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The Strategic JOURNAL of Business & Change MANAGEMENT
ISSN: 2312-9492 www.strategicjournals.com

Vol. 8, Iss. 1, pp 545 – 562. March 3, 2021. www.strategicjournals.com, ©Strategic Journals

PROJECT MANAGEMENT PRACTICES AND PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN NAIROBI CITY COUNTY, KENYA

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Accepted: February 26, 2021

ABSTRACT

The purpose of this study was to establish the influence of project management practices on performance of road construction projects in Nairobi City County, Kenya. The study used a descriptive research design. The study population was 120 (road engineers, supervisors, inspectors, surveyors and contractors). The study targeted the completed road projects, constructions of the new and upgrading of the old roads in the study area. The study adopted a census and administered a questionnaire as the data collection tool for primary data collection. The data collection instrument was pilot tested to confirm whether it was valid and reliable for data collection before carrying out the actual study. The study intended to have both qualitative and quantitative data. The qualitative data was subjected to thematic analysis while descriptive and inferential analyses were used to analyze the quantitative data. The study carried out diagnostic tests before inferential analysis fit the conditions, assumptions and expected models. It was established that there existed a strong positive relationship between the project management practices and performance of road projects. The study results implied that project management practices jointly accounted for 77.20% of the performance of road projects. This implied that project management practices need to be factored to improve performance of road projects. Results revealed that all the project management practices had a positive and significant relationship with implementation of road projects in Nairobi City County, Kenya. However, the magnitude of the influence was different for the specific project management practices. The project planning had the largest effect followed by project M & E then project funding and finally the project risk management. Consequently, this study provided project managers involved in the implementation of road projects with the insights of how to improve implementation of projects through adoption of project management practices. The key recommendations were that road project managers should embrace project management practices such as project planning, project funding, project M & E and project risk management in order to realize project implementation success of the roads.

Key Words: *Project Planning, Project Funding, Project Monitoring and Evaluation, Risk Management*

CITATION: Mongina, C., & Moronge, M. (2021). Project management practices and performance of road construction projects in Nairobi City County, Kenya. *The Strategic Journal of Business & Change Management,* 8 (1), 545 – 562.

INTRODUCTION

Project management practices among road construction projects has gained increased prominence owing to what Ngundo (2014) observes as an increase in infrastructure development in the country. The rise of many road construction projects, most notable in roads, has been faced with a lot of uncertainty, resulting in outcomes that fail to meet minimum standards benchmarked against best practice in the sector. This is attributed the low levels of project success to failure to develop proper procedures, lack of sufficient training and capacity building programs, incompetence among project staff, low levels of formal quality management support and low levels of management commitment. As a result, project risk management planning was characterised by poor risk identification, assessment, prioritization, mitigation and control. The overall outcomes were weak and inappropriate risk management measures that increased the vulnerability of the construction firms to risk (ibid).

Based on the results of the past studies, most of the researchers generally seem to have identified similar factors that generally influence performance of road construction projects, for instance, Aziz and Asmaa (2016) observed that performance of road construction projects in Egypt was mainly influenced by financing factors such as late payment by the financier, delays in client approval, improper selection of contractors, poor planning, geological problems on site, unrealistic contract prices, staffing issues, and disagreements with the stakeholders. Saraf (2013) as well as Adnan, Sheriff and Saleh (2009) observed that improper planning, poor site management and shortage of resources were major causes of delay or failure in construction. Similarfactors were also identified by Otim and Alinaitwe (2015) who noted that most of the road construction projects in Uganda suffered from change of scope, environmental issues as well as scarcity of resources

In Kenya, Wambui, Ombui &. Kagiri (2015) showed that completion of road projects was greatly enhanced by use of modern equipments, technical skills by project managers, project finances and project technology. Theroad infrastructure accounts for an estimated 93% of all freight and passenger traffic in Kenya (Ministry of Roads, 2012). Kenya has had a tremendous growth in traffic of 8.2% annually. Kenya is experiencing traffic growth of 8.2% a year, population growth of 4.1% a year and economic growth of 6% a year; has not been matched with development of road network resulting into persistent traffic jams and conflict of different modes of transport costing the economy about 0.9% of the GNP annually (World Bank, 2013).

Limitations of studies from Kenya are quite similar to those from other countries; they also suffer from either failure to focus on road construction projects or using either cost or delays as the only indicators of successful completion of construction projects. For instance, Macharia (2016) left out cost which is an important variable in indicating successful completion of road construction projects. On the other hand, Seboru (2015) and Choge and Muturi (2014) were only interested in the issue of adherence to cost estimates whereas Ngacho and Das (2014) merely studied development projects with a particular interest on Constituency Development Fund (CDF) construction projects and thereby giving no attention to road construction projects. Ondari and Gekara (2013) were keen to study the factors that influence completion of road construction projects in Kenya though with a limited consideration of the independent variables. Their study though broad in scope, only considered the impact of capacity issues on the part of the government to implement road construction projects in the country.

Poor infrastructure was identified under the Economic Recovery Strategy (ERS) for Wealth and Employment Creation 2003-07 as a major constraint to doing business. Likewise, the Kenya Vision 2030 recognises infrastructure as an enabler for sustained development under the economic pillar. The LAPSSET project undervision 2030 recognises

the underdevelopment of Northern Kenya and therefore aims to open up Northern Kenya and integrate it into the national economy. The components of the LAPSSET are a new road network, a railway line, oil refinery at Lamu, oil pipeline, Isiolo and Lamu Airports and a free port at Lamu (Manda Bay) in addition to resort cities at the coast and in Isiolo. The road component is made of two major components: Lamu -Isiolo -Southern Sudan border: Lamu -Garissa (D 568); Garissa -Isiolo (C 81, D 586, B 9); Isiolo -Maralal Link Road (C 77, C 78, C 79); Isiolo -Lokichar -Nadapal (D 370, C 113, C 46, A 1); and the Kenya -Ethiopia road link: Isiolo -Moyale (A2) divided into four lots [Isiolo –Merille River; Merille River –Marsabit; Marsabit –Turbi; Turbi –Moyale].

