

**MANAGEMENT PRACTICES INFLUENCING PERFORMANCE OF
ROAD CONSTRUCTION PROJECTS: A CASE OF IMENTI NORTH
SUBCOUNTY MERU KENYA**

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DECLARATION

This research project report is my original work and has not been presented for examination in any other university.

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This research project proposal has been submitted for the award of the degree with your approval as University supervisors.

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DEDICATION

I dedicate this project to my mother, my son Liam, Ngatu and my close relatives and friends who have stood as my pillar throughout the project.

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Figure 1: Conceptual framework**Error! Bookmark not defined.**

ABBREVIATIONS AND ACRONYMS

IPMA-International Project Management Association

GoK-Government of Kenya

PERT - Program Evaluation and Review Technique

PPP - Public Private Partnership

IEA -Institute of Economic Affairs

ILO -International Labor Organization

KURA - Kenya Urban Roads Authority

MDGs - Millennium Development Goals

RoK - Republic of Kenya

SPSS - Statistical package for social sciences

WTO - World Trade Organization

ABSTRACT

The purpose of the study was to evaluate management practices influencing performance of road construction projects, with the general objectives being; To examine the influence of management stability, staff expertise, team work and availability of resources on performance of road construction projects. In this study descriptive research design was employed. The reason for selecting descriptive research design was that design describes the state of affairs as it exists at present; in this case the researcher has no control over the variables. The target population of the study was 56 respondents from Kenya rural roads authority because they are the persons involved mostly in construction of low volume road projects in Imenti North Sub County. The study adopted a census approach where all the members of the target population were included into the study sample. Census approach is appropriate where the target population is small and all can be easily contacted as is the case for this study. Data was collected by the use of questionnaires. A full list of respondents to be interviewed was first prepared. The local administration offices were then informed of the research and an introductory letter was sought from them, permission was also sought from the national council of science and technology (NACOSTI) so as to make of the study conform to the set standards. The physical location of the respondents was established for ease of delivery of the questionnaires which were delivered and collected after a week. Raw data collected from the field was first be cleaned for errors, coded, analyzed and categorized as per the research questions in order to simplify it for presentation. Data was analyzed and presented descriptively using statistical package for social science version 21. The response rate was 96% since 54 out of 56 targeted respondents filled and returned the questionnaires. Majority of the respondents had attained academic qualification commensurate with their job designation and it can therefore be inferred that academic qualification influences Performance of road construction projects. As per the opinions, it was revealed that the factors under study influence performance of road construction projects. The study recommend that construction authorities must ensure that adequate plans and resources exist to recruit, motivate, train and develop employees; Key management practices are needed to hedge projects against many uncertainties i.e. resource shortage, contractors' inability to meet completion dates and other types of happenings.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The construction industry accounts for 6-9% of the Gross Domestic Product (GDP) of many countries (Chitkara, 2011). In various construction firms, the rate of business failure is lack of skills and knowledge. There is vast scope for improving performance through project management skills in construction industry, where men, materials, machinery, money and management work together to build a facility. The value of annual construction activity in the world exceeds one trillion dollars.

The business and construction industry is becoming increasingly global and the role of the project management professional now includes many front-end services, which increases the required skill set of new graduates. Project management is no longer a special-need management (Arain, 2010). Alternative contractual delivery systems, collaborative partnerships, new management initiatives, and global product markets require professionals and students to have a broader awareness of construction methods and project management issues. Duncan (2010), defined project management as the application of knowledge skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations from the project. Project management is rapidly becoming a standard way of doing business (Arain and Assaf, 2010).

An increasing percentage of the typical firm's effort is being devoted to projects. The future promises an increase in the importance and the role of projects in contributing to the strategic direction of organizations (Arain, 2005b). In the developed world, many academic disciplines inside and outside of project management education have successfully used study abroad programs as an effective means of broadening project management students' academic, personal, and professional views of the world (NASFA, 2010). This certainly is the dawning of the age of Project Management in the developing countries.

A study by Akintoye & Main (2012) on risk analysis and management of projects shows that UK contractors are positive about collaborative relationships and believe they lead to cost and risk reduction. Drexler and Larson (2000) in their study show that relationships in partnering projects are much more stable than in other types of projects.

The Road Development Authority (RDA) of Sri Lanka, due to the ever-increasing traffic volume, is planning for the future development of a national highway network (RDA, 2006). Road projects however often confront many uncertainties due to factors such as the presence of interest groups, resource availability, the physical, economic and political environments, statutory regulations, etc. According to Wang and Chou (2003), such risks have a significant effect on the outcome of a road construction process. Proper risk allocation in construction contracts will reduce the impacts of adverse conditions, and increase efficiency and effectiveness in management. Risk allocation upon risk handling of road projects in Sri Lanka has not been satisfactorily established because of different interpretations of risk allocation between owners and contractors.

In most African Governments, the setting up of efficient road networks has been the central focus and a key ingredient in the development efforts (Magidu, Alumai, & Nabiddo, 2010). The provision of infrastructure in these countries is critical for economic productivity, therefore benefits in terms improving accessibility of such social services cannot be understated (Lartey, 2011). Nevertheless numerous researches globally have been carried out revealing the fact that the performance problems of these projects in both developing and the developed countries (Otim & Alinaitwe, 2013). Generally, performance measurements may have one or more indicators, and could be influenced by various project characteristics. The development of any construction project Takim and Akintoye (2002) notes, encompasses numerous parties, many processes, different phases and stages of work and a lot of input from both the public and private sectors, with the main aim being to bring the project to a successful finish.

A lot of literature written and said about project success Ika, Diallo and Thuillier (2012) but authors are yet to exhaust this meaning and measure. All the same there is unanimity that project success entails both efficiency and effectiveness; that it is a matter of perception, that there are project success criteria, principles used to define project success, and critical success factors that refer more specifically to conditions contributing to project success.

Duncan (2010) identified different stages of project management such as project initiation, planning, execution, control and the closing process. Bryde (2003) discussed different terms which have emerged since the beginning of 1990's to describe the project management approach.

These terms include: modern project management, management-by-projects, projects (project management) culture, and beyond the Gantt chart.

