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Effect of Risk Management Practices on Project Performance. A Case of Twiceceka Project/WFWI- in Huye District, Rwanda

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Abstract

The main objective of the study was to analyze the effect of risk management on project performance in Rwanda, with special attention to the TWICECEKA project in Huye District. A project implemented by Women for Women International with funding from USAID. The specific objectives of this study are: to assess the effect of risk identification on the performance of the TWICECEKA project in Huye; to establish the effect of risk analysis on the performance of the TWICECEKA project in Huye District; to assess the effect of risk response and planning on the performance of the TWICECEKA project in Huye District; and to assess the effect of risk monitoring and control on the performance of the TWICECEKA project in Huye District. The researcher adopted theories of change, constraints, and goal-setting in order to achieve the objectives. The researcher used a census survey. The sample size was 200 respondents, all targeted populations included. Questionnaires were used to collect the primary data for this study. Secondary data were also used to conduct the study. The questionnaires are comprised of both open-ended and closed-ended questions. The questionnaires were piloted first to determine instrument reliability before distribution. The questionnaires were administered through the drop and pick later method. The findings of the study were analyzed both quantitatively and qualitatively. SPSS was used to analyze the data using descriptive statistics. The model summary revealed the R Square of 0.625, indicating that approximately 62.5% of the variance in Twiceceka Project performance can be explained by the predictors. The significance level is less than 0.05 ($p < 0.05$), indicating a highly significant relationship between the predictors and the performance of the Twiceceka Project. The coefficient for risk identification ($\beta1=0.353$, $p<0.05$). The coefficient for risk analysis ($\beta2= 0.501$, $p<0.05$). The coefficient for risk response planning ($\beta3=0.425$, <0.05). The coefficient for risk monitoring and control ($\beta4= 0.297$, $p<0.05$) indicating that there is effect of risk identification, risk analysis, risk response planning, risk monitoring and control on performance of the Twiceceka Project. The null hypotheses H01, H02, H03, and H04, which stated no significant effect of the respective risk management practices, can be rejected based on the low p-value (<0.05). It is recommended to focus on enhancing the depth and quality of risk analysis within the Twiceceka Project. This will provide a solid foundation for informed decision-making and effective risk response planning.

Key Words: *Risk Management, risk identification, risk analysis, risk response, risk monitoring and control, Project performance.*

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1. Introduction

Various projects operate with the main purpose of achieving its objectives but also to become successful. To achieve that, projects set up different measures to help them becoming more successful, among measures, we can mention a proper risk management practices. The risk management practice is considered to be a key element in projects management and its performances. Despites advances in project management methodologies many projects continue to fail for a number of reasons (Robertson & William, 2006). The need for effective risk management is accepted among different researchers on project management performance. Despite the existence of some studies done in the area of project risk management practices, the extent to which risk management practices influences Project performance is not clear nor is the techniques or methods of risk management practices. The problem is that projects continue to fail due to ineffective risk management practices.

In Rwanda many projects run within various sectors of country's life have failed all along many years due to different factors. Among factors observed we have: Continuing cases of delayed and abandoned contracts, Cases of stalled projects, continuing cases of idle assets, Failure to recover advance payment and performance securities, Delays in payment of suppliers' invoices, Public entities awarded tenders at a price higher than budgeted cost, Cases of non-compliance with taxation laws, Project budget absorption challenges and potential loss of funding, Lack of integrity of financial statements and Exclusion of internally generated revenue and expenditure of NBAS from national budget approved by parliament. (OAG annual report, 2019).

So far no academic study was conducted to assess the link between success and risk management for many projects run in Rwanda. Various authors have conducted studies previously, including "risk management and Project performance: a case study of Kabuye sugar cane company - seeds distribution project in Rwanda", "Project Risk Management Process and Performance of Mpazi Channel Construction Project in Nyabugogo, Kigali-Rwanda", "project risk management and project implementation in Rwanda: a case study of ngoma hotel building project", etc. But none of them focused on the project run neither in Huye District in general and nor by WfWI in Huye District. Hence the gap of Enough knowledge reading about effect of Risk Management on Project performance. The purpose of my study is to play my role by contributing in alleviating the gap in research about the link between effective risk management practices and Project performance thus help future project to perform better success wise.

