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Influence of Risk Management Practices on Performance of Roads Construction Projects: Case of Kenya Urban Roads Authority, North Rift Region, Kenya

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Abstract:
Globally, there in tremendous growth within the road construction industry, which out paces that of global Gross Domestic Product (GDP) with major concentration in China, the United States and India? In developing countries, 80% of the unsuccessful projects fail as a result of poor scope management. Road projects in Kenya have been facing various challenges, which include delay in completion and cost overruns. The current study sought to establish risk management practices influencing performance of road construction projects. The specific objective of the study was to establish; influence of risk identification on performance of roads construction projects, influence of risk assessment on performance of roads construction projects, influence of risk response on performance of roads construction project and influence of risk monitoring on performance of roads construction projects. The study adopted stakeholder theory. The descriptive design was used since the study gathered quantitative and qualitative data. The target population was 128 employees in Kenya Urban Roads Authority, North rift region. The respondents were 96 employees selected from various departments; procurement, finance and administration and design and construction. Questionnaires was the main instrument for data collection. A pilot study was conducted among the employees in Kenya Rural Roads Authority, Uasin Gishu County the questionnaires was analyze for reliability using Cronbach's alpha, a coefficient of 0.83 was obtained which confirmed reliability of the instruments. The questionnaires were presented to the supervisors from University of Nairobi for their advice. Data was analyzed using descriptive statistics; frequencies and percentages. Regression analysis was conducted to establish the influence of risk management practices on performance of road construction project. The study findings indicate that the firm uses various techniques to identify possible risks. KURA undertakes risk analysis in order to understand the magnitude of the risk, risk assessment is undertaken through; undertaking scenario analysis, use of decision tree, using PERT diagrams and risk maps, using the opinion of the experts and basing on the records of similar projects. The firm has set up contingency plans to respond to risks, taking mitigation measures, undertaking due diligence to prevent risks, changing design and outsourcing. The firm undertake risk reassessment at every stage of the project, the firm undertake risk audit to ensure proper mechanisms is put in place to avoid risk and uses previous data to monitor the performance of the current similar projects. The multiple regression analysis indicated that risk identification, risk assessment, risk response and risk monitoring significantly affect road construction project performance. The study recommend that the firm employ the use of modern technologies such as computer modeling software's to in risk assessment.

Keywords: *Risk management practices, performance of roads construction projects, Kenya urban roads authority, north rift region, Kenya*

1. Introduction

Infrastructure can be a path of transformation in addressing some of the majority of regular development challenges of today's world: social stability, swift urbanization, environmental change including natural disasters. World Bank (2011) observes that without an infrastructure that facilitates green and inclusive expansion, countries will not only be in a difficult situation to meet fundamental needs, but will struggle to get competitive. FIDIC (2006) report point out inability to achieve suitable standard in construction is a major problem worldwide. The role of the sector is very significant owing to its productivity and due to the accomplishment of socio-economic objectives like shelter, infrastructure and employment opportunities (Usman et al., 2012).

Risk management entails potential risk management through identifying the risks, analyzing a well as addressing those risks. This aid in mitigation of the chances of occurrence of these risks as well mitigation of negative impacts when they occur. (Partnerships BC, 2005). There are four phases of processes of risk management as presented by PMBOK: response development, identification, control and qualification. The first in the process of risk management the identification of risk, as it attempts to determine the type and source of risks. It consists of recognition of conditions of

events of potential risk in classification of responsibilities of risks and project construction (Wang & Chou, 2003). It develops the risk analysis basis and control of management of risk.

The second stage of process of risk management is the analysis of risk where data collected regarding the potential risk are analyzed. According to Cooper *et al.,* (2005), analysis of risk can be described as short-listing risks with the highest impact on the project, out of all threats mentioned in the identification phase (Cooper *et al.,* 2005). In the analysis of the identified risk, two categories of methods – qualitative and quantitative – have been developed. The qualitative methods are most applicable when risks can be placed somewhere on a descriptive scale from high to low level. The quantitative methods are used to determine the probability and impact of the risks identified and is based on numeric estimations (Winch, 2002). More companies tend to use a qualitative approach since it is more convenient to describe the risks than to quantify them.

