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PROJECT RISK MANAGEMENT PRACTICES AND PERFORMANCE OF PUBLIC SCHOOLS CONSTRUCTION PROJECTS IN MARA REGION, TANZANIA

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Abstract: **The construction industry in Tanzania and the world at large faces more risks and uncertainty than many other sectors. The process of project execution from initial investment appraisal, completion and final use is complex, and involves time-consuming ground investigations, design and production processes. These processes are highly specialized and are spearheaded by qualified and licensed civil engineering consultants. Each of the processes in construction carries with it a measure of risk factors ranging from cost overruns, quality of the final product, litigations, time overruns, and riots, among others. Thus, the main objective of this study was to determine the effect of project risk management practices on construction projects in Mara Region Tanzania. The specific objective was to examine effect of risk identification practices, determine effect of risk monitoring and control practices and to establish effect of risk response practices on performance of consulting civil engineers. The study focuses on registered consulting civil engineers practicing in Mara Region Tanzania either as individual consultants or as registered engineering firms. The study was informed by prospect theory and enterprise risk management theory. The study employed descriptive cross-sectional study. The study targeted 175 registered consulting civil engineers in in Mara Region Tanzania. Simple Random sampling was used to select a representative sample consulting civil engineers practicing Arusha for purposes of this research. Use of questionnaires collected the research data. Use of SPSS version 23 analyzed data. Data analysis was done by use of descriptive statistics including means, standard deviation, percentages and frequency tables and inferential statistics with multiple regression analysis. This study will be significant to engineering fraternity, the general public, engineering students and the consulting engineering firms' regulators as it will offer valuable contributions from both a theoretical and practical perspective. The findings show that risk identification does not have a significant effect on project performance, $\beta_1 = 0.012$, $p = 0.777$. Furthermore, risk monitoring has a positive and significant effect on project performance, $\beta_2 = 0.150$, $p = 0.018$. There is need to further enhance the processes of risk identification by strengthening already existing practices and investing more in risk identification resources. There is more need for more investment in control systems and ensure they are effective and stakeholder participation in decision making.**

Keywords: **Project Risk Management Practices, Public construction Projects, Risk Identification, Risk Monitoring.**

I. INTRODUCTION

The East African region economic situation is changing rapidly. In Tanzania, the annual Gross Domestic Product (GDP) has been more than 5% and there it is dedicated to be a middle-income status and also become a semi-industrialized country by the year 2025. The education sector has a major role to pay in achieving the mission and vision of the country. The implementation of the Free-Free Basic Education Policy (FFBEP) in 2015 led to increase in national enrolment by 38% in the subsequent year. In the ordinary level secondary schools increased by 10% between 2016 and 2018 with enrolment of over 1.9M in lower secondary in 2018. Though the increase in enrolment indicated a positive achievement towards access to basic education, however, there was a need for more learning space [1]. To deal with the need for space, School Construction and Maintenance Strategy was required to identify new schools to be built, the facilities to be provided, and how they are to be maintained. The strategy was also necessary for ensuring there is equitable resources allocation in order to achieve the country's vision and mission by 2025. Some of the challenges related to school enrolment include distance to school, schools' size, the school network, supply of school facilities. The current long-term project shows that 6,000 primary classrooms are needed while 4,000 additional secondary school classrooms are also needed each year until 2025 [2]. The Pupil Teacher Ratio (PTR) temporary ranges between 35-53, while considering the current shortage, there would be a shortage of 45,000 classrooms in 2018 leading to a target of 4,500 additional classrooms per year for the next decade. To accommodate the natural growth, the 4,500 needs to be added to the 6,000 [1].

According to the Government of Tanzania (GoT) and World Bank (WB) report of 2018, there is a high implication of maintaining and expansion of ordinary level of secondary schools between 2018-2025. The total annual government cost for secondary schools will double from TZS 848 billion to TZS 1.63 trillion in 2025. A 3 to 5-year planning cost was to be developed for the estimated costs based on the type of school and facilities needed. The costing will consider regional, geographical, rural and urban settings as criteria. The bottom planning was conducted by Local Government Authorities (LGA) and are also responsible for allocation of funds for construction to the local communities. The construction of the schools was through community participation using a force account or contracting parties where the construction is a multi-storey building and needs high technical skills [1]. Project risk affects the objectives of the project both negatively or positively. The construction industry is faced with stiff competition, where contractors in addition are affected by change in technology, high risks, globalization and demanding customers. They are also faced with the fast change in trends, changes in laws and regulations, and the difficult economies. In the construction industry the performance of infrastructural projects is determined by the performance of construction companies and their ability to survive in the competitive market. Project Risks have been identified as the major cause of poor performance on construction projects. Such risks are numerous and vary at different stages of project life cycle depending on their complexity and dynamic nature [3]. The construction industry is faced by a lot of risk including financial and environmental risks. Construction risks can be classified according to risks types, the origin of the risks, or depending on the phase of the project. Some researchers propose classification of risks based on the location, origin and the impact on the project [4].

