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Risk Management Methods and Performance of Construction Projects; A Case of Rwanda Education Board School Construction Project in Selected Districts

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Abstract

The purpose of the study was to assess the effect of risk management methods on the performance of construction projects, with a specific case study of Rwanda Education Board (REB) School Construction projects in selected districts. Construction projects are still facing the problems generated by little knowledge on methods to be applied while managing different types of risks. Those methods include namely, risk avoidance, risk control, risk retention and risk transfer. In order to explore those various types of risks, the study focused on four objectives: to examine the effect of risk avoidance, risk controls, risk retention and risk transfer on REB School construction project in selected Districts. The study focused on Rwanda Education Board construction projects, with a target population of 122. The researcher employed a descriptive research design and used a census technique to purposively select the entire target population of 122 as the study sample. Questionnaires were utilized as the data collection instrument and were distributed to the aforementioned respondents. The collected data was then analyzed using SPSS to calculate the mean, standard deviation, correlation, and conduct multiple regression analysis. The study found that risk avoidance, risk control, risk retention and risk transfer affect construction project. The results further showed a correlation coefficient (r) of 0.853 meaning that two variables were positively, strongly and perfectly correlated. The study concludes that risk management methods significantly influence project performance in terms of time, quality, and budget. Collaboration and information sharing between clients and contractors play a crucial role in project success, with the involvement of education officers and headmasters being essential for support. The research confirms a strong and positive correlation between risk management methods and project performance, as indicated by a Pearson Correlation Coefficient (r) above 0.8. The study recommends that all stakeholders should work closely hands in hands to ensure that risks are minimized or mitigated at the highest attainable rate. Again, all parties involved in the project should make regular sites supervision to check if the contractor is using resources allocated to him/her rationally to avoid excessive cost. Furthermore, all stakeholders should ensure that the construction work is carried out in compliance with the scheduled time and that the material used is genuine. And finally, while selecting the sub-contractor, in case of risk transfer, the client and the contractor have to consult each other in order to hire the consultant with the highest desirable competence. The study recommends that construction projects, particularly those managed by the Rwanda Education Board (REB) in selected districts, prioritize and implement comprehensive risk management strategies

Keywords: *Risk Management Methods, Construction Projects, Rwanda Education Board School Construction, District.*

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1.0 Introduction

Some projects are influenced by internal and external factors and the outcomes of those projects are unpredictable and sometimes beyond anyone's control as evidenced by Wysocki (2013). Dealing with uncertainty is one way of risk management. Hence, identifying sources of uncertainty, risks associated with them as well as managing the risks identified and associated amount to minimizing them or avoided them altogether, and any positive outcomes are capitalized upon (Roberts, 2013). In most projects, managing uncertainty is inherent because it requires formal project management and is of utmost important. According to Ahmad et al., (2016) while paying attention to the management of the risk and the role played by the project manager, it is worthwhile noting that it is important to involve the team in risk management because one individual cannot be able to manage project himself/ herself hence team should be aware by participating in the project activities identified so that the project position should be improved by paying attention to the defined plans of the project (part of the main project plan) of aim at achieving the expected outcomes. According to Morris (2013), organizations spend and loss the dollars around the world due to the project failing to meet the objectives. This challenge has led Project Managers Professionals (PMP) by attempting the identified critical factors that should be put in place to identify or produce the strategies for project management so that the project should be performed as planned. Many people are of the view that Construction project, due to the nature, organization structure, processes, is risky. In this regard, Perrin (2012) maintains that construction is one of the sector challenging, most dynamic fields and most risky whereby due to the nature of the sector, risk is qualified inherent.

The introduction of Twelve Years Basic Education (12), a program, introduced, which is a free compulsory education for all Rwandan school children. This program included Six years of Primary Education and Six years of Secondary Education. The program is free and compulsory as provided by the Rwandan' Constitution of 2003 as revised in 2015. This program has been set up with the objectives of allowing each child in the school age to complete 12 years by starting Primary aged at seven (7) years (OAG, 2015). The overall objectives of the school construction unit are to promote the increase number of pupils in Primary and Secondary Education Levels by constructing school infrastructures (classrooms, latrines, science laboratories, dormitories, dining hall). In a bid to analyze how risk administration difficult has an adverse outcome to a given infrastructure development, it is better to refer to the theoretical background regarding/ related to the risk and the methods of managing risk by applying as a case study of REB. There are key stakeholders in school construction activities performed by REB. This study mainly focused on selected Districts and Sectors where schools are located. For the purpose of this study, the research focused on effect of risk avoidance, risk controls, risk retention and risk transfer on construction project.

In managing peril one look into procurement and adequate labor, materials and equipment, monitoring all changes in project scope, quality control assurance and ensuring overall compliance of with contractual terms and obligations (Scott 2016). The general objective of this study was to assess the effect of risks management methods on the performance of construction projects, the extent to which they are applied in Rwanda Education Board School Construction Project in selected Districts and how the team involved mitigates risks associated, by calling upon the appropriate methods in their daily activities or operations. The main objective of this research was

to assess the effect of risk management methods on the performance of construction projects; with specific reference REB School Construction project in selected Districts.

1.1 Research Objectives

The study was guided by the following research objectives;

i. To determine how risk avoidance affect construction project performance in Rwanda Education Board (REB) school construction project in selected Districts.
ii. To assess extent of risk controls on construction project performance in Rwanda Education Board (REB) school construction project in selected Districts.
iii. To establish extent to which risk retention affect construction project performance in Rwanda Education Board (REB) school construction project in selected Districts.
iv. To examine the effect of risk transfer on construction project performance in Rwanda Education Board (REB) school construction project in selected Districts.

2.0 Literature Review

The literature review was done in sections.

2.1 Theoretical Literature

2.1.1 Risk Management Methods

Kendrick (2011) proposes that within the Hazard Management Process (RMP) as comprehension and overseeing dangers in a venture, there are four stages specifically chance distinguishing proof, hazard evaluation, hazard appraisal and chance reaction. Note that the sketched out stages ought to not be respected as the as it were components to oversee dangers. As highlighted above, all phases in RMP should be included when dealing with risks, in order to efficiently implement the process in the project. There exist many variations of RMP available in literature, but most commonly described frameworks consist of the steps mentioned above. Besides these phases or steps, some scholars add the fourth step, which is referred to as chance checking / audit. For the reason of this consider, the show of RMP as introduced by Russell Darnall and John Preston (2012) comprise our primary studies and so was well expounded within the taking after area.

2.1.2 Project Performance

According to PMI (2008), the method of deciding the venture budget includes accumulating the assessed expenses of person actions or effort in setting up an approved standard. It is believed that the planning cycle the project estimates have to be reasonable, attainable, and must hang on cost well negotiated in the contract and in the statement of the work to be carried out. The benchmark for the costs estimate involves historical cost, best estimates as well as other standards applied in industrial engineering. Peurifoy (2014) underline this talk by stating that costs estimates have to specify the manpower intended to be employed and requirements, funds that are located to contract and those costs of required total the project. Usually in project management the extend time plan incorporates an arranged begin date as well as an arranged wrap up date for each action. Risk is an exposure to the possibility of economic or financial loss or gains, physical damage or injury or delay as a consequence of the uncertainty associated with pursuing a certain cause of action

(Chapman 2013). Many explanations incorporate the components of unplanned or likelihood of occasions as well as the adverse effect of targets.