Field and Ofori (2013), stated that the construction makes a noticeable contribution to the economic output of a country; it generates employment and incomes for the people and therefore the effects of changes in the construction industry on the economy occur at all levels and in virtually all aspects of life (Rameezdeen, 2007). This implies that construction has a strong linkage with many economic activities (Rameezdeen, 2007), and whatever happens to the industry will directly and indirectly influence other industries and ultimately, the wealth of a country. Hence, the construction industry is regarded as an essential and highly visible contributor to the process of growth (Field and Ofori, 2008).

Despite the construction industry's significant contribution to the economy of developing countries and the critical role it plays in that country's development, the performance of the industry still remains generally low. As (Idoko, 2008) noted, many projects in developing countries encounter considerable time and cost overruns, fail to realize their intended benefit or even totally terminated and abandoned before or after their completion . Moreover, the development of the construction industry in developing countries generally lags far behind from other industries in those countries and their counter parts in developed nations.

1.2 Statement of the problem

The total annual cost of worldwide project failures alone is \$7.5 trillion dollars, according to Maylor, (2010). A government report from the Ministry of Roads & Public Works (GoK, 2009) identified eight main reasons for the failure of government projects: inadequate planning; insufficient buy-in by senior management; failure to engage effectively with key stakeholders; a lack of technical skills; poor project monitoring and review; inadequate initial evaluation of the project; poor networking skills; and failure to integrate the disparate parties needed to deliver project success. All are issues that can be improved through training and development. Moreover, these reasons apply equally to projects in public and private-sector organizations.

Empirical data (Chamoun,2011) and (World Bank, 2010) shows project management skill as having the most significant impact on achieving project success which is equated to achieving project objectives. Cooke-Davies, (2010) consistently shows well-trained teams deliver more

benefit to project management than undertrained teams. Well trained and knowledgeable project managers and staff aggressively seek ways to control cost and to effectively reduce risks to projects by carefully selecting the most appropriate technologies, hiring the most affordable and experienced consultants, and using sophisticated management practices to ensure functional success. A project's level of embedded skill will affect project outcome regardless of project complexity. The likelihood of project success is proportional to the skill level of the team working on it (International Labour Organization, 2001). Stated bluntly, the risk of a project failing to meet its objectives rises when the project team does not have the skills to do the job.

Indeed when these projects fail to achieve the set objectives, the basic project constraints are usually advanced as reasons for the same. However this would have been avoided or reduced if the project sponsors and managers were more skilled in the application of prudent project management policies and practices. Thus, this research study sought to examine the influence of management practices on Performance of road construction projects with reference to road construction projects within Imenti North Sub County

1.3 Purpose of the Study

The purpose of the study was to evaluate management practices influencing performance of road construction projects. A case of Imenti North subcounty, Meru Kenya.

1.4 General objectives:

- i. To examine the influence of management stability on performance of road construction projects
- ii. To establish the influence of staff expertise and experience on performance of road construction projects
- iii. To determine the influence of team work on performance of road construction projects
- iv. To examine the influence of resource availability on performance of road construction projects

1.5 Research Questions

- i. To what extent does management stability influence performance of road construction projects?

- ii. How does staff expertise and experience influence performance of road construction projects?
- iii. In what ways does team work influence performance of road construction projects?
- iv. To what extent does resource availability influence performance of road construction projects?

1.6 Significance of the Study

Projects are undertaken to fulfill predetermined objectives. If the projects are not completed, then the objectives shall not have been met and resources shall have been wasted. The significance of this study is therefore to raise awareness on management practices that influence performance of road construction projects. Secondly, the outcome of making sure projects are completed is that delaying their completion has the implication of added cost to the tax payer. Emphasizing the completion of projects is part of the development agenda since one set of project is completed, the focus is turned to another projects. This is development and it is this development that makes the study to be significant.

1.7 Limitations of the study

The following are the limitations of the study: Some respondents who may not be willing to give complete information for fear of being reprimanded by their managers for providing information they deem confidential. However, the researcher assures respondents of the confidentiality of the information he would provide and asks authority from the management to conduct research.

Access to accurate information due to divided attention of respondents to the questionnaires, the desire to protect the organization's reputation, which hinders the dissemination of information. Legal and ethical requirements in dealing with the respondents can hinder the cooperation of the respondents; this will be mitigated by timely communication with respondents and creating a friendly environment for trust and mutual benefit.

1.8 Delimitation of the Study

The study was limited to establishing the influence of management practices on road construction projects. The study will focus on low volume road construction projects. Although there are many road construction projects carried out in the area, the study only focused on low volume road construction projects in Imenti North Sub County.

1.9 Basic assumptions of the study

The study was based on the following assumptions; first, the study assumed that the sample was representative of the population under study. Second; the study assumed that the respondents answered the questions provided correctly and truthfully and that the target population provided an enabling environment for the research.

1.10 Definition of Significant Terms used in the Study

Project risk. This is an unforeseen event or activity that can impact on the project's progress, result or outcome in a positive or negative way.

Project Risk Management: This is the human activity which integrates identification of risk, risk assessment, measurement, monitoring, developing strategies to manage it, and mitigation of those risks which can threaten project achieving performance.

Project success: This is the achievement of all the project objectives which include cost effectiveness, quality, scope, timeliness and satisfaction of the users of the product.

Project team: This includes all persons/parties that play any role towards the success of the project at any stage of the project life cycle.

Competence of project team: This is the level of skill and knowledge level of the house construction project staff in terms of academic and professional qualifications

Project Risk Planning: It is the process that involves setting the roadmap towards all activities necessary to achieve structured and systematic proper risk management

1.11 Organization of the Study

The study was organized into five chapters. Chapter one covers the background of the study, statement of the problem, purpose of the study, research question, significant of the study, limitations of the study, delimitation of the study, definition of significant terms and the organization of the study. Chapter two consists of the literature review which was sub-divided into different sub-headings concerning management practices influencing performance of road construction in road projects. Chapter three covered the research methodology divided into; Research design, Target population, Sample and sampling procedures, Research instrument, Validity of the instrument, Reliability of the instruments, data collection and data analysis.