The African construction industry has become more dynamic, with infrastructural projects getting bigger and more complex. According to Deloitte's African Construction Trends Report of 2013, this expansion is due to economic growth, a rising middle class, urbanization, and regional integration in many of the 54 nations in Africa. In South Africa Building and infrastructure projects at the public works and roads department in North Western province were found to be poorly performed and characterized by cost overruns, scope creep and change of schedule which is attributed to contractor related factors, owner related factors, and those factors related to the consultant [5]. In Tanzania, study done by [6] on the factors affecting cost management of road construction projects found that change of scope, change in design, poor leadership, stakeholders' conflicts, incompetent contractors and project manager, political climate and force majeure are some of the factors that affect cost management. Cost overrun is a common challenge in projects, with projects even having more than 50% of cost overruns. Another challenge is delay which causes increase in cost in construction projects in Tanzania [6]. In another study on the causes of cost overrun in building of building projects in Tanzania, found that the source of cost overruns in projects are internal sources and are always technical. They include: inflation of construction materials, scope or plan changes, design changes, and changes in specifications [7].

A. Statement of the Problem

The implementation of the Free-Free Basic Education Policy (FFBEP) in 2015 led to increase in national enrolment by 38% in the subsequent year. In the ordinary level secondary schools increased by 10% between 2016 and 2018 with enrolment of over 1.9M in lower secondary in 2018. Though the increase in enrolment indicated a positive achievement towards access to basic education, however, there was a need for more learning space [1]. According to the Government of Tanzania (GoT) and World Bank (WB) report of 2018, there is a high implication of maintaining and expansion of ordinary level of secondary schools between 2018-2025. The total annual government cost for secondary schools will double from TZS 848 billion to TZS 1.63 trillion in 2025. According to the Ministry of Education Science and Technology of Tanzania (MoEST)the estimated needs for new secondary schools or their expansion stands by region, Mara region for the 9 districts. It has potential demand of 154,371 where the current enrolment stands at 96,906 giving a gap of 57,465. There are also 80 schools. The overcrowding students and the enrolment gap is around 75,082 that need around 156 schools. The current population growth estimated the number to increase to 110, 707 and those will need 231 schools. Thus, the proportional gap stands at 37.2% [8].

Project costs are represented in monetized expressions of the targets to be accomplished within a given period. With a well-articulated cost, the management of public schools through MoEST can effectively to plan, coordinate, control and evaluates its activities. Costs are in form of budgets which are thus the financial plans. Budgeting is one of the existing process in the MoEST and very crucial. A good budgeting process is an important management tool for enhancing effective project cost management during project implementation. Budgets are sourced for allocation of resources and mobilization of funds through proposals to donors. Public-school construction projects are funded by GoT and other international donors such as World Bank. Despite the funding by the GoT and other donors to achieve the middle-income status and also become a semi-industrialized country by the year 2025 through education, there has been a large gap between the need for classrooms and the classrooms built each year with Mara region having a proportional gap stands at 37.2% [8]. Some school built are substandard and have to be demolished e.g. Kurumwa Ward Secondary School in the Northern Tarime District and that is loss to the society. To achieve efficient utilization of the allocated funds, proper project cost control measures should be implemented to ensure that the management team account for the allocated funds.

B. Research Objective

The general objective of this study was to determine the effect of project risk management on the performance of public school's construction projects in Mara region, Tanzania**.**

The specific objectives comprise of the following;

1. To examine the effect of risk identification practices on performance of public schools' construction projects in Mara region, Tanzania.

2. To determine the effect of risk monitoring practices performance of public schools' construction projects in Mara region, Tanzania.