1.2 Objectives of the Study

General Objective

The general objective for this research is to assess the effect of risk management practices on the performance of Twiceceka project in Huye District.

The specific objectives of this study are:

1. To assess the effect of risk identification on Twiceceka Project performance in Huye District.
2. To establish the effect of risk analysis on Twiceceka Project performance in Huye District.
3. To find out the effect of risk response planning on Twiceceka Project performance in Huye District.
4. To determine the effect of risk monitoring and control on Twiceceka Project performance in Huye District.

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1.3 Research Hypotheses

The research questions of this research are:

H_{01}. Project risk identification has no significant effect on Twiceceka Project performance in Huye District.

H_{02}. Project risk analysis has no significant effect on Twiceceka Project performance in Huye District.

H_{03}.Project risk response planning has no significant effect on Twiceceka Project performance in Huye District.

H_{04}.Project risk monitoring and control has no significant effect on Twiceceka Project performance Huye District.

2. Literature review

2.1. Conceptual review

In this section, researcher conceptualise the interlinkages between risk management and performance of TWICECEKA Project in Huye District and operationalise the main linkages for our study. We begin with a definition of the underlying terms and then proceed with an operationalisation of the analytical dimensions.

Risk Management

Henry (1916), identified risk management as a security function among the six basic functions of a business firm. (Baram, 1982). In 1931, the American Management Association established its Insurance Division for exchanging information among members. In 1950 the National Insurance Buyers Association was created which became in 1955 the American Society of Insurance Management (ASIM). In 1969 the name of the society's magazine was changed from the National Insurance Buyers to Risk Management and in 1975 the name of the Society was changed to the Risk and Insurance Management Society (RIMS). (Bird, 1986) Risk management has been re-discovered by multinational firms in the United States after World War II. The general trend in the current usage of risk management probably began in the early 1950s. One of the earliest reference to the concept of risk management in the literature appeared in an article by Russel Callagher in the Harvard Business Review in 1956 (Carter, 1974).

Project performance

According to Kerzer (2009) Project performance was the completion of an activity within the constraints of time, cost and performance for the last 20 years. Today, the definition has been modified to include completion within the allocated time, within the budgeted cost, at the proper performance or specification level with the acceptance by the client/ end user within minimum or mutually agreed upon scope change, without disturbing the main work flow of the organization and without changing the corporate culture.

2.2. Theoretical framework

A theoretical framework is a conceptual model of how one theorizes or makes logical sense of the relationships among the several factors that have been identified as important to the problem.

Theory of Change

The Theory of Change (ToC) is a management and planning approach that describes how change happens and what actions are needed to achieve specific goals. The origins of the Theory of Change are difficult to trace, but it is believed to have been first used in the 1960s

by the social science community in the United States. In recent years, the Theory of Change has gained popularity as a planning and evaluation tool in the fields of international development, social innovation, and philanthropy. The ToC approach helps organizations and communities to clarify their goals, identify the necessary steps to achieve them, and measure progress towards their desired outcomes (Connell *et al*., 2020).

In this study, the Theory of Change (ToC) used to help plan, carry out, and evaluate projects. The ToC method is especially useful for big, complicated projects where it is important to know what changes are happening and why, as well as how they are happening. The ToC method helped project managers get a better understanding of the environment in which their projects run and come up with strategies that are more in line with the results and goals of the project.

Goal setting theory

The goal-setting theory was first introduced by Edwin A. Locke and Gary P. Latham in 1968. Since then, the theory has been widely studied and applied in various fields, including business, education, sports, and personal development. According to Locke and Latham, goals should be explicit, quantifiable, achievable, relevant, and time-bound. They also stated that feedback and support from supervisors and coworkers might assist people in meeting their objectives and improving their performance (Latham & Locke, 2019).

The goal-setting theory helped this research, which aims to improve project performance and get better results, by giving it a framework. The idea helped to make sure that everyone involved in a project is working toward the same goals and that resources are used in the best way possible by setting clear goals, creating motivation and commitment, and encouraging responsibility and ownership.

