



**RISK MANAGEMENT AND PERFORMANCE OF AFFORDABLE HOUSING  
PROJECTS IN NAIROBI CITY COUNTY, KENYA**

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**ABSTRACT**

Affordable housing projects play a critical role in addressing housing shortages in rapidly urbanizing regions. However, many affordable housing projects in Kenya continue to experience delays, cost overruns, and quality challenges that undermine project performance. This study sought to establish the relationship between risk management and the performance of affordable housing projects in Nairobi City County, Kenya. Specifically, the study examined the influence of risk identification, risk assessment, risk mitigation, and risk monitoring and control on project performance. The study was anchored on Risk Management Theory, Prospect Theory, Contingency Theory, and Control Theory. A descriptive research design was adopted. The target population comprised 280 stakeholders involved in affordable housing projects, including project managers, contractors, government officials, consultants, and financial institution representatives. Using stratified random sampling and Slovin's formula, a sample size of 165 respondents was selected. Primary data were collected using structured questionnaires. Out of 165 questionnaires distributed, 149 were successfully completed and returned, representing a response rate of 90 percent. Data were analyzed using SPSS Version 26 through both descriptive and inferential statistics. Correlation and multiple regression analyses were used to determine relationships among variables. The findings revealed that risk identification ( $\beta = 0.176$ ,  $p = 0.017$ ), risk assessment ( $\beta = 0.249$ ,  $p = 0.001$ ), and risk mitigation ( $\beta = 0.289$ ,  $p < 0.001$ ) had positive and statistically significant effects on project performance. Risk monitoring and control had a positive but statistically insignificant effect on project performance ( $\beta = 0.130$ ,  $p = 0.083$ ). The study concludes that effective risk management practices significantly improve project timeliness, cost efficiency, and quality performance. The study recommends institutionalization of comprehensive risk management frameworks across all affordable housing projects to improve project outcomes and sustainability.

**Keywords:** Risk Management, Risk Identification, Risk Assessment, Risk Mitigation, Risk Monitoring and Control, Affordable Housing Projects, Project Performance.

## **Background of the Study**

Affordable housing has become a critical development priority across the world as governments seek to address growing urban populations, housing deficits, and the need for sustainable urban development. In many countries, affordable housing projects are viewed as a strategic intervention for improving living standards, reducing informal settlements, and promoting socio-economic development. However, the successful implementation of affordable housing projects is often hindered by numerous risks associated with financing, stakeholder management, legal compliance, procurement processes, environmental factors, and project execution. Consequently, risk management has emerged as a fundamental project management practice that enables project teams to identify, assess, mitigate, and monitor risks that may adversely affect project outcomes (Hubbard, 2020). Effective risk management contributes to improved project performance by enhancing timeliness, cost efficiency, and quality delivery, while poor risk management often results in delays, cost overruns, disputes, and project failure (Qazi et al., 2021).

Globally, construction and housing sectors have increasingly adopted structured risk management frameworks to address the complexities associated with large-scale housing developments. Studies have demonstrated that proactive stakeholder engagement, advanced risk assessment techniques, simulation models, and adaptive leadership approaches significantly improve project outcomes (Bridoux & Stoelhorst, 2022; Huang et al., 2021). In developing regions, particularly Africa, affordable housing projects continue to face challenges arising from financial instability, climate-related uncertainties, weak contractual arrangements, and inadequate stakeholder coordination. Research conducted in countries such as Nigeria, South Africa, and Ghana indicates that ineffective risk management contributes to project delays, budget overruns, and poor-quality outcomes, while robust risk management practices enhance project sustainability and performance (Akinsulire et al., 2024; Ebirim et al., 2024; Moghayedi et al., 2021).

In Kenya, affordable housing remains a key pillar of the government's development agenda under the Affordable Housing Programme. Despite significant investments and policy support, many affordable housing projects continue to experience implementation challenges that negatively affect their performance. Studies have revealed that inadequate risk identification, weak risk assessment mechanisms, reactive mitigation strategies, and ineffective risk monitoring practices contribute significantly to delays, increased construction costs, and compromised quality standards in housing projects (Kimocho, 2023; Juma & Kamaara, 2024). Furthermore, project stakeholders often fail to anticipate legal, financial, and operational risks during the planning stages, resulting in disruptions during implementation (Muthoni & Obuba, 2023). In Nairobi City County, where housing demand continues to rise rapidly, these challenges have become increasingly evident. Therefore, understanding the relationship between risk management practices and the performance of affordable housing projects is essential for improving project delivery, enhancing resource utilization, and achieving sustainable housing development objectives in Kenya (Kamau & Mohamed, 2020; Komu & Mungai, 2024).