Chapter four was a representative of research data presentation, analysis and interpretation. Chapter five focused on the summary of the study findings, discussions, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covers relevant literature on the management practices influencing the performance of road construction projects. The chapter also offers theoretical review, empirical review and conceptual framework which the study is based.

2.2 Performance of road construction projects

The performance definitions reviewed in this study articulate the concept in achieving and accomplishing the planned targets. For instance, BNQP (2011) defines performance as “outputs and outcomes from processes, products and services that allow assessment and comparison relative to set goals, standards, past results, and other specifications”.

For a long time, performance assessment has remained a problem for the construction industry. Various concepts and measures have been experimented to assess and measure performance of projects. Alarcon (2014) observed that most of these measures inhibit their assessment to preferred standards such as, time, cost or output. Contractors are required to evaluate performance and upgrade strategies to gain competitive advantage. To lift competitiveness, construction firms have to utilize performance evaluation mechanism to ensure sustainable performance.

Rose (2015) observed that performance measurement is the expression of progress. Expansion in business cannot be achieved if its performance is not evaluated, (Baldwin et al., 2011). Performance measurement is described by Neely (2008) as the method of evaluating previous activities to ascertain present performance. Poor performance, is on the other hand shown by substandard quality of work and low production, is widespread in construction projects. Other challenges linked with inadequate performance include; poor work ethics and miscommunication among stakeholders, late completion, cost increase, very high accident occurrences, and inconsiderateness to ecological issues.

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).

According to Aiyetan et al. (2008) the three most significant factors that adversely impact construction project delivery time performance include quality of management during construction, quality of management during design, and design coordination. In their study, Ghazala and Vijayendra (2011) study on causes of construction delays in Hong Kong found differences in perceptions as to causes of delays by different groups of participants in building and civil engineering works. In their investigation on the causes of delays in highway construction in Thailand, Miller and Lessard (2005) established that delays can be caused by all parties involved in projects; however, main causes come from inadequacy of sub-contractors, organizations that lack sufficient resources, incomplete and unclear drawings and deficiencies between consultants and contractors.

Seboru (2010), further citing other scholars also states that the time frame for major road projects worldwide to reach construction start stage have been observed to range from 10-30 years. Similarly, a study by United Nations Commission for Trade and Development (UNCTAD), (2011) on African construction industry's turmoil's and their implications for New Partnership for Africa's Development (NEPAD) identified costly project delays as a major problem and identifies poor project time, quality and cost performance as a major issue

Al-Kharashi and Skitmore (2011) indicate that the main cause of delay in Saudi Arabia construction sector for public projects is the lack of qualified and experienced personnel. Morrissey (2010) identify ten most important causes of delay in Malaysian construction industry contractor's improper planning, contractor's poor site management, inadequate contractor experience, inadequate client's finance and payments for completed work, problems with subcontractors, shortage in material, labor supply, equipment availability and failure, lack of communication between parties, and mistakes during the construction stage.

The problems affecting Ghanaian contractors and consultants were researched by Ofori (2012) and found that challenges are the same as those noted generally in reports on construction industries in other third world countries. The challenges identified by Ofori (2012) as particularly influencing the performance of Ghanaian contractors include lack of ability to obtain adequate working capital, insufficient organization, inadequate engineering competence and poor workmanship. Other challenges include an extremely unstable business environment (Dansoh,

2005) characterized by high inflationary trends, poor organization practices and weak organization structures (Vulink, 2014).

The industry is multifaceted in its nature because it is executed by large number of parties such as clients, regulators, contractors, stakeholders, and consultants (Dadzie et al, 2012). It is one of the most unbalanced sectors within the wealth of the world. It faces unpredictable demand cycles, project-specific demands, uncertain circumstances, and it combines with several factors. In this sector, contractors play a very central role and the success of projects is mainly dependent on the performance of contractors.

Developments in the road construction industry in Kenya are increasing in size, technology complexity, interdependencies, and variations in demands from clients. The road network in Kenya at independence was 45,000km out of which only approximately 2000km were paved while the rest was mainly earth. In order to support the country's development objectives, the country embarked on a programme of upgrading trunk roads to bitumen standard and improving rural roads to gravel standard. As a result, the paved road network was expanded from 2000 km in 1963 to 11,189 km in 2009. The Kenya road sub-sector has been largely dominated by road expansion and upgrading programmes since the year 2009, when the Kenya Vision 2030 was launched. Given the road network size, traffic composition and projected future growth rates, the demand for road infrastructure investment in Kenya is very high and exceeds the country's budgetary financing capacity.

The road construction in transport sector in Kenya is witnessing a boom in view of the significant economic activity of the economy. The sector plays a very major role in the country's economic development through its contribution to gross domestic product (GDP), gross domestic capital formation (GDCF), creation of employment and production of capital facilities and assets required for production in other sectors, as creating demand for their products (UNCHS, 2010). This contribution by the road construction in transport sector is primate in cities and towns (Olima, 2011).

The increase of project based works in urban areas in the road construction in transport sector is necessitated by increased demand due to migration and rapid urbanization (UNCHS, 2010). However the sustainability of this sector is in jeopardy.

According to Ahmed et al., (2012), the urban construction project especially in roads is bound to fail due to slow rate in completion. This according to UNCHS, (2010), can result to losses of over 19.82%. However, in Kenya, delays in project completion are a common problem in the construction industry not only with an immeasurable cost to society but also with debilitating effects on the contracting parties. The concept of delay in the substantial completion of construction projects is a global phenomenon. For instance, while evaluating the progress and reports of 28 highway projects constructed during the period 1996-1999 in Jordan, Battaineh (2011) observed that the average ratio of actual completion time to the planned contract duration is 160.5% for road works.

2.3 Management practices and Performance of construction projects

Management practices usually refer to the working methods and innovations that managers use to improve the effectiveness of work systems. Common management practices include: empowering staff, training staff, introducing schemes for improving quality, and introducing various forms of new technology.

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 and 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 and Kuotcha, 2010). The criteria of project performance are cost, time and quality which are basic elements of project success (Mohammed, 2002). Quality is all about the entirety of features requisite by a product to meet the desired need and fit for purpose. To ensure the effectiveness and conformity of quality performance, the specification of quality requirements should be clearly and explicitly stated in design and contract documents.