Statement of the Problem

In Kenya, development of road construction projects is very crucial and form part of the key drivers of development and economic growth towards achieving Vision 2030. The completion of road construction projects is essential to facilitate economic development of a country and stakeholders try to ensure that the projects are completed in time, cost and quality. However, most road projects in Nairobi City County are not completed within the initial set targets of time due to a number of factors that impact negatively on the performance of these road projects (Hussein & Kisimbii, 2019). Further, noted that only 20.8 per cent of the road projects were implemented on time and budget, while 79.2 per cent exhibited some form of failure. Nyika (2012) noted that only 20.8 per cent of the projects in Kenya were implemented on time and budget, while 79.2 per cent exhibited some form of failure. According to Gitau (2015) the road construction projects in the county still continues to experience significant cost overruns, schedule delays and poor quality output, resulting in poor time, cost and quality performance. The poor performance of road construction projects is attributed to risk management practices (Wafula, 2017).

Choge and Muturi (2014) also observed that very few road construction projects in Kenya were completed within the budget cost estimates due to a number of challenges. A number of factors were identified as significant determinants of cost adherence such as ground conditions, poor planning and unrealistic initial requirements. Another study was conducted by Seboru (2015) and focused on the factors that result to delays in road construction projects in Kenya. The researcher noted that these factors ranged from project funding, project monitoring and evaluation, poor planning, contractor capacity and slow decision making. Despite the significant investment that the Government continues to make towards road construction, Macharia (2016) laments that around 55 percent of all road construction projects in the country suffer a myriad of challenges hindering their completion within schedule, experiencing cost overruns or fail to meet the requisite quality standards. According to GoK (2017) report many of the road construction projects are not completed within the schedule, more than 17% road connecting Nairobi in 2010 were closed for expansion, in 2015 majority 13% were still not in operation.

From the aforementioned studies, though the project management practices have gained a lot of popularity as a tool for improving construction project performance. Owour (2016) conducted a study on factors influencing completion of construction projects in Kenya and looked on government buildings construction projects in Nairobi County, Kenya. Langat (2015) conducted a study on factors influencing completion of construction projects in public secondary schools in Bomet East sub-county, Bomet County, Kenya. Seboru (2015) established a study on investigation into factors causing delays in road construction projects in Kenya. The study established that most studies on determinants of road construction project completion were conducted in developed countries and few studies were conducted in Kenya. Gathoni and Karanja, (2016) that most of the

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construction projects undertaken in the County using the Constituency Development Funds (CDF) were either poorly completed (30%) or not completed at all (50%) and only 20 percent were complete and performing. The road construction projects in the county have suffered delays, failed to meet quality standards with a number exceeding their budget estimates which is worrying though there lacks empirical research. It is on this premise the current study sought to establish the project management practices on performance of road construction projects in Nairobi City County, Kenya.

Objectives of the Study

The purpose of the study is to establish the influence of project management practices on performance of road construction projects in Nairobi City County, Kenya. The specific objectives were:

- To examine the influence of project planning on performance of road construction projects in Nairobi City County, Kenya.
- To establish the influence of project funding on performance of road construction projects in Nairobi City County, Kenya.
- To determine the influence of project Monitoring and Evaluation on performance of road construction projects in Nairobi City County, Kenya.
- To assess the influence of project risk management on performance of road construction projects in Nairobi City County, Kenya.

LITERATURE REVIEW

Theory of Constraints

This section covers a review of the theory of constraints that anchors this study; it discusses the assumptions of the theory and its relevance to this study. This study will be guided by Goldratts'(Goldratt,1984) Theory of Constraints (ToC). This theory holds that a system is faced by constraints that limit it from achieving its objectives. Some of these limiting factors emanate from production, planning, production control, managing a project, logistics, accounting, performance measurement and other lines of business which might impact on performance. In this theory, constraints define the output of a system whether acknowledged or not. The aim of the top management is findings appropriate ways to minimize the constraints of a system in the organization.

Some of the impediments that affect performance of projects are inadequate finances, poor leadership and inadequate technical skills. These limitations highly contribute to failure of project completion resulting into inefficiencies and delay which might lead to an increase in costs of the project. However, the supporters of this theory; Noreen etal. (2012) put more emphasis on the significance of project teams identifying the limitations and establishing effective ways to deal with these limitations at early stages to reduce their impact on road projects

Programme Theory

A programme theory details an intervention's contribution to a chain of results and effects that lead to the foreseen results and impacts (Rogers, 2011).It may include impacts that are positive in line with the objective of implementation or detrimental to the basis of the intervention. Occasionally, it will also show other incidental factors that contribute to producing results and the context in which this happens. Programme theory provides a conceptual framework used in developing an integrated monitoring and evaluation framework and guiding these two important project functions.

Programme theory also helps bring together available information that supports a programme providing clarity about how a programme is understood to work or not to work, thereby aiding to bridge the gap towards optimal performance(Rogers, 2011). Programme theory principles may apply for a single evaluation, planning multiple evaluations of different projects that are funded under program, or to collate data and information from multiple evaluations both midterm and final. A programme theory develops

during the planning stage of a new intervention. It may be applied during implementation, close-out and post implementation. When planning for an evaluation, it is particularly useful to review the programme theory applied and review or contextualize as may be necessary. The study adopted project planning to establish the relationship between project planning and performance of road projects in Nairobi City County, Kenya.

Enterprise Risk Management Theory

The Enterprise risk management theory was propounded by Nocco and Stulz (2006). Enterprise Risk Management (ERM) is a framework that focuses on adopting a systematic and consistent approach to managing all of the risks confronting project. Risk management refers to the culture process and structures that are directed towards the effective management of potential opportunities and adverse effects (Verschuren et al., 2010). Effective risk management helps to improve the performance of an organization by creating value to the firm through better service delivery, effective manage of change, efficient use of resources, better project management, minimizing waste, minimizing fraud and supporting innovation.

The major task of enterprise risk management is therefore to ensure that the organization can keep on creating value under any uncertain environment. Managers can save a lot of money if they deal with uncertain project events in a proactive manner that will minimize the impact of threats and seize the opportunities that occur (Shahu *et al*., 2012).The ERM theory is central to this research since risk resilient organizations must objectively asses their existing risk management capacities, evaluate their organizational culture with regard to risk, performance and reward and implement sustainable risk management practices. The above theory relates to influence of project risk management on performance of road projects in Kenya.