## **Statement of the Problem**

Affordable housing remains one of the most critical socioeconomic challenges in Kenya, particularly in Nairobi City County, where rapid urbanization and population growth continue to outpace housing supply. Kenya currently faces a housing deficit of more than 2 million units, while annual housing demand stands at approximately 250,000 units against a supply of less than 50,000 units per year. As a result, nearly 60 percent of urban residents live in informal settlements characterized by overcrowding, poor sanitation, inadequate infrastructure, and insecure housing conditions. In response to this crisis, the Government of Kenya, under the Big Four Agenda, targeted the construction of 500,000 affordable housing units by 2022. However, only about 65,000 units had been completed by the deadline, representing approximately 13

percent of the intended target (Kimani & Kamaara, 2024). This poor performance demonstrates serious implementation challenges within affordable housing projects despite substantial government support and increased private sector participation.

A major factor contributing to the poor performance of affordable housing projects is ineffective risk management. Affordable housing projects in Nairobi City County continue to experience delays, cost overruns, stalled construction works, and compromised quality standards due to financial, legal, operational, political, and environmental risks. Studies indicate that construction projects in Kenya record average cost overruns ranging between 20 percent and 45 percent due to poor risk planning and inadequate financial management (Kimotho, 2023). In addition, Juma and Kamaara (2024) established that more than 42 percent of affordable housing projects in Nairobi experienced delays because critical risks were not identified during the planning phase. Similarly, Muthoni and Obuba (2023) found that approximately 30 percent of affordable housing projects lacked effective risk monitoring and control systems, resulting in uncontrolled escalation of emerging risks and financial losses. Further, Komu and Mungai (2024) observed that 35 percent of stalled real estate projects in Nairobi lacked structured mitigation frameworks such as contingency planning, insurance coverage, and risk-sharing mechanisms.

The problem is further complicated by the involvement of multiple stakeholders, including national and county governments, contractors, developers, financiers, consultants, and beneficiaries, whose competing interests often increase project uncertainty and implementation challenges. Despite the increasing number of affordable housing projects in Nairobi City County, many projects still fail to meet expected performance indicators in terms of timeliness, cost efficiency, and quality delivery. Existing studies on affordable housing in Kenya have largely focused on financing models, policy frameworks, and stakeholder engagement, while giving limited attention to the influence of specific risk management practices on project performance. Consequently, there remains inadequate empirical evidence on how risk identification, risk assessment, risk mitigation, and risk monitoring and control affect the performance of affordable housing projects in Nairobi City County.

This study, therefore seeks to investigate the relationship between risk management practices and the performance of affordable housing projects in Nairobi City County, Kenya. Specifically, the study examines how risk identification, risk assessment, risk mitigation, and risk monitoring and control influence project performance in terms of timeliness, cost efficiency, and quality of housing delivery. The findings of the study are expected to provide empirical evidence that can support policymakers, project managers, contractors, and other stakeholders in strengthening risk management frameworks to improve the success and sustainability of affordable housing projects in Kenya.

### **General Objective**

The general objective of this study is to evaluate the relationship between Risk Management and the Performance of Affordable Housing Projects in Nairobi City County, Kenya.

### **Specific Objectives**

- i. To evaluate the relationship between risk identification and performance of affordable housing projects in Nairobi City County, Kenya.
- ii. To evaluate the relationship between risk assessment and performance of affordable housing projects in Nairobi City County, Kenya.

## **LITERATURE REVIEW**

### **Theoretical Framework**

#### **Risk Management Theory**

Risk Management Theory was postulated by Gustav Hamilton in 1970. Hamilton emphasized that risk management involves a structured and systematic approach to identifying, analyzing,

and responding to project risks that could impede the achievement of project objectives (Nocco, 2022). The theory is based on the premise that all projects, regardless of their size or scope, are exposed to uncertainties that need to be proactively identified and managed. In the context of affordable housing projects, risk identification is a crucial initial step in ensuring project success by recognizing and preparing for potential disruptions before they escalate.

The theory suggests that risk identification must be thorough and continuous, engaging multiple stakeholders to uncover both internal and external risk factors. According to Hamilton, failure to identify risks at an early stage leads to project cost overruns, delays, and even abandonment. In large projects such as affordable housing developments, risks may stem from financial constraints, legal compliance issues, stakeholder conflicts, or unforeseen environmental challenges. Therefore, a structured approach to risk identification enables project managers to develop informed strategies to address these uncertainties effectively.

Risk Management Theory also emphasizes that the identification process should not be limited to a one-time exercise. Rather, it should evolve throughout the project lifecycle to capture new risks that emerge as the project progresses (Nocco, 2022). This is particularly important in dynamic environments like the real estate and construction sector, where changing economic policies, inflation, and stakeholder interests can introduce new uncertainties. The theory encourages the use of risk registers, brainstorming sessions, expert consultations, and scenario analysis as practical tools for identifying risks in complex projects.

Moreover, this theory aligns to evaluate the relationship between risk identification and the performance of affordable housing projects. It underscores the fact that when project managers adequately identify potential risks early in the project, they are better positioned to allocate resources, adjust timelines, and incorporate contingency plans. This reduces project failure rates and enhances performance outcomes, including quality, cost efficiency, and timely completion.