II. LITERATURE REVIEW

A. Theoretical Review

The study was underpinned by the prospect theory of risk. The prospect theory was formulated in late 1970's and further developed in 1992 by Amos Tversky and Daniel Kahneman. Prospect theory is a theory of decision-making under conditions of risk [9]. Decisions involve an internal conflict over value trade-offs. This theory is designed to describe better, explain, and predict the choices that typical person makes in a world of uncertainty. The theory addresses how these choices are framed and evaluated in the decision-making process. Prospect theory advances the notion that utility curves differ in domains of gain from those in domains of loss. Prospect theory is designed to explain a characteristic pattern of choice. It is descriptive and empirical. The most interesting feature of Prospect Theory for most psychologists is that it predicts when and why people will make decisions that differ from perfectly rational or normative decisions. This has therefore figured prominently in explanations of why people make a variety of transparently bad decisions in daily life. Prospect theory analyses two components of making decision namely framing and appraisal phase [10]. Framing refers to how an option is influenced by the manner of its presentation to the decision maker. Value function and weighting function are the two components that entail the appraisal phase of a prospect theory. The value function is explained in form of gains and losses comparative to the reference point rather than in form of absolute wealth. In this theory, value is a function of change through attention to the beginning point so that change can be either positive or negative. People will commit more effort to preventing a loss than achieving a potential gain [11]. In addition, [11] state that people's commitment increases when they are trying to prevent a loss, but decreases when they are trying to gain something. For all practical purposes, this means that the energy and resources a person will use to prevent a loss will increase in proportion to the likely size of the loss. The converse is not true in respect of a gain [12].

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B. Conceptual Framework

The conceptual framework for this study is as shown below:

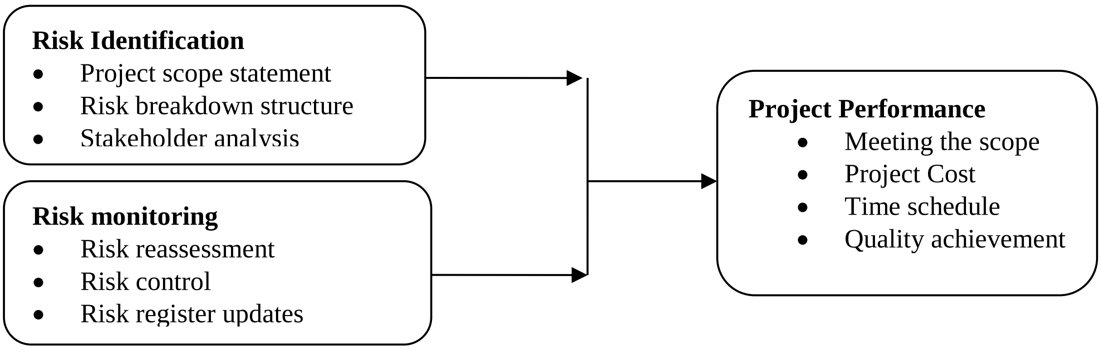

Fig 1: Conceptual Framework

i). Risk Identification

Risk Identification refers to the process of determining which risks are likely to affect the project and documenting the characteristics of each [13]. Participants in risk identification activities may include the project managers, project team members, risk management team, subject matter experts outside the project team, customers, end users, other project managers, stakeholders and risk management experts. Risks include but not limited to social, environmental and economic risks. Risk identification is the first stage in the project risk management process, and it encompasses determining all potentials risk that might occur during the project implementation [14]. Risk Identification forms the base for subsequent steps of risk assessment/analysis, monitoring, and control, and enables project implementers to learn about the areas that are exposed to risk. If correctly performed, risk identification guarantees successful risk management, preventing unknown sources of losses escalating to unmanageable occurrences with unexpected outcomes [14]. The emphasis is not only aimed at the inability to identify loss causing risks but also includes the inability to determine opportunistic events. The effect of the non-identification of positive risks is equal to the effect of non-identification of adverse risks [15].

Risk Identification involves the identification of all possible risks and circumstances which may affect the implementation of the project, as well as the conditions leading to the threats and opportunities. Risk identification, therefore, facilitates the efficient studying of areas and activities where project resources are at risk, affecting their ability to achieve their goals and objectives [15]. To efficiently perform risk identification, the principal project documentation must be prepared. These include the project charter, project scope statement and project management plan [15]. The risk management plan and the organizational atmosphere needs to be well understood to perform an effective risk identification. These form the basis in which project risks will be evaluated. The risk management plan may also identify specific risk identification practices that are either acceptable or not by the project implementers. This information can encourage thinking about different risk matters and concerns when evaluated using the tools and techniques of risk identification [15, 14]. The tools and techniques used in risk identification vary from one project to another. The most frequently used tools and techniques include – brainstorming, interviews, questionnaire, Delphi technique, expert systems, documentation review, checklist analysis of previous similar projects, assumption analysis, and diagramming techniques [13].