In science, likelihood of an occasion is communicated measurably utilizing cruel, scattering, certainty interim and other factual parameters. Significant information must be accessible for a factual examination. When no information exists, the involvement and information of the choice producer is imperative in evaluating the likelihood of an antagonistic occasion. The project risks can be divided into two groups: External Risks and Internal Risks. External risks are those risks that are beyond the control of the persons who manage the project (project management team). These risks include: political risk, economic risk, social risk and weather risk. On other hand, internal risk referred to us as intrinsic risks are those risks originate inside the project whereby project team has some measure to control these risks . In construct project, internal risks include: resource risk, project member risk, stakeholder's risks, designers risk, and contractor risk, subcontract risk, supplier risk, team risk, construction site risk, documentation and information risk (Yembi Renault, & Ansary, 2018).

2.1.3 Risk Avoidance

Risk avoidance ranges from the much more scrutiny of the objectives of project to revamping the whole project (to re-examine the aims of that project). This may be regarded as the final mitigation strategy and this implies that after revisiting the project, this latter may be aborted. Again, this implies that the decision maker seeks new strategies that would curb risks which are intrinsic to the program. While management risks in infrastructure project one have to endeavor to realize venture targets in time taken a toll and value. Due to the nature of the construction sector, hazard administration could be an exceptionally imperative prepare. Choice ought to in a perfect world in under certain circumstances where all components of impact, besides decision strategies leading to unsurprising results. Be that as it may, choice making frequently happens beneath conditions of hazard and instability. Development ventures do not apply beneath the perfect state of inevitability. A choice is prepared beneath condition in the event that the choice marker has ability to evaluate normally or instinctively, surely, as well as likelihood of specific occasion to take place, utilizing a premise he/ she data approximately comparative past occasions or he/she individual encounter (Ceric, 2013). Equally expanded extend length as well as destitute worth can be communicated in expanded costs. Chance affect is regularly calculated both quantitative and subjectively. Chance introduction is the item of hazard likelihood and hazard affect. Hazard administration is method done that guarantees that everything was done to realize the venture, goal together with its limitations (Clark & Pledger, 2010).

2.1.4 Risk Controls

Matsoso, (2017) states that checking and investigating dangers is to actualize a hazard reaction arrange, to keep track of the dangers recognized, to screen leftover dangers, to recognize unused dangers, and to assess the viability of the extend chance administration prepare. Bread cook (2015) keeps up that danger control could be prepare whereby viability reactions is checked as distinguishing proof as well as investigation of recently emerging dangers. The strategy, help the planner adopts a method whereby the likely exposure to risks and their impact are mitigated. The planner fulfills the mission by the managing and setting out potential risk. In order to reduce risks

initial investments that are meant to curb the like hood of the risk occurring has to be brought into play. Risk reduction steps in when the level of risk is unbearable and alternative moves are still in hand (Yembi Renault, & Ansary, 2018). On the other hand, another strategy of reducing risk in designing and implementing project lies in making available expenditures that will likely produce benefits in the end.

2.1.5 Risk Retention

Transferring a risk or avoiding is still fruitless; one would rather go for retaining the risk. This means that, in arrange to play down the effect of its event, the risk, beforehand, must be controlled. Another option may be retention, particularly when the plan B is not an economy related solution (Culp, 2011). Agreeing to Perry and Hayes (2015), the hazard administration prepare is direct and comprises of hazard distinguishing proof, chance investigation and chance reaction. This straight prepare be that as it may does not appreciate that most hazard administration exercises are themselves sources of modern dangers.

2.1.6 Risk Transfer

Once master can oversee chance with more prominent ability, exchanging it is for beyond any doubt another alternative that can be tabled. Ralph (2010) says that the risk should be transferred to those who are more knowledgeable and who can effectively handle it. It is maintained that risks can be transferred in two ways: First is through insurance and second is through contract. Undoubtedly, risk transfer entails higher costs and unplanned work, and this is commonly referred to as a risk premium. It cannot be emphasized; danger not totally suppressed but rather put on the shoulders of the party that is in a position to overcome it (PMI, 2004).

2.2 Theoretical Framework

2.2.1 Expect value (EV) Theory

Expect value (EV) is one of the primary hypotheses of choice making beneath hazard. The anticipated esteem demonstrates never look at reality a specific profit one individual had was indirectly associated with exact money Value (Tversky, 1979). The concept of precise inclination in choice making was accepted as long as individuals attempted to utility and not their anticipated esteem (Tversky, 1979). In Von Neumann and Morgenstern's appear of subjective utility, one person may not share some utility twist as another, but each takes after the some standardizing maxim in endeavoring toward their solely characterized most prominent subjective utility (Neumann &Morgenstern, 1953).

2.2.2 Prospect Theory

Prospect hypothesis may be a theory of choice making beneath conditions of hazard (Tversky, 1979). Choices include inside struggle over esteem exchange –offs. This hypothesis is outlined to superior depict, clarify and anticipate the choices that ordinary individual makes in a world of powerlessness. The speculation addresses how these choices are encompassed and evaluated inside the choice making handle. Prospect speculation advances the thought that utility twists differentiate in spaces of choose up from those in spaces of misfortunes. Prospect speculation is laid out to clarify a common plan of choice. It is obvious and exploratory in nature. Prospect

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Speculation looks at two parts of choice making: the modifying, or encompassing, arrange and the evaluation arrange (Tvesky, 1967). Encompassing implies to the way in which a choice or choice can be impacted by orchestrate or way in which it is shown to a choice maker. The appraisal organized of a prospect theory encompasses two parts: the regard work and the weighting work.

2.3 Conceptual Framework

The conceptual framework consist of dependent variable in this study is project performance measured in terms of project cost, time schedule and quality while that independent variables risk management methods are Risk avoidance measured in terms of Meeting of all stakeholders, site visit, Risk retention measured in terms of retendering and changing Site ,risk transfer measured in terms of Insurance and contract and risk control measured in terms of Hiring Experts Inspection of construction materials while moderating variable is Project team. The framework is presented I Figure 1.