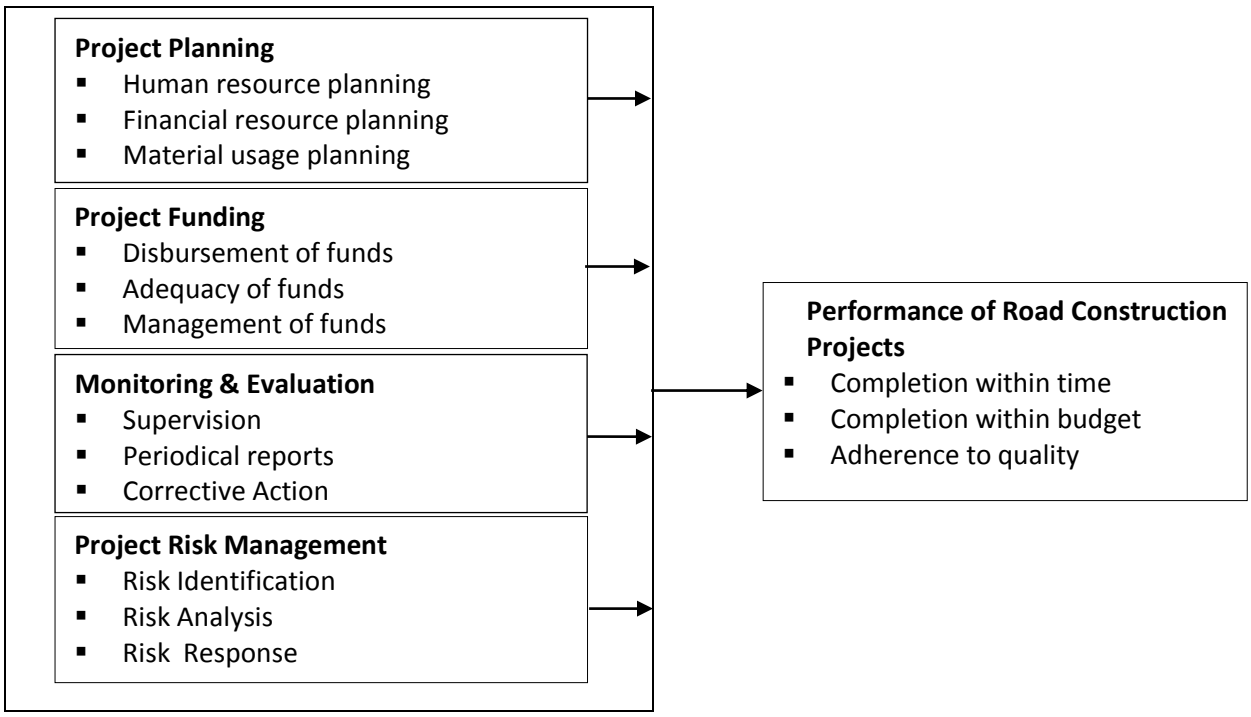

Figure 1: Conceptual Framework

The Strategic Journal of Business & Change Management. **ISSN** 2312-9492 (Online) 2414-8970 (Print). www.strategicjournals.com

Empirical Review

Werner and De Simone, (2016) studied the influence of human resource planning on organizational performance. The study targeted the human resource managers and inferential research design was used. The study found that planning of human resource helps companies in the prediction of how changes in their strategy will affect the needs of their HR. The study recommended that planning the labor force needs of any organization is very important as well as critical particularly in the rapid changes in demands of external market. The study concentrated on the human resource needs and how they affect organization performance, but it failed to address the issue on human resource planning.

PMBOK (2014) investigated the influence of cost planning on project performance. This study utilized a descriptive research design. The respondents of the study were project managers. The study found that project cost planning practices, which includes the cost budgeting as well as cost estimating process, affects project performance. According to the study, cost-planning practices are essential to complete a given project within the agreed budget. The project's budget is crucial and it has an influence in all areas in both projects planning as well as implementation. The study recommended that it is crucial to keep track of expenses for various work packages and total costs in a project. However, the study failed to show the relationship strength between project performance and cost planning.

Chan et al, (2008) hold that the most important cause of delays in the construction sector is financing by the contractor during the project, changes in designs by the owner or his agent during the construction, delays in contractor's payment and non-utilization of professional construction management. Ravindra (2019) argued that investment in a constructed facility represents a cost in the short term that returns benefits only over the long term use of the facility. Thus, costs occur earlier than the benefits, and owners of facilities must obtain the capital resources to finance the costs of construction Pilcher, (2012). A project cannot proceed without adequate financing, and the cost of providing adequate financing can be quite large Dissanayaka and Kumaran, (1999). For these reasons, attention to project finance is an important aspect of project management. Finance is also a concern to the other organizations involved in a project such as the general contractor and material suppliers Kerzner (2008). Unless an owner immediately and completely covers the costs incurred by each participant, these organizations face financing problems of their own Odusami and Olusanya (2010). Mburu and Muturi (2016) revealed that failure in timely completion of the CDF projects was occasioned by challenges associated with project funding. According to their study, all elements of the project that were; fund allocation process, budgetary and funds disbursement had respondents at below 60% in agreement. Based on these findings the study concluded that shortage of funding constrained the timely completion of roads projects.

Project monitoring is the continuous assessment of project implementation in relation to design schedules, and the use of inputs, infrastructure, and services by project beneficiaries (Simon, 1986). Project evaluation is the periodic assessment of a project's relevance, performance, efficiency, and impact both expected and unexpected in relation to stated objectives. Projects monitoring and evaluation provide managers and stakeholders with continuous feedback on implementation, interim and terminal evaluations. These are conducted on projects as ways to identify necessary adjustments in project design and to assess the projects‟ effects and their potential completion (Paul, 2005)

According to Gaba (2013) there is need for effective M&E of projects as this is increasingly recognized as an indispensable tool of both project and portfolio management. This acknowledged need to improve the performance of development assistance calls for close attention to the provision of management

information, both to support the implementation of projects and programs and to feed back into the design of new initiatives. The WBG further avers that M&E also provides a basis for accountability in the use of development resources. Given the greater transparency now expected of the development of community, governments and agencies assisting them need to respond to calls for more "success on the ground". Here, there should be examples of development projects with evidence that they have systems in place that support learning from experience.

Adjei (2015) study focused on the identifying factors associated with the construction projects in Tamale and identifying the risk control techniques adopted. The study adopted a questionnaire and quantitative data collected was analyzed by both the descriptive and statistical analysis was employed for analysis. Risk control was the practices of risk management mostly observed by the respondents. Moreover, it was realized that forty (40) out of the forty-one risk factors were significant such includes contractor financial difficulties, delay in payment, weather condition, price fluctuation, social and culture factors, vandalism amongst others. Finally, insurance, retention, bond were also identified as the most used risk control strategies used in the Tamale Metropolis.