This third step of the process, response development, indicates what action should be taken towards the identified risks and threats. The response strategy and approach chosen depends on the kind of risks concerned (Winch, 2002). The risk needs to have a supervisor to monitor the development of the response, which will be agreed by the actors involved in this risk management process. (PMI, 2004). Winch (2002) argues that the lower the impact the risk has, the better it can be managed. Most common strategies for risk response are: avoidance, reduction, transfer and retention (Potts, 2008).

This final step of the risk management process is vital since all information about the identified risks is collected and monitored (Winch, 2002). The continuous supervision over the risk management procedures helps to discover new risks, keep track of identified risks and eliminate past risks from the risk assessment and project (PMI, 2004). PMI (2004) also states that the assumptions for monitoring and controlling are to supervise the status of the risks and take corrective actions if needed. PMI (2004) describes the tools and techniques applied to monitor and control risk. These are risk reassessment identification of new potential risks, 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 the risk owner, share experience and helping managing the risks and risk register updates. Risk register update is a method of creating a risk register where all risks and their management can be allocated in order to facilitate future projects (PMI, 2004).

Though risk management has become a concern in most projects, project risk management is not commonly applied with regard to the construction projects (Klemetti, 2006). More construction companies are starting to become aware of the risk management procedures, but are still not using models and techniques aimed for managing risks. Cost of risk is a concept many construction companies have never thought about despite the fact that it is one of the largest expense items (Cavicnag, 2009).

Risk management planning develops a detailed strategy for risk responses depending on the nature of likely risks. The plan should include formally defined and agreed milestones and deliverables. These milestones and timelines enable appropriate project monitoring and control, as well as timely mitigation decisions when risk events emerge.

Management of these deadlines needs to be met in order for the project to stay within agreed schedules and budgets and to maintain project team credibility. A workable risk plan should include a risk breakdown structure, a quantification of impact values of identified risks, a risk register, and mitigation and contingency response plans, (Schroeder et al, 2011). Inadequate planning is among the factors which cause risk in construction projects. If adequate planning of the entire project is not observed due to negligence or inexperience it may lead to loss or even failure of the project (Saminu *et al,* 2003).

The ultimate importance of project performance is achieved through avoiding the project's failure to keep within cost budget, failure to keep within time stipulated for approvals, design, occupancy and failure to meet the required technical standards for quality, functionality, fitness for purpose, safety and environment protection (Flanagan & Norman 2003). Project performance ensures that enterprises maximize on profitability, minimize the consequences of risky and uncertain events in terms of achieving the project's objectives and seizes the chances of the risky events from arising (Kululanga & Kuotcha, 2010). Risk management is one of the nine knowledge areas propagated by the Project Management Institute (PMI). The PMBOK presents four phases of the risk management process: identification, quantification, responses development and control (PMBOK, 2004).

Globally, there in tremendous growth within the road construction industry, which outpaces that of global Gross Domestic Product (GDP) with major concentration in China, the United States and India. However, Sub Saharan Africa is characterized by limited number of firms dominating large scale-works, mainly Chinese and European contractors (Queiroz, 2012). In developing countries, 80% of the unsuccessful projects fail as a result of poor scope management (Nganga, 2013).

In Botswana, most construction projects encounter cost overruns due to four related factors: variations, re-measurement of provisional works, and fluctuation in the cost of labour and materials and contractual claims for extension of time with cost (Chimwaso, 2010). Government of Uganda is investing substantially in the infrastructural development, including the roads sub-sector, as a prerequisite for structural transformation in the economy. According to the Crossroads' database (2012), Uganda has a total of 746 local roads contractors. It is estimated that 45 per cent of the roads in Uganda are in poor condition. Districts are worse off with 56 per cent of the roads in poor condition, yet roads are the major mode of transport in Uganda linking areas of production to markets as well as facilitating mobility of people. Over 90 per cent of cargo freight and passengers move by road (Bogere, 2013).

In Kenya, vision 2030 identifies infrastructure development as one of the very crucial pillars to economic growth. Vision 2030 aspires for a country firmly interconnected through a network of roads, railways, ports, airports, water and sanitation facilities, and telecommunications (African Development Bank, 2009). The goal of the government is to ensure that by the year 2030 it will become impossible to refer to any region of the country as remote. For this reason, Kenya has

invested heavily in infrastructure according to the Road Sector Investment Plan 2010-2024. The growth in the sector is expected to remain over a 10-year forecast period up to 2024. The economic survey 2015 attributed the double-digit expansion to steady growth in property development, including the ongoing construction of mega projects. The building and construction sector contributed 4.8% of Kenyan's GDP, and the construction industry is expected to sustain its strong growth since the country plans to roll out several big dollar projects such as the 10,000 kilometers road annuity project. To achieve this transformative government agenda, it is important to ascertain factors that might hinder the performance of roads construction project. This study therefore seeks to establish risk management strategies influencing performance of roads construction projects.