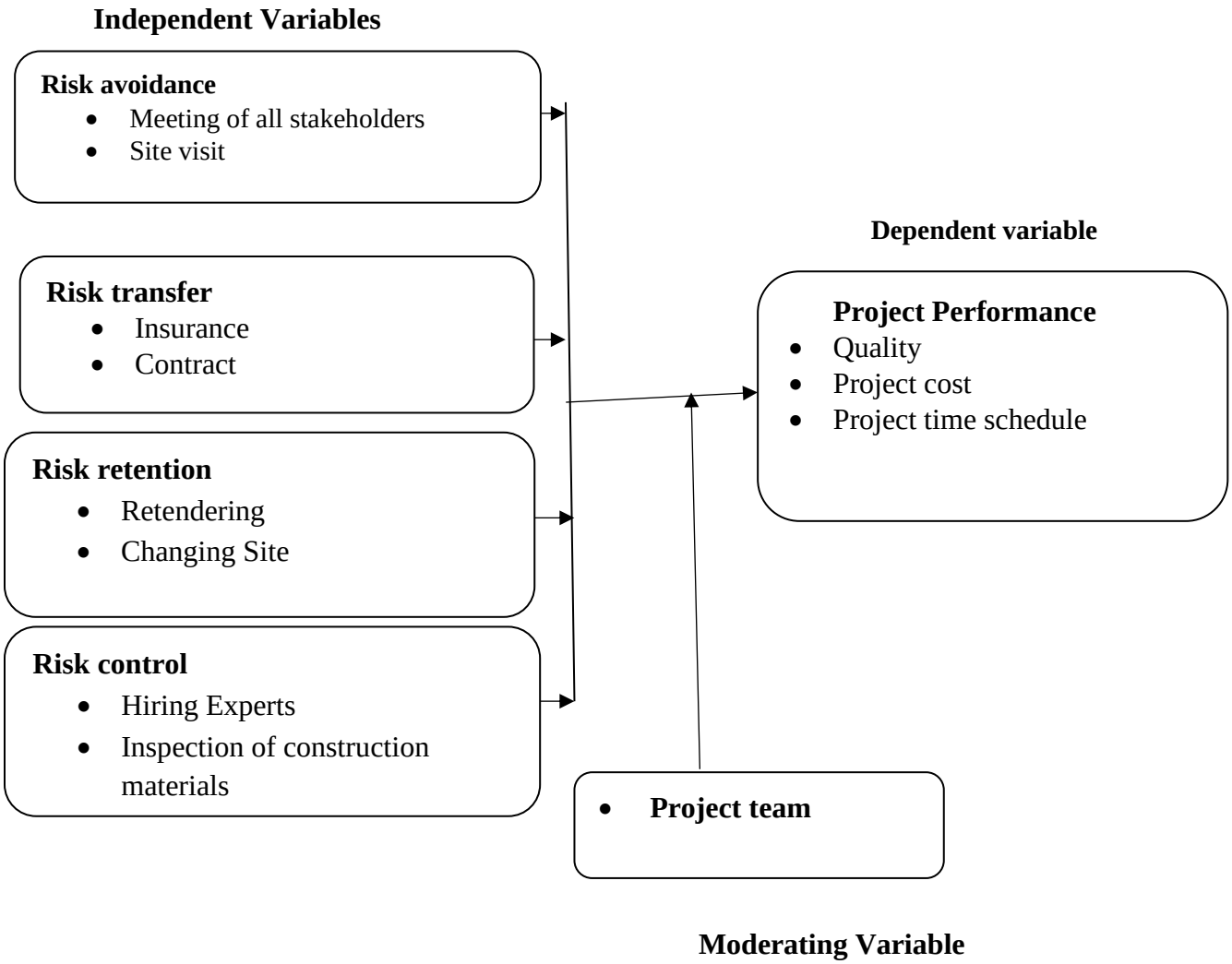

Figure 1: Conceptual Framework

3.0 Research Methodology

The study employed a research design, which served as a conceptual framework guiding the research process, with a focus on descriptive and correlation research designs. A quantitative data collection method was used to gather information from respondents. Sampling techniques involved purposive sampling to select the sample size of 122 respondents, aligning with the study's scope of selected schools in selected districts constructed from 2018 to 2022. Sample design was seen as a structured approach that provided direction and systematized the research, creating a roadmap for selecting the survey sample and ensuring the study represented the population of interest while managing time and costs. Data was collected primarily through open-ended questionnaires and Normal Scales Questionnaires, offering respondents flexibility and allowing for a wide geographical reach. This method was chosen for its cost-effectiveness, convenience for respondents, and potential for obtaining dependable and reliable results.

4.0 Research Findings and Discussions

4.1 Profile of Respondents

To analyze the profile of all respondents (122), the researcher used descriptive statistics to illustrate data of the respondents based on their educational level and experience / Time span in construction industry for all respondents.

Education Level

The respondents were asked to indicate their educational level reached in the questionnaire.

Table 1: Response by Education Level

Level of Education	Frequency	Percent (%)
Secondary certificate	-	-
Diploma	-	-
Bachelor Degree	113	93
Post graduate Degree	9	7
TOTAL	**122**	**100**

Source: Primary Data, 2022

The findings show that many respondents hold a Bachelor Degree at the rate of 93% while 7 % have postgraduate degrees. This shows that the majority of respondents are well educated hence they are well equipped with the skills and competence that enable them to respond to the questionnaires distributed to them without difficulties. The high educational level indicates that employees have adequate knowledge and skills, which contribute to the operational performance of the organization in which they are working in.

Work Experience

The respondents were asked to indicate time spent in the career in the questionnaire.

Table 2: Response by Work Experience

Period of service	Frequency	Percent (%)
1-2 years	0	0
2-3 years	0	0
3-4 years	26	21
More than 5 years	96	79
TOTAL	**122**	**100**

The majority of respondents have worked for a period of more than five years representing a percentage of 79 % followed by those who have served for a period between three and four years with a percentage were corresponding to 21 %. Majority of respondents having served for a period of more than three years show that they had enough knowledge regarding the risk management methods. Otherwise expressed, employees with more experience are likely to make a significant contribution to organizational performance than those with least experience.

Knowledge of Risk Management Methods

The researcher also seeks to know whether the respondents are aware or have knowledge on risk management.

Table 3: Response by Knowledge of Risk Management Methods

Level of knowledge	Frequency	Percent (%)
Almost none	9	8
Fair	42	34
Fairly good	54	44
Good	0	0
Very good	17	14
Total	**122**	**100**

Source: Primary Data, 2022

Findings show that the majority of respondents who represent 44% have good knowledge in risk management. 34% of respondents have fair knowledge in risk management. 14% embody sound knowledge whereas 8% rate their knowledge on risk management

4.2 Descriptive Statistics

Findings from the Respondents (Reb Construction Managers and District Engineers) Vis A Vis the Objectives of the Study

The study discusses and analyzes the points related to the objectives of the study namely the effect of risk avoidance or prevention, the effect of risk transfer, the effect of risk retention and the effect of risk control (loss control or risk mitigation) on project performance in order to establish a relationship between and risk management methods and project performance.

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Risk Avoidance on Construction Project Performance In Rwanda Education Board (REB) School Construction Project

The first objective was to establish the to examine the effect of risk avoidance on construction project performance in Rwanda Education Board (REB) school construction project in selected Districts.

Table 4: Response by Types of Risks Experienced in the School Construction Projects

Types of Risks	Frequency	Percent (%)
Delayed completion	2	15
Cost variations	2	15
Contract risk management	6	46
Abandoned work	2	15
Failure to achieve the quality	1	9
TOTAL	**13**	**100**

Source: Primary Data, 2022

Based on the results from the table above; the majority of the respondents who represent 46% said that they have experienced the risk of contract management. 15% said that they experienced the risk of project completed belatedly, 15% underwent cost variations, and 15% experienced abandonment of work whereas 9% witnessed failure to achieve the quality required. In order to achieve the objective of the project, contract management is very important in terms of making a follow up by monitoring schedule provided by the contractor (milestone) to ensure that all activities planned to be executed in a given time are monitored and controlled.

According to the researcher's own experience in the project which comes to confirm the views of most respondents, the contract risk management is at the forefront in not implementing the projects as initially planned or desired. Indeed, most of the time, after signing the contract, the contractor seeks to get their contract revisited so as to extend the contract time of completion or increment in price allotted to the project. This has been observed in Nyagatare District, in Rukomo Sector.

On descriptive analysis the researcher sought opinion of respondents on whether they strongly agree, agree, neutral, disagree or strongly disagree that the risk avoidance on construction project performance in Rwanda Education Board (REB) school construction project in selected Districts. Respondents stating their level of agreement did this or otherwise with the statements using scale of measurement of 1 to 5 where 1, 2,3,4,5 represented strongly disagree, disagree, neutral, agree and strongly agree respectively.