ii). Risk Monitoring

After project risks have been identified, assessed, and appropriate responses developed, those findings are required to be put into action. Risk monitoring and control include implementing the risk plan, which should be an integral part of the project plan as well as re-evaluating emerging risks [13]. Risk Monitoring and Control may therefore be looked at as the process of identifying, analysing and planning newly arising risks, keeping track of the identified risks and those on the watch-list, reanalysing existing risks, monitoring trigger conditions for contingency plans, monitoring residual risks and reviewing the execution of the risk responses while evaluating their effectiveness [13]. Project Risk Monitoring and Control is usually faced with two main challenges including implementing the project risk plans and ensuring that project risk plans are updated and effective. The second challenge is producing significant documentation to support the risk monitoring process. Project risk monitoring and control aimed at keeping track of identified risks, controlling deviations, minimize risks and increase the project value [14]. This stage of the Risk Management Plan addresses project risks in such a way that maximizes the effective achievement of project objectives. Risk control is based on a proactive approach other than a reactive approach to having the right measures in place and refining on them repeatedly. It is worth noting that, there are no readily available solutions for minimizing project risk in the construction industry. However, the following corrective actions have been proposed to assist in handling the risks associated with construction projects [14]. This final step of RMP is vital since all information about the identified risks is collected and monitored [16]. The continuous supervision over the RMP helps to discover new risks, keep track of identified risks and eliminate past risks from the risk assessment and project [13]. According to [13] the assumptions for monitoring and controlling are to supervise the status of the risks and take corrective actions if needed. Tools and techniques used to risk monitor and control may be. Risk reassessment and identification of new potential risks. This is a constantly repeated process throughout the whole project. Monitoring of the overall project status are there any changes in the project that can affect and cause new possible risks? Status meetings discussions with risks owner, share experience and helping to manage the risks. Risk register updates by managing the whole RMP, the process can be evaluated. This is a method of creating a risk register where all risks and their management can be allocated to facilitate future projects [17]. This is also a way to improve the project work, since the advantages and disadvantages will be brought up.

iii). Project performance

Project cost estimate is one of the dependent variables in the study. Project Management Body of Knowledge guide (PMBOK) defines cost estimates as a developed approximation of the monetary resources needed to complete project activities. The accuracy of cost estimates starting from the planning phase of a project through to the tender view can affect the success or failure of an engineering project. Many failures of construction projects are as a result of cost escalations [17]. The process of determining the project budget involves aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline [13]. The project budget that results from the planning cycle must be reasonable, attainable, and based on contractually negotiated costs and the statement of work. The basis for the budget is historical cost, best estimates, or industrial engineering standards. The budget must identify planned manpower requirements, contract-allocated funds, and management reserve Performance results standards are quantitative measurements and include such items as the quality of work, the quantity of work, cost of work, and time-to-complete [18]. Earned value is a management technique that relates resource planning to schedules and technical performance requirements. Earned value management (EVM) is a systematic process that uses earned value as the primary tool for integrating cost, schedule, professional performance management, and risk management [13].

C. Empirical Review

In a study by [19] on the effects of project risk management practices on performance of consulting civil engineers in Nairobi county found that risk identification has no significant influence on performance of projects this may be mainly due to lack of optimal identification of risks during selection of projects, risks presentation, risks prioritization, and a few experts in risk identification. [20] in their study on the influence of project risk management on the performance of agricultural projects in Nakuru county recommend the inclusion of risk management plan during design of agricultural projects. The study further emphasizes on regular and continuous trainings to help the project managers improve on their skills and competencies in risk management process. The agricultural sector should also provide opportunities to project team members for those with ambition to advance in their education to advance their careers to enable them have the necessary knowledge in project management to identify the potential risk at early stages.

III. RESEARCH METHODOLOGY

A. Research Design

The study adopted an Ex-post facto design. Ex-post facto design is a quasi-experimental study examining how an independent variable, present prior to the study in the participants, affects a dependent variable. The choice of the Ex post facto design is based on the fact that in this study research is interested in how factors that happened before the researcher went to collect data affected the current state of affairs. Ex-post facto design is therefore appropriate because it will enable the researcher to gather information concerning risk management practices and performance of public-schools construction projects in Mara region in Tanzania.

B. Target Population

The target population in this study will be public-schools projects completed in the past five years within Mara Region as captured in the government of Tanzania projects. According to Matokeo website, there are around 175 public schools in Mara region that in one way or the other were under construction [21] and also reported by [1] school construction and maintenance strategy.

C. Sampling

The sample will be arrived at by using the Slovins formula since the population is less than 1000 (182 supervisors) [22].

D. Data Analysis and Presentation

Both descriptive and inferential analysis was done. The results were presented in table, graphs, and charts. Multiple regression as done to establish the relationship between the independent variables with the dependent variables. The model was fitted as follows:

$$Y= \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e_0$$

Where; Y= Project Performance (dependent variable),

βo = Constant (Coefficient of intercept)

X_1= Risk Identification

X_2= Risk Monitoring

IV. RESEARCH FINDINGS AND DISCUSSIONS

A. Response Rate

The study findings in Table I revealed that the researcher distributed 122 questionnaires to the respondents. 95 questionnaires out of the 122 were returned, which gives a response rate of approximately 77.87%.