Theory of Constraints

The assumptions of the TOC, as introduced by an Israeli Physicist Dr. Moshe Eliyahu Goldratt, were first published in the 1984 book The Goal: Excellence in Manufacturing which offered comprehensive solutions for production management. One of the three principles of TOC is concentration, i.e. focus on the most important issues. It means that all processes and positions should be supervised, although the non-critical may enjoy a certain autonomy. Most attention should be given to tasks that are crucial from the point of view of the system as a whole. The main aim of every company is to increase the profit. According to this point of view, constraints are the main obstacles in achieving the aims of companies. In other words, anything that gets in the way of gaining more profit is considered as constraint. The identification of the constraint is the basis for improving the production system. This theory must be considered in project planning process just by identifying all threats and risk related to the project so that relevant strategies should be taken to address issues that can affect project performance (Trojanowska & Dostatni, 2017).

Most projects are difficult to manage because they involve uncertainty, and involve three different and opposing commitments (due date, budget, and content). Triple constraints criteria (time, scope and cost) in project management have been accepted as a measure of Project performance.

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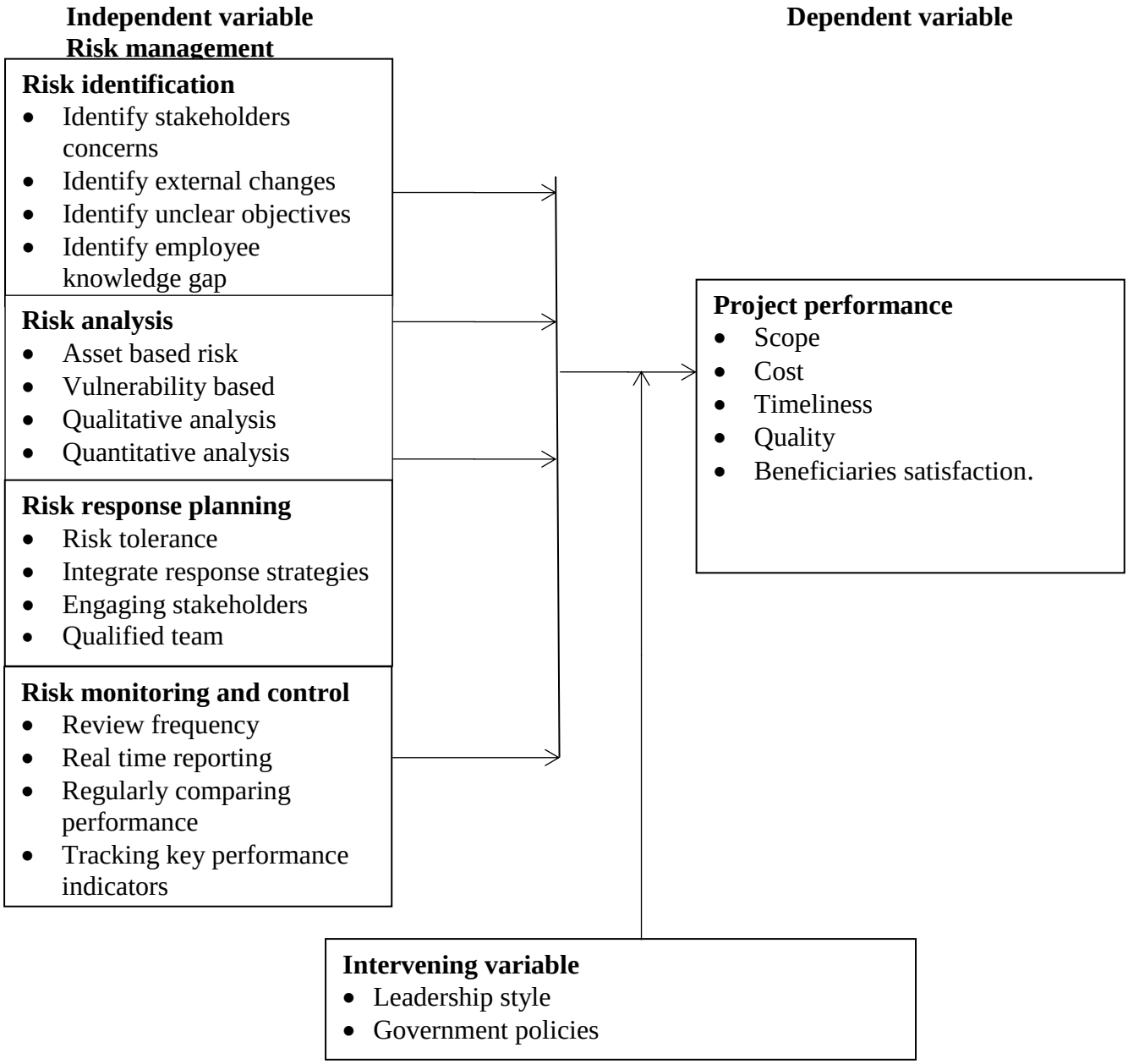
2.3. Conceptual framework