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Table 5: Opinion on Effect Risk Avoidance On Construction Project Performance In (REB)

Statement	SD	D	N	A	SA	N	M	Std. D
	%	%	%	%	%			
Risk avoidance on construction project lead Delayed completion	14.5	9.1	3.6	27.3	45.5	122	3.80	1.46
Risk avoidance on construction project led to Cost variations	9.1	10.0	9.1	36.4	35.5	122	3.60	1.30
Contract risk management is way risk avoidance on construction project	12.7	10.9	2.7	50.9	22.7	122	3.93	1.31
Risk avoidance on construction project lead abandonment of work	9.1	10.0	4.5	30.9	45.5	122	3.92	1.26
Risk avoidance on construction project lead Failure to achieve the quality	9.1	10.0	9.1	36.4	35.5	122	3.60	1.30

Source: Primary Data, 2022

Legend: SD: Strongly Disagree, D: Disagree, N: Neutral, A: Agree, SA: Strongly Agree, N: Number of respondents, M: Mean, St. D: Standard Deviation,

The study sought to establish the level at which respondents agreed or disagreed with the above statements relating effect of risk avoidance on construction project performance in Rwanda Education Board (REB) school construction project in selected Districts. From the findings majority of respondents agreed that Risk avoidance on construction project lead Delayed completion as shown by a mean of 3.80 with standard deviation of 1.46 , many respondents agreed that risk avoidance on construction project led to Cost variations on the mean of 3.60 with standard deviation of 1.30 many respondents agreed that Contract risk management is way risk avoidance on construction project on the mean of 3.93 with standard deviation of 1.31 , Risk avoidance on construction project lead abandonment of work on the mean of 3.92 with standard deviation of 1.26 while many respondents agreed that Risk avoidance on construction project lead Failure to achieve the quality on the mean of 3.60 with standard deviation of 1.30.

Impact Of Risk Avoidance/ Prevention On Project Performance

As in any project, constructions project comprise of five major phases: planning, programming and design, procurement, construction and project close out (closure phase). For the purpose of the study, this section was designed to explore the aspects of risk avoidance related to the said phases of construction project. Risk avoidance requires the development of an alternative strategy aiming at having a high probability of project success but usually it incurs high cost associated with the accomplishment of project task. The use of proven and existing technologies rather than adopting the new technology is a common risk avoidance technique even though the new techniques used may show promise of better performance or lower costs. This approach might be used to ensure customer satisfaction, quality, and management of resources / to ensure with the project plan. It is against this background that the respondents were asked to specify in which area risk avoidance / prevention has influenced the performance of the project.

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Table 6: Response by Area Risk Avoidance / Prevention Has Influenced the Performance of the Project

Risk avoidance and project performance	Frequency	Percent (%)
To ensure quality	4	31
To ensure beneficiaries' satisfaction	2	15
To manage resources	6	46
To meet the project plan	1	8
TOTAL	**13**	**100**

Source: Primary Data, 2022

Findings show that 46% risk avoidance helped them manage resources, 31% revealed that risk avoidance enabled them to ensure quality of the project; 15 % disclosed that risk avoidance allowed ensuring beneficiaries' satisfaction whereas 8% unveil that risk avoidance helped them meet the project plan. As indicated above, the researcher's experience holds that when resources were well managed in the school construction project at Groupe Scolaire Karushya in Gicumbi District, Bukure Sector, the project that was under way was satisfactorily completed within the resources that were planned (budgeted).

Frequency of Applying Risk Avoidance/Prevention Method in REB School Construction Project

The researcher was also interested in finding out how often project team applied risk avoidance method in REB School Construction Project towards performance.

Table 7: Present the Prevention Method in REB School Construction Project

Applying risk avoidance	Frequency	Percent (%)
Weekly	7	54
Monthly	5	38
Quarterly	1	8
TOTAL	**13**	**100**

Source: Primary Data, 2022

As the figures above show, the majority, 54% indicate that the best way to apply risk avoidance in projects is to do it on weekly basis. 38 % revealed that risk avoidance should be applied monthly whereas 8% are of the view that that exercise should be conducted quarterly. It is also the researcher's take that risk avoidance should be done weekly because it is the best way to gauge the execution of the project. This frequency enables to identify any possible loopholes in time and make necessary remedy in time as well. This will avoid incurring unbudgeted costs, not meeting the deadline for completing the project, to name but a few. Again, the researcher noted that generally, risk avoidance is very known and being applied within REB school construction projects.

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Rationale Behind of Choosing Risk Avoidance/ Prevention As An Appropriate Method

In REB construction projects, the methods of avoiding risks are very valued and applied in all phase of the implementation of the project. In this regard, the respondents were asked the reason behind choosing risk avoidance method.

Table 8: Present Appropriate Method on Risk Prevention In Rwanda Education Board

Risk avoidance and Performance	Frequency	Percent (%)
Decision of Project Manager	3	23
Wish of Client	7	54
Nature of the Work	2	15
Previous experience	1	8
TOTAL	**13**	**100**

Source: Primary Data, 2022

Fifty-four percent (54%) of the respondents maintain that they go for this method in order to meet the client's wish (REB). 23 % reveal that this method is applied upon the decision of the project manager. 15 % disclose that the application of this method depends on the nature of the work whereas the remaining percentage, 8% maintain that risk avoidance is used as it has been in previous projects. The majority of the respondents submit that the client's wish is given a great consideration because REB is the sole planner and owner of the construction project. Therefore, it should play the key role in over viewing the project.

Responsible for Risk Avoidance/ Prevention

In construction industry, risk is inherent and unavoidable because the sector is complex. Risks may step in before, during or after the implementation of the project. REB launches tenders calling for the qualified bidders to submit their proposals. These latter have to meet the specifications as enshrined in the tender document. Among the documents to be submitted by the bidder, there must be a performance security.

After notifying the successful bidder, the client (REB) requires him/her to submit performance guarantee that oscillates between 5 and 10% of the total cost of the contract. When the contractor starts billing, the procuring entity withholds a certain percentage (retention percentage) on each submitted invoice; all of that money seized was used to cater for the work that has not been duly carried out. In case the tender cost is above 100,000,000 RWF as set forth by the Rwanda Public Procuring Authority (RPPA), the procuring entity has to hire a consulting surveillance firm to supervise the work. For all of these reasons above-mentioned, the contractor is responsible for shielding the project against any eventual failure. The situation whereby the performance guarantee and seizure of a certain amount has been applied was witnessed at Groupe Scolaire Rugogwe in Nyamagabe District, in Cyanika Sector. The question of knowing who is responsible for risk avoidance/prevention was put to respondents and their responses are portrayed in the table below.

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Table 9: Response for Responsible for Risk Avoidance/ Prevention

Responsible	Frequency	Percent (%)
Contractor	10	77
Client	2	15
Consultants /surveillance	1	8
TOTAL	**13**	**100**

Source: Primary Data, 2022

Seventy seven percent (77%) of the respondents say that the contractor is the one responsible for avoiding risks. 15% of the respondents maintain that the client is responsible for risk prevention whereas 8% posit that the controlling or surveillance firm is responsible for avoiding risk.