According to the Project Management Institute, (2000) "the three important processes are organizational planning, staff acquisition and team development", however many contractors ignore these important aspects and prefer to chase their short-term goals of maximizing profit as opposed to the long term goals of industry development. With respect to managing client specific

issues it was discovered that Key Account Manager (KAM), who is the person accountable to the client spends most of his day supervising staff and doing administrative work, instead of being involved in strategic planning, project conceptualization and project evaluation(Avots, 2011).

The knowledge and capabilities of the managers and staff is especially important, i.e. their knowledge about technologies, marketing and management. According to Kerzner, (2011) to succeed in planning needs to be trained in the various facets of project management such as planning resourcing, monitoring and control so as to be able to effectively manage the projects. Planning underpins the efforts of a management team that does not shy away from the challenges of change and proactively seeks to find better ways of doing things (International Project Management Association, 2006).

Managers need to support and engage in effective learning processes. The routine “act, find out what works, reflect and retain desirable behaviors”” needs to permeate all levels of organizations at both individual and group level. This does not mean learning for the sake of learning or permanently engaging in one experiment or other. Follow the simple routine - experiment, learn, reflect, do more of what works (Maylor, 2011). Experimentation, reflection and learning will assume greater importance as the future becomes more complex and unpredictable. In short, the challenge is to strike the right balance between learning and control, change and stability, thought and action.

Ofori (2013) accentuates, while defining project success, there is a challenge in understanding project management and consequently assessing its performance. He adds that projects generally fail as a result of poor planning, constant changes in the scope and consequently deadline and budget, as well as the lack of monitoring and control.

In Kazhibekova and Jusufovic (2010) view, the distinction between the project execution and project management there is no clear cut. They give an illustration of meeting site personnel in a construction site which can be regarded as an element of both project execution and project management. It is therefore concluded that project management, which involve project planning, monitoring, controlling and motivation, has vital implications on a project’s fate, success or failure.

Belout, (2008) argues that maintaining the right skill mix and enhancing employee flexibility are two sides of the same coin and a direct consequence of a more unstable business environment, necessitating more frequent re-inventions and a continuous search for better ways of doing things. The attainment of the desired balances through significant personnel change is more risky when an organization has a strong culture that it wishes to maintain.(Berkun, 2009). Developing a flexible workforce capable of performing a range of tasks and readily moving from one function to another is potentially a better option when there is no need for a fundamental cultural change, but requires a well-developed training and education programme (Burke, 2009).

Project performance measure for this study will be defined in terms of cost, time, quality and sustainability. In Kenya, project performance has been measured through project cost, quality, customer or stakeholder's satisfaction, timeliness and achieving of project objective as effective indicator to measure of project performance (Nyikal, 2011).

2.3.1 Management Stability and performance of road construction projects

Management stability means that the whole management team shares the same vision and direction, thereby leading successful achievement of goals. If the management is unstable then it can lead to unrealistic and impractical schedules for the project and inefficient use of resources. While the involvement of senior management is arguably critical to the success of any initiative, it is absolutely essential for risk management. The reason is simple – certain aspects of risk management run counter to human nature. While people are eager to talk about favorable results and success, they are generally less enthusiastic when it comes to discussing actual or potential losses that affect their business (Cleland & Ireland, 2002).

Without a demonstrated commitment to the management process from the highest echelons of the organization, a culture for success and managerial invincibility will prevail where past achievements provide protection from future risks and good management is enough to prevent troubles from arising. Problems are considered managerial failures to which risk management draws unwanted attention

Risk management comprises the processes concerned with identifying, analyzing, and responding to project risk (Chamoun, 2011). It includes maximizing the results of positive events and minimizing the consequences of adverse events. The processes include determining which

risks are likely to affect the project and documenting the characteristics of each; evaluating the risks and risk interactions to assess the range of possible project outcomes; defining enhancement steps for opportunities and responses to threats; and responding to changes in risk over the course of the project (Frascer, 2011).

Clearly most projects are faced by a myriad of risks necessitating increased skill levels among staff and management of the project. However, few projects would be able to demonstrate the application of disciplined risk management on their projects due to lack of training in risk management practices (Frascer, 2011). This can be a major constraint to the success of any project. Improving the application of project risk management involves two main objectives: improving the ability to identify risk, while we still have time in the project lifecycle to influence it, and embedding the management of risk into the mainstream of delivering projects which all require skilled personnel (Bredillet, 2009). As with any process, project risk management must itself be controlled. There should be periodic reviews and events scheduled into the mainstream project plan to address risk. These reviews must be managed with enormous discipline, as they are not brainstorming or analysis sessions - they should review the status of risk mitigation strategies, and assign actions as appropriate (Clarke, 2008).

Many researchers subscribe strongly to the view that top management support and commitment is a critical success factor in effectiveness of project management. It is also important to emphasize effective top management support for different project scenarios. Critical top management support includes a broad range of activities in an organization, including developing project procedures that include the initiation stage, training programs, establishing a project management office, support quality management and so on (Zwikael and Ahn, 2011).

Kerzner (2003) also supports this view, stating that lack of visible executive support is the biggest detriment to achieving maturity and excellence in the management and implementation of projects. This is a factor common within public sector project management and implementation. Rao and Mak (2001) also outline a number of key responsibilities for the executive to ensure project success, which include approving the project, confirming it is aligned to the strategic goal of the business, allocating resources such as human, time and financial resources to the implementation effort. Wang and Nah,(2010) add that communicating the business vision and overcoming resistance of project implementation to these key roles. Hence, top management

should involve itself in resolving conflict by mediating between groups and promoting project acceptance, by building cooperation between various stakeholders and involving users in the project implementation process.

Increasing team skill and employing successful practices reduces risk and contributes to successful implementations (Belout, 2008). In fact project managers know that things rarely go off exactly as planned. During the planning process, it is vital to produce a risk log with an action plan for the risks that the project could face. If something happens, then a skilled team can quickly resolve the issue with the management plan that has already been set in place. This will give the team confidence when facing project risks and help the clients feel comfortable with the project's progression (Burke, 2009).