In Nairobi City County, where affordable housing projects face multiple pressures such as funding shortages and stakeholder disagreements, effective risk identification practices are necessary for ensuring project sustainability. Applying Hamilton's Risk Management Theory, this study will help illustrate how risk identification contributes to the success of affordable housing projects and what tools and strategies are most effective in the Kenyan context. By understanding and adopting structured risk identification frameworks, stakeholders can avoid costly surprises and deliver affordable housing projects that meet their intended objectives.

### **Prospect Theory**

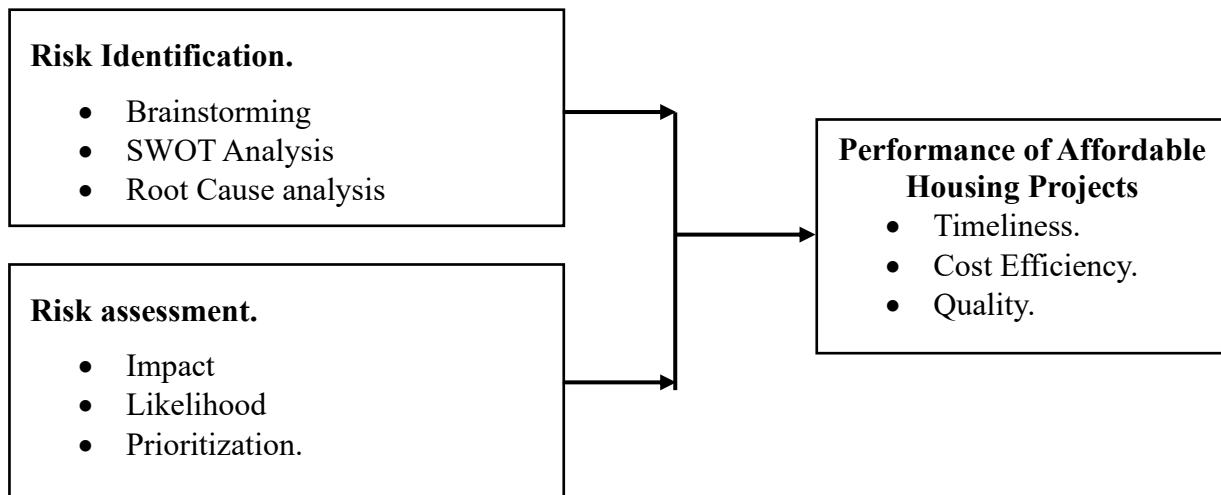
Prospect Theory was postulated by Daniel Kahneman and Amos Tversky in 1979 as a behavioral economic theory that describes how individuals make decisions in situations of risk and uncertainty. The theory suggests that people do not always act rationally when evaluating probabilities and outcomes; instead, they tend to weigh potential losses more heavily than equivalent gains, leading to systematic biases in decision-making (Kahneman & Tversky, 1979). In recent years, the theory has been widely applied in project management and risk assessment, particularly in understanding how subjective perceptions influence the prioritization of risks in projects (Chatterjee et al., 2023).

Prospect Theory is crucial for explaining how project managers and stakeholders assess risk when managing affordable housing projects. Risk assessment involves determining the probability and potential impact of identified risks. According to the theory, stakeholders often display loss aversion, a tendency to focus more on avoiding losses rather than maximizing gains (Chatterjee et al., 2023). This can result in either excessive caution, where managers avoid taking beneficial risks, or in some cases, an underestimation of rare but high-impact risks. For affordable housing projects, especially those dealing with tight budgets and strict timelines, these cognitive biases can lead to poor prioritization of critical risks.

In practice, Prospect Theory explains why some project managers may overly emphasize risks with smaller financial implications while downplaying larger strategic risks that seem less immediate but are more severe. For instance, a manager might focus extensively on short-term procurement issues but ignore broader risks like regulatory changes or shifting political support, which could derail an entire affordable housing project (Chatterjee et al., 2023). Understanding this human tendency allows for the creation of risk assessment tools that compensate for these biases, ensuring a more objective approach to identifying and prioritizing threats and opportunities.

This theory directly supports the second objective of this study: to evaluate the relationship between risk assessment and the performance of affordable housing projects in Nairobi City County. In the context of Kenya’s affordable housing projects, applying Prospect Theory will help understand why certain risks are prioritized over others and whether these decisions are based on rational analysis or cognitive bias. By accounting for these psychological factors, project managers can improve their risk assessment frameworks, leading to more balanced and informed decisions that enhance overall project performance.

**Conceptual Framework**



**Independent Variable**

**Dependent Variable**

*Figure 2.1 Conceptual framework*

**Risk Identification and Performance of Affordable Housing**

Risk identification is a foundational component of managing affordable housing projects effectively. It entails recognizing threats that could impact performance indicators like timeliness, cost efficiency, and quality. Three common techniques used in risk identification are brainstorming, SWOT analysis, and root cause analysis. Brainstorming involves assembling project stakeholders to generate a comprehensive list of potential risks. This technique encourages knowledge sharing and draws on diverse experiences to identify legal, financial, operational, and environmental threats (Hubbard, 2020). In affordable housing, brainstorming with contractors, engineers, and community representatives can uncover overlooked issues like land disputes or supply chain disruptions early in the planning phase.