Strategies Applied to Avoid /Prevent The Risk Recurrence

Some strategies are put in place to ensure that the project implementation goes on smoothly. This question was put to respondents to enlighten us on those strategies. Below are responses that we collected from them.

Table 10: Response for Strategies Applied to Avoid /Prevent the Risk Recurrence

Strategy	Frequency	Percent (%)
Meeting of all stakeholders including contractors	8	61
Sites visits	3	23
Addendum/contract amendment	2	16
TOTAL	**13**	**100**

Source: Primary Data, 2022

The figures show that 61% of the respondents think that meeting of all stakeholders are of paramount importance. 23% of the respondents assert that sites visits should be conducted whereas 16% believe that contract may be amended. It is worthwhile noting that consultative meeting have to be held regularly in order to make timely assessment of the implementation of the project. Stakeholders may draw lessons from past experience and build on them to avoid any failure. These meetings serve as information and experience sharing occasions.

Objective Two: Response on Assessment of Risk Controls to the Project Performance

As it has been indicated in the specific objectives in chapter one (Introduction), the study had to assess the extent of risk controls on REB school construction projects in selected districts and schools. The following questions were tendered to respondents in order to gather their views on that matter. While raising this set of questions, the researcher intended to identify problems that

may have bad repercussions on the project. He sought to highlight ways of reducing, minimizing risks by mitigating their level of occurrence.

Indicators of Risk Control Vis A Vis to the Project Performance

It is maintained that at the end of the projects there was indicators showing the successfulness of the project. In this regard, the question of eliciting those indicators in respondents was set.

Table 11: Response for Indicators of Risk Control Vis A Vis to the Project Performance

Indicators	Frequency	Percent (%)
Project cost	3	23
Project completion time	2	16
Client satisfaction	3	23
Quality of the project	5	38
TOTAL	**13**	**100**

Source: Primary Data, 2022

Their viewpoints are as follows. 38 % hold that a good quality of the project is the utmost indicator. 23 % feel that risk is best controlled when the client embodies his/her satisfaction and another 23% seeks risk control in project cost. 16% suggest that the timely project completion is an indicator of minimization of risks.

Strategies Used To Control the Risks

The table below show the strategies used to control the risks from the respondents

Table 12: Response for Strategies Used To Control the Risks

Risk control in percentage	Frequency	Percent (%)
Monitoring Schedule provided by the contractor	3	23
Inspection of construction materials and sites	8	62
Hiring experts	2	15
TOTAL	**13**	**100**

Source: Primary Data, 2022

The intention of asking this question was to allow respondents to give their stands on controlling risks. In this regard, 63 % reveal that the client should inspect materials and sites. 23 %submit that the client should conduct the time frame set by the contractor whereas 15% maintain that the client should hire the expert to overview the project for the sake of controlling risks. The high percentage that we read from the table matches with the reality on the field.

As a matter of fact, REB called upon this strategy in school construction at Groupe Scolaire Nyabihanga in Rusizi District, Gikundamvura sector (Groupe Scolaire Mwegera) whereby the contractor had used non-durable materials that had not been itemized in the tender document. REB

learned these gaps through the regular reporting channel by all stakeholders. The client consulted the contractor and advised the company to use sustainable materials. Once the client makes sites visit, he may for instance come across some realities like not covering insurances for workers or employing workers who do not have health insurance scheme covered, smuggling of building materials by storekeeper. Etc.

Risk Controls versus Influencing Project Performance

When putting this question to the respondents, the researcher wanted to collect their viewpoints on the extent to which risk control may impact the performance of the project.

Table 13: Response for Risk Control May Impact the Performance of The Project

Influence project performance	Frequency	Percent (%)
Strongly Disagree	-	-
Disagree	1	8
Agree	5	38
Strongly Agree	7	54
TOTAL	**13**	**100**

Source: Primary Data, 2022

The results show that 54 % strongly admit that risk control undoubtedly affects the performance of the project. 38% unveil that risk control does impact the performance of the project whereas 8% think that risk control has infinitesimal effect on the performance of the project. These findings show that risk control has to be given special attention while designing the project.

Objective Three: Response on Evaluation of the Effect of Risk Retention on Construction Projects

Risk Retention means that the risk is classified as a risk acceptance after a risk management work process is performed. Risk retention method is very important in any construction project. Lack of it is deficiency in risk management. Risk retention measures or strategies should be developed for the performance of the project. The respondents were requested to describe challenges that are generated by lack of risk retention.

Challenges/ Setbacks Caused By Lack of Risk Retention Method within Construction Project

The respondents were requested to describe challenges that are generated by lack of risk retention.

Table 14: Present Risk Retention Method within Construction Project

Challenges associated	Frequency	Percent (%)
Project delay	1	8
Excessive cost	3	23
Row (Conflict) between client and contractor	4	31
Poor quality of the constructed school	5	38
TOTAL	**13**	**100**

Source: Primary Data, 2022

Findings show that most of the respondents with the percentage of 38% think that absence of risk retention strategies may yield poor quality of the constructed product. 31% of the respondents revealed that the lack of risk retention may lead to misunderstanding between the client and contractor. 23 % of the respondents assert that lack of risk retention may generate excessive cost unbudgeted for from the onset of the project. 8% of the respondents maintain that not addressing risk retention beforehand leads to the project delay. These two challenges (misunderstanding between the client and contractor and school poor quality of the constructed) stand for the biggest threats to the tender fulfillment, once not duly addressed. Therefore the project planner should pay the utmost attention to the risk retention strategies before launching the project.

Impact of Risk Retention Method on Project Performance

Risk retention is the result of making a deliberate decision to endure the consequences of an event in case it occurs. Acceptance of risk may be twofold: passive and active. Passive acceptance occurs when no action to retain the risk is taken, the procuring entity copes with it or deal with it purposefully. On the other hand, for active risk retention, an action is taken to mitigate the impact of the event in case it occurs. Therefore, any organization should be able to mindfully put these two types of risk retention (active and passive) on balance and opt for the one that is not likely to spoil the project. The researcher requested the respondents to indicate their position vis a vis risk retention and project performance.

Table 15: Response for Impact of Risk Retention Method on Project Performance

Risk retention and project performance	Frequency	Percent (%)
Strongly Disagree	1	8
Disagree	2	15
Agree	6	46
Strongly Agree	4	31
TOTAL	**13**	**100**

Source: Primary Data, 2022

The majority of the respondents at the rate of 46%, agree that risk retention has impact on the performance of the project. 31% uphold that risk retention is likely to impact the project performance. 15 % do not put a correlation between the risk retention strategies and project

performance whereas 8% strongly deny that the risk retention strategies may impact the fulfillment of the project. The researcher own can confirm the above results investigation whereby he noted a risk retention strategy in a school called Ecole Primaire Ngara located in Gasabo District, Bumbogo Sector. In this area, there was a construction project of a primary school. Towards the start of the academic year (2017), the construction activities were still under way. Classrooms had roofs, doors and windows but the finishing stage was not yet undertaken. Due to the pressing need of having classrooms where to place children and for the sake of avoiding over crowdedness, REB took a well-informed and considered decision to occupy those unfinished classrooms. The remaining work was fulfilled during the following holidays. This is a typical example of risk retention.