Sikoi (2015) evaluated the performance of local road construction companies in Kenya in four broad areas namely: financial, internal business process customer and learning and growth; to determine predominant factors affecting their performance. This study involved 56 construction companies and 1 road agency in Kenya. The performance of construction companies was measured using pre-determined framework comprising of Key Performance Indicators and analyzed through descriptive statistics to establish a cause-and-effect relationship which identified pre-dominant factors affecting performance. The overall performance score was 54.54%; while pre-dominant factors affecting performance was determined as: Poor management of companies, lack of a long term development strategy and lack of deliberate investment in training of employees.

Seboru, Sabina, Kyalo and Rambo (2016) study focused on of acquisition of materials influences roads performance in Kenya. The study was based on the theory of controlling, construction management theory and stakeholder theory. The study used the pragmatism and mixed approaches. Further, the study used the cross sectional descriptive survey and correlational research design to conduct the study. The sample size for the study was 74 senior engineers which included the 30 senior engineers and 44 senior engineers from construction engineering companies; The results indicated that with null hypotheses was rejected and it was concluded that acquisition of materials had statistically significant influence on the road projects performance.

METHODOLOGY

Descriptive research design was used in the study to establish the relationship between risk management practices and roads performance. The researcher focused on the road construction projects being carried out within Nairobi City County. The projects being considered were the ones which were ongoing and completed between the year 2014 to 2020. The study units of observation comprised of 14 road engineers, 4 road supervisors, 8 road inspectors, 12 road surveyors and 102 contractors. The study targeted the completed road projects, constructions of the new and upgrading of the old roads in the study area. The study collected primary data through the use of questionnaires. The questionnaires were distributed to the respondents (road contractors, engineers, inspectors, surveyors and supervisors) to fill information about the issues being investigated by the study on the project management and road construction performance in Nairobi City County, Kenya. Piloting for this study involved 12 respondents in Nairobi City County. The study collected both the qualitative and quantitative data.

The regression model that aided the analysis was as follows;

Model 1:$Y = \beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\varepsilon$.

Where;

Y = Performance of Road construction projects (Y = f (X_1, X_2, X_3, X_4)

X_1 =Project planning

X_2 =Project funding

X_3 =Project M & E

X_4 =Project Risk Management

ε = Error term

$\beta_1..\beta_4$= Regression coefficient of four variables

RESULTS AND DISCUSSIONS

Descriptive Statistics of the Study Variables

The study variables descriptive results were represented by the use of mean and standard deviation to make conclusions of the results. The independent variables of the study included project planning, project funding, project M & E and project risk management. The dependent variable of the study was implementation of road construction projects.

Project Planning

The study sought to assess the influence of project planning on performance of road construction projects in Nairobi City County, Kenya. This section presented findings to statements posed in this regard with responses given on a five-point Likert scale (where 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5= Strongly Agree). Table 1 presented the findings. The scores of 'strongly disagree' and 'disagree' have been taken to represent a statement not agreed upon, equivalent to mean score of 0 to 2.5. The score of 'Neutral' has been taken to represent a statement equivalent to a mean score of 2.6 to 3.4. The score of 'agree' and 'strongly agree' have been taken to represent a statement highly agreed upon equivalent to a mean score of 3.5 to 5.0.

Table 1 presented the findings as tabulated, a majority of respondents were found to disagree with the statement posed in regard to influence of project planning on performance of road construction projects in Nairobi City County, Kenya. The study established that the respondents agreed that the project cost was well estimated (Mean= 4.332; Std= .763). From the study descriptive it was established that budgeted funds were enough to complete the project (Mean= 4.332; Std= .763). The respondents agreed that the projects had a training done to project team members (Mean= 3.765; Std= .009). It was agreed that an appropriate material was provided to implement the projects (Mean= 4.213; Std= .011). The respondents disagreed that all material resources allocated were used well (Mean= 1.987; Std= .017). The study results indicated that the project material and organization was well communicated during planning phase (Mean= 4.675; Std= .116).

Table 1: Influence of Project Planning on Project Implementation

Project Planning	Mean	Std. Dev
Project cost was well estimated	4.332	.763
The budgeted funds were enough to complete the project	3.765	.009
Training was done to project team members	4.213	.011
Appropriate material was provided	1.987	.148
All material resources allocated were used	3.218	.017
Project material and organization was well communicated during planning phase	4.675	.116
Average Mean	**3.648**	

Project Funding

Table 1 presented the findings and as tabulated, a majority of respondents were found to disagree with the statement posed in regard to influence of project funding on performance of road construction projects in Nairobi City County, Kenya. The study established that the respondents agreed that was accountability in use of funds (Mean=

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4.210; Std= .713). The respondents stated that the projects were always allocated enough finances to ensure their completion (Mean= 3.876; Std= .026). The respondents disagreed that the road project funds were disbursed in a timely manner (Mean= 1.675; Std= .091). From the study results, it was established that the respondents agreed that there were adequate funds for the roads project needs (Mean= 4.321; Std= .098). The respondents agreed that project financier ensured that there was timely availability of funds for all the road projects being implemented (Mean= 3.993; Std= .237). The study findings implied that project funding on performance of road construction projects in Nairobi City County, Kenya.

Table 2: Influence of Project Funding on Project Implementation

Project Funding	Mean	Std.
There is accountability in use of funds	4.210	.713
The projects are always allocated enough finances to ensure their completion	3.876	.026
The road project funds are disbursed in a timely manner	1.675	.091
There are adequate for the roads project needs	4.321	.098
The project financier ensures there is timely availability of fund	3.993	.237
Average Mean	**3.615**	

Project Monitoring & Evaluation

Table 2 presented the findings. As tabulated, a majority of respondents were found to agree with the statement posed in regard to influence of Project Monitoring and Evaluation on performance of road construction projects in Nairobi City County, Kenya. The study established that the respondents agreed they conducted M&E activities on road projects on regular basis (Mean= 4.324; Std= .724). The study established that the respondents agreed that monitoring and evaluation costing should be about 5 to 10 percent of the entire budget (Mean= 3.987; Std= .114).. To a great extent the respondents indicated that the amount allocated for M & E was adequate (Mean= 3.765; Std= .328). It was established that M&E was not a core staff function but has been done by external consultants (Mean= 3.879; Std= .542). The respondents disagreed that that the acquisition of staff with relevant skills for M&E activities (Mean= 2.210; Std= .111). The respondents disagreed that the stakeholders were only involved only in taking corrective action (Mean= 1.998; Std= .142).