Table I: Response Rate

Questionnaire Issued	Questionnaire Returned	Responses Rate
122	95	77.87%

B. Descriptive Statistics

The responses were analysed as per study variables and presented in table and later discussed.

i). Risk Identification

This section of the analysis focused on respondent's knowledge and perceptions on risk identification. Risk Identification is the process of determining which risks are likely to affect the project and documenting the characteristics of each. It is the first stage in the project risk management process. Thus, the study sought to establish the views of the respondents regarding risk identification. The findings were presented in Table II.

Table II: Risk Identification

		SD	D	N	A	SA	Mean	SDV
We identify risk when selecting a project	N	6	7	17	44	21	3.71	1.09
	%	6.3	7.4	17.9	46.3	22.1		
We make and present various risks identified	N	1	9	19	39	27	3.86	0.97
	%	1.1	9.5	20	41.1	28.4		
We select and prioritize risk	N	0	9	7	34	45	4.21	0.94
	%	0	9.5	7.4	35.8	47.4		
We have set out criteria for identify and predicting risk	N	6	1	27	37	24	3.76	1.05
	%	6.3	1.1	28.4	38.9	25.3		
We have permanent expert committee who identify risk	N	6	1	27	37	24	3.94	1.17
	%	6.3	1.1	28.4	38.9	25.3		
We collect and analyze data before identifying	N	8	6	2	47	32	3.80	0.77
	%	8.4	6.3	2.1	49.5	33.7		
Risk Identification							**3.88**	**0.76**

The findings in Table 4.4 showed that, 46.3% (n=44) and 22.1% (n=21) of the respondents agreed and strongly agreed respectively that they identify risk when selecting a project while 6.3% (n=6), 7.4% (n=7) and 17.9% (n=17) strongly disagreed, disagreed and were neutral respectively. The mean value was 3.71 and standard deviation 1.09 implying that majority of the registered civil engineers identify risk during project selection. Further, the findings show that 41.1% (n=39) and 28.4% (n=27) agreed and strongly agreed respectively that they make and present various risks identified while 1.1% (n = 1), 9.5% (n=9) and 20% (n=19) strongly disagreed, disagreed and were neutral respectively giving a mean response of 3.86 (SD = 0.97) indicating majority of the respondents go ahead and make as well as present the various risks they have identified during project selection.The findings also show that 35.8% (n=34) and 47.4% (n=45) agreed and strongly agreed respectively that they select and prioritize risk while 9.5% (n=9) and 7.4% (n=7) disagreed and were neutral regarding this. The mean response was 4.21 (SD = 0.94) showing that majority of the registered civil engineers further prioritize the risk identified. The findings also showed that 38.9% (n=37) and 25.3% (n=24) of the respondents agreed and strongly agreed respectively that they have set out criteria for identify and predicting risk while 6.35 (n = 6), 1.1% (n=1) and 28.4% (n=27) strongly disagreed, disagreed and were neutral in their perspective thereby giving a mean response of 3.76 (SD = 1.05) indicating that majority of the respondents have defined criteria for identifying and predicting risk.

Furthermore, 38.9% (n=37) and 25.3% (n=24) of the respondents agreed and strongly agreed respectively that they have permanent expert committee who identify risk while 6.3% (n=6), 1.1% (n = 1) and 28.4% (n=27) strongly disagreed, disagreed and were neutral regarding this giving a mean of 3.94 (SD = 1.17) indicating the presence of an oversight committee especially for identifying risk and the committee is made of experts in civil engineering. Finally, the findings also showed that 49.5% (n=47) and 33.7% (n=32) of the respondents agreed and strongly agreed respectively that they collect and analyze data before identifying while 8.4% (n=8), 6.3% (n=6) and 2.1% (n=2) strongly disagreed, disagreed and were neutral respectively regarding this. The mean response was 3.8 (SD = 0.77) revealing a high level of use of information in risk identification. In general, the results on the respondents' perception about risk identification had a mean of 3.88 (SD = 0.76) meaning that the majority of the registered civil engineers agreed about the various aspects of risk identification and how this can influence project risk management processes and after that, the performance.

ii). Project Risk Monitoring

Risk Monitoring and Control may therefore be looked at as the process of identifying, analyzing and planning newly arising risks, keeping track of the identified risks and those on the watch-list, reanalyzing existing risks, monitoring trigger conditions for contingency plans, monitoring residual risks and reviewing the execution of the risk responses while evaluating their effectiveness. Thus, the study sought to assess the level of implementation of project monitoring about risk management from the perspective of the civil engineers and this might impact on project risk management. The findings regarding this were presented in Table III.

