



**PROJECT RISK MANAGEMENT PROCESSES AND PERFORMANCE OF
AUTOMOBILE FIRMS IN KENYA**

¹ Bett Jared, ² Dr. Muchelule Yusuf

¹ Msc., Student in Project Management, Jomo Kenyatta University of Agriculture and
Technology

² Lecturer, Jomo Kenyatta University of Agriculture and Technology

ABSTRACT

This study sought to examine project risk management process and performance of automobile firms in Kenya. Specifically, the study sought to establish the influence of risk identification, and risk analysis on the performance of projects in the four major automotive firms in Kenya. The researcher targeted projects undertaken by Isuzu East Africa, Kenya Vehicle Manufacturers (KVM), Associated Vehicle Assemblers (AVA) and Mobius Motors. Where a sample of 96 was drawn. A pilot study was done at Mobius Motors in Nairobi County where a 10% of the Sample of 96 was administered with questionnaires. The study checked for both validity and reliability. The study found that risk management practices have a strong correlation with performance of automotive firms in Kenya. The four independent variables could only explain 63.7% variation in performance. The study found that risk identification had a significant influence on performance of automotive firms in Kenya. Additionally, the study showed that risk analysis has a significant influence on performance of automotive firms in Kenya. The study recommended enhancement of risk management practices to ensure improved performance. The study also recommended use of risk management tools is also encouraged. The study will be useful to automotive firms, scholars, and project practitioners. The results were presented in tables and figures and later discussed. The study employed a model depicting the relationship between risk management practices and performance of automotive firms in Kenya. Further, studies on risk management practices were also recommended to ascertain the variation in performance of automotive firms in Kenya.

Key Words: Project risk management process, Performance, Automobile firms, Risk identification, Risk analysis

Background of the Study

In the project management life cycle the different phases have expected deliverables and a scope of work that is assigned to it. Upon completion of a phase, there is a particular decision point where assessment of risks takes place and the appropriate decision made based on the actions that need to be taken in the subsequent phases. For effective management process, an inclusive evaluation of all the phases of project life cycle should be included. Thus, decisions that are made at each stage should be clear of the risks which may be encountered (Gajewska & Ropel, 2017). The description of risks is dependent on profession, type of business and the project. Risk management process is considered as the principle for understanding and managing the risks in a project. The main phases include risk plan, identification, analysis, response, and control. Risk management process should be a continuous development in the entire project to maximize the efficiency of risk management as the risks are identified and managed throughout all the phases of the project (Smith, Merna, & Jobbling, 2017)."

Ahmed (2019) in a study on risk management and project performance of UNDP projects in construction projects in Somalia found that a close relationship between risk identification, risk response and performance of construction projects in Mogadishu Somalia. The study further indicated that risk management should be a systematic way of identifying, analysis, and responding to project risks to achieve the objectives (Ahmed, 2019).

Nguru and Yusuf (2018) studied on the effects of project risk management practices on performance of consulting civil engineers in Nairobi County. Risk identification didn't significantly influence performance. Risk response, risk governance, and risk monitoring positively influenced performance of projects. The study emphasizes the need to invest in control systems for effective stakeholders' participation in the process of decision making. Knowledge on risk operations, identification, and risk competence in project management process to enhance project performance. In his study on risk management strategies and performance of public-school construction projects in Murang'a County, Macharia established that risk avoidance as a strategy strongly influence performance of construction projects. Macharia further established that risk transfer had the lower influence on performance of construction projects (Macharia, 2017).

Statement of the Problem

Projects are risky as they are unique in nature and a characterised with complexity for the purpose of delivering benefits through constraints and assumptions while trying to fulfil the stakeholder expectations. Organizations should take project risk in a manner that is controlled to create value while trying to bring a balance between the risk and reward (PMI, 2017). The automobile industry is marred by a lot of uncertainties since most automobile companies are owned by multinationals and thus face global competitions and other risks. Importation of second-hand vehicles for instance has remained to be one of the greatest threats for local vehicle assemblers. According to the 2020 annual report by the National Automotive Policy, 85-90% of the vehicles were imported. Emission regulations by the government is another risk that can jeopardise the success of projects in the automotive industry.