Figure 1 shows the conceptual framework indicating the relationship between variables to the study.

Figure 1: Conceptual framework.



Source: (Researcher, 2023)

The figure above highlights the implication of risk management strategies to the Project performance. According to various literatures, the risk management strategies are strongly linked to the Project performance thus risk management have a great relationship with Project performance.

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3. Research methodology

A descriptive research is concerned with conditions, practices, and structure, differences or relationships that exist, opinions held, process that are going on or trends that are evident (Kombo & Tromp, 2006) According to Orodho (2009), he observed that the descriptive survey design was one to design information concerning the current phenomena and where possible to draw general conclusion from facts. It allows researcher to gather information for the purpose of clarification. According to Tan (2014) a correlational study seeks to ascertain relationships between two or more variables.

A quantitative approach involves the collection and analysis of numerical data to identify patterns, trends, and relationships. A qualitative approach involves the collection and analysis of non-numerical data to explore meanings, perceptions, and experiences (Creswell & Plano, 2017).

The research used the descriptive design to attempt to describe, explain and interpret the phenomenon of risk management practices and Project performance. Findings from a correlational study enable researcher to determine whether or not as well as the degree to which two variables change together.

The entire population of this study is 200 project staff of Twiceceka Project implemented by WfWI in Huye District.

Because the fraction of the population to be concerned about is very small, the researcher employed the Total Enumeration Survey Technique or Census Inquiry Method, which evaluated the entire targeted population for this study

This data collected by documentation, interview, and administering self-administered questionnaire. The Statistical Package for the Social Sciences (SPSS) used to analyse the data.

The model used in the study took the form below:
$Y= \alpha+\beta1X1+ \beta2X2+ \beta3X3 + \beta4X4 +ę$
Where: Y= Project performance.
X1: Risk identification
X2: Risk analysis
X3: Risk response planning
X4: Risk monitoring and control
α= Constant Term
β= Beta Coefficient –This measures how many standard deviations a dependent variable will change, per standard deviation increase in the independent variable.

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4. Research findings

This section focuses on the study's results and interpretation of data makes sense in light of the study's goals. Quantitative methods were used to supplement the qualitative findings. The researcher distributed 200 questionnaires whereby 175 questionnaires were returned and completed, 21 questionnaires were returned but incomplete and 4 questionnaires were not returned, showing 87.5% as a high rate of response and completeness

Table 1: Correlations

		Risk identification	Risk analysis	Risk response planning	Risk monitoring and control	Performance of Twiceceka Project
Risk identification	Pearson Correlation	1	.679**	.697**	.664**	.700**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	175	175	175	175	175
Risk analysis	Pearson Correlation	.679**	1	.844**	.849**	.745**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	175	175	175	175	175
Risk response planning	Pearson Correlation	.697**	.844**	1	.894**	.676**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	175	175	175	175	175
Risk monitoring and control	Pearson Correlation	.664**	.849**	.894**	1	.662**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	175	175	175	175	175
Performance of Twiceceka Project	Pearson Correlation	.700**	.745**	.676**	.662**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	175	175	175	175	175

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

The correlation matrix Table 1 provides information on the correlations between the variables related to risk management practices and the performance of the Twiceceka Project in Huye District. There is a significant positive correlation between risk identification and the performance of the Twiceceka Project ($r = 0.700$, $p < 0.05$). This indicates that a higher level of risk identification is associated with better project performance. The correlation coefficient suggests a moderate positive relationship between these variables.