Provision of Other Factors Affecting Project Performance Vis-à-vis Risk Retention

Project performance is evaluated and measured by using a large number of defined performance indicators related to various groups (dimensions) including: time, quality, time, client satisfaction, client changes, business performance, health and safety. Many researchers introduced other factors that have an influence on project cost performance. These factors include: competence of project manager, support from top management, project manager's coordinating and leadership skills, owners' competence, social, climate and economic conditions. The researcher requested the respondents to provide other factors affecting project performance vis a vis risk retention and project performance.

Table16: Present Provision of Other Factors Affecting Project Performance Vis A Vis Risk Retention

Other factors that affect project performance	Frequency	Percent (%)
Time	2	15
Cost	7	54
Quality	3	23
Reduced schedules	1	8
TOTAL	**13**	**100**

Source: Primary Data, 2022

According to the respondents views 54% cost come first. Respondents consider cost as a main factor that contributes to the project performance. It means that there must be a well-designed project cost. The project cost should meet the schedules such as Gantt Charts to plan and subsequently report progress within the project environment. In addition, in construction project, there must be well planned budget. Failure to plan budget, performance of the project is questionable. 23% agree that quality is another factor that affects project performance. 15% agree that time is another factor that contributes to the project performance. Lastly 8% confirmed that schedules have power over the project performance.

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Objective Four: Response on Examination of the Effect of Risk Transfer on Construction Project

In construction projects, there is involvement of many parties including: owner, consultants, contractor, sub-contractor and suppliers. Each party plays a significant role in terms of achieving the objective of the project. In addition, each party has its own role and risks for accomplishment of the project. Risk transfer means the shift of risk responsibility to another party by use of insurance and contract. Contractors generally use three methods in construction project to transfer risk: through insurance from insurance companies- through contractor to subcontractor and through modifying the contract terms and conditions to client or other parties.

Reasons behind Choosing Transferring Risks

The researcher asked the question to the respondents about the reason of transferring risks.

Table 17: Present Responses For Reasons Behind Choosing Transferring Risks

Reasons For Transferring Risks	Frequency	Percent (%)
Wish of the client	37	31
Work's nature	56	46
Previous Experience	10	8
Project manager's decision	19	15
TOTAL	**122**	**100**

Source: Primary Data, 2022

The majority of the respondents at the rate of 46% agree that reason of transferring risks is the nature of the works. It means that the construction projects are extremely complex and fraught with uncertainty. It means that risk and uncertainty can potentially have damaging consequences for the construction projects. 31% agree that the reason of transferring is the wish of the client; 15% agree that the reason behind for transferring risk is the decision of project manager and 8% agree that the reason of transferring is previous experience noted from the project completed or failed.

Does Risk Transfer Affect Project Performance

The researcher asked this question to the respondents to get their positions on whether risk transfer affects project performance.

Table 18: Present Responses for Risk Transfer Affect Project Performance

Risk Transfer Affects Project Performance	Frequency	Percent (%)
Strongly Disagree	10	8
Disagree	18	15
Agree	66	54
Strongly Agree	28	23
TOTAL	**122**	**100**

Source: Primary Data, 2022

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The majority of the respondents at the rate of 54 % agree that risk transfer affect the performance of the project, 23% strongly agree, 15% disagree and 8% strongly disagree. As highlighted above, risk transfer means the shift of risk responsibility to another party by use of insurance and contract. After documentary review, the researcher came up with the feeling that REB does not pay insurance for the completed school like fire (Fire insurance is property insurance that provides coverage for loss or damage to a structure damaged or destroyed in a fire). After the completion of the schools; those latter are handed over to districts for their management. This exercise is done in two phases: provisional handover and final handover. As mentioned above, risk transfer may be done through hiring a sub-contractor. As an illustration, REB signed a contract with a successful bidder who embarked on the work. As the activities were on the course, the main contractor was unable to honor it as he hailed to manage the resources allocated to him rationally; therefore that contractor entered into negotiation with the client (REB) and both parties agreed that a sub-contractor should be hired to completed the remaining work, which he did as per scheduled timeline. This case was noted in Nyagatare District, Rukomo Sector at Groupe Scolaire Rukomo.

Findings From the Respondents (Districts Directors Of Education, Districts Education Officers, Headmasters Of Schools And Sectors Education Officers) Vis A Vis The Objectives Of The Study

The researcher intended to know the extent to which the Districts Directors of Education, Districts Education Officers, Headmasters of Schools and Sectors Education Officers are involved in the planning process of school construction.

Table 19: Response on Involvement Of Stakeholders

Involvement in the planning process	Frequency	Percent (%)
Yes	122	100
No	-	-
TOTAL	**122**	**100**

Source: Primary Data, 2022

Objective One: Response on Examination of The Effect On Risk Avoidance On Construction Projects

The following are strategies applied to avoid risks

Table 20: Present Response for Strategies Applied To Avoid Risks

Strategies applied to avoid risks	Frequency	Percent (%)
Timely reporting	39	32
Providing accurate data	42	35
Liaise with local leaders	40	33
TOTAL	**122**	**100**

Source: Primary Data, 2022

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In order to avoid risks, 35% of the respondents revealed that providing data that are flawless is the best way to avoid risk. 33% hold that submitting required report to the superior official is also of paramount importance whereas 32% posit that liaising with local leaders also plays an important role. As it may be read from our chart, all respondents view the three strategies as almost equally important, they are intertwined.

Objective Two: Response on Assessment of Risk Controls to the Project Performance
The table below show the strategies applied to control risk.
Table 21: Response for Strategies Applied To Control Risks

Strategies applied to control risks	Frequency	Percent (%)
Sites visits	73	60
Involvement in handover	12	10
Reporting the progress of the work	37	30
TOTAL:	**122**	**100**

Source: Primary Data, 2022

The findings show that 60% of the respondents conduct sites visits very often. Once they notice the good or shaky progress they report it to the higher authority with the percentage of 30%. It is noticed that 10% of the respondents maintained that they are invited to the handover ceremonies. The results show that these stake holders to whom we submitted the questionnaires, do show interest in making regular follow up of the projects that are undertaken with their areas.

Objective 3: Response On Evaluation Of The Effect Of Risk Retention On Construction Projects
The table below show the strategies applied to retain risks
Table 212: Present Response For Strategies Applied To Retain Risks

Strategies applied to retain risks	Frequency	Percent (%)
Timely reporting of any incidence	51	42
Involvement in decision making	59	48
Liaise with security organs	12	10
TOTAL	**122**	**100**

Source: Primary Data, 2022

The findings indicate that 48% of the respondents would like to be consulted while taking the decision in case of risk retention. 42% of the respondents suggested that it is advisable to report any shortcoming on time whereas 10% are of the view that security organs have to be associated

in retaining risk. These results in fact show that the views of REB stakeholders at all levels have to be given due weight.

Objective Four: Response on Examination Of The Effect Of Risk Transfer On Construction Project

Having meticulously examined and reviewed all theories relating to risk transfer, the researcher came up with the idea that this type of risk management method is not applicable to this particular group of respondents. Indeed, risk transfer involves many parties including: owner, consultants, contractor, sub-contractor and suppliers. Each party plays a significant role in terms of achieving the objective of the project. Risk transfer means the shift of risk responsibility to another party by use of insurance and contract.

Contractors generally use three methods in construction project to transfer risk: through insurance to insurance companies- through contractor to subcontractor and through modifying the contract terms and conditions to client or other parties. Departing from these specificities, this category of respondents (Districts Directors of Education, Disticts Education Officers, Headmasters of Schools and Sectors Education Officers) does not play any role in the application of risk transfer method.