2.3.2 Staff expertise and performance of road construction projects

In the event that the members of a project team lack the direct working knowledge and experience of the area, there is a likelihood of time delays, estimated cost upsets and poor quality. Murch (2011) suggested that project managers should possess sufficient technical knowledge and skill to perform their jobs. This is particularly vital in the construction industry where the majority of projects undertaken are highly technical and complex, and an understanding of engineering and scientific principles is essential. In such an environment, the project manager should have at least a working level understanding of the technical challenges the project team is facing. Technical skills enhance the ability of the project manager to lead and manage through an understanding of the complex issues that persist during a project life cycle.

Individuals who are knowledgeable about specific construction skills gained from training or from practical experience in construction can be defined as skilled manpower (Medugu et al, 2011). Rafee (2012) noted that skilled manpower in the construction industry play a very critical function to the survival and growth of the sector as they are directly involved in construction process. In Kenya there is an acute shortage of skilled manpower despite the many construction projects that the government is undertaking. Elevation of middle level colleges to universities has further eroded the development of skilled manpower creating a major shortage of skilled manpower.

Wang (2010) indicated in his report that labour shortage is a problem faced by many countries all over the world. In the construction industry framework, the purchasing power of the end user results quality work production. Hence, additional skilled workforce is needed. Medugu et al (2011) observed that where highly capable workforce is utilized, the effect of skilled manpower in the construction sector is very visible in it ends products. This is because they are directly involved in early realization of construction projects completion since they handle the technical phase of such contract.

Reduction in poor quality, low productivity, late project completion, cost and time overruns in projects is notable where trained skilled manpower is involved. Abiola (2014) believe that rework of defective or unsatisfactory work is mostly attributed to poor level of workmanship which normally results from involvement of unskilled manpower.

Skilled manpower also helps to raise efficiency, decrease of accidents, less management, increased organization stability. Trendle (2008) stated that there are several causes of labour shortages; increases in the demand for labour arising from continuing infrastructural expansion skilled manpower also helps to raise efficiency, decrease of accidents, less management, increased organization stability. Trendle (2008) stated that there are several causes of labour shortages; increases in the demand for labour arising from continuing infrastructural expansion.

According to Dantong et al (2011), shortage of skilled manpower is not a shortage of workers; rather it is a shortage of sufficiently trained, skilled, and industrious workers available for particular type of work. Attar et al (2012) enumerated reasons attributed for shortage of skilled manpower as; lack of training and retraining, an aging labor force, and an industry that does not attract youth as potential manpower. Bustani (2011) pointed out that the quality and availability of skilled manpower is considered vital factor towards the efficacy of the construction sector. Reasons credited for shortages includes; aging of skilled manpower in the industry, reduction in the number of new entrants into skilled trades, poor financial support and ineffective state of professional education and training /retraining scheme in the country.

In a study conducted by Posner (2007) and cited by Meredith and Mantel (2012), successful project managers were seen as having relevant experience or knowledge about the technology required by the project, but seldom were effective project managers seen as technical experts.

Posner (1987) advocates that reliance on only “technical expertise” was often found to be detrimental because it decreased flexibility and a willingness to consider alternative perspectives. However, project managers do need to be sufficiently well versed in the technology to be able to ask the right questions and acquire adequate insight in an attempt to manage outcomes.

A research conducted by Monson (2010) concluded that technical expertise does not correlate directly to successful Project Management. This is commonly reflected in the organizational structure as the most technically competent personnel are frequently used as project consultants rather than as project managers.” Monson claims that it is no accident that significant problems in PM arise in engineering related professional areas. Engineers, as well documented, are taught with a curriculum that generates a correct answer (outcome based) without partial credit allotted for the work supporting the final answer (process based). For example a research study related to project characteristics conducted by Williams (2010) implied that as technical complexity increases, the likelihood of project success diminishes

The bottom line is technical competence (the ability to solve complex engineering or scientific problems) serves to enhance the project manager’s credibility with customers, senior leadership and the project team. However it is not apparent that the project management’s credibility is the most critical factor for project management competency. Orvis (2015) indicated that the core skills of engineers relate to the application of logic and engineering principles since scientists and engineers often perform numerical calculations. Their operations range from the single task of determining the value of a function to the complex task of numerically integrating a differential equation tasks that require considerable skill, time, and energy

In spite of efforts, in many instances with external assistance, opportunities for training in requisite specialized skills are sorely inadequate although the foundation for developing such skills, in terms of basic education exists in most although not all of them. Effective risk management calls for training in a large number of technical skills and cannot be effectively pursued with the help of manpower that is merely literate at a basic level (Chamoun, 2011).

Risk is inherent in every project activity; however, several factors inhibit organizations from realizing their efforts to reduce risk; specifically, changing technologies, processes, and staff each contribute to decreased organizational performance and increased risk (Avots,2011).Consistently

applying standard business practices can contribute to lower risk; standard practices help reduce variation and increase the reliability of installed systems. Organizations that use consistent procedures and reliable systems reduce company exposure to risk. Best practices are often built into significant and mature technologies they are designed to promote the use of labor-saving or risk-reducing activities (Comminos et al,2010).

During project implementation, problems will inevitably surface which end up with the eventual risk of project failure hence dealing effectively with projects calls for adequate human resources, both in size and level of technical sophistication (Clements et al, 2013). These problems can range from basic staffing decisions to major vendor disagreements over a contract and resolving problems with end users. The project manager must be able to identify the specific problem and to use sound judgment to develop alternative solutions and make recommendations. Making sound well informed decisions is a key competency (Clarke, 2008). The project manager must determine the scope and boundaries on which decisions should be made. Decisions must be made, and frequently they are not major enough to require a principal. Therefore the project manager must be able to make them (Clement et al 2013). Risks and uncertainties inherent in the construction industry are more than other industries. The process of planning, executing and maintaining all project activities is complex and time-consuming. The whole process requires a myriad of people with diverse skill sets and the coordination of a vast amount of complex and interrelated activities.