There is a significant positive correlation between risk analysis and the performance of the Twiceceka Project ($r = 0.745$, $p < 0.05$). This indicates that a higher level of risk analysis is

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associated with better project performance. The correlation coefficient suggests a moderate to strong positive relationship between these variables.

There is a significant positive correlation between risk response planning and the performance of the Twiceceka Project ($r = 0.676$, $p < 0.05$). This indicates that a higher level of risk response planning is associated with better project performance. The correlation coefficient suggests a moderate to strong positive relationship between these variables.

There is a significant positive correlation between risk monitoring and control and the performance of the Twiceceka Project ($r = 0.662$, $p < 0.05$). This indicates that a higher level of risk monitoring and control is associated with better project performance. The correlation coefficient suggests a moderate positive relationship between these variables.

Tara (2019) argued that, Effective risk management strategies are the one that allow to identify project's strengths, weaknesses, opportunities and threats. By planning for unexpected events, you can be ready to respond if they arise. To ensure project's success, it is important to define ways of handling potential risks so you can identify, mitigate or avoid problems when you need to do.

The correlation matrix reveals that all the variables related to risk management practices (risk identification, risk analysis, risk response planning, and risk monitoring and control) have significant positive correlations with the performance of the Twiceceka Project. This suggests that effective implementation of these risk management practices is likely to contribute to improved project performance.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.791[a]	.625	.617	.41066

a. Predictors: (Constant), Risk monitoring and control, Risk identification, Risk analysis, Risk response planning

Source: Field data, July 2023

The model summary Table 2 provides information about the overall fit and performance of the regression model used to assess the effect of risk management practices on the performance of the Twiceceka Project in Huye District. In this case, R is 0.791, indicating a moderate to strong positive correlation. R Square is 0.625, indicating that approximately 62.5% of the variance in Twiceceka Project performance can be explained by the predictors. The adjusted R Square is 0.617, suggesting that about 61.7% of the variance in Twiceceka Project performance can be explained by the predictors, accounting for the complexity of the model. The standard error of the estimate is 0.41066, indicating the average distance between the observed and predicted values of Twiceceka Project performance.

Bloch (2023) revealed that risk management plans contribute to Project performance by establishing a list of internal and external risks. This plan typically includes the identified risks, probability of occurrence, potential impact and proposed actions. Low risk events usually have little or no impact on cost, schedule or performance. Moderate risk causes some increase in cost, disruption of schedule or degradation of performance. High risk events are likely to cause a significant increase in the budget, disruption of the schedule or performance problems.

The model summary suggests that the predictors (risk identification, risk analysis, risk response planning, and risk monitoring and control) collectively have a moderate to strong

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influence on the performance of the Twiceceka Project in Huye District. However, it is important to note that there may be other factors not included in the model that could also contribute to project performance.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	47.862	4	11.966	70.952	.000[b]
	Residual	28.669	170	.169		
	Total	76.531	174			

a. Dependent Variable: Performance of Twiceceka Project
b. Predictors: (Constant), Risk monitoring and control, Risk identification, Risk analysis, Risk response planning

Source: Field data, July 2023

The ANOVA Table 3 provides information about the statistical significance of the regression model used to assess the effect of risk management practices on the performance of the Twiceceka Project in Huye District. In this model, the F-value is 70.952, suggesting a significant relationship between the predictors and the performance of the Twiceceka Project. The significance level is less than 0.05 ($p < 0.05$), indicating a highly significant relationship between the predictors and the performance of the Twiceceka Project. The ANOVA table suggests that the predictors (risk identification, risk analysis, risk response planning, and risk monitoring and control) collectively have a significant effect on the performance of the Twiceceka Project in Huye District. The null hypotheses H01, H02, H03, and H04, which stated no significant effect of the respective risk management practices, can be rejected based on the low p-value (<0.05).

In their studies Del & Pilar (2004) mentioned that the typical activities of PRM are: risk planning, identification, analysis, and control. It is assumed that the complete sequence of project risk management activities is used iteratively during the project. PRM is based on the rational decision-making assumption that is, it assumes that all risks and uncertainties can be managed. These assumptions make PRM appear as an effective process with a positive impact on meeting project objectives and therefore on Project performance.