SWOT Analysis helps assess both internal and external factors by categorizing them as strengths, weaknesses, opportunities, and threats. In the affordable housing context, it can highlight internal inefficiencies like limited project financing (weakness) or external opportunities like new government subsidies, while flagging threats such as political instability or regulatory hurdles (Kariuki & Muturi, 2020). This holistic perspective enables better strategic planning. Root Cause Analysis (RCA) seeks to identify the underlying causes of recurring problems. For example, if a housing project continually experiences delays, RCA might trace the issue back to poor procurement planning or weak stakeholder coordination.

Addressing root causes rather than symptoms is essential to preventing future disruptions (Kimotho, 2023). Together, these tools provide a structured approach to risk identification, which, if implemented early and thoroughly, contributes significantly to the improved performance of affordable housing projects.

### **Risk Assessment and Performance of Affordable Housing**

Risk assessment is a critical phase in risk management that involves evaluating identified risks based on their potential impact and the likelihood of occurrence. This process helps project managers understand which risks pose the greatest threat and require urgent attention. In affordable housing projects, effective risk assessment ensures that resources are allocated to mitigate the most significant risks, thus safeguarding project success. Impact on project objectives refers to evaluating how a given risk can affect key project deliverables, such as cost, time, quality, and scope. Kimani and Kamaara (2024) emphasize that failure to assess the impact of risks on project objectives often leads to resource mismanagement and project failure in housing projects within Nairobi City County. Assessing the impact allows project managers to anticipate challenges and develop measures to minimize disruption.

Likelihood of risk occurrence involves estimating the probability that a risk event will materialize. According to Qazi et al. (2021), accurately determining the likelihood of risks in construction projects helps avoid underestimating or overestimating threats, which can result in either over-preparation or neglect of critical issues. Projects that fail to evaluate probability often end up dealing with unexpected disruptions, leading to delays and increased costs. Risk prioritization is the process of ranking risks based on both their potential impact and likelihood. It ensures that attention is focused on the most significant risks that could derail project objectives. Komu and Mungai (2024) highlight that risk prioritization is essential for real estate development projects to allocate resources effectively and manage risks that matter most. Without prioritization, project teams may waste efforts on minor risks, while severe risks remain unaddressed.

### **Performance of Affordable Housing Projects**

The performance of affordable housing projects is measured by how well the projects meet their intended objectives in terms of timeliness, cost efficiency, and quality of housing. These three indicators determine the overall success and sustainability of such projects. Timeliness is a critical performance factor as delays can escalate costs and disrupt housing delivery. According to Mwendwa (2022), timely completion of affordable housing projects in Mombasa County was linked to effective risk management practices, especially risk assessment and mitigation strategies. When risks are identified and addressed promptly, projects are less likely to experience delays caused by unforeseen challenges. Timely delivery also enhances stakeholder confidence and ensures that the housing demand is met within the planned schedule.

Cost efficiency refers to the ability of a project to stay within budget while delivering the expected outcomes. Kariuki and Muturi (2020) highlight that legal compliance and adherence to budgetary controls significantly influence the financial performance of construction projects in Kenya. Cost overruns are common in large housing developments due to poor risk management or inadequate financial planning. Therefore, implementing strong financial risk identification and continuous monitoring can help ensure that resources are optimally utilized, reducing wastage and unplanned expenses in affordable housing projects.

Quality of housing remains a key determinant of performance, especially in affordable housing projects where stakeholders often fear compromised standards due to cost-cutting. Lugasi (2022) emphasizes that project management practices, such as stakeholder engagement and adherence to regulatory standards, greatly influence housing quality. Quality assurance mechanisms, regular audits, and performance monitoring contribute to delivering durable, safe,

and functional housing units. High-quality housing not only meets the immediate needs of beneficiaries but also ensures long-term sustainability and reduces future maintenance costs.

## **Empirical Review**

### **Risk Identification and Performance of Affordable Housing**

Mu et al. (2024) conducted a study focusing on how integrating advanced technologies like artificial intelligence (AI), big data, and the Internet of Things (IoT) can enhance risk identification in food safety systems. Although their research was centered on the food industry, the principles and findings offer valuable insights applicable to the construction and housing sector. The study demonstrated that early risk identification, supported by real-time data and predictive tools, is essential for managing potential disruptions and ensuring system resilience. Similarly, in the context of affordable housing projects, timely and systematic risk identification can prevent delays, cost overruns, and quality compromises by enabling proactive responses to emerging challenges.

The study by Mu et al. (2024) highlights the importance of a structured approach to risk identification that is comprehensive and continuous rather than reactive. Affordable housing projects often face complex risks, including financial constraints, legal hurdles, and operational inefficiencies. Borrowing from this empirical evidence, it is clear that leveraging technology and involving multiple stakeholders in risk identification improves the accuracy and effectiveness of the process. Project managers in affordable housing can adopt similar approaches, using digital project management tools and data analytics to identify potential risks early and prioritize them according to their potential impact on performance.