The infrastructure has been given the highest priority to ensure that the main road projects under the economic pillar are implemented, according to the Ministry of Roads Service Charter (2008), there is a need for improvement of roads to a motorable condition because the road transport (mode of transport) carries about 80% of all cargoes and passengers in the country. Due to the importance of roads in socio-economic development of the country, the government has in the recent past steadily increased budget allocation to the road sub-sector. However, road projects in Kenya have been facing various challenges, which include delay in completion, cost overruns, demolition of residential and businesses houses and abortive works (Maina, 2013).

2. Research Methodology

The study applied descriptive survey research design. The descriptive design was used since the study gathered quantitative and qualitative data that describes risk management strategies influencing performance of roads construction projects in Kenya Urban Roads Authority. According to Sekeran (2003), descriptive research design is a type of design used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables or conditions in a situation. Kothari (2003) describes descriptive research as including surveys and fact-finding enquiries adding that the major purpose of descriptive research is description of the state of affairs as it exists. Population is the entire set of units for which the study data are to be used to make inferences (Kothari 2003). Target population defines those units for which the findings of the study are meant to be generalized from (Dempsey 2003). The study targeted KURA employees in the North Rift region office. There are 128 employees in the KURA North Rift regional office, which formed the target population for the study.

The study employed the use of purposive sampling to select employees in the management level; chief procurement officer, chief officer corporate, chief officer legal, senior auditor, senior ICT, senior engineer and design, and senior engineer planning since they are mostly involves in the risk management practices. Simple random sampling was used to select the other employees. The sample size for the study was 96 respondents.

The questionnaires and interview guide were the main instruments for data collection. The questionnaire composed of closed-ended questions utilizing an ordinal scale format. Questionnaires are preferred because according to Dempsey (2003) they are effective data collection instruments that allow respondents to give much of their opinions pertaining to the researched problem. According to Kothari (2003), the information obtained from questionnaires is free from bias and researchers influence and thus accurate and valid data was gathered. The questionnaires were self-administered, since the respondents were left with the questionnaire to respond at their convenient time and picked later after 48 hours.

Pilot study was conducted to help in identification of errors in data collection instruments and make necessary adjustment in order to ensure valid and reliable data was collected. Pilot study was conducted among Kenya Rural Roads Authority (KERA) employees in Uasin Gishu County to test the reliability and validity of the questionnaire. This was undertaken to test the reliability and validity of data collection instruments (Sekeran, 2003).

Descriptive statistics method was applied to analyze quantitative data where data was scored by calculating the frequencies and percentages. This was done using Statistical Package for Social Sciences (SPSS) computer software version 21.0. SPSS is considered appropriate since it allowed the researcher to follow clear set of quantitative data analysis procedures that leads to increased data validity and reliability and demonstrates the relationship between the research variables. SPSS also assisted in producing frequency tables for descriptive analysis. Inferential statistics was applied through use of Pearson correlation. The correlation analysis was used to determine with statistical significance, the influence risk management practices on performance of roads construction projects.

3. Findings

The first objective of the study was to establish the influence of risk identification on performance of roads construction projects in KURA, North Rift region. The respondents were presented with questions rated in a five-point Likert scale; rated 1- strongly disagree (SD), 2- disagree (D), 3 – undecided (U), 4 – agree (A), and 5 – strongly agree (SA). During analysis, the response was analyzed using descriptive statistics; frequencies and percentages and presented in frequency tables.