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.640	.179		3.566	.000
	Risk identification	.353	.066	.359	5.327	.000
	Risk analysis	.501	.097	.501	5.152	.000
	Risk response planning	.425	.125	.420	3.405	.001
	Risk monitoring and control	.297	.128	.286	2.320	.022

a. Dependent Variable: Performance of Twiceceka Project

Source: Field data, July 2023

The model used in the study took the form below:

$Y= \alpha+\beta1X1+ \beta2X2+ \beta3X3 + \beta4X4 +ę$

Where: Y= Project performance.
β1 risk identification
β2 risk identification
β3 risk response planning
β4 risk monitoring and control
α= Constant Term

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β= Beta Coefficient –This measures how many standard deviations a dependent variable will change, per standard deviation increase in the independent variable.

The Coefficients Table 4 presents the estimated coefficients for the predictors (risk identification, risk analysis, risk response planning, and risk monitoring and control) in the regression model used to assess the effect of risk management practices on the performance of the Twiceceka Project in Huye District. The constant term (α) represents the expected value of the dependent variable (project performance) when all predictor variables are equal to zero. In this model, the constant term is 0.640. The coefficient for risk identification (β1) indicates the change in the dependent variable associated with a one-unit increase in the risk identification variable, holding all other variables constant. In this model, the coefficient for risk identification is 0.353. However, the coefficient is statistically significant at the conventional significance level ($p < 0.05$). The coefficient for risk analysis (β2) indicates the change in the dependent variable associated with a one-unit increase in the risk analysis variable, holding all other variables constant. In this model, the coefficient for risk analysis is 0.501. The coefficient is statistically significant ($p < 0.05$) and has a positive value, suggesting that higher levels of risk analysis are associated with higher project performance. The coefficient for risk response planning (β3) indicates the change in the dependent variable associated with a one-unit increase in the risk response planning variable, holding all other variables constant. In this model, the coefficient for risk response planning is 0.425. The coefficient is statistically significant ($p <0.05$) and has a positive value, suggesting that higher levels of risk response planning are associated with higher project performance. The coefficient for risk monitoring and control (β4) indicates the change in the dependent variable associated with a one-unit increase in the risk monitoring and control variable, holding all other variables constant. In this model, the coefficient for risk monitoring and control is 0.425. The coefficient is statistically significant ($p <0.05$) and has a positive value, suggesting that higher levels of risk monitoring and control are associated with higher project performance. The results suggest that risk identification, risk analysis, risk response planning, and risk monitoring and control have a significant positive effect on the performance of the Twiceceka Project.

5. Conclusion

The study concluded that risk management practices have a significant positive effect on the performance of the Twiceceka Project in Huye District. The study indicates that risk identification, risk analysis, risk response planning, and risk monitoring and control are all important factors that contribute to project performance. These risk management practices are associated with better project performance and are correlated with each other in a positive manner. The results suggest that a higher level of attention to risk management is associated with improved project outcomes. The study highlights the significance of incorporating effective risk management practices into project management processes. Organizations and project teams should prioritize risk identification, analysis, response planning, and monitoring/control to minimize potential risks and enhance project performance. Specifically, H01, which states that project risk identification has no significant effect on Twiceceka Project performance in Huye District, was rejected with a p-value of .000. Similarly, H02, H03, and H04, which respectively suggest no significant effects for project risk analysis, risk response planning, and risk monitoring and control on Twiceceka Project performance in Huye District, were all rejected.

6. Recommendations

It is crucial to continue emphasizing the importance of risk identification in the project. Implement robust processes to identify potential risks, both internal and external, that may affect the project.

Focus on enhancing the depth and quality of risk analysis within the Twiceceka Project. This will provide a solid foundation for informed decision-making and effective risk response planning.

Strengthen the development and implementation of risk response plans. Ensure that response strategies are well-defined, actionable, and aligned with the identified risks. Consider multiple response options, including risk mitigation, transfer, avoidance, and acceptance. Regularly review and update response plans as the project progresses and new risks emerge.

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