Table 3: Influence of Project Monitoring and Evaluation on Project Implementation

Project Monitoring and Evaluation	Mean	Std.
Conduct M&E activities on road projects on regular basis	4.324	.724
Monitoring and evaluation costing should be about 5 to 10 percent of the entire budget	3.987	.114
Amount allocated for M & E is adequate	3.765	.328
M&E is a core staff function but has been done by external consultants	3.879	.542
Acquisition of staff with relevant skills for M&E activities.	2.210	.111
Stakeholders participated in the entire M & E process	1.998	.142
Average Mean	**3.138**	

Project Risk Management

Table 3 presented the findings as tabulated, a majority of respondents were found to agree that the respondents agreed that the project management ensured that there was adherence to technical specifications to reduce cost and time overruns(Mean= 4.218; Std= .115). It was established that the tools and techniques used to identify likely and unlikely project risks (Mean= 3.855; Std= .001. The respondents indicated that they included; reviewed of documentation, brainstorming, interviews expert judgment I about

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the project risks (Mean= 4.218; Std= .112). Respondents disagreed that for all the risks identified the likelihood and impact of the risk was assessed for all the road projects (Mean= 1.876; Std= .187. The study established that the respondents agreed that strategies were developed to manage the risks identified (Mean= 4.217; Std= .216. The study findings indicated that some of the strategies deployed included taking insurance covers, performance guarantees, and retention sum and defect liability period for all the road projects(Mean= 2.657; Std= .173).

Table 4: Influence of Project Risk Management on Project Implementation

Project Risk Management	Mean	Std.
The project ensures that there is adherence to technical specifications to reduce cost and time overruns	4.218	.115
Tools and techniques used to identify these risks, included; review of documentation, brainstorming, interviews expert judgment etc.	3.855	.001
For all the risks identified the likelihood and impact of the risk was assessed.	4.218	.112
Strategies were developed to manage the risks identified	1.876	.187
Some of the strategies deployed included taking insurance covers, performance guarantees, and retention sum and defect liability period.	4.217	.111
Average Mean	**3.677**	

Multiple Regression Analysis

From the study findings, it was notable that there exists a strong positive relationship between the project management practices and performance of road projects as shown by R value (0.772). The study results implied that project management practices jointly accounted for 77.20% of the performance of road projects as represented by the R^2. This therefore meant that other factors not studied in this research contribute 25.80% to the performance of road projects. This implied that these variables are very significant and need to be factored to improve performance of road projects.

Table 5: Model Summary (Overall)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.879[a]	.772	.758	.15186

a. Predictors: (Constant), project planning, funding, M & E, risk management

Further, the analysis of variance was used to examine whether the regression model was a good fit for the data. The p-value was 0.000, which was less than the significance level (0.05). Therefore, the model can be considered to be a good fit for the data and hence it is appropriate in predicting the influence of the four independent variables (project planning, funding, M & E, risk management) on the dependent variable (performance of road projects).

Table 6: ANOVA

Model		Sum of Squares	d.f	Mean Square	F	Sig.
1	Regression	99.516	4	24.879	93.354	.000
	Residual	22.392	84	.2665		
	Total	128.908	88			

Further, the study ran the procedure of obtaining the regression coefficients, and the results were as shown on the Table 7. The coefficients or beta weights for each variable allowed the researcher to

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relative importance comparatively of the project management practices. In this study the unstandardized coefficients and standardized coefficients are given for the multiple regression equations. However, discussions are based on the unstandardized coefficients.

Table 7: Regression Coefficient Results

Model		Unstandardized Coefficients		Standardized Coefficients	T	P-value.
		B	Std. Error	B		
1	(Constant)	12.876	2.897		4.472	0.000
	Project Planning	0.769	0.225	0.568	3.418	0.000
	Project Funding	0.678	0.265	0.435	2.558	0.010
	Project M & E	0.699	0.256	0.615	2.728	0.002
	Risk Mgt.	0.587	0.277	0.406	2.119	0.014

The Multiple regression model equation would be ($\mathbf{Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon}$) becomes: $Y= 12.876+ 0.769X_1+ 0.678X_2 + 0.699X_3 + 0.587X_4$. This indicates that Performance of road projects = 12.876 + 0.769 (Project planning) + 0.678 (Project Funding) + 0.699(M & E) + 0.587(Project Risk Management).According to the regression equation established, taking all factors into account (project management practices) constant at zero, performance of road projects was 12.876.

Findings in Table 7 showed that project planning had coefficients of estimate which was significant basing on $\beta_1 = 0.769$ (p-value = 0.000 which is less than $\alpha = 0.05$). Also, the influence of project planning is more than the effect attributed to the error, this is shown by the t-test value = 3.418, thus we conclude that there is a significant relationship between project planning and performance of road projects.

In addition, the findings in Table 7 indicated that project funding had coefficients of estimate which was significant basing on $\beta_2 = 0.678$ (p-value = 0.010 which is less than $\alpha = 0.05$). Also, the influence of project funding is more than the effect attributed to the error, this is indicated by the t-test value = 2.728, thus we conclude that there is a significant relationship between project funding and performance of road projects.

Further, the findings in Table 7 indicated that project M & E had coefficients of estimate which was significant basing on $\beta_3 = 0.699$ (p-value = 0.002 which is less than $\alpha = 0.05$). Also, the influence of project M & E is more than the effect attributed to the error, this is indicated by the t-test value = 2.728, thus we conclude that there is a significant relationship between project M & E and performance of road projects.

Further, the findings in Table 7 indicated project risk management had coefficients of estimate which was significant basing on $\beta_4 = 0.587$ (p-value = 0.014 which is less than $\alpha = 0.05$). Also, the influence of project risk management is more than the effect attributed to the error, this is indicated by the t-test value = 2.119, thus we conclude that there is a significant relationship between project risk management and performance of road projects.

CONCLUSION AND RECOMMENDATIONS

The study concluded that project planning has a positive and significant effect on performance of road projects. The study concludes that budget for the project was properly determined and that the budgeted funds were enough to complete the project. Additionally, the study concludes that formulation and implementation of human resource training are in line with overall goal. The study concluded that human resource planning positively and significantly contributes to performance of road construction projects. It was clear that material usage planning was effective as it was indicated in the quality of the material used, right materials used and the indication that all materials needed were availed to the projects.

Monitoring and evaluation is a key activity in the project management cycle. Monitoring enables the project team to track the performance of a road project on a continuous basis so as to ensure that it is implemented as planned. Evaluation allows the project team to determine the effectiveness of the projects in view of achieving pre-established targets on the M&E processes to improve performance of road projects in Nairobi City County.

The study concluded that project funding had a significant effect on the performance of road projects. The findings that project funding had a positive effect on implementation of road projects, was a good indications that increase in project funding of road projects motivate better implementation road projects in the county. The influence of this variable was found to have a positive and a statistically significant effect on projects.