In 2022, Kenya Bureau of Standards (KEBS) through gazette notice dated 28 April 2022 notified the Automobile industry stakeholders about the banning of importation of second-hand trucks with gross vehicle weight equal or greater than 3.5 tons; effectively 1st July 2023. In the same gazette notice, KEBS notified the local vehicle assemblers of impending mandatory transition from Euro II to Euro IV. The firms were to be Euro VI compliant by July 2023. According to Kenya association of manufacturers on Motor vehicle manufacturing report (2018), logistical challenges often cause delay on arrival of these CKDs and as such can lead to project failure due to cost and time overruns. This is even made worse due to lack of strategies for assessing and controlling

risks that could be brought about by delayed arrival of vehicle assembling materials. Further, according to Kenya Motor Industry Association (KMIA), 2021, the government has leased over 2,637 units for the National Police Service (NPS). This is exclusive of vehicles leased to ministries and state corporations. There was need to study whether project risk management process contribute to improved performance of automobile firms in Kenya. The study investigated the relationship between risk management process on the performance of the automobile firms.

Research Objective

The General objective of this study was to examine the influence of project risk management process on performance of automotive firms in Kenya.

Specific Objectives

- i. To examine the influence of risk identification on the performance of automotive firms in Kenya.
- ii. To determine the influence of risk analysis on performance of automotive firms in Kenya.

LITERATURE REVIEW

Theoretical Review

Enterprise Risk Management Theory

According to Tseng (2009), Enterprise Risk Management (ERM) is a framework that focuses on adopting a systematic and consistent approach to managing all the risks confronting an organization. Gordon et al. (2009) on the other hand define ERM as the overall process of managing an organization's exposure to uncertainty with particular emphasis on identifying and managing the events that could potentially prevent the organization from achieving its objective. ERM is an organizational concept that applies to all levels of the organization (Gordon, Loeb, & Tseng, 2009)". "In conducting ERM, the following are listed as some of the areas or aspects of the organization that a risk manager needs to consider: the people, intellectual assets, brand values, business expertise and skills, principal source of profit stream and the regulatory environment (Searle, 2008). This will help the organization to balance the two most significant business pressures; the responsibility to deliver success to stakeholders and the risks associated with and generated by the business itself in a commercially achievable way. By doing so, the risk manager is constantly aware of the risks the project and therefore able to monitor its exposure and be positioned to change strategy or direction to ensure the level of risks taken is acceptable.

One of the key performance indicators for many boards of directors is good risk governance. Reporting of risks in organizations is one of the fundamental building blocks for the ERM programs that are run in this organization. Each department or functional unit is required to do an assessment of all the risks and escalate them to a centralized point, which in most cases would be the headquarters (Alviniussen and Jankensgård, 2015). Fraser in his study also agrees with Alviniussen and Jankensgård. He urges that in most corporates, the different sections are tasked to get updated risk information mainly through interviews or workshops. The risk information gathered by the individual units is then used to come up with the most appropriate counter measures to mitigate the risks. Mike and Kaplan (2016) in their study postulated that any risk mitigation measures should be aligned to the overall company strategic plan, organization's risk appetite and the laid-out compliance policies. Whereas the organization will face the challenge of prioritizing the limited resources in its attempt to curb the risks, there is the long-term benefit of improving its competitive advantage against its competitors as well as reducing operation costs. They further urged that firms that employ quantitative risk analysis are better placed in narrowing down to projects whose risks are tolerable. However, this is only achievable these firms have cultures that empower the middle level management to implement the findings of the analysis. In this case, ERM is therefore considered as the best model that the management can use to manage the uncertainties and thus create value based on the adopted operational decisions.

(Lai & Shad, 2017), while studying Shariah-compliant companies these firms were seen as ethical and with high standards of running business. Some of these organizations which implemented ERM realized considerable value creation in their operations. In the cases considered, it was found out that the management had to make critical decision to establish the balance between risks and the expected returns. Some of functional units like audit had to implement ERM to enable them to control the potential risks.

Prospect Theory

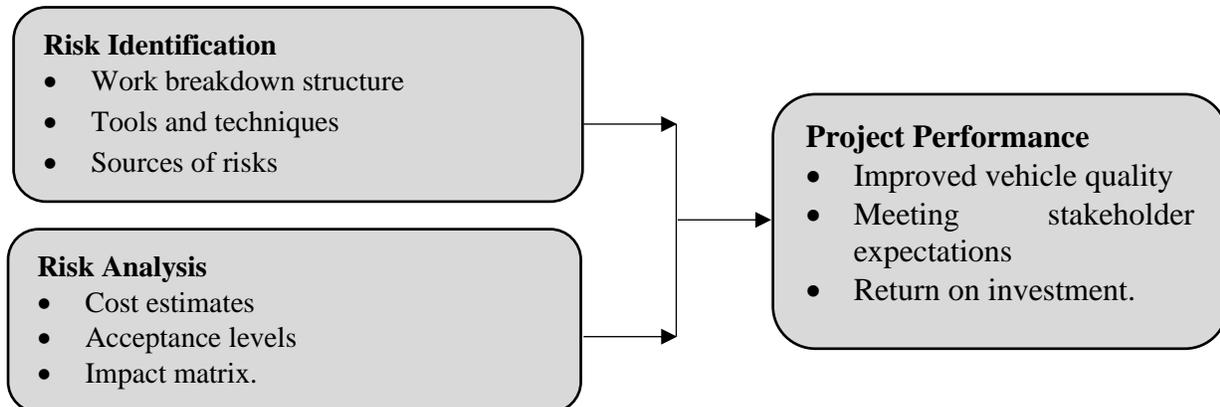
“The prospect theory was formulated in late 1970’s and further developed in 1992 by Amos Tversky and Daniel Kahneman. The theory explains how individuals tend to be risk averse when things are going as expected or planned, and when losing they tend to be risk averse. The theory is designed to explain the common pattern of choices that it is descriptive and empirical in nature. Prospect Theory is a psychological account that describes how people make decisions under conditions of uncertainty (Tversky & Kahneman, 1979).“Pasquariello (2014), in his study found out that many investors were not ready to invest when loss appeared more apparent than gain. Nonetheless, several financial firms still employed prospect theory when formulating their prices. He concluded that Prospect Theory is a popular non-standard, descriptive model of decision making under uncertainty as originally proposed by Kahneman and Tversky.