Project performance of REB Construction Project

The respondents were asked to select the rate statement on the project performance of REB Construction Project in relation to their performance. The Likert-type scale was used to rate their responses on a 5– point scale ranging from 5 = Strongly Agree to 1 = Strongly Disagree

Table 2322: project performance of REB Construction Project

Statements on Performance of REB Construction Project	Strongly agree %	Agree %	Un certain %	Disagree %	Strongly disagree %	Mean	SD
REB Construction Project faces two main factors are scheduling and budget	16.7	57	20	6.6	-	3.38	0.62
REB Construction Project was finished within the required time schedule	3.3	27	3.3	66.7	-	2.92	0.92
REB Construction Project are Project cost is well estimated	56.7	33	10	-	-	3.27	0.94
REB Construction output/delivered product met the specifications in the planning stage	60	33	6.7	-	-	3.4	0.64
Accurate consumption of external and internal financial resources is obligatory, for the construction project	20	43	33	3.3	-	2	0.88
insufficient cash flow consequence in a project is frequently associated with delays and large extra costs	40	43.3	-	-	16.7	3.50	0.77

Source: Primary data 2022

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Findings on whether REB Construction Project faces two main factors are scheduling and budget, the research indicated that 56.7% agreed, 16.7% strongly agree, 20% uncertain while 6.6% disagreed. The majority of the respondents agreed REB Construction Project faces two main factors are scheduling and budget. This implied that REB Construction Project faces two main factors are scheduling and budget. Findings on whether REB Construction Project was finished within the required time schedule, showed that majority of the respondents disagreed represented by 66.7%, 33% uncertain, 26.7% agree, while 3.3% strongly agreed. This meant that REB Construction Project was finished within the required time schedule in REB Construction Project. Findings on whether REB Construction Project are Project cost is well estimated, research showed that the majority represented by 56.7% strongly agreed with the statement REB Construction Project are Project cost is well estimated. Therefore, this meant that REB Construction Project are Project cost is well estimated.

Findings on whether Budget for the project is properly determined the estimated costs of individual activities or work packages to establish an authorized cost baseline, the research indicated that the majority strongly agreed represented by 60%, 33.3 agreed while 3.3% were uncertain. Therefore, this meant Budget for the project is properly determined the estimated costs of individual activities or work packages to establish an authorized cost baseline in Nyamata Housing Project. Findings on whether REB Construction output/delivered product met the specifications in the planning stage the research showed that 43.3% agree and these represented the majority, 20% of the respondents strongly agreed, 33.3% were uncertain and 3.3% disagreed. Majority of the respondents agreed REB Construction output/delivered product met the specifications in the planning stage This meant that REB Construction output/delivered product met the specifications in the planning stage Findings on the Accurate consumption of external and internal financial resources is obligatory, for the construction project research indicated that 40% of the respondents strongly agreed, 43.3% agree while 16.7% disagree. Since those who agree represent the majority, that is 43.3% of the respondents, meant that accurate consumption of external and internal financial resources is obligatory, for the construction project

4.3 Inferential Statistics

Risk Management Methods On The Performance Of Construction Projects; With Specific Reference Reb School Construction Project In Selected Districts

The first objective was to establish the effect of risk management methods on the performance of construction projects; with specific reference REB School Construction project in selected Districts Table 24 shows the summary of results For the purpose of this study , the researcher has developed Independent Variables and Dependent Variables in order to establish the relationship behind two variables whereby the respondents argue that the Independent Variables affects directly Dependent Variables positively.

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Table 24: Correlation

Description		Risk Management Methods	Project Performance
Risk Management Methods	Pearson Correlation	44.2	0.853
	Sig.(2-tailed)		.000
	N	112	112
Project Performance	Pearson Correlation	0.853	1
	Sig.(2-tailed)	.000	
	N	112	112

Source: Primary data (2022)

Correlation is significant at the 0.01 level (2-tailed). The researcher used Pearson Correlation Coefficient and the result obtained is (r) equals to 0.853. It means that when Pearson Correlation Coefficient is Zero (0) then there is no relationship of variables in consideration. When Pearson Correlation Coefficient is between Zero (0) and 0.5; it means that the correlation between two variables is weak, the some, when Pearson Correlation Coefficient is between 0.5 and 0.79, the variables are Strongly Correlated. On other hand, when Pearson Correlation Coefficient (r) is above 0.8; it means that the given variables are positively, strongly and perfectly correlated. It is against this background that the researcher concluded that there is relationship between risk management methods and project performance. Table 25 show the summary of Risk management methods (risk avoidance, Risk control Risk retention and risk transfer) on the performance of construction projects.

Table 235: Regression Analysis Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.725[a]	.7105	.671	.78600

a. Predictors: (Constant), risk avoidance, Risk control Risk retention and risk transfer

Source: primary data 2023

The findings in table 26 revealed that project resource management (risk avoidance, Risk control Risk retention and risk transfer) affect the Performance of construction projects, therefore the regression analysis (R2) of 0.7105 means that the findings show strong linear, positive, statistically important and good for Performance of construction projects because the regression analysis is not less than 0.005. The study further reveals that p risk avoidance, Risk control Risk retention and risk transfer contribute 71.05% Performance of construction projects 28.95% is contributed by other factor.

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Table 26: ANOVA Table

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	6.837	4	1.709	102.767	.002[b]
	Residual	58.073	108	.618		
	Total	64.909	112			

a. Dependent Variable: Performance of construction projects
b. Predictors: (Constant), risk avoidance, Risk control Risk retention and risk transfer,

Source: Primary data 2022

The researcher also conducted the analysis of variance to determine the significance of the model. Table 26 shows the overall significance of the predictors in explaining Performance of construction projects. The model predictors are significant in explaining changes in Performance of construction projects with a 0.000 level of significance. The researcher was interested in establishing the amount of variance accounted for in model. The model between Risk management methods and Performance of construction projects shows that model was significant since the p-value was less than 0.05without the interaction term, F (4, 108) 102.767, p<.002

Regression Analysis Results

In order to ascertain the nature of the relationship between the independent and dependent variables of the study and establish the statistical significance of the hypothesized relationships, multiple regression analysis was used. This was performed using the field data and tested at 5% level of significance. The findings of the multiple regressions are summarized in the table 27

Table 27: Regression of Dependent Variable and Independent Variables

Model		Coefficients[a] Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.991	1.031		3.428	.000
	Risk avoidance	.327	.1068	.356	3.322	.001
	Risk control	.752	.077	-.086	-.844	.001
	Risk retention	.676	.084	-.083	-.785	.004
	Risk transfer	0.791	.031	-.0783	-.967	.000

Source: Primary data 2022

$y = \beta O + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_1$ became Performance of construction projects =6.991+0.327 risk avoidance +0.752 Risk control +0.676 Risk retention + 0.791Risk transfer +error.

The interpretation of this is that when risk avoidance, Risk control, Risk retention and risk transfer are held constant Performance of construction projects is 6.991. Unit in risk avoidance will lead

increase of Performance of construction projects with 0.327, unit of risk control will lead increase 0.752 while unit of Risk retention will lead increase of Performance of construction projects with 0.676 while unit of Risk transfer will lead increase of Performance of construction projects with 0.791

To determine How Risk Avoidance Affect Construction Project Performance In Rwanda Education Board (REB)

Based on the results from the field the majority of respondents who represent 46% said that they have experienced the risk of contract management. 15% said that they experienced the risk of project completed belatedly, 15% underwent cost variations, and 15% experienced abandonment of work whereas 9% witnessed failure to achieve the quality required. In order to achieve the objective of the project, contract management is very important in terms of making a follow up by monitoring schedule provided by the contractor (milestone) to ensure that all activities planned to be executed in a given time are monitored and controlled.

