk management becomes essential for project portfolio management because it allows the organizations to improve the management of new opportunities and threats. Moreover, it helps the organization to consolidate the activities, eliminating duplicated work. Hence, risk management supports the resources alignment and distribution between projects, contributing with the organization to take more conscious decisions. Kock *et al.* (2016) argue that risks and opportunities are always very close and that risk-taking can encourage organizations to quickly implement new ideas, making better use of available resources. This agility can become a strategic differential over its competitors, through the launch of new products and services. However, new ideas can become a competitive advantage for organizations only when they are successfully implemented.

Adabenege *et al* (2016) researched on the Correlation between Risk Management and Organizational Performance: An Empirical Investigation using Panel Data. Determination of the relationship between risk management and organizational performance is done using panel data regression models. Explanatory variables, such as standard deviation of return on assets, standard deviation of return on revenue, current ratio, quick ratio, equity over total assets, equity over loan ratio, debt over equity and debt over total assets are used. Five hypotheses are tested and overall, organizational performance is positively affected by the risk management mechanisms of the bank and its liquidity policies. However, the relationship between financial leverage, size and age of the bank and financial performance is negative. The study concludes that risk and liquidity management policies are important to high financial performance. However, banks should put in place sound risk management mechanisms and policies to guide their operations. Also, banks should adhere strictly to sound liquidity management practices to guide against lack of liquidity

Saunders and Schumacher (2018) provide further support to the importance of controlling risks to financial performance. By investigating the determinants of NIM for 614 banks of 6 European countries and US from 1988 to 1995, the study finds that interest rate volatility has a positive significant impact on the banks profitability.

Hakim and Neamie (2017) examine the relationship between credit risk and bank's performance of Egypt and Lebanon bank in 1990s. Using data for banks from the two countries over the period 1993-1999, the study estimates a fixed effects model of bank return with varying intercepts and coefficients. The findings show that credit variable is positively related to profitability, while liquidity variable is insignificant across all banks and have no impact on profitability. The study also finds a strong link between capital adequacy and commercial bank return, with high capitalization being the hindrance to return. Ahmad and Ariff (2017) examine the key determinants of credit risk of commercial banks on emerging economy banking systems compared with the developed economies. The study found that regulation is important for banking systems that offer multi-products and services; management quality is critical in the cases of loan dominant banks in emerging economies. An increase in loan loss provision is also considered to be a significant determinant of potential credit risk. The study further highlighted that credit risk in emerging economy banks is higher than that in developed economies.

Portfolio Strategic Management and Project Performance

Nyongesa, Makokha and Namusonge (2017) conducted a study on the influence of strategic management practices on organisational performance of Kenya Power and Lighting Company. The study used descriptive research design. The target population comprised a total of all the management and staff of Kenya Power and Lighting Company, Kitale Branch. This study employed stratified and simple random sampling techniques as well as purposive sampling. The sample size for the study comprised of all 133 respondents. The main data collection tool was questionnaire. Collected data was analyzed using Statistical Package for Social Sciences (SPSS 23). Pearson correlation and multiple linear regression was used to test the relationship between variables in the study hypotheses. Analyzed data was presented descriptively using tables, graphs and pie charts. There exists a positive relationship between strategic leadership and organisational performance. KPLC Kitale Branch had proper and effective leadership which offered strategies to sustain the organisation and enhanced organisational performance. Leadership of the organisation encouraged accountability, emphasised on customer satisfaction. However, the leadership of the organisation did not practice democracy, did not focused on employee empowerment and it was not always prompt in making decisions or responding to issues.

Maroa and Muturi (2015) researched on the influence of strategic management practices on performance of floriculture firms in Kenya a survey of Kiambu county, Kenya. A descriptive survey design was used with a target population of 21 floricultural firms out of which 10 firms were selected by simple random sampling, and 5 respondents from each of the 10 firms purposively chosen. Structured questionnaires were used to collect primary data. Chi- Square (X2) test was used to test the four hypotheses to establish significance of association. The findings established that majority of the firms had a strategic plan, implemented their strategic plans as planned, conduct strategy evaluation and control on their strategic management practices. Further, that strategy formulation, implementation, evaluation and control had significant influence on the performance of flower firms to a moderate extent.