	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
The firm employ the use of risk checklist, risk tables, risk breakdown structures, event tree and defect tree.	3	3.6	8	9.6	13	15.7	45	54.2	14	16.9
The firm conduct brainstorming session with various project teams to identify possible risks	3	3.6	15	18.1	4	4.8	35	42.2	26	31.3
The firm undertakes risk profiling	4	4.8	6	7.2	6	7.2	41	49.4	26	31.3
The firm sometimes engage external consultant in risk identifications	0	0.0	10	12.0	8	9.6	39	47.0	26	31.3
The firm use the experience of the project teams to identify risks	8	9.6	0	0.0	0	0.0	41	49.4	34	41.0

Table 1: Response on Risk Identification

The study established that the firm employ the use of risk checklist, risk tables, risk breakdown structures, event tree and defect tree to identify the possible risks that might be witnessed in the course of project implementation, as indicated by the majority of the respondents 45(54.2%) who agreed and 14(16.9%) who strongly agreed. The firm also conduct brainstorming session with various project teams to identify possible risks that might arise at later stages of the project, as evidenced by 35(42.2%) of the respondents who agreed and 26(31.3%) strongly agreed with the statement. Majority of the respondents 41(49.4%) agreed and 26(31.3%) strongly agreed that the firm undertakes risk profiling. In some occasions, the firm engages external consultant in risk identifications as indicated by most of the respondents 39(47.0%) who agreed and 26(31.3%) that strongly agreed with the statement. On the statement that the firm use the experience of the project teams to identify risks, most of the respondents 41(49.4) agreed and 34(41.0) strongly agreed, as indicated in table 1.

The firm employed the use of risk checklist, risk tables, risk breakdown structures, event tree and defect tree to identify the possible risks that might be witnessed in the course of project implementation. The above risk identification techniques employ the use of Work Break Down Structures (WBS) where the entire projects are broken down into individual work unit and link together using PERT techniques, event tree or any other techniques. At this point, it is possible to identify risk areas. This is done through brainstorming session with various project teams to identify possible risks that might arise at later stages of the project. Once the risks have been identified, a risk profiling is done so that the number of risks identified can be reduced. At this stage the firm uses the experience of the project teams to identify risks. Some of the risk identified might require critical analysis to ascertain, hence in such circumstances, the firm engages the services of external consultant in risk identifications. The correlation results indicated that risk identification significantly affect performance of road construction projects. Therefore, the methodology used in risk identification; whether modern or traditional the experience of the project teams will affect the performance of road construction projects.

The study established that the firm employ the use of risk checklist, risk tables, risk breakdown structures, event tree and defect tree to identify the possible risks that might be witnessed in the course of project implementation. According to Ropel, (2011), in order to find all potential risks which might impact a specific project, different techniques can be applied. It is important to use a method that the project team is most familiar with and the project will benefit from. The aim is to highlight the potential problems, in order for the project team to be aware of them. One of the effective tools for identifying potential risks is the work breakdown structure (WBS) which reduces the chance of missing risk event (Smith, 2008).

The firm conduct brainstorming session with various project teams to identify possible risks that might arise at later stages of the project. The study agrees with Oluwaseyi, (2012) who established that managers often rely heavily on their experience and on the insight of other key personnel involved in the process. Majority of the respondents agreed that the firm undertakes risk profiling. In some occasions, the firm engages external consultant in risk identifications. The firm use the experience of the project teams to identify risks. The correlation results indicated that risk identification significantly affect performance of road construction projects. The findings concur with Jun, Qiuzhen and Qingguo (2010) who investigated the effects of project risk planning on IT project performance in China. The study established that project risk identification and control make a greater significant positive contribution to project performance. Similar findings were obtained by Addison and Vallabh, (2002), the study was carried out on impact of project risk Identification on performance of software projects in IT enterprises in China. The p-value showed a relationship between project risk identification and project performance**.** On the influence of risk analysis on performance of roads construction projects in KURA, North Rift region.

	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
The firm undertake scenario analysis to assess risk	0	0.0	6	7.2	3	3.6	37	44.6	37	44.6
The firm employ the use of decision tree to assess risks	0	0.0	5	6.0	6	7.2	50	60.2	22	26.5
The firm employ the use of PERT diagrams to assess risk	2	2.4	6	7.2	4	4.8	45	54.2	26	31.3
The firm uses risk map to assess risks	4	4.8	6	7.2	0	0.0	41	49.4	32	38.6
The firms seek the opinions of the experts to assess risks that are identified during the project implementation	0	0.0	6	7.2	0	0.0	45	54.2	32	38.6
The firm consult previous records of similar projects to help in assessment of risks.	2	2.4	2	2.4	2	2.4	44	53.0	33	39.8

Table 2: Response on Risk Analysis

Table 2 shows majority of the respondents 37(44.6%) agreed and similar proportion strongly agreed that the firm undertake scenario analysis to assess risk. The firm also employ the use of decision tree to assess risks as indicated by most of the respondents 50(60.2) who agreed with the statement.