Moreover, Mu et al. (2024) emphasized stakeholder involvement as a crucial factor in identifying emerging risks. In the housing sector, involving architects, engineers, financiers, and community representatives in the risk identification process ensures that diverse perspectives and potential issues are captured. This collaborative approach minimizes oversight and enables projects to be designed and implemented with fewer disruptions.

The study also noted that clear documentation and regular updates of identified risks are essential to maintaining project performance (Mu et al., 2024). In affordable housing projects, maintaining updated risk registers and holding frequent risk review meetings can improve responsiveness to changes in the project environment. Risk identification is not a one-off activity but a continuous process that evolves with the project. Therefore, systematic identification supported by modern tools and stakeholder input directly contributes to improved project performance through reduced delays, better financial management, and higher-quality outcomes.

### **Risk Assessment and Performance of Affordable Housing**

Huang et al. (2023) conducted a comprehensive review on risk assessment methods in maritime transport, offering valuable insights that can also be applied to construction and affordable housing projects. The study examined various risk assessment models and methods, including probabilistic risk assessment, fuzzy logic, and scenario analysis, emphasizing their effectiveness in identifying, evaluating, and prioritizing risks based on likelihood and severity. In affordable housing projects, similar approaches are essential to ensure project objectives are met within time, cost, and quality parameters. Proper risk assessment allows project managers to quantify potential threats, enabling informed decision-making that directly influences project performance.

Huang et al. (2023) highlighted the importance of quantifying both the probability of occurrence and the potential impact of risks, which directly aligns with risk assessment practices in housing projects. Affordable housing initiatives, often constrained by tight budgets and strict deadlines, are vulnerable to financial, legal, and operational risks. The study's findings indicate that structured and data-driven risk assessment processes help in setting

priorities, allocating resources, and implementing mitigation plans, which ultimately improves project outcomes. Project managers in affordable housing projects can therefore benefit from adopting assessment tools that consider historical data, expert opinions, and predictive modeling.

Another critical aspect identified by Huang et al. (2023) is the integration of scenario-based analysis in risk assessment. This method allows project managers to anticipate different risk scenarios and their potential impacts, making it easier to develop flexible strategies. In affordable housing projects, scenario analysis can be applied to forecast delays due to regulatory changes, budgetary adjustments, or supply chain disruptions. By understanding possible outcomes and their probabilities, project managers can create contingency plans that safeguard project performance.

Additionally, Huang et al. (2023) stressed the need for continuous improvement in risk assessment methods, incorporating feedback loops and regular updates. This approach is highly relevant to affordable housing projects, where conditions may evolve rapidly due to market shifts, policy changes, or stakeholder dynamics. Regularly revisiting and refining risk assessments ensures that emerging threats are promptly identified and addressed, reducing the chances of costly project disruptions. Therefore, the empirical evidence underscores that accurate, systematic, and continuous risk assessment practices are key contributors to the success of affordable housing projects.

## RESEARCH METHODOLOGY

This study adopted a mixed-methods research design that integrated quantitative and qualitative approaches to examine the relationship between risk management practices and the performance of affordable housing projects in Nairobi City County, Kenya. The quantitative approach facilitated the measurement of relationships between the study variables, while the qualitative approach provided deeper insights into stakeholders' experiences and perspectives regarding risk management practices. The unit of analysis was affordable housing projects, whereas the units of observation comprised project stakeholders directly involved in project implementation, including project managers, project supervisors, civil engineers, project officers, contractors, government officials, representatives of financial institutions, community leaders, and housing beneficiaries.

The target population consisted of 280 stakeholders involved in affordable housing projects within Nairobi City County. A stratified random sampling technique was employed to ensure proportional representation of all stakeholder categories. Using Slovin's formula at a 95% confidence level and a 5% margin of error, a sample size of 165 respondents was obtained. Stratification enhanced representativeness and minimized sampling bias by ensuring that each stakeholder category was adequately represented.

**Table 1: Sample Size**

NO	Population Category	Target Population	Sample Size
1.	Project managers	5	3
2.	project supervisors	20	12
3.	Civil Engineers	10	6
4.	project officers(workers)	50	30
5.	Contractors	12	7
6.	Government officials	20	12
7.	Financial Institutions	10	6
8.	Community leaders	60	35
9.	Housing beneficiaries	93	54
	<b>Total Population</b>	<b>280</b>	<b>165</b>

Primary data was collected using a structured self-administered questionnaire comprising closed-ended questions measured on a five-point Likert scale. Before the main study, a pilot

test involving 21 respondents was conducted to assess the reliability and validity of the research instrument. Necessary adjustments were made based on feedback from the pilot study.

Data analysis was conducted using Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize the data. Inferential statistics, specifically Pearson correlation and multiple linear regression analysis, were employed to determine the relationship between risk identification, risk assessment, risk mitigation, risk monitoring and control, and the performance of affordable housing projects. Qualitative data were analyzed thematically to complement and enrich the quantitative findings.

