



## PROJECT MITIGATION PLAN AND PERFORMANCE OF AUTOMOTIVE PROJECTS IN NAIROBI COUNTY

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### ABSTRACT

The automotive industry in Nairobi County, like many other regions, faces significant challenges in the successful execution of automotive projects. Despite the challenges faced by the automotive industry in Nairobi County, there is limited research on the effectiveness of project mitigation plans and their impact on project performance. This study therefore sought to establish the effect project mitigation plan and performance of automotive projects in Nairobi County. The study employed a descriptive study design and targeted all registered automotive companies in Nairobi County. Census sampling was used to select the study participants. A sample of 288 senior level managers in automotive firms constituted the study sample size. Data was collected using questionnaires. The instrument was validated during pilot study to ensure it is reliable and valid. Data was analyzed using frequency counts, percentages, means, standard deviations and regression analysis with the aid of Statistical Package for Social Sciences (SPSS) version 25. Qualitative data was analyzed based on the study objectives. These findings are useful to all stakeholders in formulating policies pertaining to performance of the automotive industry in Kenya. The study found that project mitigation plans is statistically significant to performance of automotive projects in Nairobi County, Kenya. To improve the performance of automotive projects in Nairobi County, it is recommended to enhance risk identification and assessment processes, develop comprehensive mitigation strategies, strengthen monitoring and control mechanisms, foster collaboration and communication among stakeholders, continuously learn and improve project management practices, consider the local context of the automotive industry, embrace technological solutions, and promote stakeholder engagement. These recommendations aim to ensure the effective implementation of project mitigation plans, optimize risk management efforts, and ultimately enhance project outcomes in the automotive sector of Nairobi County

## **INTRODUCTION**

The automotive industry plays a crucial role in the global economy, with constant advancements in technology, design, and manufacturing (Pheng & Chuan, 2019). Automotive projects are complex endeavors that require effective planning and management to ensure their successful execution. However, numerous challenges and risks can impact project performance and hinder the achievement of project objectives. Therefore, the development and implementation of a robust project mitigation plan are essential to minimize these risks and enhance project outcomes.

A project mitigation plan is a proactive approach to identify, assess, and address potential risks and uncertainties throughout the project lifecycle (Cetinkaya et al., 2019). It involves the implementation of preventive and corrective measures to reduce the probability and impact of adverse events. By systematically analyzing and managing risks, automotive projects can enhance their performance, increase efficiency, reduce costs, and improve overall project success rates (Chapman & Ward, 2019).

Prior research has highlighted the significance of project mitigation plans in the automotive industry. According to a study by Shenhar and Dvir (2018), effective risk management practices, including the development of mitigation plans, significantly contribute to project success in complex industries such as automotive. Similarly, a research article by Patanakul, Iewwongcharoen, and Milosevic (2017) emphasized the importance of risk mitigation strategies in automotive projects and their impact on project performance.

In the automotive sector, project mitigation plans typically address a wide range of risks, including technical challenges, supply chain disruptions, regulatory compliance issues, market volatility, and changes in customer preferences. Mitigation measures can involve diversifying suppliers, conducting comprehensive feasibility studies, adopting agile project management methodologies, establishing robust communication channels, and implementing quality control mechanisms (Zhang et al., 2020).

Despite the recognition of the importance of project mitigation plans in the automotive industry, there remains a gap in the literature regarding the

relationship between the implementation of mitigation measures and project performance. Therefore, this study aimed to investigate the effectiveness of project mitigation plans in enhancing the performance of automotive projects.

### **Statement of the Problem**

The automotive industry in Nairobi County, like many other regions, faces significant challenges in the successful execution of automotive projects. These challenges include the complex nature of automotive projects, stringent cost and time constraints, and the need for adherence to high-quality standards. According to a study by the Project Management Institute (PMI), the automotive industry has one of the highest project failure rates compared to other sectors, with approximately 65% of automotive projects experiencing cost overruns, delays, or failure to meet objectives (PMI, 2018). These statistics highlight the need for effective project management strategies, including robust project mitigation plans, to improve project outcomes in the automotive industry. According to the data provided by the Nairobi County Automotive Industry Association (2021), the average cost overrun in automotive projects without a well-defined mitigation plan was 25% higher compared to projects with effective mitigation plans. This statistical evidence highlights the potential financial risks associated with inadequate project mitigation strategies.