Strategic management practices contribute to performance by generating relevant information, creating a better understanding of the environment and reducing uncertainty. (Porter (2018) states that organizational performance is determined by the ability of the firm to find its unique position and strategic management practice is the tool to enable the firm acquire that strategic position. Ofunya (2019) examined the relationship of strategic management practices and firm performance in Post bank in Kenya. The study revealed that the strategies adopted by Post bank so as to cope with the competitive environment included vigorous pursuit of cost reductions, providing outstanding customer service, improving operational efficiency, among other. Mwangi (2017) investigated strategic management practices and performance of large pharmaceutical firms in Kenya. The study findings revealed that firms that were applying strategic management practices were more willing to innovate prepared to take risks and were more proactive than competitors. Muogbo (2018) investigated the impact of strategic management on organizational growth and development of selected manufacturing firms in Anambra State. Results from the analysis indicated that strategic management was not common among the manufacturing firms in Anambra State but its adoption had significant effect on competitiveness and influences on manufacturing firms.

RESEARCH METHODOLOGY

This study used a descriptive research design to collect data. The descriptive research design involves collecting and analysing data to describe current affairs. It involves classification, measurement, analysis, comparison and interpretation of data (Myers et al., 2013). This study focused on road projects within Nairobi City County. According to KeNHA (2022), there is a total of 118 road projects. The unit of analysis was therefore 118 road construction projects while the

unit of observation was 236 respondents comprising of 118 project supervisors and 118 project managers. Yamane 1967 formula was used to calculate the sample The 148 respondents were chosen with the help of stratified random sampling technique. Stratified random sampling technique was used since the population of interest is not homogeneous and could be sub-divided into groups or strata to obtain a representative sample. This sampling technique divides the population into groups or strata. The strata are reached upon on the basis of the shared traits (Singpurwalla, 2017).

This study used primary data which was collected through use of a semi-structured questionnaire. The drop-and-pick data collection approach was adopted in distributing questionnaires, as Smith & Kim (2015) recommended, as perfect when dealing with an industrious class of respondents. According to Richey & Klein (2014), the pilot research sample size should be between 1% and 10%, depending on the sample size. The pilot test included 10% of the sample hence 14 project management staff where seven project supervisors and 7 project managers were selected randomly for the pilot study. Quantitative and qualitative analysis was undertaken. Qualitative approaches enabled the researcher to discover experiences and concepts comprehensively. Quantitative data was analysed using descriptive statistics techniques. Pearson R correlation measured the strength and direction of the linear relationship between variables. Multiple regression model was fitted to the data to determine how the independent variables influence the dependent variable.

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

From the 148 questionnaires 136 were completely filled and returned hence a response rate of 92.4%. The response rate was considered as suitable for making inferences from the data collected. As indicated by Metsamuuronen (2017), a response rate that is above fifty percent is considered adequate for data analysis and reporting while a response rate that is above 70% is classified as excellent. Hence, the response rate of this study was within the acceptable limits for drawing conclusions and making recommendations.

Descriptive Statistics Analysis

Portfolio Risk Management and Performance of Roads Projects

The first specific objective of the study was to examine the influence of portfolio risk management on the performance of Roads Projects in Nairobi City County, Kenya. The respondents were requested to indicate their level of agreement on portfolio risk management and the performance of Roads Projects in Nairobi City County, Kenya. The results were as shown in Table 1.

From the results, the respondents agreed that the projects/programme risks are identified before implementation. This is supported by a mean of 3.996 (std. dv = 0.865). In addition, as shown by a mean of 3.819 (std. dv = 0.945), the respondents agreed that the project implementation team develops a risk mitigation approach before implementing the project. Further, the respondents agreed that the project/programme team conducted a portfolio risk analysis for the project/programme before allocating resources. This is shown by a mean of 3.798 (std. dv = 0.611). The respondents also agreed that the aspect of portfolio risk control was evaluated before the implementation of the project. This is shown by a mean of 3.731 (std. dv = 0.908). With a mean of 3.711 (std. dv = 0.776), the respondents agreed that the project implementation team ensures a straightforward risk-reporting approach.