2.3.3 Team work and performance of road construction projects

Robbins, (2012) stated that a work team generates positive synergy in project risk management through coordinated effort. Risk strategies effectiveness is vital for the success of a project, (Kerzner, 2011). Some of the strategies to counter of the project team's incompetence are training and education, good staffing and effective teamwork. Training and education are actually considered a competitive way for organizations to achieve improvement. In order to complete a project successfully, it is critical that every project team member has a good understanding of the fundamental project requirements, and training on these requirements which is vital for the team to be competent to handle the project (Cleland & Ireland, 2012).The biggest tool to minimizing risk in construction projects is to ensure that the employees are well trained and they receive updated instruction on spotting potential risks.

A project team can be viewed as a team that is newly formed to undertake a unique task (Hass, 2009). This definition of a project team frames some of the complex challenges that successful project teams must overcome, such as delivering on unique tasks which are often higher risk than more mundane operations, forming disparate participants into an effective team, preserving knowledge as the team changes over time and once the project team is disbanded (Costello, 2008).

Different types of projects require different competency sets for the team managing the project. Wang, (2013) notes that it is important for the appraisal to consider the competencies required by a project team to carry out a project proficiently and with an acceptable level of risk. Care should be taken to avoid building up a project team that is too large to manage. Where a project team becomes large due to the scale and complexity of a project consideration should be given to separating the operational project delivery team (the project team) from those with stakeholder duties (Kerzner, 2016). The stakeholder role could be formed into a separate group that meets with the Project Manager at suitable times, although this would only normally be suitable for the riskiest and largest projects. For small less risky projects one or two individuals may perform all the all of these roles. For larger riskier projects it may be necessary to have more than one team and to use external advisors and consultants (Harris, 2013).

Appraising project team member performance is an increasingly vital, yet complex, challenge as the teams are often cross-functional and self-managing (Wang, 2013). It is important that personal team member and team performance goals are in some way aligned.

Accordingly the commitment of the project team to the task is important for project team success. The team must be provided with a supportive atmosphere where their participation and ideas are backed up. The team must clearly understand the rewards systems made available to them, but purely financial rewards need not be the main consideration. In fact, continual referral to financial rewards can be counterproductive (Askov, 2005).

The potential to improve project teams is broad, whether it is improving the team leadership skills, team member skills or team cohesion. Particularly if the project team has clear project objectives and the freedom from excessive top management intervention it stands a good chance of performing effectively. The project leader in conjunction with the upper management must

ensure that clear performance standards are put in place and that the teams are accountable for their own actions (Costello, 2008).

However, unnecessary process controls should be avoided. As with project team leaders, the ability to communicate effectively on the intra-team level is a critical competency for project team members (Buono, 2012). Existence of team goals, positive group dynamics and project member satisfaction were all associated with less organizational conflict and project team conflict. In addition to positive attitude, an effective team member should have the ability to question assumptions. They should have problem solving skills and the capacity to analyze a range of situations. These skills should be underpinned by a broad range of technical skills and business competencies distributed throughout the team. There is importance in also recruiting high quality team members, training them and developing their skills and retaining those team members with the highest ability levels (Van et al, 2012).

Risk management is rarely applied in construction projects. The project teams handle the risks from informal approach. This technique is not employed because of less knowledge and awareness among the construction industry. Risk management should be applied into any construction project at the initial stage of the project in order to achieve the project objectives. This presents the need for project team training in the area of risk management. All participants in the project should be aware of risk management since risks occur in all stages of the project life cycle.

Construction companies provide training for their employees. This training can be classified into two methods namely: on the job training and the off the job training which is conducted away from the work site, (Treven, 2003). The success of the training programmes for construction companies is influenced by the high quality of the training manual, the high degree of the interactive learning employed, the extensive use of peer group critiquing skills and the critical support of highly motivated training staff, (Moss, 2007).

A plan of orientation training for new employees and updating existing workers training should be put in place. There should be written materials for all employees, and orientation training should be supplemented by ongoing training which can include instruction by supervisors, to peer trainers or outside expertise. This ensures that employees are aware of the building codes,

and are updated on the building regulations, laws and other standards, (Seitter D, 2010). Nur et al (2012), in their study titled significant risk factors in construction projects identified the five most important risk factors in construction projects as shortage of material, late deliveries of materials, insufficient technology, poor quality of workmanship and cash flow difficulties. Poor quality workmanship is the result of insufficient training in the workforce. This study will focus on the extent to which training of employees affects risk management.

In a study on clients' perspectives of management practice in Malaysian construction industry, Norazian et al,(2008) sought to identify the level of awareness among construction professionals towards risk management and to examine the policy undertaken when dealing with risks in a construction project. The findings were that 44.4% of the respondents claimed that the construction companies provide very minimum training on risk management, and even if it is so, it is for relevant personnel only. This study will examine further the role of the three factors that is commitment of top leadership, communication and training to project risk management success.

Saminu et al, 2013 in their study on factors affecting risk management in construction projects in India, recommended that well trained and experienced workmen should be employed. Another descriptive study on factors affecting adherence to cost estimates, a survey of construction projects of Kenya National Highways Authority was carried out by Choge and Muturi, (2014). The study concluded that factors like design variation, and contractor experience are the major factors that affect adherence to cost estimates.

Design variation factors include unexpected ground conditions, unrealistic requirements and specification, inadequate planning and poor design. The contractors experience is affected by inadequate technical and managerial skills, inadequate quality control skills, and poor site management. Ngundo, (2014), carried a research on factors affecting effectiveness of risk management in public housing construction projects in Kenya. He identified four important factors namely support of the top management, competence of the project team, project risk planning and project approval procedure as having an effect on the effectiveness of the risk management process. In case of large teams, the probability of problem occurrence increases due to the team size. One of the reasons can be the difficulty of communication due to the large team size.

2.3.4 Resource Availability and performance of road construction projects

If the availability of resources is easy, the probability of responding to problems in real time also increases. For example, easy availability of money makes securing human, material and equipment resources easy on as needed basis. However, an abundance of resources does not provide guarantee against risks, all it does is to equip the project team with the tactics to respond to risks.