A study conducted by Akenga et al. (2018) examined the challenges faced by automotive projects in Kenya but did not specifically address the role of project mitigation plans in mitigating these challenges. Research by Nyamwange et al. (2020) explored project management practices in the Kenyan automotive industry but did not delve into the specific impact of project mitigation plans on project performance. A study by Kibet et al. (2019) examined risk management practices in the construction industry in Nairobi County but did not focus specifically on the automotive sector.

Despite the challenges faced by the automotive industry in Nairobi County, there is limited research on the effectiveness of project mitigation plans and their impact on project performance. Existing studies have identified gaps in project management practices, including the inadequate emphasis on project mitigation planning and the

integration of risk management into quality management processes. Addressing these gaps through a comprehensive study provides insights and recommendations to enhance the performance of automotive projects in Nairobi County.

**Objective of the Study**

- i. To establish the effect project mitigation plan and performance of automotive projects in Nairobi County.

**LITERATURE REVIEW**

**Theoretical Review**

**Contingency Theory**

The Contingency Theory suggests that effective project management practices and strategies are contingent upon the specific context, environment, and characteristics of the project (Machado et al., 2018). This theory emphasizes the need for a flexible and adaptive approach to project management, tailoring strategies and actions to address the unique challenges and circumstances of each project.

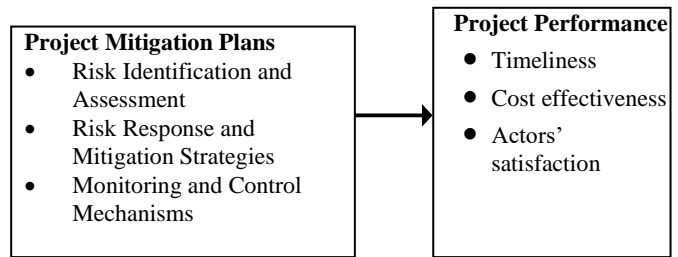
In the context of the study, the Contingency Theory can provide a framework for understanding how project mitigation plans should be designed and implemented based on the specific characteristics of automotive projects in Nairobi County. The theory suggests that project managers should consider various factors, such as project size, complexity, stakeholder involvement, and regulatory requirements, when developing and executing mitigation plans.

By adopting the Contingency Theory, the study can explore how different aspects of the project context influence the effectiveness of project mitigation plans in improving project performance. This includes examining factors such as supply chain dynamics, local market conditions, technological advancements, and regulatory compliance requirements specific to the automotive industry in Nairobi County. Applying the Contingency Theory will provide a theoretical lens to analyze and interpret the empirical findings, helping to identify the key factors and contextual elements that influence the relationship between project mitigation plans and project performance in the automotive industry.

**Conceptual Framework**

Conceptual framework is a group of concepts that are broadly defined and systematically organized to provide a focus, rationale and a tool for the

integration of information (Kothari, 2004). The conceptual framework can also be described as a set of broad ideas and principles taken from relevant fields of inquiry and used to structure a subsequent presentation (Orodho, 2005).



**Project Mitigation Plans**

Project mitigation plans refer to the proactive strategies, actions, and measures implemented to identify, assess, and address potential risks and uncertainties that may impact the performance and success of a project (Chapman & Ward, 2019). These plans are designed to minimize the negative consequences of risks and enhance the likelihood of achieving project objectives.

Risk identification and assessment involves the effectiveness of the plan in identifying and assessing potential risks. It includes the comprehensiveness and accuracy of risk identification processes, such as risk registers, expert opinions, and data analysis techniques (Walker, 2015). Risk Response and Mitigation Strategies examines the adequacy and appropriateness of the plan's risk response strategies. It evaluates the proactive actions taken to address identified risks, such as risk avoidance, risk reduction, risk transfer, or risk acceptance (Hillson & Murray-Webster, 2017). Monitoring and Control Mechanisms focuses on the plan's monitoring and control mechanisms. It assesses the regularity and effectiveness of risk monitoring activities, progress tracking, performance measurement, and the implementation of control measures to address emerging risks (Patanakul & Shenhar, 2012).