The findings indicated that the firm employ the use of PERT diagrams to assess risk as evidenced by 45(54.2%) of the respondents who agreed and 26(31.3%) who strongly agreed with the statement. the firm also uses risk map to assess risks. The findings further indicated that the firm seeks the opinions of the experts to assess risks that are identified during the project implementation, as the majority of the respondents 45(54.2%) agreed and 32(38.6%) strongly agreed. The firm also consult previous records of similar projects to help in assessment of risks, as shown by 45(54.2%) of the respondents who agreed and 32(38.6%) who strongly agreed, as indicated in table 4.5. The study established that after risk identification, KURA undertakes risk analysis in order to understand the magnitude of the risk, risk analysis is undertaken through; undertaking scenario analysis, use of decision tree, using PERT diagrams and risk maps, using the opinion of the experts and basing on the records of similar projects.

Risk assessment is the second stage in risk management, at this stage the study established that the firm employ various techniques in risk assessment which includes; undertaking scenario analysis, use of decision tree, PERT diagrams, and risk map, seeking and consulting previous records of similar projects to help in assessment of risks. The firm employ various techniques since each technique has its strength and weaknesses, hence the use of different techniques helps in enhancing risk assessment accuracy. The study indicated that risk assessment significantly affects performance of road construction projects.

The study established that the firm undertake scenario analysis to assess risk. The firm also employ the use of decision tree to assess risks. The findings indicated that the firm employ the use of PERT diagrams to assess risk. The firm also uses risk map to assess risks. The findings further indicated that the firm seeks the opinions of the experts to assess risks that are identified during the project implementation and consult previous records of similar projects to help in assessment of risks. The study indicated that risk assessment significantly affects performance of road construction projects. The study concurs with Roque and de Carvalho (2013) who carried out a study on impact of project risk assessment on project performance in Brazil. The results demonstrate that adopting risk assessment and has a significant positive impact on project success as project staff were able to identify and take measures to mitigate occurrence of risks to a greater extent. The study found that assessing uncertainties during the project, making use of the risk management strategies and deeply understanding the business environment are critical success factors had a significant impact on project performance. The findings also agree with Karimi *et al.,* (2011) who conducted a study to establish decision criteria from the nominal group technique (NGT). The Study concluded that the assessment of project risk are the critical procedures for projecting success, and that there must be in Construction project between dissimilar, yet contractually integrated parties, owners, designers, contractors, sub-contractors, suppliers, manufacturers, and others.

The third objective was to assess the influence of risk response on performance of roads construction projects in KURA, North Rift region.

	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
The firm has contingency plan to respond to unforeseen occurrence	0	0.0	9	10.8	4	4.8	46	55.4	24	28.9
The firm undertake risk mitigation to ensure that the project is completed as planned	0	0.0	12	14.5	4	4.8	43	51.8	24	28.9
The firm undertake due diligent to prevent risks	0	0.0	17	20.5	7	8.4	39	47.0	20	24.1
Sometime the firm change designs to avoid or minimize risks	0	0.0	4	4.8	0	0.0	57	68.7	22	26.5
Sometimes the firm accept the risks when all the alternatives have been exhausted	0	0.0	4	4.8	2	2.4	33	39.8	44	53.0
The firm outsource some activities if it seems too risk to be undertaken	2	2.4	4	4.8	4	4.8	42	50.6	31	37.3

Table 3: Risk Response

The study established that the firm has contingency plan to respond to unforeseen occurrence, as indicated by the majority of the respondents 46(55.4%) who agreed and 24(28.9%) who strongly agreed. It further established that the firm undertake risk mitigation to ensure that the project is completed as planned, as indicated by 43(51.8%) of the respondents who agreed and 24(28.9%) that strongly agreed with the statement.

Majority of the respondents 39(47.0%) agreed and 20(24.1%) strongly agreed that the firm undertake due diligent to prevent risks. Most respondents 57(68.7%) also agreed that Sometime the firm change designs to avoid or minimize risks. But where all the alternatives have been exhausted, the firm undertakes the projects as it is. In some occasions, the firm avoid the risks by outsource some activities if it seems too risk to be undertaken as indicated by 42(50.6%) of the respondents who agreed and 31(37.3%) who strongly agreed, as indicated in table 3. the findings indicated that after risk analysis, KURA uses the information to response to the risks through; setting up contingency plans to respond to risks, taking mitigation measures, undertaking due diligence to prevent risks, changing design and outsourcing.