The study concluded that project risk management had a significant effect on the performance of road projects. The findings that project risk management had a positive effect on implementation of road projects, was a good indications that increase in project risk management of road projects motivate better implementation road projects in the county. The influence of this variable was found to have a positive and a statistically significant effect on projects. The project risk management practices carried out included risk identification, analysis and risk response for smooth implementation of the road projects.

The study also recommended that there is need for construction firms to understand the prerequisites of the project team members in order to address them. Additionally, it is recommended that construction projects forecast the level of performance of a project before it is inaugurated. Concerning financial resource planning, the study notes that project budget is a critical part of the budget and it has a major influence on both the planning and execution parts of a project. For efficient utilization of the resource, total costs and individual costs of the diverse work packages in the project should be kept track of.

The study recommends that before the commencement of the road projects, all factors of project process should be written or recorded to ensure timely budgets and proper procedures are followed that there is need to ensure that there is timely funding. The project financier of the road projects should develop a clear schedule of funds on all the cycles of the projects and have dedicated qualified staff members who are able to create the situations of the successful timely and implementation.. This makes the timely funding and project planning process easier to manage, and it can be of use for the projects that are the same as the current project

The study recommended that the funds for carrying out M&E activities should be adequate, well budgeted and disbursed as planned. Findings also showed that project stakeholders are not known and documented. They are also not involved in M&E activities. It is therefore recommended that stakeholders should participate in M&E activities to an agreed extent by the project managers. Finally findings further showed that project staff do not exhibit skills and competence in M&E. The effectiveness of monitoring and evaluation can be enhanced when project team learn how to apply technical and systematic methodologies in executing M&E activities. Formal training program also can equip personnel with the knowledge of these methodologies and the skills required to apply these methods effectively.

It was established from the study results that project risk management influenced performance of the road projects. The study recommends that there is need to create more awareness on project risk management practices. Additional tools and risk management practices need to be developed and tested to determine which tools works best in different scenarios and environments. This can be carried out by identification of the project risks, analysis of the risks and responses. This will ensure

that risk management improves project performance and success.

Suggestions for Further Research

The findings of the study, as summarized in the previous section have several implications for theory, methodology and practice. Specifically, the results demonstrate that project management practices can act as a powerful tool that can directly lead to improved implementation of road projects. In addition, further research should apply longitudinal study to corroborate cross-sectional findings and examine performance of road projects prior to and after implementation of project planning at different time periods, providing insights into the refinement of the pertinent items since this research study was a cross-sectional one. Future researchers should consider introducing other factors not covered in this study such as project management, political interference, inflation among others to establish their influence on performance of road projects in the country.

REFERENCES

Al Mihar, M.M &Irtemeh, H.J (2017). Impact of risk management process on project success; An empirical investigate in Jordanian Ministry of Environment. *European Journal of Business and Management*, 9(19), 2222-2839

Anca, U., Cezar, B., & Adrian, U. (2015). Risk identification in project management. *In International Conference on Economic Sciences and Business Administration*, 2(1), 259-266 [Accessed on 22nd April 2019].

Aduma, L. K., &Kimutai, G. (2018). Project risk management strategies and project performance at the National Hospital Insurance Fund in Kenya. *International Academic Journal of Information Sciences and Project Management*, *3*(2), 111-136.

Alizadehsalehi, S., &Yitmen, I. (2019). A concept for automated construction progress monitoring: technologies adoption for benchmarking project performance control. *Arabian Journal for Science and Engineering*, *44*(5), 4993-5008.

Ameyaw, E. E., & Chan, A. P. (2015). Risk ranking and analysis in PPP road infrastructure projects: an international survey of industry experts. *Facilities*, *33*(7/8), 428-453.

Aziz, N. A. A., Manab, N. A., & Othman, S. N. (2015). Exploring the perspectives of corporate governance and theories on sustainability risk management (SRM). *Asian Economic and Financial Review*, *5*(10), 1148.

Bhandari, S. B., Shahi, P. B., & Shrestha, R. N. (2014). Multi-criteria Evaluation for Ranking Rural Road Projects: Case study of Nepal. *Journal of Mechanical and Civil Engineering*, *11*(6).

Cagliano, A. C., Grimaldi, S., &Rafele, C. (2015). Choosing project risk management techniques. A theoretical framework. *Journal of Risk Research*, *18*(2), 232-248.

Castillo-Rodríguez, J. T., Needham, J. T., Morales-Torres, A., &Escuder-Bueno, I. (2017). A combined risk analysis approach for complex dam–levee systems. *Structure and Infrastructure Engineering*, *13*(12), 1624-1638.

Chan, K., & Dodin, B. (2016). A decision support system for audit staff scheduling with precedence constraints and due dates. *The Accounting Review Journal*, 61(3), 726-734.

Chandra, P. (2015). *Projects planning, analysis, selection and review.* New Delhi: Tata Mcgraw.

Chihuri, S., & Pretorious, L. (2015). Managing risks for success in a South African Engineering and Construction project environment. *South African Journal of Industrial Engineering,* 21(2), 63-77.

Chileshe, N. (2010). *An evaluation of risk impacting highway and road construction projects in Nigeria* (Doctoral dissertation, China Architecture & Building Press).

Chileshe, N., &Kikwasi, G. J. (2014). Risk assessment and management practices (RAMP) within the Tanzania construction industry: Implementation barriers and advocated solutions. *International Journal of Construction Management*, *14*(4), 239-254.

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*. Sage publications.

Creswell, J. W., &Poth, C. N. (2017). *Qualitative inquiry and research design: Choosing among five approaches*. Sage publications.

Cronk, R., & Bartram, J. (2017). Factors influencing water system functionality in Nigeria and Tanzania: a regression and Bayesian network analysis. *Environmental science & technology*, *51*(19), 11336-11345.

Devaney, R. (2018). *An introduction to chaotic dynamical systems*. CRC Press.

Duff, P. (2018). *Case study research in applied linguistics*. Routledge.

El-Sayegh, S. M., & Mansour, M. H. (2015). Risk assessment and allocation in highway construction projects in the UAE. *Journal of Management in Engineering*, *31*(6), 04015004.

Flanagan, R., & Norman, G. (2017). Risk management and building. *Journal of Building Management and Economics,* 18(4), 491-500.

Fink, A. (2019). *Conducting research literature reviews: From the internet to paper*. Sage publications.

Fisher, M. B., Shields, K. F., Chan, T. U., Christenson, E., Cronk, R. D., Leker, H., ...& Bartram, J. (2015). Understanding hand pump sustainability: Determinants of rural water source functionality in the Greater Afram Plains region of G hana. *Water resources research*, *51*(10), 8431-8449.