These plans provide a structured approach to risk management, guiding project teams in identifying and analyzing risks, developing appropriate response strategies, allocating resources, and monitoring risks throughout project execution. By implementing effective project mitigation plans, organizations can enhance their ability to deliver projects successfully and achieve desired outcomes

while minimizing disruptions and maximizing project performance.

### **Project Performance**

Traditionally projects are perceived to be successful when they meet time, budget and performance goals (Shenhar, 2011). According to Kloppenborg and Opfer (2015) the project success is measured in terms of time, quality and customer satisfaction. In other words, a project is often considered successful if it is completed within its budget estimate and scheduled time frame (Scott-Young & Samson, 2008). Shenhar (2011) evaluated project success by assessing the long-term success that propels the organization into the future. Lim and Mohamed (2013) measured project success using the multidimensional set of time, cost, quality, safety and operational benefit. Shenhar (2011) uses project efficiency and potential benefit to the organization to assess project success. Yu (2014) developed a value-centered model based on net project execution cost and net project operation value to evaluate project success and considered profitability as the criterion for measuring project performance. The success of a project involves meeting customer expectations and getting the job done within the commonly accepted constraints of time, cost and quality.

According to Burke (2015) the key components of performance that may be applicable in the flower sector include actors' satisfaction and commercial value. The requisite tasks, and the roles and responsibilities of the stake holders during planning can be organized in a number of different ways to deliver the project (Wang, 2013).

To enhance performance, it is essential for the management to practice conventional planning. According to Pinto and Slevin (2016) project success means achieving deadlines, delivering within budget and making the customer happy. This study seeks to establish how Project Mitigation Plan could enhance project performance of automotive projects in Kenya.

### **Empirical Review**

#### **Project Team Planning and Projects Performance**

Zhang, Gao, Wu and Li, (2020) studied integration of risk management practices in automotive projects: A systematic literature review. This systematic literature review explores the

integration of risk management practices in automotive projects. It provides insights into the various risk management techniques, tools, and frameworks used in the automotive industry. The study identifies the gaps and challenges in current risk management practices, highlighting the need for effective project mitigation plans to address risks and uncertainties in automotive projects.

Cetinkaya, Karaca and Gumus (2019) study was on evaluating the effectiveness of project risk management practices in the automotive industry. This study evaluates the effectiveness of project risk management practices in the automotive industry. It investigates the impact of risk identification, risk assessment, and risk response strategies on project performance. The findings emphasize the importance of robust project mitigation plans in the automotive sector and provide insights into enhancing risk management practices for improved project outcomes.

Ng, Rezaei and Ong, (2018) conducted an empirical investigation of risk management practices in the automotive industry. This empirical study investigated risk management practices in the automotive industry. It examines the extent to which project teams in the automotive sector implement risk management practices and their influence on project performance. The study highlights the need for comprehensive risk management practices, including the development of effective project mitigation plans, to mitigate risks and enhance project success in the automotive industry.

Akenga, Ongori and Mbweza (2017) conducted an analysis of risk management practices in automotive projects in Kenya. This study focused on the analysis of risk management practices in automotive projects specifically in Kenya. It identifies the key risk areas and challenges faced by automotive projects in the Kenyan context. The study emphasizes the importance of implementing robust risk management practices, including project mitigation plans, to address these challenges and enhance project performance in the automotive industry in Kenya.

### **RESEARCH METHODOLOGY**

The study was based on a descriptive survey design. Descriptive research aims at producing accurate representation of events. It also aims at

seeking new insights into phenomena, ask questions and assess the phenomena in a new light (Sekaran, 2012). The target population comprised of 72 registered automotive companies. Census sampling was taken for all the senior level managers in 72 registered automotives in Kenya totaling to 288 as they are the major decision makers making them suitable for the study.