## **RESEARCH FINDINGS AND DISCUSSIONS**

This section presents the findings and discussion of the study on the relationship between risk management and the performance of affordable housing projects in Nairobi City County, Kenya. The analysis is based on data collected from key stakeholders involved in affordable housing projects, including project managers, engineers, contractors, government officials, financial institutions, community leaders, and housing beneficiaries. The section presents the response rate, demographic characteristics of respondents, descriptive statistics, correlation analysis, and multiple regression results. The findings are discussed in relation to the study objectives and existing empirical literature. Statistical analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 26. The results provide evidence on the influence of risk identification, risk assessment, risk mitigation, and risk monitoring and control on the performance of affordable housing projects and form the basis for the conclusions and recommendations of the study.

### **Descriptive Results**

This section presents the descriptive analysis of the study variables based on the responses collected. The analysis was guided by the five-point Likert scale used in the questionnaire, where: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree. The interpretation of the mean scores is based on the following scale: 1.00 – 1.99 = *Strongly Disagree*, 2.00 – 2.99 = *Disagree*, 3.00 – 3.99 = *Neutral*, and 4.00 – 5.00 = *Agree*. Mean scores and standard deviations are presented to provide insight into respondents' perceptions of project design factors influencing the successful implementation of the Thika Superhighway project.

### **Risk Identification**

Descriptive statistics was used to summarize the perceptions of respondents for risk identification, risk assessment, risk mitigation, risk monitoring and control and project performance. The minimum value, maximum value, mean and standard deviation were considered for each item of the questionnaire. The descriptive statistics for the risk identification variables revealed that the mean scores fall between 3.79 to 3.87. The highest mean score was achieved for the statement that the brainstorming sessions involve the input of a great variety of project stakeholders ( $M = 3.87$ ,  $SD = 0.741$ ). Similarly, the statement that project teams use brainstorming sessions to identify project risks that may arise during the project also recorded a mean score of 3.86 ( $SD = 0.707$ ). These results indicate general agreement by respondents that brainstorming and collaborative risk identification practices were commonly used in affordable housing projects.

Table 2: Risk Identification

<b>Risk Identification</b>	<b>n</b>	<b>Mean</b>	<b>Std. Deviation</b>
Our project team uses brainstorming sessions to identify potential project risks.	149	3.86	.707
Brainstorming activities involve input from a wide range of project stakeholders.	149	3.87	.741
SWOT analysis is conducted during project planning to uncover internal and external risks.	149	3.87	.741
Identified risks from SWOT analysis are incorporated into the project risk register.	149	3.81	.704
Root cause analysis is used to investigate recurring problems or delays in the project.	149	3.81	.701
Lessons from root cause analysis are used to prevent similar risks in future project phases.	149	3.79	.729
<b>Risk Identification</b>	<b>149</b>	<b>3.835</b>	<b>.721</b>

### **Risk Assessment**

The results of the descriptive results for risk assessment ranged with a mean score of 3.76 to 3.83. The highest mean score was obtained for the statement that shows that projects contain a structured risk prioritization framework ( $M = 3.83$ ,  $SD = 0.714$ ). The lowest mean score was related to the use of past project experiences to help evaluate the likelihood of similar risks occurring in the future ( $M = 3.76$ ,  $SD = 0.704$ ). Overall, the average values suggest that there is general agreement between the respondents that risk assessment practices were applied in affordable housing projects.

Table 3: Risk Assessment

<b>Risk Assessment</b>	<b>n</b>	<b>Mean</b>	<b>Std. Dev.</b>
Identified risks are assessed based on their potential impact on project objectives.	149	3.82	.668
Our project team conducts impact analysis to determine critical risks.	149	3.76	.704
Risks are evaluated based on their probability of occurrence.	149	3.79	.731
Past project experiences are used to assess the likelihood of similar risks recurring.	149	3.77	.736
Risks are prioritized according to their severity and urgency.	149	3.80	.716
Our project has a structured risk prioritization framework.	149	3.83	.714
<b>Risk Assessment</b>	<b>149</b>	<b>3.795</b>	<b>.716</b>

### **Project Performance**

The results of the descriptive for the performance of the project were found to have a mean value of 3.77-3.82. The greatest mean score was given to the statement that projects fulfill the objective of housing demands ( $M = 3.82$ ,  $SD = 0.780$ ). These findings suggest generally moderate ratings that respondents had given to affordable housing projects in terms of project outcomes.

Table 4: Project Performance

Project Performance	n	Mean	Std. Dev.
The project adheres to planned timelines and milestones.	149	3.77	.806
Delays are promptly identified and corrective actions are taken.	149	3.79	.729
The project is managed within the allocated budget.	149	3.79	.793
Cost overruns are minimized through proper financial controls.	149	3.77	.815
The housing units meet the required quality and building standards.	149	3.82	.780
<b>Project Performance</b>	<b>149</b>	<b>3.788</b>	<b>.785</b>

**Correlation Results**

Pearson correlation analysis has been performed to see the relationship between independent variables (risk identification, risk assessment). The results showed that risk identification had a positive and statistically significant relationship to project performance ( $r=.350, p<.001$ ). This suggests that quality risk identification practices are related to better performance of affordable housing projects. Risk assessment was also positively and significantly correlated with project performance ( $r=.413, p<.001$ ). This means that a good risk assessment leads to better results of the project. This finding suggests that an important role in the performance of affordable housing projects has been the effective implementation of risk mitigation strategies. Overall, the correlation results show that all risk management components were positively correlated with the performance of the affordable housing project.