The simplest way to choose between risky options is to choose the option with the highest expected value. These may involve decisions about nearly anything where the outcome of the decision is somewhat risky or uncertain. Prospect Theory predicts that people go through two distinct stages when deciding between risky options like these. In the first phase, decision makers are predicted to edit a complicated decision into a simpler decision, usually specified in terms of gains versus losses. In the second phase, decision makers choose between the edited options available to them. This choice is based on two dimensions, the apparent value of each attribute or option, and the weight (similar, although not identical to, the objective likelihood) assigned to those values or options. These two features are then combined by the decision maker, and the option with the highest combined value is chosen by the decision maker.

People will commit more effort to preventing a loss than achieving a potential gain (Kahneman & Tversky, 2000). In addition, Kahneman and Tversky state that people’s commitment increases when they are trying to prevent a loss but decreases when they are trying to gain something (Kahneman & Tversky, 2000). For all practical purposes, this means that the energy and resources a person will use to prevent a loss will increase in proportion to the likely size of the loss. The converse is not true in respect of a gain (Adrianssen & Johannessen, 2016). This theory can be useful in explaining the managing of risks behaviours especial in relation to the various stakeholders in the vehicle assembly sector and their influence on performance of projects.

Conceptual Framework

The conceptual framework gives an outline of the dependent and independent variables as discussed in the literature review and as shown in the figure 1 below. It gives an understanding the relationship of the variables of the study.

Independent Variable**Dependent Variable****Figure 1: The Conceptual Framework****Study Variables****Risk Identification**

The PMI (2017) describes risk identification as the process where individual risks of the projects are identified, and their sources documented. 'It is determining which risks might affect the project and documenting their characteristics. 'Risk identification is a project team's effort where the project scope as per specification and Work Breakdown Structure (WBS) is examined to identify possible risks to the project. The project team may use brainstorming session or use a previously compiled list from projects of similar nature. Interviews with outside parties or an expert opinion may be used. This process comes up with a list of all possible risks to the project (Lester, 2017).' According to Lester risks may be categorised in to four main areas as: organization, environment, technical, and financial risks. He further argues that the risks may be examined into a more categories such as: environmental, technical, cultural, financial, legal, resource, economic, political, operational, commercial, and security.

In a project there are many types of risks which lead to performance issues, scheduling, cost, and others have adverse consequences to the organization. The common risks include performance risk, cost risks, strategic risks, market risks, governance risks, and program risks. From these examples, the risks are internal and are closely associated with completion of every stage of a project (Doval, 2019). According to Doval, earlier identification of risks is crucial for them to be addressed in time. Risk identification happens throughout the project. Known risks are apparent to the project team while others are more rigorously discovered during the project execution at the respective phases. Doval adds that the risk register is the main tool for recording the risks that have been identified in the project and is documented and stored centrally in the project.

Qualitative Risk Analysis

According to PMBOK, qualitative risk analysis is the process of assessing the possibility and the impact of the risks that have been identified and prioritizing them according to the extent of impact on the project objectives. This analysis provides numerical estimate of the overall effect of the individual risks on the planned project objectives. Compared to quantitative analysis, qualitative analysis takes comparatively shorter time and is also cheaper. Jameela Hammad Nadaf (2018), qualitative risk analysis involves the evaluation of the likelihood and the impact of the various risks. These risks these risks are listed so as to improve on the product performance by making them a priority. Nadaf further argues that the data obtained from the questionnaire survey helps to

obtain the average values of probability, urgency and priority which can then be used to analysis the risks.