Resources allocations on strategic planning mean that any meaningful project success to be realized, resources must be availed. These resources include finances, human capital resource, motor vehicles, computers, managerial resources and time (Gwadoya, 2011). There are various forms of resources key among them includes; natural based, infrastructure based, and human based. Natural based resources include; water, soils, forests, wildlife, and oil among other. Infrastructure based includes; machines, roads, dams, and cities among other. Human based encompasses the stock of knowledge and skills exhibited by citizens. The use of these resources in strategic planning a project should be geared toward generation of sustainable benefits to the beneficiaries and stakeholders (Gasper, 2010).

With proper allocation and utilization of these resources; there will be efficiency and effectiveness in performance and thus increased output. This will make the projects to be easily monitored, reports and feedback given on time. The time reporting, is necessary interventions that should be done to save projects from collapsing (Gichuki, 2012).

Resources allocation on project strategic planning are the key challenges for performance of road projects in the next decade: only those institutions that have sound financial structures and stable income flows will be able to fulfill their multiple missions and respond to the current challenges in an increasingly complex and global environment (Anthony and Young,2003). This can be best summarized as the establishment and financial control system; carry on the projects in an orderly and efficient manner, adherence to project management's policies, safeguard the asset and secure as far as possible the completeness and accuracy of the projects against time, cost and specifications(Nyandika, 2014).

According to Habeeb, (2013) the ability to accurately forecast cost performance allows organizations or project teams to confidently allocate capital, reducing financial risk, possibly reducing the cost of capital Brignall and Modell (2010).

According to Kamwana (2014), resources allocation are of the most important project management assets needed to ensure your project is delivered by measures of the performance rate and implemented within the cost expectations laid down by the project's definition (Cleland, 2009). Financial management like any form of control process is not about collecting and measuring how much cost you have expended on the project, and then simply looking at the budget and deciding what is left will 'obviously' finish the project (Bourne and Walker,2003). Financing mechanisms and cost control success factors are based on good project control practices, which result in good and cost and schedule outcomes thus attracting investors to invest in the project (Strogatz,2003). Meeting requirements of financial resources such as financing mechanisms, investment cost, operation and maintenance cost determine the effective implementation of strategic planning for an improved performance of road projects (KPPRA,2001).

According to Santoso (2003), owners will manage their cash flow effectively by minimizing cash out and maximum cash in when funds are borrowed from banks. If they fail to generate funds, they will postpone project progress payment to the contractors to minimize cash out. Several of the projects studied had bad experiences on delayed payments, especially for the commercial projects funded by the private sector. According to the contractors surveyed, delayed progress payments would affect their project's cash flow as a result of delayed income. Contractors usually have limited capital for executing a project and when the capital provided is exceeded, consequently, the contractors may postpone payments to subcontractors and suppliers. As a result, they will also reduce their performance. These multiple problems will eventually cause construction delays.

2.4 Theoretical framework

A theory is an organized system of accepted knowledge that applies in a variety of circumstances to explain a specific set of phenomenon. This study will adopt the theory of project management and theory of uncertainty

2.4.1 Theory of project management

Theory of project management (PM) can be described as a set of models and techniques for the planning and control of complex undertakings. Theory of project management is prescriptive: it reveals how actions contribute to the goals set to those actions. Project Management is the art of directing and coordinating human and material resources throughout the life of a project by using modern management techniques to achieve predetermined objectives of scope, cost, time, quality, and participant satisfaction (Johann, 2005). According to Lauri & Gregory, (2009) the theory of project management is considered to be made of two components: Theory of Project; The main part of theory of project is scope management whose purpose is to ascertain that an adequate or sufficient amount of work is done and also the work that is done delivers the stated business purpose.

The scope is defined through the work breakdown structure. The planning processes are structured into core processes and facilitating processes. There are ten core processes: scope planning, scope definition, activity definition, resource planning, activity sequencing, activity duration estimating, cost estimating, and schedule development, cost budgeting and project plan development (Johann, 2005). The Execution of the plan indicates the process involved in the execution. The underlying theory of execution provides the interface between plan and work. While the theory of control indicates the core process of controlling two sub-processes: performance reporting and overall change control (Lauri & Gregory, 2009).

2.4.2 Uncertainty Theory

Uncertain theory was introduced by Liu (2010) due to generalization of domain of uncertainty. Uncertainty theory was also applied to uncertain logic by Li and Liu (2010) in which the truth value is defined as the uncertain measure that the proposition is true. Furthermore, uncertain entailment was proposed by Liu that is a methodology for calculating the truth value of an uncertain formula when the truth values of other uncertain formulas are given. Uncertainty is, of course, not a neglected concept in project management. Early development of activity network techniques in the 1950s, such as PERT (Program Evaluation and Review Technique), recognized the possibility of variation in task durations. These techniques were extended in the 1960s to incorporate probabilistic branching for instance Graphical Evaluation and Review Technique. Qualitative approaches, such as the Synergistic Contingency Evaluation and Review Technique,

and Analysis of Potential Problems, were developed to guide project managers to prepare for uncertainty with risk prevention and contingency planning (Henriksen & Uhlenfeldt,2006).

This extensive literature on project planning has developed our understanding of scheduling tasks in complex and uncertain projects, describing such well known techniques as the critical path method (CPM). There is also extensive knowledge on how to handle the relationships with the stakeholders, utilizing such tools as contract formalization and enforcement, responsibility charts, force field analysis, and conflict management. Foreseen uncertainties are identified, but uncertain, influences in a project management.

Uncertainty risk also affects how project management should approach stakeholder management. The project team in one of our samples liked to utilize the phrase proactively occupy the white spaces in the contract. This meant that, through anticipating uncertainties, they could proactively write in the contingencies reflecting these uncertainties, possibly staking out a claim before other stakeholders had thought of it. Thus, foreseen uncertainty requires disciplined risk management, the identification of potential risk that could affect the project followed by the planning of preventive measures to block adverse events and multiple contingent courses of action that are then triggered by the events (Young & Jordan, 2008).

The project manager must not only be able to trouble shoot, but also function as a reactive consolidator of what has been achieved up to a certain stage in the project. All risks the incidents in the environment, or certain outcomes of the project work) must be constantly monitored and communicated to project stakeholders. Flexible contingent actions, depending on outcomes of key influence parameters, should be anticipated in the decision tree (Zwikael & Ahn, 2011).