Table III: Project Monitoring

		SD	D	N	A	SA	M	SD
We engage our evaluators in training	N	0	0	17	65	13	3.96	0.563
	%	0	0	17.9	68.4	13.7		
We monitor project risk regularly	N	0	2	36	32	25	3.84	0.842
	%	0	2.1	37.9	33.7	26.3		
The project risk control systems are very effective in their functions	N	0	15	38	28	14	3.43	0.930
	%	0	15.8	40	29.5	14.7		
The project risk is evaluated now and then	N	0	0	12	51	32	4.21	0.651
	%	0	0	12.6	53.7	33.7		
There is regular check of input activities	N	0	25	23	37	10	3.34	0.985
	%	0	26.3	24.2	38.9	10.5		
Participatory oversight has been made during risk monitoring	N	21	9	33	29	3	2.83	1.182
	%	22.1	9.5	34.7	30.5	3.2		
There is continuous review and evaluation of risk	N	2	36	0	32	25	3.84	0.842
	%	2.1	37.9	0	33.7	26.3		
Portfolio Managers continually monitor project risks	N	0	12	0	51	32	4.21	0.651
	%	0	12.6	0	53.7	33.7		
Risk Monitoring							**3.62**	**0.678**

The findings in Table 4.5 show that 68.4% (n=65) and 13.7% (13) of the respondents agreed and strongly agreed respectively that they engage their evaluators in training 17.9% (n=17) of the respondents were neutral. The mean response was 3.96 (SD = 0.563) and indicated the presence consultative decision-making process regarding training. Furthermore, 33.7% (n=32) and 26.3% (n=25) of the respondents agreed and strongly agreed respectively that they monitor project risk regularly while 2.1% (n=2) and 37.9% (n=33) disagreed and were neutral respectively giving a mean response of 3.84 (SD = 0.842) revealing that there was routine monitoring of risk as part of the process of risk management within the projects. Further, it was revealed that 29.5% (n=28) and 14.7% (n=14) of the respondents agreed and strongly agreed respectively that the project risk control systems are very useful in their functions while 15.8% (n=15) and 40% (n=38) disagreed and were neutral respectively. The mean response was 3.43 (SD = 0.93) indicating that majority of the respondents were not sure regarding the effectiveness of the risk control systems thereby presenting a gap within the project risk management process. Furthermore, 53.7% (n=51) and 33.7% (n=32) of the respondents agreed and strongly agreed respectively that the project risk is evaluated now and then while 12.6% (n=12) were not sure thus giving a mean response of 4.21 (SD = 0.651) that indicated that project risk was continuously evaluated thus confirming that majority of them monitor risk regularly. Although this was the case, only 38.9% (n=37) and 10.5% (n=10) of the respondents agreed and strongly agreed respectively that There is regular check of input activities while 26.3% (n = 25) and 24.2% (n=23) disagreed and were neutral regarding this respectively giving a mean response of 3.34 (SD = 0.985) indicating that majority of the civil engineers were not sure on this thus showing a gap in the monitoring process.

The findings also show that 30.5% (n=29) and 3.2% (n=3) of the respondents agreed and strongly agreed respectively that participatory oversight has been made during risk monitoring while 22.1% (n = 21), 9.5% (n=9) and 34.7% (n=33) strongly disagreed, disagreed and were neutral respectively regarding this giving a mean response of 2.83 (SD = 1.182) indicating that majority of the respondents are not sure whether there is participatory oversight is carried out during risk monitoring thereby showing that there is a centralized oversight structure. It was further revealed that 33.7% (n = 32) and 26.3% (n = 25) of the respondents agreed and strongly agreed respectively that there is continuous review and evaluation of risk while 2.1% (n = 2) and 37.9% (n = 36) of the strongly disagreed and disagreed respectively with this thus giving a mean of 3.84 (SD = 0.842) showing that majority of the civil engineers continuously review and evaluate risk thereby strengthening the risk monitoring process which they carry out regularly. Finally, the findings show that 53.7% (n = 51) and 33.7% (n = 32) of the respondents agreed and strongly agreed respectively that portfolio managers continually monitor project risks while 12.6% (n = 12) disagreed. The mean response was 4.21 (SD = 0.651) showing that majority of the respondents agreed on this and this shows that those that are responsible for continual monitoring of project risks actually carry out their activities in line with their mandate. The overall mean response for project monitoring was 3.62 (SD = 0.678) that showed that majority of the civil engineers agree on the various aspects regarding project monitoring despite there being a few gaps in 3 areas of project monitoring.

iii). Project Performance

Finally, the study sought to establish the level or degree of project performance given the level of implementation of project risk management. The views of the respondents were found regarding completion of the projects in time, within the set budget, ability of the project to serve its purpose as well as other aspects of project performance. The project budget that results from the planning cycle must be reasonable, attainable, and based on contractually negotiated costs and the statement of work. The findings were presented in Table IV.