Empirical Review

Tworek (2017) studied on methods of risk identification in companies' investment projects. 'The study sampled 25 out of 100 construction and assembly companies in Poland. The study looked at the various techniques including assumption and constraints analysis; brainstorming; Ishikawa diagrams and SWOT analysis. The study found out that brainstorming is the most popular technique among the construction companies in Poland. Brainstorming involves teamwork of the team members who are involved in planning as well as implementation of investment projects and thus, it is very comfortable to use and doesn't require a lot of time to prepare for a discussion and coming up with a solution.

Reiss (2016) on his guide to small public entities on risk identification and analysis explains that public entities are faced with a range of risks which arise from mandated legal activities. Though it is difficult for any entity regardless of size to identify the full range of risks, small entities face the biggest challenges. To avert losses, these entities assemble team members to review the analytical framework, review the severity and frequency worksheets, and assign each team member tasks of researching. In some cases, the analytical framework with severity and frequency sheets is distributed to the team members before first meeting. In their study by Nguru and Yusuf (2018) on the effects of project risk management practices on performance of civil engineers in Nairobi County found a correlation between risk identification and performance of projects. Projects should enhance the level of risk identification by eliminating the risks through pursuance of the present risk.

RESEARCH METHODOLOGY

Descriptive research design was adopted in this study. Descriptive survey is useful as it demonstrates the relationships through assessment of samples at any given point without any casual references made. The target population of this study comprised of 125 project managers from the targeted firms. The study focused on the managers and supervisors in the 4 targeted vehicle assemblers in Kenya. The sample was arrived at by using the Slovincs formula since the population is less than 1000 (125). The sample size was therefore 96 respondents. Simple random sampling was be used to select the sample population. Questionnaires were used for data collection. This study used both primary and secondary data. Semi structured questionnaires was used to collect Primary data. In this study pretesting involved 10 staff (10% of the sample size). According to Creswell and Clark (2017), 10% of the sample required for a full study should be used in a sample size.

Data from the questionnaires was used both qualitative and quantitative and was coded in a Statistical Package for Social Sciences (SPSS) version 24, which was used to generate descriptive statistics and inferential statistics.' Quantitative data was analysed using descriptive statistics which included mean, frequencies, percentages, and standard deviation. Thematic analysis was used to analyse qualitative data and the presentation of results done in a prose form. SPSS version 24 was be used to analyse all quantitative data. Inferential and descriptive statistics was used to analyse qualitative data. Inferential data analysis was done using the Pearson correlation coefficient, regression analysis, and multiple regression analysis. Linear regression analysis was used to establish the relationship between the risk management practices and project performance of automotive firms in Kenya.

RESEARCH FINDINGS AND DISCUSSIONS

The study administered 96 questionnaires to project managers and engineers with key mandate on project operations. The questionnaires were dropped and picked later after they were dully filled. A total of 93 were duly filled and returned representing a response rate of 96.9%. According to Babbie (2017), a response rate of 75 per cent is adequate for analysis as well as making conclusions and inferences about a population. Kumar (2019) further indicates a response rate of 60% to 70% should be considered as adequate while a response rate of over 70% should be regarded as excellent. Thus, the response rate of 96.9% was excellent and appropriate for the data analysis in this study

Descriptive Statistics

Risk Identification

The second specific objective of this study was to examine the influence of risk identification on the performance of performance of automotive firms in Kenya. The objective also aimed at answering the research question 'How does risk identification influence the performance of automotive firms in Kenya'. From Table 1 below the study found that respondents agreed that Risk identification as a risk management process affects performance of performance of automotive firms in Kenya (M= 4.08, std. dev = .776). According to PMI (2017), during risk identification all the possible risks that may affect the projects are predicted and categorized based on their characteristics. Rahman (2018) opined that risk identification aims at informing of the possible risks, details, and their characteristics. This process uses interviews, SWOT analysis as well as review of previous records as methods of collection data relating to the risks.

According to PMI (2017) there are various tools and techniques for identifying risks. These include document review, information gathering techniques, checklist analysis, assumption analysis, and diagramming techniques. Regarding documentation reviews, a structured review of project plans, project files and project documentation is performed. Ayudhya and Kunishima (2019) explained that risk management aims to identify risks and take preventive and corrective measures to ensure their impacts are minimized. Risk categories vary depending on the nature of project such as technical, social, market, financial, and business. The sources of risks may be internal or external (Faiz, 2020).