Table 5: Correlations Results

		RI_MEAN	RA_MEAN	PP_MEAN
RI_MEAN	Pearson Correlation	1		
	Sig. (2-tailed)			
	N	149		
RA_MEAN	Pearson Correlation	.331	1	
	Sig. (2-tailed)	.000		
	N	149	149	
PP_MEAN	Pearson Correlation	.350	.413	1
	Sig. (2-tailed)	.000	.000	
	N	149	149	149

**Regression Coefficients**

From the coefficients table, when the unstandardized regression coefficients (B) were substituted into the multiple regression equation, the final predictive model became:

Table 6: Regression Coefficients

Model	Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Tolerance	VIF
(Constant)	1.228	.109		11.271	.000		
Risk Identification (X1)	.137	.026	.223	5.120	.000	.752	1.330
Risk Assessment (X2)	.168	.030	.289	5.606	.000	.569	1.757

a. Dependent Variable: Performance of Affordable Housing Projects (Y)

The regression analysis confirmed that all four independent variables had statistically significant effects on the performance of affordable housing projects, as indicated by the p-

values of 0.000, which were below the 0.05 significance level. The t-values were also sufficiently high, confirming the reliability of the predictor variables in explaining project performance. In addition, the Variance Inflation Factor (VIF) values were all below 2, indicating the absence of multicollinearity problems among the independent variables. The standardized beta coefficients showed that Risk Monitoring and Control ( $\beta = 0.342$ ) was the most influential predictor, followed by Risk Mitigation ( $\beta = 0.312$ ). These findings highlight the importance of effective and continuous risk management practices in improving the performance of affordable housing projects in Nairobi City County.

### Conclusions

The study concludes that the identification of risks is a critical element in the successful project management process for affordable housing projects. Early identification of potential risks enables project teams to anticipate such challenges and devise strategies to deal with them before they become a major problem. Organizations involved with housing development should therefore include systematic risk identification processes in their project planning activities.

The study concludes that proper risk assessment significantly contributes to the great performance of projects. Evaluating risks by their probability and potential impact helps project managers prioritize them and allocate resources accordingly. Affordable housing works that utilize structured risk assessment frameworks are more likely to meet their project objectives in terms of cost-efficiency, time management, and quality results.

### Recommendations

Project managers involved in affordable housing projects should enhance the risk identification process during the planning phase of projects. Brainstorming sessions and stakeholder consultations can be conducted on a regular basis to spot possible risks early on in the project's lifecycle. Project teams also must establish formal risk assessment processes for assessing risks according to the likelihood and potential consequences. This will give the project managers to effectively assign priorities to risks and allocate resources accordingly. Furthermore, organizations should implement proactive risk mitigation strategies that focus on risk prevention before they occur. Measures such as risk-sharing contracts, insurance, and collaborative work among stakeholders can substantially decrease the project risks.

### Areas for Further Research

Future studies should explore more aspects that might have an impact on the performance of affordable housing projects, such as project financing, stakeholder collaboration, and regulatory frameworks. Further research could also address the question of the role of technological objects and digital risk management systems in improving the performance of projects. Additionally, similar studies could be done in other regions or countries, comparing it with risk management practices and its impact on housing project outcomes. Expanding the scope of future research would give a more comprehensive picture of the types of variables that affect the success of affordable housing initiatives.

### REFERENCE

- Amoo, M. E., Rambo, C. M., & Mbugua, J. M. (2023). Liquidity Risk Management Practices and Performance of Real Estate Construction Projects in Busia County, Kenya.
- Akinsulire, A. A., Idemudia, C., Okwandu, A. C., & Iwuanyanwu, O. (2024). Strategic planning and investment analysis for affordable housing: Enhancing viability and growth. *Magna Scientia Advanced Research and Reviews*, 11(2), 119-131.
- Bridoux, F., & Stoelhorst, J. W. (2022). Stakeholder theory, strategy, and organization: Past, present, and future. *Strategic Organization*, 20(4), 797-809.