Gawne, B., Roots, J., Hale, J., &Stewardson, M. (2014). Commonwealth Environmental Water Office Long–Term Intervention Monitoring Project: Basin Evaluation Plan. *Report prepared for the Commonwealth Environmental Water Office by The Murray–Darling Freshwater Research Centre. MDFRC Publication*, *42*, 2014.

Giannakis, M., & Papadopoulos, T. (2016). Supply chain sustainability: A risk management approach. *International Journal of Production Economics*, *171*, 455-470.

Gitau, L. M. (2015). The effects of risk management at project planning phase on performance of construction projects in Rwanda. *Master of Science in Project Management Thesis, Jomo Kenyatta University of Agriculture and Technology*.

Glaser, B. G., & Strauss, A. L. (2017). *Discovery of grounded theory: Strategies for qualitative research*. Routledge.

Goh, C. S., & Abdul-Rahman, H. (2014). The identification and management of major risks in the Malaysian construction industry. *Journal of Construction in Developing Countries*, *18*(1), 19.

Hassan, A. I. (2017). *Evaluation of the Performance of Donor Funded Road Construction Projects in Kenya* (Doctoral dissertation, JKUAT-COHRED).

Han, Y., &Peng, Z. R. (2019). The integration of local government, residents, and insurance in coastal adaptation: An agent-based modeling approach. *Computers, Environment and Urban Systems*, *76*, 69-79.

Hashim Motaleb, O., & Kishk, M. (2014). Assessing risk response maturity: A framework for construction projects success in the United Arab Emirates. *International Journal of Managing Projects in Business*, *7* (2), 247-262.

Hussein, H. I., & Kisimbii, J. (2019). Influence of Community Participation on Projects Implementation in Arid and Semi-Arid Regions: A Case of Road Construction Projects in Garissa County, Kenya. *International Journal of Current Aspects*, *3*(V), 12-27.

Iqbal, S., Choudhry, R. M., Holschemacher, K., Ali, A., &Tamošaitienė, J. (2015). Risk management in construction projects. *Technological and Economic Development of Economy*, *21*(1), 65-78.

Ju, C., & Rowlinson, S. (2014). Institutional determinants of construction safety management strategies of contractors in Hong Kong. *Construction management and economics*, *32*(7-8), 725-736.

Kagiri, D., &Wainaina, G. (2017). Time and Cost Overruns in Power Projects in Kenya: ACase Study of Kenya Electricity Generating Company Limited. *ORSEA JOURNAL*, *3*(2).

Kambi, S. B. (2015). *Impact Of Communal Projects Implementation Process On The Welfare Of Local Communities; The Case Of Msumarini Shallow Wells In Kilifi County, Kenya* (Doctoral Dissertation, University Of Nairobi).

Kanda, E., Muchelule, Y., &Mamadi, S. (2016). Factors Influencing Completion of Water Projects in Kakamega County, Kenya.

Kikuvi, K. M. (2016). Determinants of Successful Implementation of Water and Sanitation Projects in Kenya: A Case of Informal Settlement in Kenya Garissa County.

Kinyua, E., Ogollah, K., & Mburu, D. K. (2015). Effect of risk management strategies on project performance of small and medium information communication technology enterprises in Nairobi, Kenya. *International Journal of Economics, Commerce and Management*, *3*(2), 1-30.

Kisaka, S. E., &Musomi, B. (2017). The Effect of Risk Management on Performance of Investment Firms in Kenya. *Orsea Journal*, *5*(1).

Krisnawati, A., Yudoko, G., &Bangun, Y. R. (2016). Modeling An Effective Corporate Social Responsibility Based on Systems Theory and Management Functions: A Case Study in Indonesia.

Kulinkina, Alexandra V., Karen C. Kosinski, Alexander Liss, Michael N. Adjei, Gilbert A. Ayamgah, Patrick Webb, David M. Gute, Jeanine D. Plummer, and Elena N. Naumova. "Piped water consumption in Ghana: A case study of temporal and spatial patterns of clean water demand relative to alternative water sources in rural small towns." *Science of the Total Environment* 559 (2016): 291-301.

Kumar, R. (2019). *Research methodology: A step-by-step guide for beginners*. Sage Publications Limited.

Lagat, F. K., &Tenai, J. (2017). Effect Of Risk Identification On Performance Of Financial Institutions. *International Journal of Business Strategies*, *2*(1), 75-87.

Leong, T. K., Zakuan, N., Mat Saman, M. Z., Ariff, M., Md, S., & Tan, C. S. (2014). Using project performance to measure effectiveness of quality management system maintenance and practices in construction industry. *The scientific world journal*, *2014*.

Macharia, K. P. (2017). *Risk Management Strategies And Performance Of Construction Projects In Public Secondary Schools In Murang'a County, Kenya* (Doctoral Dissertation, Kenyatta University).

Mackey, A., &Gass, S. M. (2015). *Second language research: Methodology and design*. Routledge.

Maritim, S. K., &Chelule, K. (2018). Influence Of Project Risk Management Practices On Performance Of Telecommunication Network Modernisation Projects In Kenya. *European Journal of Business and Strategic Management*, *3*(7), 101-124.

Marks, S. J., Komives, K., & Davis, J. (2014). Community participation and road sustainability: evidence from handpump projects in rural Ghana. *Journal of Planning Education and Research*, *34*(3), 276-286.

Maghanga E.M &Lewa . M. (2019). Influence of project risk management on performance of cement manufacturing firms projects in Kenya. *International Journal of academics and Research* 1(4), 204-208

Mburu, D. K. (2017). Effect Of Risk Management Strategies On Project Performance Of Small and Medium Information Communication Technology Enterprises In Nairobi, Kenya.

Mbusi, E. T (2016), *Influence of Monetary and Fiscal Policies on Construction Output Levels inKenya*[online], available from http://ir.jkuat.ac.ke/handle/123456789/2082 [accessed on 01st July 2019]

Mbuva, P. M., Rambo, C. M., &Oketch, T. (2018). Influence of Risk Assessment on Performance of SME Projects in Machakos County, Kenya.*European Scientific Journal*, 14 (19), 1857-7881

McNeil, A. J., Frey, R., &Embrechts, P. (2015). *Quantitative Risk Management: Concepts, Techniques and Tools-revised edition*. Princeton university press.