Table 1: Risk Identification

| Risk Identification | SD % | D % | N % | A % | SA % | Mean | Stdev |
|---|---------|--------|--------|--------|---------|-------------|-------------|
| In our organization there are well defined techniques that are used in identifying risks for the individual projects. | 0 | 3.1 | 15.6 | 46.9 | 34.4 | 4.13 | .785 |
| In our organization the sources of the risks are identified during each phase of the project | 0 | 3.1 | 15.6 | 54.2 | 27.1 | 4.05 | .745 |
| In our organization there is a proper break down on how the various projects are identified. | | 4.2 | 14.6 | 51 | 30.2 | 4.07 | .785 |
| In our organization risk identification is a continuous process to ensure all risks associated with the projects are known. | 1 | 5.2 | 9.4 | 54.2 | 30.2 | 4.09 | .837 |
| In our organization there are well defined techniques that are used in identifying risks for the individual projects. | 0 | 2.1 | 16.7 | 53.1 | 28.1 | 4.07 | .729 |
| Average Risk Identification | | | | | | 4.08 | .776 |

The study found out that the automotive firms have well defined techniques used in identifying risks for the individual projects. This was supported by a mean of 4.13 (std. dev = .785).

Respondents also agreed that the sources of risks are identified during each phase of the project as shown by a mean of 4.05 (std. dev = .745). In addition, the study found that there is a proper breakdown in the automobile firms on how various projects are identified as supported by a mean of 4.07 (std. dev = .785). With a mean of 4.09 (std. dev = .837), respondents also agreed that risk identification to be a continuous process that ensures all the risks associated with the projects are known. Finally, respondents agreed that the automotive firms have well defined techniques that are used in identifying risks for individual projects. This was supported by a mean of 4.07 (std. dev = .729).

Risk Analysis

The third specific objective was to determine the influence of Risk Analysis on performance of performance of automotive firms in Kenya. The study was also guided by the research question ‘How does risk analysis influence the performance of automotive firms in Kenya?’ From Table 2 the study found evidence of risk analysis as a process of risk management influences performance of automotive firms in Kenya (M = 4.38, std. dev = .756). The APM (2018) describes risk analysis as a two-stage process of the identification, estimation, and evaluation of risks. In the first stage, which is also known as qualitative risk analysis, risks are identified and assessed subjectively in the second phase also known as quantitative analysis the identified risks are analysed in terms of time and cost estimates. Lester (2017) explained that risk analysis is also called risk assessment and addresses three questions which include: What can go wrong? What is the probability of the risk occurring? what are the consequences? According to the PMI (2017) The risk assessment process involves a seven-stage process: a systematic assessment, risks identification, assessing the consequences and requirements of the risks, the level of tolerance or acceptable risk levels, risk evaluation, determining the impact of risks, and the use of appropriate measures (Lester, 2017).

Rahman (2018) explained that in qualitative risk analysis the project risks are ranked based on their probability of their occurrence and impact. In risk assessment the main attributes of the risk that are examined are the probability and impact. According to Lester (2017) in quantitative risk analysis project risks are numerically analysed based on their impact. These are risks that were previously prioritized in qualitative risk analysis that are further analysed to ensure accuracy in establishing the probable impact on the projects. Simon and Mutiso (2021) described some of the tools used in quantitative analysis such as simulation and modelling, sensitivity analysis, probability distributions, and expected monetary value analysis. Rahman (2018) mentioned some of the benefits of risk analysis such as: helps in project justification, reduction of costs and chaos, prioritizing of project and management support, portfolio management of projects, reduction of risks by fine tuning plans, establishment of management reserves, and finally project control and communication.

Table 2: Risk Analysis

| Risk Analysis | SD % | D % | N % | A % | SA % | Mean | Stdev |
|---|------|-----|------|------|------|-------------|-------------|
| In our organization, project risks are categorized based on their impact to the project. | 1 | 2.1 | 11.5 | 50 | 35.4 | 4.17 | .790 |
| In our organization, costs related to risk occurrence are done and documented. | 0 | 3.1 | 24 | 43.8 | 29.2 | 3.99 | .814 |
| In our organization, the agreed project risks have assigned tolerance levels that evaluated periodically. | 0 | 2.1 | 10.4 | 53.1 | 34.4 | 4.20 | .705 |
| In our organization, the agreed risk control measures are constantly followed up and evaluated to make sure they are effective. | 0 | 2.1 | 13.5 | 52.1 | 32.3 | 4.15 | .725 |
| Average Risk Analysis | | | | | | 4.38 | .756 |

The descriptive statistics in Table 2 revealed that the respondents agreed that the project risks are categorized based on their impact on the project. This is supported by a mean of 4.17 (std. dv = 0.790). Respondents also agreed that costs related to risk occurrence are done and documented. This is as shown by a mean of 3.99 (std. dv = 0.814). With a mean of 4.20 (std. dv = 0.705) the agreed project risks have assigned tolerance levels that evaluated periodically. Finally, the respondent also agreed that there is consistently follow up of the agreed risk control measures as well as evaluation for their effectiveness. This is supported by a mean of 4.15 (std. dv = 0.725)