- Chatterjee, S., Chaudhuri, R., Vrontis, D., & Thrassou, A. (2023). Revisiting the resource-based view (RBV) theory: from a cross-functional capabilities perspective in the COVID-19 period. *Journal of Strategic Marketing*, 1-16.
- Ebirim, W., Ninduwezuor-Ehiobu, N., Usman, F. O., Olu-lawal, K. A., Ani, E. C., & Montero, D. J. P. (2024). Project management strategies for accelerating energy efficiency in HVAC systems amidst climate change. *International Journal of Management & Entrepreneurship Research*, 6(3), 512-525.
- Hubbard, D. W. (2020). *The failure of risk management: Why it's broken and how to fix it*. John Wiley & Sons.
- Huang, X., Wen, Y., Zhang, F., Han, H., Huang, Y., & Sui, Z. (2023). A review on risk assessment methods for maritime transport. *Ocean Engineering*, 279, 114577.
- Huang, Y., Lin, R., & Chen, X. (2021). An enhancement EDAS method based on prospect theory. *Technological and Economic Development of Economy*, 27(5), 1019-1038.
- Isack, H. H. (2023). *Risk Management Practices and Performance of Real Estate Construction Projects in Nakuru County, Kenya* (Doctoral Dissertation, Kenyatta University).
- Juma, I. A., & Kamaara, M. (2024). Project Risk Management Practices and Performance of Affordable Housing Projects in Nairobi City County, Kenya. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, 8(1).
- Kamau, J., & Mohamed, H. (2020). Stakeholder engagement in affordable housing projects in Kenya. *Journal of Housing Studies*, 15(2), 76-92.
- Kariuki, J., & Muturi, W. (2020). Legal compliance and project performance in Kenya's construction sector. *Journal of Construction Law and Practice*, 7(1), 88-103.
- Khalef, R., El-Adaway, I. H., Assaad, R., & Kieta, N. (2021). Contract risk management: A comparative study of risk allocation in exculpatory clauses and their legal treatment. *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction*, 13(1), 04520036.
- Koech, R. (2021). Performance-based contracting and service delivery in infrastructure projects. *International Journal of Project Management*, 12(4), 56-72.
- Kimani, S. W., & Kamaara, M. (2024). Project Management Practices and Success of Housing Projects in Nairobi City County, Kenya. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, 8(2).
- Kummer, T. F., & Mendling, J. (2021). The effect of risk representation using colors and symbols in business process models on operational risk management performance. *Journal of the Association for Information Systems*, 22(3), 649-694.
- Mahmudah, S., Rini, W. L., & Majid, A. M. (2024). The Role of Portfolio Theory in Risk Management and Investment Decision Making. *Magister: Manajemen Strategis Dan Terapan*, 1(1), 30-36.
- Mwendwa, L. (2022). *Project Management Practices and Implementation of Affordable Housing Projects in Mombasa County, Kenya* (Doctoral dissertation, University of Nairobi).
- Mu, W., Kleter, G. A., Bouzembrak, Y., Dupouy, E., Frewer, L. J., Radwan Al Natour, F. N., & Marvin, H. J. P. (2024). Making food systems more resilient to food safety risks by including artificial intelligence, big data, and internet of things into food safety early warning and emerging risk identification tools. *Comprehensive Reviews in Food Science and Food Safety*, 23(1), e13296.

- Mugambi, P., & Njeru, S. (2021). Conflict resolution mechanisms in real estate development. *African Journal of Business and Management*, 9(2), 45-61.
- Mugenda, O., & Mugenda, A. (2003) *Research Methods*. Nairobi: Acts Press
- Muthoni, Z., & Obuba, R. (2023). Effects of Stakeholders' Management in Public Private Partnership on Implementation of Affordable Housing Projects in Meru County, Kenya. *Asian Journal of Economics, Business and Accounting*, 23(22), 201-215.
- Ngugi, T., & Muturi, W. (2020). Budgetary control and project performance in the construction sector. *African Journal of Business Research*, 8(1), 112-128.
- Nocco, B. W., & Stulz, R. M. (2022). Enterprise risk management: Theory and practice. *Journal of applied corporate finance*, 34(1), 81-94.
- Nyaguthii, W. J. (2021). *Influence of Financial Risk Management on Performance of Real*
- Ochieng, R., & Wanyoike, D. (2019). The role of financial stability in infrastructure project success. *International Journal of Project Management*, 10(3), 75-89.
- Omondi, P., & Wambugu, J. (2019). Dispute resolution mechanisms in real estate development: A case study of Kenya's housing sector. *African Journal of Business and Management*, 9(2), 112-129.
- Tariq, S., Loy-Benitez, J., Nam, K., Kim, S., Kim, M., & Yoo, C. (2023). Deep-AI soft sensor for sustainable health risk monitoring and control of fine particulate matter at sensor devoid underground spaces: a zero-shot transfer learning approach. *Tunnelling and Underground Space Technology*, 131, 104843.
- Torrence, C. E., Libby, C. S., Nie, W., & Stein, J. S. (2023). Environmental and health risks of perovskite solar modules: Case for better test standards and risk mitigation solutions. *Iscience*, 26(1).
- Villoria, M. (2023). Contingency theory of leadership. In *Global Encyclopedia of Public Administration, Public Policy, and Governance* (pp. 2463-2469). Cham: Springer International Publishing.
- Wathiuru, F. M., & Pedo, M. (2024). Influence Of Contractual Risk Management On Performance Of Housing Construction Projects In Nairobi County Kenya. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, 8(4).
- Wang, G., Chao, Y., Cao, Y., Jiang, T., Han, W., & Chen, Z. (2022). A comprehensive review of research works based on evolutionary game theory for sustainable energy development. *Energy Reports*, 8, 114-136.