Mohammed, S. and Ogolla , P. (2018). Factors influencing implementation of water projects in Coast Water Services Board. *International Journal of Novel Research in Humanity and Social Sciences*, 5 (4), 53-69

Morley, C., Ablett, P., & Macfarlane, S. (2019). *Engaging with Social Work*. Cambridge University Press.

Müller-Bloch, C., &Kranz, J. (2015). A framework for rigorously identifying research gaps in qualitative literature reviews.

Mutwiri, S. (2017). *Determinants of Strategic Risk Management in Projects: A Case of AMREF Health Africa* (Doctoral dissertation, United States International University-Africa).

Mwamburi, E. K. (2013). *Factors Affecting Access Of Road In Kisauni Area, Garissa County, Kenya* (Doctoral dissertation, Doctoral Dissertation, University of Nairobi).

Mwende, J. (2015), Big Projects Lift Construction Sector, *Construction Business Review* [online], available from http://www.constructionkenya.com/2888/construction-growth-kenya/, [accessed on 22nd July, 2019]

Muthoni, A. & Ogolla, P. (2018). Factors Influencing Project Risk Management In State Corporations: A Case Of Kenya Pipeline Company Limited. *International Journal of Novel Research in Humanity and Social Sciences,* 5 (4), 38-52

Ndambiri, J.N & Kimutai G., (2018), Risk management and performance of health systems digitalization projects in public hospitals in Nyeri County, Kenya. S*trategic Journal Of Business and Change Management*, 5(2), 2533-2549.

Ngundo, J. M. (2014), *Factors affecting effectiveness of risk management in public housing construction projects in Kenya: a case of Kibera slum upgrading housing scheme in Nairobi*, Unpublished Master of Arts Research Project, University of Nairobi, Nairobi, Kenya.

Njogu, P. M. (2015). *Assessment of effects of construction risks on project delivery among contractors in Kenya* (Doctoral dissertation, JKUAT).

Nketekete, M., Emuze, F., & Smallwood, J. (2016). Risk management in public sector construction projects: Case studies in Lesotho. *ActaStructilia*, *23*(2), 1-24.

Noga, M., Raczkowski, K., &Klepacki, J. (2015). *Risk Management in the Polish Financial System*. Springer.

Ochieng, C.H.O., (2017). Influence of project risk management strategies on the performance of organizations in the motor industry, A case of Isuzu East Africa Ltd, Kenya, *International Journal of Novel Research in Engineering and Science*, 4(2), 28-41

Odimabo, O. (2016). Risk Management System To Guide Building Construction Projects'in Developing Countries: A Case Study Of Nigeria.

Ogolla. P.J., Mugambi, F., & Obwongi, J. (2019). Influence of Project Managers Risk Management Competence on Perfromance of Garissa County Government Project, Kenya. *The international Journal of Business & Management*, 7 (5), 157-165

Ogolla, K., & Mburu, D. (2015). Effect of Risk Management Strategies on Project Performance of Small and Medium Information Communication Technology Enterprises in Nairobi, Kenya. *International Journal of Economics, Commerce and Management.,* 3(2),146-166.

Okumu, J. M., &Wanjira, J. (2017). Risk Mitigation Strategies And Performance Of Insurance Industry In Kenya: A Case Of Motor Insurance Companies. *American Journal Of Strategic Studies*, *1*(1), 22-43.

Ondara, A. E. (2017). *Risk management strategies and performance of construction firms in selected counties in Kenya* (Doctoral dissertation, Kenyatta University).

Otaalo, G., Muchelule, Y., &Asinza, K., (2019). Effect of risk identification and risk analysis on performance of Garissa construction projects in Kenya; A case study of Kakamega county. *International Journal of Social Sciences and Human Resources*, 7(2), 407-411

Ott, R. L., & Longnecker, M. T. (2015). *An introduction to statistical methods and data analysis*. Nelson Education.

Ouma, V.O & Nyonje R. (2016); Influence of Types of Risks on performance of distribution projects; A case of Kenya Power and Lighting Company in Nairobi County; *International Journal of Humanities and Social Sciences*, 6(8)

Perera, B. A. K. S., Dhanasinghe, I., & Rameezdeen, R. (2009). Risk management in road construction: the case of Sri Lanka. *International Journal of Strategic Property Management*, *13*(2), 87-102.

Pimchangthong, D., &Boonjing, V. (2017). Effects of risk management practices on IT project success. *Management and production engineering review*, *8*(1), 30-37.

Rostami, A. (2016). Tools and techniques in Risk identification: a research within SMEs in the UK construction industry. *Universal journal of management*, *4*(4), 203-210.

Saldaña, J. (2015). *The coding manual for qualitative researchers*. Sage.

Sbârcea, I. R. (2014). International Concerns for Evaluating and Preventing the Bank Risks–Basel I Versus Basel II Versus Basel III. *Procedia Economics and Finance*, *16*, 336-341.

Segismundo, A., & Miguel, P. (2015). Failure Mode and Effect Analysis(FMEA) in the context of risk management in new product development. *International Journal of Quality and Reliability Management,* 25(9), 899-912.

Silverman, D. (Ed.). (2016). *Qualitative research*. Sage.

Singh, A. S., &Masuku, M. B. (2014). Sampling techniques & determination of sample size in applied statistics research: An overview. *International Journal of Economics, Commerce and Management*, *2*(11), 1-22.

Sirkoi, A. I. A. (2015). *Factors affecting performance of local road construction companies in Kenya* (Doctoral dissertation, Strathmore University).

UWAZI, (2014).*It's our Water too!* Bringing greater equity in access to water in Kenya-Policy brief.

World Bank.(2014). *"Shoring Up Water Infrastructure."*World Bank Website, as accessed on 10August 2019. http:// go.worldbank.org/I7M6HR9BP0

Yin, R. K. (2017). *Case study research and applications: Design and methods*. Sage publications.

Yirenkyi-Fianko, A. B., &Chileshe, N. (2015). An analysis of risk management in practice: the case of Ghana's construction industry. *Journal of Engineering, Design and Technology*, *13*(2), 240-259.

Young, K., & Hall, J. W. (2015). Introducing system interdependency into infrastructure appraisal: from projects to portfolios to pathways. *Infrastructure Complexity*, *2*(1), 2.

Wafula, E. F. (2017). Factors Influencing Road Projects Performance In Kenya: A Case Of Road Contractors In Machakos County. *Univeristy of Nairobi*.

Wijethilake, C., & Lama, T. (2019). Sustainability core values and sustainability risk management: Moderating effects of top management commitment and stakeholder pressure. *Business Strategy and the Environment*, *28*(1), 143-154.