Most of the risks that the project might incur are identified at the first stage of risk management, but the firm has put in place contingency plan to respond to unforeseen occurrence, since such risks that were not identified at the beginning of the project might derail the project, to overcome such cases, the firm undertake risk mitigation to ensure that the project is completed as planned. In the course of the project implementation, the firm undertake due diligent to prevent risks, whenever risks are foreseen, the firm respond by taking the necessary measures and sometime the firm change designs to avoid or minimize risks. In some occasions, the firm avoid the risks by outsourcing some activities if it seems too risk to be undertaken. This helps the firm since the firm that undertake the activity may be having expertise in that area, hence saving the firm the risk that could be incurred.

The firm has contingency plan to respond to unforeseen occurrence. It also firm undertake risk mitigation to ensure that the project is completed as planned and undertake due diligent to prevent risks. But where all the alternatives have been exhausted, the firm undertakes the projects as it is. In some occasions, the firm avoid the risks by outsource some activities if it seems too risk to be undertaken. Correlation analysis indicated that risk response significantly affects performance of road construction projects. The results agrees with (Mohammed, 2013) who proposed that the techniques for managing risks in the construction projects include; avoiding risk through extending schedule, reducing scope, shutting down the project, transferring risks through financial risk exposure, insurance, warranties and guarantees or mitigating the risks by taking early actions, adopting less complex processes, conduction of more tests, choosing more stable supplies, prototyping and redundancy and where there seem no alternative the firm can take no action except to document the strategy and leave it to the project team to deal with it.

The fourth objective was to determine the influence of risk monitoring on performance of roads construction projects in KURA, North Rift region.

	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
The firm undertake risk reassessment at every stage of the project	4	4.8	12	14.5	5	6.0	31	37.3	31	37.3
The firm undertake risk audit to ensure proper mechanisms is put in place to avoid risk	2	2.4	6	7.2	4	4.8	36	43.4	35	42.2
The firm use previous data to monitor the performance of the current similar projects	0	0.0	11	13.3	4	4.8	35	42.2	33	39.8
The firm undertakes technical performance measure to monitor the project	3	3.6	8	9.6	13	15.7	45	54.2	14	16.9
The firm undertakes regular status meeting with various stakeholders to assess the implementation of the project.	3	3.6	15	18.1	4	4.8	35	42.2	26	31.3

Table 4: Response on Risk Monitoring

During project implementation, risks identified are monitored, while the emerging risks are also recorded. It was clear from the findings that the firm undertake risk reassessment at every stage of the project, as shown by majority of the respondents 31(37.3%) who agreed and similar proportion who strongly agreed. The firm also undertake risk audit to ensure proper mechanisms is put in place to avoid risk, since 36(43.4%) of the respondents agreed and 35(42.2%) strongly agreed with the statement.

The firm also uses previous data to monitor the performance of the current similar projects. The firm undertakes technical performance measure to monitor the project to ensure that it meets the pre-determined standards. To ensure that the project is steered as planned, the firm undertakes regular status meeting with various stakeholders to assess the implementation of the project, as indicated by the majority of the respondents 35(42.3%) who agreed and 26(31.3%) who strongly agreed, as illustrated in table 4.

During project implementation, risks identified are monitored and undertake risk reassessment at every stage of the project to ensure that emerging risks are also recorded. This activity ensure that proper mechanism is put in place to steer the project on course.

To ensure that the project meets the quality standards as agreed at the planning stage, the firm undertakes technical performance of the material used and such standards as the required compaction is done, the required thickness was adhered to among other standards stipulated in the plan. The firm also undertakes regular status meeting with various stakeholders to assess the implementation of the project.

Risks identified are monitored, while the emerging risks are also recorded. It was clear from the findings that the firm undertake risk reassessment at every stage of the project. The firm also undertake risk audit to ensure proper mechanisms is put in place to avoid risk. To ensure that the project is steered as planned, the firm undertakes regular status meeting with various stakeholders to assess the implementation of the project. Risk monitoring significantly affect performance of road construction projects. The study concurs with Mudau and Pretorius (2009) who conducted a study on risk monitoring and success in construction projects. The main findings indicated that project controlling have a significant influence on performance of the project and it was also found that effective earned value management contributes positively to the project success.