Table IV: Project Performance

		SD	D	N	A	SA	Mean	SDV
Project was completed within the time	N	0	15	1	60	19	3.87	0.914
	%	0	15.8	1.1	63.2	20		
Projects were completed within set budget	N	0	7	23	56	9	3.71	0.742
	%	0	7.4	24.2	58.9	9.5		
Project can now service its purpose	N	0	12	30	34	19	3.63	0.946
	%	0	12.6	31.6	35.8	20		
There are other new projects that need to be implemented	N	0	0	13	47	35	4.09	0.957
	%	0	0	13.7	49.5	36.8		
	N	0	7	25	44	19	3.79	0.849

Most of our employees are always willing to serve and participate in Project decision making	%	0	7.4	26.3	46.3	20		
Employees can promptly respond to our requests even when they are busy	N	0	7	23	39	26	3.88	0.898
	%	0	7.4	24.2	41.1	27.4		
Project performance							**3.701**	**0.631**

From the findings in Table 4.863.2% (n=60) and 20% (n=19) of the respondents agreed and strongly agreed respectively that the project was completed within the time while 15.8% (n=15) and 1.1% (n=1) disagreed and were neutral giving a mean response of 3.87 (SD = 0.914) indicating that majority of the projects are completed within the planned timelines. Furthermore, 58.9% (n=56) and 9.5% (n=9) of the respondents agreed and strongly agreed respectively that the projects were completed within set budget indicating the effectiveness of the projects and efficiency with the allocated resources. Only 24.2% (n=23) and 7.4% (n=7) disagreed and were neutral regarding this thus giving a mean response of 3.71 (SD = 0.742) indicating the majority of the projects were completed within the budget.

The findings also showed that 35.8% (n=34) and 20% (n=19) of the respondents agreed and strongly agreed respectively that the project can now service its purpose while 12.6% (n=12) and 31.6% (n=30) disagreed and were neutral respectively giving a mean response of 3.63 (SD = 0.946) which is an indication that the projects are well planned and can attain the objectives that were set from the onset. Furthermore, 49.5% (n=47) and 36.8% (n=35) of the respondents agreed and strongly agreed respectively that there are other new projects that need to be implemented while 13.7% (n=13) were neutral giving a mean response of 4.09 (SD = 0. 957) indicating that majority of the respondents agreed with this statement.

The findings also showed that 46.3% (n=44) and 20% (n=19) agreed and strongly agreed respectively that most of their employees are always willing to serve and participate in project decision making while 7.4% (n=7) and 26.3% (n=25) disagreed and were neutral regarding this. This showed another side of project performance regarding benefiting all internal and external stakeholders. The mean response was 3.79 (SD = 0.849) indicating agreement by a majority of the civil engineers. Finally, 41.1% (n=39) and 27.4% (n=26) of the respondents agreed and strongly agreed respectively that employees can promptly respond to their requests even when they are busy while 7.4% (n = 7) and 24.2% (n=23) disagreed and were neutral respectively resulting a mean response of 3.88 (SD = 0.898) indicating agreement by majority of the respondents. The overall mean response was 3.701 (SD = 0.631) showing approval by a majority of the respondents regarding various aspects of project performance.

C. Inferential Analysis

i). Correlations

Thus, the study sought to establish the nature of the relationships existing between the independent variables and the dependent variable by examining the correlation coefficients, and the findings were presented in Table V.

Table V: Correlation Analysis

		Risk Identification	Risk Monitoring
Project Performance	ρ	0.109	0.687**
	sig	0.371	0.000

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

ρ is the Pearson's Product Moment Correlation Coefficient

The findings in Table V above showed that risk identification does not have a significant relationship with project performance, ρ = 0.109, sig = 0.371 > 0.05. Risk identification also has a weak correlation with project performance. This implies that, though Risk identification correlates with performance of public schools' construction projects in Mara Region, Tanzania, it isn't significant. Thus, there is an association of 0.109 of increase in project performance given increased risk identification, this is not significant at 0.371 which greater than 0.05 level of significance. Furthermore, risk monitoring has a positive and significant relationship with project performance, ρ = 0.687, sig = 0.001<0.05 meaning that there is association of 0.687 of increase in project performance increasing with risk monitoring is increased.

ii). ANOVA

The findings in Table VI for the analysis of variance revealed that the variation accounted for the model on project performance was significant, F (4, 90) = 147.606, p < 0.001. Thus, at least one of the variables in the study is fit in explaining the variation of performance of public construction projects in Mara Region, in Tanzania.