Primary data was collected using questionnaires. The subjects participating in the pilot study are usually not included in the final study to avoid survey fatigue. Usually, 1% of the sample should constitute the pilot test. This principle was applied in this study. Therefore, 22 automotive -projects participated in the pilot study. The analysis was done with the aid of the Statistical Package for the Social Sciences version 25. Descriptive statistics were used to analyze data based on the study variables. Thematic content analysis was also used to analyze the qualitative data from the open ended questionnaires. Regression analysis was used to establish whether the identified linear relationship is significant or not. The output consisted of an R squared, F statistic and regression coefficients. It also provides a measure of how well future outcomes are likely to be predicted by the model. Analysis of Variance (ANOVA) was conducted to check whether the mean response for the independent variables significantly differed across the identified categories.

**RESEARCH FINDINGS AND DISCUSSION**

The study targeted 288 senior level managers in all the 72 registered automotive companies in Nairobi County. All the selected respondents were issued with questionnaires but the only 257 respondents filled and returned the questionnaire, forming a response rate of 89.2%. A response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent (Mugenda & Mugenda (2008). In our case a response rate of 257 out of 288 was excellent and was used for further analysis.

**Descriptive Analysis**

**Project Mitigation Plans on Projects Performance**

Respondents were asked their opinion on the extent to which they agree or disagree with the various statements regarding the influence of project mitigation plans on their automotive project. Table

1 presents the findings obtained.

**Table 1: Descriptive Statistics on Project Mitigation Plans**

Statements	Mean	Std. Dev.
In my opinion using risk transfer leads to timely completion of the project	4.021	1.265
There is funding set aside to facilitate management of risks that may delay the project	3.988	1.182
The management has put in place protection and safety systems against any event that may delay the project implementation	3.961	1.149
The project management encourages use of detailed work plans so as to limit occurrence of risks	3.955	1.199
The project has a programme on training of employees on how to ensure that projects run on schedule	3.902	1.345
In my opinion using risk reduction leads to timely completion of the project	3.902	1.235
The project management effectively communicates the risk to employees or stakeholders	3.902	1.235
The organization plans for disaster recovery plans on issues that may affect the implementation of the project	3.896	1.21
The project uses regular inspections to ensure issues arising do not delay project implementation	3.836	1.207
The management buys insurance premium on some items so as to ensure occurrence of risks cause no delay in project implementation	3.836	1.234
The project adheres to signed contracts terms and conditions on the issues that may influence the duration of implementation of projects	3.836	1.313
The project management encourages use of contingency/alternative plans in order to avoid risks	3.83	1.3
In my opinion using risk acceptance leads to timely completion of the project	3.81	1.142
The organization conducts periodic meetings with project team to alleviate the possible causes of project delay	3.803	1.248
In my opinion using risk avoidance leads to timely completion of the project	3.738	1.168
<b>Aggregate Score</b>	<b>3.881</b>	<b>1.229</b>

Based on the findings in Table 1, the aggregate mean score was 3.881 (>3.5) an indication that the respondents agreed on average with the statements on the influence of risk management planning on the performance of automorive projects. The small standard deviation (1.229<2) suggests that the responses had small deviation from the mean value. The findings specifically show that the respondents

agreed that using risk transfer leads to timely completion of the project (M= 4.021, SD= 1.265); that there is funding set aside to facilitate management of risks that may delay the project (M= 3.988, SD= 1.182); and that the management has put in place protection and safety systems against any event that may delay the project implementation (M= 3.961, SD= 1.149).

They also agreed that the project management encourages use of detailed work plans so as to limit occurrence of risks (M= 3.955, SD= 1.199); that the project has a programme on training of employees on how to ensure that projects run on schedule (M=3.902, SD= 1.345); and that using risk reduction leads to timely completion of the project (M= 3.902, SD= 1.235). Respondents further agreed that the project management effectively communicates the risk to employees or stakeholders (M= 3.902, SD= 1.235); that the organization plans for disaster recovery plans on issues that may affect the implementation of the project (M= 3.896, SD= 1.21); and that the project uses regular inspections to ensure issues arising do not delay project implementation (M= 3.836, SD= 1.207).