The dependent variable of the study was performance of roads construction projects. The response is presented in table 5.

	SD		D		U		A		SA	
	F	%	F	%	F	%	F	%	F	%
The public are satisfied with the roads under KURA jurisdiction	4	4.8	6	7.2	6	7.2	41	49.4	26	31.3
The overall quality of the road projects supervised by KURA are of high quality	0	0.0	10	12.0	8	9.6	39	47.0	26	31.3
The roads under KURA serve the public for reasonable time without requiring regular repairs	0	0.0	8	9.6	0	0.0	41	49.4	34	41.0
Most of the roads projects falls within the estimated budget			6	7.2	3	3.6	37	44.6	37	44.6
The public enjoy value for money for projects undertaken by KURA			5	6.0			50	60.2	22	26.5
Most of the road projects are completed within the set timelines			2	2.4	6	7.2	45	54.2	26	31.3

Table 5: Response on Road Projects Performance

The study established that the public is satisfied with the roads under KURA jurisdiction as indicated by 41(49.4%) of the respondents who agreed and 26(31.3%) who strongly agreed. Majority of the respondents 39(47.0%) agreed and 26(31.3%) strongly agreed that the overall quality of the road projects supervised by KURA are of high quality. On the statement that the roads under KURA serve the public for reasonable time without requiring regular repairs 41(49.4%) agreed and 34(41.0%) strongly agreed.

The study established that most of the roads projects fall within the estimated budget, as evident by 37(44.6%) of the respondents who agreed and 37(44.6%) who strongly agreed, it was further established that the public enjoy value for money for projects undertaken by KURA as indicated by 50(60.2%) of the respondents who agreed and 22(26.5%) who strongly agreed, the researcher also sought information on completion time of the roads projects under KURA, majority of the respondents 45(54,2%) agreed and 26(31.3%) strongly agreed with the statement that the roads under KURA serve the public for reasonable time without requiring regular repairs. The response is presented in table 5.

3.1. Correlation Analysis

The researcher conducted correlation analysis to establish the relationship between risk management practices and roads construction project performance.

		Project Performance
performance	Pearson Correlation	1
	Sig. (2-tailed)	
Risk identification	Pearson Correlation	.772**
	Sig. (2-tailed)	.000
Risk assessment	Pearson Correlation	.807**
	Sig. (2-tailed)	.000
Risk response	Pearson Correlation	.455**
	Sig. (2-tailed)	.000
Risk monitoring	Pearson Correlation	.577**
	Sig. (2-tailed)	.000
	N	83

Table 6: Correlation Analysis Summary

The study established that risk identification has positive significant relationship ($r = 0.772^{**}$, $p = 0.000$) with performance. Risk assessment was found to have a significant positive relationship on road construction project performance ($r = 0.807^{**}$, $p = 0.00$). Similarly, risk response was found to have significant positive relationship with performance of construction project ($r = 0.455^{**}$, $p = 0.000$), and finally, risk monitoring had a positive significant relationship with performance of construction project. The results hence indicate that, risk identifications, risk assessment, risk response and risk monitoring influence performance of performance of construction project.

4. Conclusions

The study findings indicate that the firm uses various techniques to identify possible risks; which includes; use of risk checklist, risk tables, risk breakdown structures, event tree and defect tree, conducting brainstorming session with various project teams, undertaking risk profiling, engaging the services of external consultants and using the experience of the project teams to identify risks.

The study established that after risk identification, KURA undertakes risk analysis in order to understand the magnitude of the risk, risk assessment is undertaken through; undertaking scenario analysis, use of decision tree, using PERT diagrams and risk maps, using the opinion of the experts and basing on the records of similar projects.

The findings indicated that after risk assessment, KURA uses the information to response to the risks through; setting up contingency plans to respond to risks, taking mitigation measures, undertaking due diligence to prevent risks, changing design and outsourcing.

The study established that the firm undertake risk reassessment at every stage of the project, the firm undertake risk audit to ensure proper mechanisms is put in place to avoid risk. The firm further uses previous data to monitor the performance of the current similar projects. To ensure that project perform to specification, it undertakes technical performance measure to monitor the project and also undertakes regular status meeting with various stakeholders to assess the implementation.

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