Performance of Projects

The general objective of the study was to examine the influence of project risk management process on performance of automotive firms in Kenya. The findings from Table 3 indicated that project risk management process on the performance of automotive firms in Kenya ($M = 4.39$, std. dev = .681). Njuguna (2019) in the study of risk management practices and performance of projects in Nairobi found risk management practices of risk retention, risk prevention, risk transfer and risk control to have a positive and significant impact on project performance. According to APM (2018) risk management enhances the likelihood of maximizing profits, minimizing risks, and probability of achieving success in relation to the objectives of the project. Furthermore, risk management enhances project performance through avoidance of cost budget failure; meeting time and deadlines; and meeting standards and quality. The gain from project risk management is not only for the project team but also for customers, end users, and clients of the projects. Siang and Ali (2017) opined that the benefits of risk management include: formulation of appropriate strategy for cost estimation and schedule of work; a better perception of risk and their consequences and planning for a risk response and allocation of risks to responsible party; selection of a suitable contract; improved decision making; structuring of information for better modelling of future projects; and maximize the efficiency of project activities. Bergsma (2020) argued that Risk management is essential for successful project implementation and project performance. Thus, there is a good relationship between effective risk management and project performance. If risks are not well managed there will immediate consequences in the project in terms of cost overruns, poor quality, damages or even rework. Thus, mitigation of those risks helps ensure the performance of the project is improved.

Table 3: Project Performance

| Performance of Projects | SD % | D % | N % | A % | SA % | Mean | SD |
|--|------|-----|------|------|------|-------------|-------------|
| In your own opinion does risk management process affect the overall quality of the project deliverables? | 1 | 3.1 | 7.3 | 43.8 | 44.8 | 4.32 | .748 |
| In your own opinion does risk management process affect the satisfaction levels of project stakeholders? | 0 | 2.1 | 10.4 | 39.6 | 47.9 | 4.33 | .749 |
| In your own opinion does involvement of stakeholders in risk management process affect overall project performance? | 0 | 1 | 5.2 | 45.8 | 47.9 | 4.41 | .642 |
| In your own opinion does the involvement of subject matter experts in risk mitigation process influence project success? | 0 | 1 | 4.2 | 44.8 | 50 | 4.46 | .580 |
| In your opinion does the project overall profitability depend on how risk management process was carried out? | 0 | 1 | 11.5 | 42.7 | 44.8 | 4.31 | .715 |
| In your own opinion does periodic review of risks mitigation strategies contribute to better project performance? | 0 | 1 | 5.2 | 36.5 | 57.3 | 4.50 | .649 |
| Average Performance of Projects | | | | | | 4.39 | .681 |

From Table 3 above, the respondents agreed that risk management practices affect the overall quality of the project deliverables. This is supported by a mean of 4.32 (std. dev = .748). Additionally, the respondents agreed that risk management practices also affect the satisfaction levels of the project stakeholders as shown by a mean of 4.33 (std. dev = .749). Respondents also agreed that involvement of stakeholders in risk management process affects overall project performance. A mean of 4.41 (std. dev = .642) supported this conclusion. Further, respondents also agreed that stakeholders' involvement of subject matter expert in risk mitigation process influences project success. This is supported by a mean of 4.46 (std. dev = .580). Respondents also agreed that the overall profitability of the project is dependent on the effectiveness of the risk management process as shown by a mean of 4.31 (std. dev = .715). Finally, with a mean of 4.50 (std. dev = .649), the respondents agreed that that periodic review of the risk mitigation strategies contribute to better project performance.

Inferential Statistics

Correlation Analysis

Risk identification ($r = .747$, $p\text{-value} = .000$) has a strong relationship with performance of projects in automotive firms in Kenya. The relationship was significant since the p value 0.000 was less than 0.05 (significant level). Thus, risk identification is positively correlated to project performance. The findings are also supported by Kunya and Yusuf (2023) who found a significant correlation between risk identification and performance of renewable energy projects in Nairobi County.

Risk analysis ($r = .835$, $p\text{-value} = .008$) has a strong relationship with performance of projects in automotive firms in Kenya. The relationship was significant since the p value 0.008 was less than 0.05 (significant level). The findings are in line with findings of Ochieng (2018) who found a positive correlation between risk analysis and risk response and performance of Isuzu E.A limited. Similarly, Simon and Mutiso (2021) found a significant correlation between risk assessment and performance of agricultural projects in Nakuru County.