In addition, they agreed that the management buys insurance premium on some items so as to ensure occurrence of risks cause no delay in project implementation (M= 3.836, SD= 1.234); that the project adheres to signed contracts terms and conditions on the issues that may influence the duration of implementation of projects (M= 3.836, SD= 1.313); and that the project management encourages use of contingency/alternative plans in order to avoid risks (M= 3.83, SD= 1.3). Furthermore, the respondents agreed that using risk acceptance leads to timely completion of the project (M= 3.81, SD= 1.142); that the organization conducts periodic meetings with project team to alleviate the possible causes of project delay (M= 3.803, SD= 1.248); and that using risk avoidance leads to timely completion of the project (M= 3.738, SD= 1.168).

The findings agree with Zwikael and Ahn (2011) that effectiveness of risk mitigation is pegged on the importance of understanding the project context, considering the industry’s and country’s levels of project risk. It also agrees with Bakker, Boonstra and Wortmann (2012) who suggests that in addition to the impact of risk management on

project performance, communication play a key role in establishing a common vision of the project’s uncertainties and the expectations for its success. It also concurs with Elkington and Smallman (2013) have identified that there is a strong link between the amount of risk management undertaken in a project and the level of success of the project. It also agrees with Kululunga and Kuotcha (2010) who found that project risk mitigation processes was significantly influenced by the various categories of size and experience of the firms

**Performance of Projects**

Respondents were asked to indicate the extent to which their organization has performed based on various performance dimensions. Table 2 presents the findings obtained.

**Table 2: Descriptive Statistics on Improvement Project Performance**

Performance Dimension	Frequency	Percentage (%)
Project efficiency	230	89.6
performance goals	226	88.1
Meeting customer expectations	206	80.3
Budget Estimates	205	79.9
Potential benefit to the organization	204	79.5
Cost effectiveness	201	78.2
Project cost on completion	194	75.6
Commercial value	191	74.2
Actors’ satisfaction	178	69.3

The findings presented in Table 2 show that majority (>50%) agreed that their organization recorded an increase in performed of various performance dimensions. The findings specifically show that there was improvement in project efficiency (89.6%); performance goals (88.1%); meeting customer expectations (80.3%); budget estimates (79.5%); potential benefit to the organization (79.5%); cost effectiveness (78.2%); project cost on completion (75.6%); commercial value (74.2%); and actors’ satisfaction (69.3%). This simply means that the organization over the years, the flower farms in Nakuru County have recorded improvement in their performance in terms of project efficiency, achievement of performance goals, meeting customer expectations, performing projects within budget estimates. The companies also improved in terms of cost

effectiveness, project cost on completion, commercial value and improved actors' satisfaction.

The findings agree with Kloppenborg and Opfer (2015) that project is often considered successful if it is completed within its budget estimate and scheduled time frame. It also concurs with Shenhar (2011) that project efficiency and potential benefit to the organization to assess project success. Yu (2014) also explained that the success of a project involves meeting customer expectations and getting the job done within the commonly accepted constraints of time, cost and quality which agrees with findings of this study.

**Inferential Statistics**

In this study, correlation analysis and multiple regression analysis were conducted to test the influence among predictor variables. The researcher used statistical package for social sciences (SPSS Version 25) to code, enter and compute the measurements of the multiple regressions.

**Correlation Analysis**

The correlation analysis was used to analyze the relationship between independent and dependent variables. The results were as shown in Table 3. The closer the correlation coefficient is to 1, the greater the relationship, whereas the closer the correlation coefficient is to 0, the weaker the relationship (Hair et al., 2010). The correlation strengths was interpreted using Cohen and Cleveland decision rules where 0.1 to 0.3 indicate weak correlation, 0.3 to 0.5 indicate moderate correlation strength and greater than 0.5 indicate a strong correlation between the variables.

**Table 4: Correlations Coefficient**

		Performance	Project Mitigation Plans
Performance	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	257	
Project Mitigation Plans	Pearson Correlation	.871**	1
	Sig. (2-tailed)	.001	
	N	257	257

The results established a strong positive relationship project mitigation plans and performance of automotive projects in Nairobi

County, Kenya as shown by  $r = 0.871, p < 0.05$ .