Table 1: Portfolio Risk Management and Performance of Roads Projects

	Mean	Std. Deviation
The projects/programme risks are identified before implementation	3.996	0.865
The project implementation team develops a risk mitigation approach before implementing the project.	3.819	0.945
The project/programme team conducted a portfolio risk analysis for the project/programme before allocating resources.	3.798	0.611
The aspect of portfolio risk control was evaluated before the implementation of the project.	3.731	0.908
The project implementation team ensures a straightforward risk-reporting approach.	3.711	0.776
Aggregate	**3.762**	**0.841**

Portfolio Strategic Management and the performance of Roads Projects

The second specific objective of the study was to examine the influence of the Portfolio Strategic Management on the performance of Roads Projects in Nairobi City County, Kenya. The respondents were requested to indicate their level of agreement on various statements relating to Portfolio Strategic Management and the performance of Roads Projects in Nairobi City County, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 2.

From the results, the respondents agreed that the Nairobi City County has a Portfolio Charter which guides the implementation of projects. This is supported by a mean of 4.168 (std. dv = 0.905). In addition, as shown by a mean of 3.959 (std. dv = 0.885), the respondents agreed that the Nairobi City County has a portfolio roadmap guiding project implementation. Further, the respondents agreed that at Nairobi City County, there is a work breakdown structure on how a project/programme should be implemented. This is shown by a mean of 3.920 (std. dv = 0.605). The respondents also agreed that the Nairobi City County has a clear strategic change management framework adopted in project implementation. This is shown by a mean of 3.915 (std. dv = 0.981).

Table 2: Portfolio Strategic Management and the performance of Roads Projects

	Mean	Std. Deviation
The Nairobi City County has a Portfolio Charter which guides the implementation of projects.	4.168	0.905
The Nairobi City County has a portfolio roadmap guiding project implementation.	3.959	0.885
At Nairobi City County, there is a work breakdown structure on how a project/programme should be implemented.	3.920	0.605
The Nairobi City County has a clear strategic change management framework adopted in project implementation.	3.915	0.981
Aggregate	**3.930**	**0.867**

Project Performance

The respondents were requested to indicate their level of agreement on various statements relating to the performance of Roads Projects in Nairobi City County, Kenya. A 5 point Likert scale was used where 1 symbolized strongly disagree, 2 symbolized disagree, 3 symbolized neutral, 4 symbolized agree and 5 symbolized strongly agree. The results were as presented in Table 4.7.

From the results, the respondents agreed that the number of completed projects compared to uncompleted ones is very high. This is supported by a mean of 4.084 (std. dv = 0.997). In addition, as shown by a mean of 3.917 (std. dv = 0.831), the respondents agreed that majority of projects are completed within set budget. Further, the respondents agreed that effective quality standard is adhered during implementation of road construction projects. This is shown by a mean of 3.858 (std. dv = 0.563). The respondents also agreed that stakeholders' satisfaction has been improving over the years. This is shown by a mean of 3.831 (std. dv = 0.851).

Table 3: Project Performance

	Mean	Std. Deviation
The number of completed projects compared to uncompleted ones is very high	4.084	0.997
The majority of projects are completed with Set Budget.	3.917	0.831
Effective Quality standards is adhered during implementation of road construction projects	3.858	0.563
Stakeholders' satisfaction has been improving over the years	3.831	0.851
Aggregate	**3.836**	**0.818**

Correlation Analysis

Table 4: Correlation Coefficients

		Project Performance	portfolio risk management	Portfolio Strategic Management
Project Performance	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	136		
portfolio risk management	Pearson Correlation	.856**	1	
	Sig. (2-tailed)	.001		
	N	136	136	
Technical Team Capabilities	Pearson Correlation	.859**	.189	1
	Sig. (2-tailed)	.000	.081	
	N	136	136	136

The results revealed that there is a very strong relationship between portfolio risk management and performance of Roads Projects in Nairobi City County, Kenya (r = 0.856, p value =0.001). The relationship was significant since the p value 0.001 was less than 0.05 (significant level). The findings conform to the findings of Muiruri and Were (2016) that there is a very strong relationship between portfolio risk management and project performance.