Table 4: Coefficient of Correlation

| Variables | | PREP | RI | RA |
|--|---------------------|--------|------|----|
| Performance of automotive firms' projects (PREP) | Pearson Correlation | 1 | | |
| | Sig. (2-tailed) | | | |
| | N | 93 | | |
| Risk Identification (RI) | Pearson Correlation | .747** | 1 | |
| | Sig. (2-tailed) | .000 | | |
| | N | 93 | 96 | |
| Risk analysis (RA) | Pearson Correlation | .835** | .187 | 1 |
| | Sig. (2-tailed) | .008 | .061 | |
| | N | 93 | 93 | 93 |

**Correlation is significant at the 0.01 level (2-tailed).

Analysis of Variance

With the use of ANOVA, the analysis of variance was used to examine whether the regression model was a good fit for the data. The F -critical was 2.472 while the F -calculated was 3.539 as shown in Table 5. This shows that F -calculated was greater than the F -critical and hence linear relationship between the Risk Management process and performance of projects in automotive firms in Kenya. In addition, the p -value was 0.010, which was less than the significance level (0.05). Therefore, the model can be considered to be a good fit for the data and hence it is

appropriate in predicting the influence of the four independent variables (risk identification, risk analysis) on the dependent variable (performance of projects in automotive firms in Kenya).

Table 5: Analysis of Variance

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|--------------|----------------|----|-------------|-------|-------------------|
| 1 Regression | 3.127 | 4 | .782 | 3.539 | .010 ^b |
| Residual | 20.099 | 89 | .226 | | |
| Total | 23.226 | 93 | | | |

a. Dependent Variable: project performance

b. Predictors: (Constant), risk identification, risk analysis

Regression Analysis

Further, the study ran the procedure of obtaining the regression coefficients, and the results were as shown on the Table 6. Multivariate regression analysis was used to assess the relationship between independent variables: risk identification, and risk analysis and the dependent variable: project performance in automotive firms in Kenya. The model was as below:

$$Y = .167 + .426X_1 + .335X_2 + \varepsilon \dots \dots \dots (ii)$$

Table 6: Regression Results

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------|-----------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | B | | |
| 1 | (Constant) | .167 | .028 | | 5.964 | .000 |
| | RI | .426 | .105 | .428 | 4.057 | .001 |
| | RA | .335 | .103 | .337 | 3.252 | .002 |

The findings indicated that risk identification had coefficients of estimate which was significant basing on $\beta_1 = .426$ (p -value = .001). The relationship was considered significant since the p value 0.000 was less than the significant level of 0.05. The findings are also supported by Nguru and Yusuf (2018) who established that risk identification did significantly affect performance of consulting civil engineers in Nairobi. Similarly, Ochieng (2018) there was a significant effect established on risk identification on the performance of projects. Similarly, Serpell et al (2019) in their study on ‘the critical analysis and benefits of evaluating project risk management efficiency’ that risk identification had the greatest impact on the implementation of road construction projects. Rahman (2018) argued that risk identification aims at informing of possible risks, their characteristics as well details about them.

The findings also indicated that risk analysis has a significant influence on the performance of projects in automotive firms in Kenya. $B_2=0.335$, 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 similar to what Ochieng (2018) found on ‘the effect of project risk management strategies on the performance Isuzu East Africa (E.A) limited’ in the motor industry found that risk analysis and risk response significantly influence performance of Isuzu E.A limited.

Model Summary

In Table 7, 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 0.637. This implied that 63.7% of the variation in the dependent variable (project performance in automotive firms in Kenya) could be explained by independent variables (risk identification, risk analysis). The positive correlation

between risk management processes and project performance has also been supported by previous studies such as Ochieng (2018), Simon and Mutiso (2021), and Kunya and Yusuf (2023).

Table 7: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .798 ^a | .637 | .620 | .26306 |

a. Predictors: (Constant), risk identification, risk analysis

Conclusions

Further, the study found that risk identification has a significant correlation with the performance of automotive firms in Kenya. The study findings revealed that the use work breakdown structure in risk identification, risk identification tools and techniques and mapping of sources of risks influence the performance of automotive firms in Kenya.

Additionally, the study found a significant correlation between risk analysis and the performance of automotive firms in Kenya. The research findings indicated that establishment of risk cost estimates, risk acceptance levels and risk impact matrix have significant influence of the performance of automotive firms in Kenya.

Recommendations

Additionally, the study found that risk identification has a significant correlation with the performance of automotive firms in Kenya. The study thus, recommends that while undertaking projects, project stakeholders in the automotive firms in Kenya ought to single out risks that could possibly impact their projects deliverables negatively.