**Multiple Regression Analysis**

To determine the influence of project mitigation plan and performance of automotive projects in Nairobi County multiple regression analysis was conducted and the findings were presented in three tables here-under. Model summary was used to analyze the variation of dependent variable due to the changes of independent variables. The study analyzed the variations in performance of automotive projects in Nairobi County, Kenya due to the changes in project mitigation plans.

**Table 5: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.895 <sup>a</sup>	0.801	.797	.02143

a. Predictors: (Constant), project mitigation plans,

The value of R squared was 0.801 implying that 80.1% variation in performance of automotive projects in Nairobi County, Kenya can be explained by changes in project mitigation plans. The remaining 19.9% imply that there are other factors that influenced performance of automotive projects in Nairobi County, Kenya which were not discussed in the study. R is the correlation coefficient which shows the relationship between the study variables. From the findings, the study found out that there was a strong positive relationship between the study variables as shown by 0.895.

**Analysis of Variance**

The analysis of variance ANOVA was used to determine whether the data used in the study was significant. Significance of the model was tested at 5% level of significance.

**Table 6: Analysis of Variance**

Model	Sum of Squares	df	Mean Square	Sig.	F
1Regression	8.129	1	2.032	17.218	.000 <sup>b</sup>
Residual	29.743	255	0.118		
Total	37.872	256			

a. Dependent Variable: Performance

b. Predictors: (Constant), project mitigation plans,

The results show that the p-value for the processed data is 0.000 which implies that the data was ideal for making conclusion because the p-value was less than the selected level of significance i.e. 0.05. The F critical was less than F calculated ( $2.407 < 17.218$ ). The F- critical value was obtained from the

f distribution table, and since the calculated value was greater than critical value it implied that, project mitigation plans significantly influenced performance of automotive projects in Nairobi County, Kenya. The model was considered to be significant because the significance value in the above table was less than ( $\leq 0.05$ ).

### Beta Coefficients of the Study Variables

**Table 7: Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1(Constant)	0.725	0.073		9.9320.000	
project mitigation plans	0.412	0.091	0.341	4.5270.003	

Based on the findings of the regression analysis presented in Table 7, the regression model became;  $Y = 0.725 + 0.412X_1$

The findings also show that project mitigation plans is statistically significant to performance of automotive projects in Nairobi County, Kenya as shown by ( $\beta = 0.412$ ,  $P = 0.003$ ). This shows that project mitigation plans positively and significantly relates with performance of automotive projects in Nairobi County, Kenya. Therefore improving project mitigation plans by a single unit would lead to an increase in performance of automotive projects by 0.412 units. This agrees with Zhang and Faerman (2015) who found out that projects failed because of poor leadership which reflected limited or no teamwork, inadequate communication and inability to resolve conflicts and other human related inefficiencies.

### Conclusions

The objective of the study was to establish the influence of project mitigation plans on performance of automotive projects in Nairobi County, Kenya. The study found that project mitigation plans is statistically significant to performance of automotive projects in Nairobi County, Kenya. This showed that project mitigation plans positively and significantly relates with performance of automotive projects. Based on the findings, the study concludes that improving project mitigation plans by a single unit would lead to an increase in performance of automotive projects in Nairobi County, Kenya.

### Recommendations

To improve the performance of automotive projects in Nairobi County, it is recommended to enhance risk identification and assessment processes, develop comprehensive mitigation strategies, strengthen monitoring and control mechanisms, foster collaboration and communication among stakeholders, continuously learn and improve project management practices, consider the local context of the automotive industry, embrace technological solutions, and promote stakeholder engagement. These recommendations aim to ensure the effective implementation of project mitigation plans, optimize risk management efforts, and ultimately enhance project outcomes in the automotive sector of Nairobi County.

### Suggestions for Further Studies

This study was limited to Nairobi County; this study thus recommends a study to be conducted in other counties to facilitate generalization of research findings.

The study focused on measures explained 80.1% variation in performance of automotive projects; the study thus recommends a study to be conducted using other variables that can explain the remaining 19.9% variation in performance of automotive projects. This study focused on project mitigation plans which is one aspect of project management; the study thus recommends other studies to be conducted on other factors of project management such as monitoring and evaluation and how it affects projects performance.

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