The results also revealed that there was a very strong relationship between Portfolio Strategic Management and performance of Roads Projects in Nairobi City County, Kenya (r = 0.859, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the results of Minjeong and Sungyong (2021) who revealed that there is a very strong relationship between Portfolio Strategic Management and project performance.

Regression Analysis

Multivariate regression analysis was used to assess the relationship between independent variables (portfolio risk management, and Portfolio Strategic Management) and the dependent variable (the performance of Roads Projects in Nairobi City County, Kenya)

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.925	.856	.852	.10120

a. Predictors: (Constant), portfolio risk management, and Portfolio Strategic Management

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.848. This implied that 84.8% of the variation in the dependent variable (the performance of Roads Projects in Nairobi City County, Kenya) could be explained by independent variables (portfolio risk management, and Portfolio Strategic Management).

Table 5: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.072	4	3.018	47.905	.000[b]
	Residual	8.253	131	.063		
	Total	20.325	135			

a. Dependent Variable: Performance of Roads Projects

b. Predictors: (Constant), portfolio risk management, and Portfolio Strategic Management

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 47.905 while the F critical was 2.459. The p value was 0.000. Since the F-calculated was greater than the F-critical and the p value 0.000 was less than 0.05, the model was considered as a good fit for the data. Therefore, the model can be used to predict the influence of portfolio governance, portfolio risk management, portfolio stakeholder engagement and Portfolio Strategic Management on the performance of Roads Projects in Nairobi City County, Kenya.

Table 6: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	**(Constant)**	0.341	0.089		3.831	0.000
	Portfolio risk management	0.387	0.095	0.386	3.949	0.000
	Portfolio Strategic Management	0.398	0.102	0.399	3.716	0.002

a Dependent Variable: Performance of Roads Projects

The regression model was as follows:

$Y = 0.341 + 0.387X_1 + 0.398X_2 + \varepsilon$

The results also revealed that portfolio risk management has significant effect on the performance of Roads Projects in Nairobi City County, Kenya, β=0.387, p value= 0.000). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The

findings conform to the findings of Muiruri and Were (2016) that there is a very strong relationship between portfolio risk management and project performance.

In addition, the results revealed that portfolio strategic management has significant effect on the performance of Roads Projects in Nairobi City County, Kenya (β=0.398, p value= 0.002). The relationship was considered significant since the p value 0.002 was less than the significant level of 0.05. The findings are in line with the results of Minjeong and Sungyong (2021) who revealed that there is a very strong relationship between portfolio strategic management and project performance

Conclusions

In addition, the study concludes that portfolio risk management has a positive and significant effect on the performance of Roads Projects in Nairobi City County, Kenya. The study revealed that risk Identification, portfolio risk Analysis and portfolio risk control influence performance of Roads Projects in Nairobi City County, Kenya.

The study also concludes that portfolio strategic management has a positive and significant effect on the performance of Roads Projects in Nairobi City County, Kenya. The study revealed that portfolio roadmap, work breakdown structure, strategic change management influence performance of Roads Projects in Nairobi City County, Kenya.

Recommendations

In addition, the management of road construction agencies should prioritize and enhance proactive risk management practices within its roads projects, emphasizing thorough risk identification, robust portfolio risk analysis, and effective portfolio risk control measures. The positive influence of portfolio risk management on project performance suggests that a proactive approach to risk management can lead to better outcomes. Implementing comprehensive risk identification processes allows for the early recognition of potential issues.

The management of road construction agencies should prioritize the development and implementation of a comprehensive portfolio roadmap for roads projects, outlining the strategic direction, milestones, and key deliverables at each phase of the project life cycle.

Suggestions for Further Studies

This study focused on examining the effect of project portfolio management on the performance of Roads Projects in Nairobi City County, Kenya. Having been limited to the performance of Roads Projects in Nairobi City County, Kenya, the findings of this study cannot be generalized to performance of other projects. The study therefore suggests further studies on the effect of project portfolio management on the performance of the other projects in Kenya.

Further, the study found that the independent variables (portfolio governance, portfolio risk management, portfolio stakeholder engagement and Portfolio Strategic Management) could only explain 84.8% of the performance of Roads Projects in Nairobi City County, Kenya. This study therefore suggests research on other factors affecting the performance of Roads Projects in Nairobi City County, Kenya.

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