Table VI: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	32.496	4	8.124	147.606	0.000b
Residual	4.954	90	0.055		
Total	37.45	94			

a. Dependent Variable: Project Performance

b. Predictors: (Constant), Risk Identification, Risk Monitoring, Risk Response, Risk Governance

iii). Regression Analysis

The data were regressed to obtain the beta coefficients their significance and extent of influence. Table VII below shows the results.

Table VII: Regression model

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.159	0.118		9.832	0.000
Risk Identification	0.006	0.022	0.012	0.284	0.777
Risk Monitoring	0.121	0.050	0.150	2.416	0.018

a. Dependent Variable: Project Performance

The first specific objective of the study was to examine the effect of risk identification practices on performance of public schools' construction projects in Mara in Tanzania. This was through answering the research question stating that: To what extent does risk identification affect the performance of public schools' construction projects in Mara in Tanzania? From the findings in Table 4.12, risk identification does not have a significant effect on project performance, $\beta 1= 0.012$, $p = 0.777$. Furthermore, the impact of risk identification is less than that accounted for by the associated error. This means that not enough is being done regarding project risk identification regarding the identification of the risk when selecting the project, presentation of risks, prioritization of risks, predicting risk, having enough experts to identify risk and use of data in risk identification. It has to be noted that although risk identification, in this case, has a potential effect on project performance, it is not significant. Risk identification is the first stage in the project risk management process, and it encompasses determining all potentials risk that might occur during the project implementation [14,15]. In this case, there are areas that are lacking. If correctly performed, risk identification guarantees successful risk management, preventing unknown sources of losses escalating to unmanageable occurrences with unforeseen outcomes [13,15] and the effect of the non-identification of positive risks is equal to the effect of non-identification of negative risks. The lack of risk identification means that the project cannot identify and study areas and activities where project resources are at risk, and this would affect their ability to achieve their goals and objectives [13,14]. In this case, such critical resources such as project charter, project scope statement and project management plan might be lacking or are not sufficiently available.

The second specific objective of this study was to determine the effect of risk monitoring and control practices on performance of public schools' construction projects in Mara in Tanzania by answering the research question stating that: What is the effect of risk monitoring and control on the performance of public schools' construction projects in Mara in Tanzania? The findings in Table 4.12 show that risk monitoring has a positive and significant effect on project performance, $\beta 2= 0.150$, $p = 0.018$ indicating that with each unit increase in risk monitoring, project performance would increase by 0.15 units. Also, the effect of risk monitoring is over two times compared to that attributed to the associated error, $t = 2.416$. In line with this finding, risk monitoring and control provides a means of analyzing and planning for any arising risks as well as keeping track of such risks. However, to further have better project performance, the following two main challenges have to be addressed: ensuring that there are established project risk plans and ensuring that such plans are updated and remain effective all through the project. Also, documentation is critical in support of the risk monitoring process.

V. CONCLUSION

The findings show that risk identification does not have a significant effect on project performance, $\beta_1 = 0.012$, $p = 0.777$. Despite this, the findings have shown that: they identify risk when selecting a project, they make and present various risks identified, they select and prioritize risk and have set out criteria for identity and predicting risk. Further, they have a permanent expert committee who identify risk and collect and analyze data before identifying. However, not enough is being done regarding project risk identification regarding identification of the risk when selecting the project, presentation of risks, prioritization of risks, predicting risk, having enough experts to identify risk and use of data in risk identification. There is need to further enhance the processes of risk identification by strengthening already existing practices and investing more in risk identification resources. The findings show that risk monitoring has a positive and significant effect on project performance, $\beta_2 = 0.150$, $p = 0.018$. This is mainly because the consultants: engage their evaluators in training indicated the presence consultative decision-making process regarding training, monitor project risk regularly revealing that there was routine monitoring of risk as part of the process of risk management within the projects, continuously review and evaluate risk and portfolio managers continually monitor project risks. However, more needs to be done especially in ensuring project risk control systems are very effective in their functions, evaluating the project risk regularly and constantly and ensuring that there is regular check of input activities and ensuring that participatory oversight has been made during risk monitoring.

Risk identification has no significant effect on project performance. This is mainly because there is no optimal identification of the risk when selecting the project, presentation of risks, prioritization of risks, predicting risk, having enough experts to identify risk and use of data in risk identification. Furthermore, risk monitoring has an enhancing effect on project performance especially in the engagement of evaluators especially in training, regular monitoring of risk, routine review and risk evaluation and availing the necessary human resources to drive the risk management process.

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