According to the researcher's own experience in the project which comes to confirm the views of most respondents, the contract risk management is at the forefront in not implementing the projects as initially planned or desired. Indeed, most of the time, after signing the contract, the contractor seeks to get their contract revisited so as to extend the contract time of completion or increment in price allotted to the project. This has been observed in Nyagatare District, in Rukomo Sector. On descriptive analysis the researcher sought opinion of respondents on whether they strongly agree, agree, neutral, disagree or strongly disagree that the risk avoidance on construction project performance in Rwanda Education Board (REB) school construction project in selected Districts. Respondents stating their level of agreement did this or otherwise with the statements using scale of measurement of 1 to 5 where 1, 2,3,4,5 represented strongly disagree, disagree, neutral, agree and strongly agree respectively.

To Assess Extent Of Risk Controls On Construction Project Performance In Rwanda

The intention of asking this question was to allow respondents to give their stands on controlling risks. In this regard, 63 % reveal that the client should inspect materials and sites. 23 %submit that the client should conduct the time frame set by the contractor whereas 15% maintain that the client should hire the expert to overview the project for the sake of controlling risks. The high percentage that we read from the table matches with the reality on the field. As a matter of fact, REB called upon this strategy in school construction at Groupe Scolaire Nyabihanga in Rusizi District, Gikundamvura sector (Groupe Scolaire Mwegera) whereby the contractor had used non-durable materials that had not been itemized in the tender document. REB learned these gaps through the regular reporting channel by all stakeholders.

The client consulted the contractor and advised the company to use sustainable materials. Once the client makes sites visit, he may for instance come across some realities like not covering insurances for workers or employing workers who do not have health insurance scheme covered, smuggling of building materials by storekeeper. It is maintained that once the client makes sites visit, he/she may for instance come across some realities like not covering insurances for workers or employing workers who do not have health insurance scheme covered and smuggling of the building material by storekeeper.

Again, the client may notice the use of non-durable materials that had not been itemized in the tender document and it advises him/her to comply with the signed contract. REB may learn the

gaps through the regular reporting channel by all stakeholders. These findings show that risk control has to be given special attention while designing the project. The findings suggest that all stakeholders show interest in making regular follow up of the projects that are undertaken with their areas. Therefore, based on the views of respondents and researcher's own observation, it can be concluded that risk control methods contribute greatly to the performance of school construction.

To Establish Extent to Which Risk Retention Affect Construction Project Performance In Rwanda Education Board

Findings show that most of the respondents with the percentage of 38% think that absence of risk retention strategies may yield poor quality of the constructed product. 31% of the respondents revealed that the lack of risk retention may lead to misunderstanding between the client and contractor. 23 % of the respondents assert that lack of risk retention may generate excessive cost unbudgeted for from the onset of the project. 8% of the respondents maintain that not addressing risk retention beforehand leads to the project delay. These two challenges (misunderstanding between the client and contractor and school poor quality of the constructed) stand for the biggest threats to the tender fulfillment, once not duly addressed. Therefore the project planner should pay the utmost attention to the risk retention strategies before launching the project. Risk Retention means that the risk is classified as a risk acceptance after a risk management work process is performed. Risk retention method is very important in any construction project. Lack of it is deficiency in risk management.

These two challenges (misunderstanding between the client and contractor and school poor quality of the constructed) stand for the biggest threats to the tender fulfillment, once not duly addressed. Therefore the project planner should pay the utmost attention to the risk retention strategies before launching the project. The project cost should meet the schedules such as Gantt Charts to plan and subsequently report progress within the project environment. In addition, in construction project, there must be well planned budget. Failure to plan budget, performance of the project is questionable. 23% agree that quality is another factor that affects project performance. 15% agree that time is another factor that contributes to the project performance. Lastly 8% confirmed that schedules have power over the project performance. Risk retention measures or strategies should be developed for the performance of the project. Risk retention is the result of making a deliberate decision to endure the consequences of an event in case it occurs.

To Examine the Effect of Risk Transfer on Construction Project Performance In (REB)

Findings on whether Budget for the project is properly determined the estimated costs of individual activities or work packages to establish an authorized cost baseline, the research indicated that the majority strongly agreed represented by 60%, 33.3 agreed while 3.3% were uncertain. Therefore, this meant Budget for the project is properly determined the estimated costs of individual activities or work packages to establish an authorized cost baseline in Nyamata Housing Project. Findings on whether REB Construction output/delivered product met the specifications in the planning stage the research showed that 43.3% agree and these represented the majority, 20% of the respondents strongly agreed, 33.3% were uncertain and 3.3% disagreed. Majority of the respondents agreed REB Construction output/delivered product met the specifications in the planning stage. This

meant that REB Construction output/delivered product met the specifications in the planning stage Findings on the Accurate consumption of external and internal financial resources is obligatory, for the construction project research indicated that 40% of the respondents strongly agreed, 43.3% agree while 16.7% disagree. Since agreed represent the majority that is 43.3% of the respondents, meant that accurate consumption of external and internal financial resources is obligatory, for the construction project.

5.0 Conclusion

To put it in a nutshell, project actors posit that risk management methods are strongly related to the performance of the project in terms of time, quality, budget (cost). Most of risk management methods should be performed in the phases of the project. Client and the contractor must fulfill their obligations in a symbiotic manner whereby each party pays attention to the counterpart view. All parties should understand that the success of the project depends on the collaboration of both the client and the contractor. Again, these two parties have to share information and experience on regular basis. Finally, in order for the project to be successful, these parties mentioned above need the support of other stakeholders. In this regard, the involvement of sector' and districts education officers and headmasters has been referred to as pivotal. The researcher concluded that there is relationship between risk management methods and project performance after realizing that Pearson Correlation Coefficient (r) is above 0.8 (0.853>0.8). Hence two variables are positively, strongly and perfectly correlated.

6.0 Recommendations

The study recommends that all stakeholders should work closely hands in hands to ensure that risks are minimized or mitigated at the highest attainable rate. Again, all parties involved in the project should make regular sites supervision to check if the contractor is using resources allocated to him/her rationally to avoid excessive cost. Furthermore, all stakeholders should ensure that the construction work is carried out in compliance with the scheduled time and that the material used is genuine. And finally, while selecting the sub-contractor, in case of risk transfer, the client and the contractor have to consult each other in order to hire the consultant with the highest desirable competence. The study recommends that construction projects, particularly those managed by the Rwanda Education Board (REB) in selected districts, prioritize and implement comprehensive risk management strategies. This recommendation is based on the strong positive correlation found between risk management methods and project performance, emphasizing the importance of effective risk management practices in achieving better project outcomes. Furthermore, it is recommended that project planners and stakeholders focus on specific risk management methods, such as risk avoidance, risk control, risk retention, and risk transfer, tailoring their strategies to address project-specific risks. Additionally, the study underscores the significance of accurate budget determination, resource consumption, and collaboration among project stakeholders to improve project performance. To this end, the involvement of sector and district education officers and headmasters is considered pivotal for successful project outcomes.

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