The third objective was to determine the influence of risk analysis on performance of automotive firms in Kenya. The study found a significant correlation between risk analysis and performance of automotive firms in Kenya. The study therefore recommends that the management of automotive firms in Kenya should continuously carry out qualitative and quantitative risk analysis throughout the project life cycle. This will ensure that stakeholders can quantify the impact of the risks and as such the best decisions are made for the success of the projects.

Areas for Further Studies

In relation with the results known above, this study found that risk management processes influence the performance of automotive firms in Kenya. Furthermore, the study has opened an insight into the influence of risk identification, risk analysis on performance of automotive firms in Kenya. Thus, more literature has been added beyond construction projects. The current study established that the independent variables (risk identification, risk analysis) could only explain 63.7% of project performance in automotive firms. Therefore, future researchers should consider introducing other factors not covered in this study to establish their influence on performance of automotive firms in Kenya. The study has, however contributed knowledge that is needed for this kind of research.

REFERENCES

- Adriansen, D. J., & Johannessen, J.-A. (2016). Prospect Theory as an Explanation for Resistance to Organizational Change: Some Management Implications. *Problems and Perspectives in Management Vol. 14, Issue 2*, 84-92.
- Ahmed, M. Y. (2019). *Risk management and project performance of UNDP projects in Somalia: A case study of Mogadishu to Cadale road construction project*. Master degree in Project Planning and Management, Kampala International University.
- Ayudhya, B. I., & Kunishima, M. (2019). Assessment of risk management for small residential projects in Thailand. *Procedia computer Science, 164*, 407-413.

- Bergsma, A. (2020). *Bullet Dodging: A risk management handbook for ICT projects*. National Library of Australia.
- Creswell, J., & Clark, V. (2017). *Designing and conducting mixed methods research*. Sage publications.
- Doval, E. (2019). Risk management process in projects. *Review of general management*, 30(2), 97-113.
- Faiz, S. (2020). *Impact of project risk management on project quality with the mediating role of project efficiency and moderating role of project culture*. Master of science Thesis, Capital University of science and technology, Islamabad, Management Sciences.
- Gajewska, E., & Ropel, M. (2017). *Risk Management Practices in a Construction Project – a case study*. Master of Science Thesis, Chalmers University of Technology, Department of Civil and Environmental Engineering.
- Gordon, L., Loeb, M., & Tseng, C. (2009). Enterprise risk management and firm performance: Risk process for A contingency perspective. *Account. Public Policy*, 28, 301-327.
- Kumar, R. (2014). *Research Methodology- A Step-by-Step Guide for Beginners* (2nd ed.). Singapore: Pearson Education.
- Lester, a. (2017). *Project management, planning and control: managing engineering, construction and manufacturing project to PMI, APM, and BSI standards* (7th ed.). Oxford, London: Butterworth-Heinemann.
- Macharia, K. P. (2017). *Risk Management Strategies and Performance of Construction Projects in Public Secondary Schools in Murang'a County, Kenya*. Doctoral Dissertation, Kenyatta University.
- Nguru, S. M., & Yusuf, M. (2018). Effects of Project Risk Management Practices on performance of consulting civil engineering: a case of Nairobi county. *International Journal of Civil and Structural Engineering Research*, 6(1), 91-98.
- Njuguna, P. G. (2019). *Risk management practices and prformance of projects in Nairobi county, Kenya*. MBA thesis, Kenyatta University.
- Ochieng, c. H. (2018). Influence of Project risk management strategies on the performance of organizations in the motor insustry: A case of Isuzu East Africa limited Kenya. *International Journal of Novel Research in Engineering and Science*, 4(2), 28-41.
- PMI. (2017). *A Guide to the Project Management Body of Knowledge: PMBOK Guide* (6th ed.). Newtown Square, PA: Project Management Institute, Inc.
- Rahman, M. S. (2018). *Risk Management and Measurement of Risk management performance in complex projects*. Master thesis, University of Oulu.
- Reiss, C. L. (2016). *Risk identification and analysis: A guide for small public entities*. Public Entity Risk Institute.
- Siang, L. C., & Ali, A. s. (2017). Implementation of risk management in the Malaysian constuction industry. *Journal of Surveying, Construction & Property*, 3(1), 1-15.
- Simon, O. F., & Mutiso, J. (2021). Influence of project risk management on performance of agricultural projects in Nakuru County. *International Research Journal Publishers*, 2(2), 371-387.
- Smith, N., Merna, T., & Jobbling, P. (2017). *Managing Risk in Construction Projects* (6th ed.). Oxford: Blackwell Publishing.
- Tversky, A., & Kahneman, D. (1979). Prospect Theory: An analysis of Decision under Risk. *Econometrics*, 47(2), 263-291.
- Tworek, P. (2016). Methods of risk identification in companies' investment projects. *ResearchGate*.