2.5 Conceptual Framework

A conceptual framework is a tool researchers use to guide their inquiry; it is a set of ideas used to structure the research, a sort of a map (Kothari, 2012). It is the researcher's own position on the problem and gives direction to the study. It may be an adaptation of a model used in a previous study, with modifications to suit the inquiry. Aside from showing the direction of the study, through the conceptual framework, the researcher can be able to show the relationships of the different constructs that he wants to investigate. The conceptual framework below, which depicts the relationship between the dependent and independent variables, guided this study.

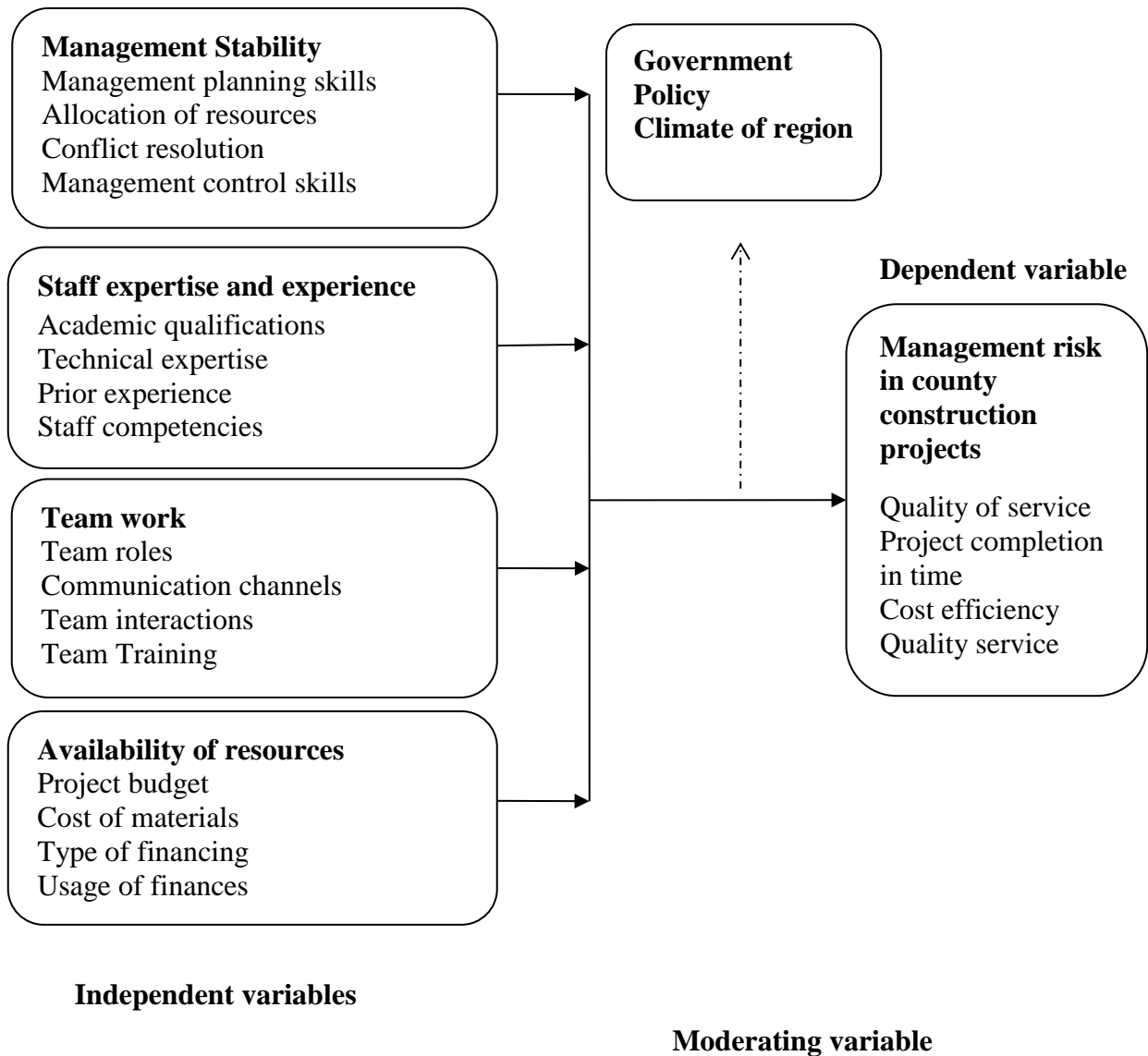


Figure 1: Relationship between the key variables contributing to the performance of road construction projects

The conceptual framework shows the relationship between management practices variables and performance of road construction projects. The researcher argues that there is a relationship between Management stability, staff expertise, team work and availability of resources and the dependent variable Performance of road construction projects. This study seeks to verify these arguments.

2.6 Research gaps

Previous studies have highlighted on factors affecting performance of projects both in developed and developing countries. Juliet and Ruth, (2014) did an evaluation of factors affecting performance of construction projects in Niger state. The variables used in this study focused on experience and qualification of personnel, quality of equipment and raw materials as well as conformance to specifications. The research recommended further studies on continuous coordination and relation between project participants in order to develop project performance.

Enshassi, Mohamed and Abushan (2009) did a study on factors affecting the performance of construction projects in the Gaza strip. Their variables focused on delays due to road closures, qualification of personnel and availability of quality raw materials. The researchers recommended that further studies should focus on developing human resources in the construction industry through proper and continuous training programs about construction project performance.

Takim and Akintoye (2010) carried out a study on the performance indicators for successful construction project management. The variables focused on three company performance indicators namely: safety, profitability and productivity. The research recommended further study in developing a robust framework for bench marking construction project development that reasonably takes into account the stakeholder's expectations, objectives and priorities for the project.

Chan, Scott and Chan (2004) also studied factors affecting the success of a construction project. The study focused on five major variables namely project-related factors, project procedures, project management actions, human related factors and external environment. They recommended that further study should be directed to identifying key performance indicators so that the casual relationship between critical success factors and key performance indicators can be identified.

From the above, many studies have investigated on factors affecting performance. However, there is mixed results regarding the specifications and description of the construction projects. This study will focus on roads which is a facet of construction projects. The variables that will be considered are: Management stability, staff expertise, team work, project and availability of

resources. Therefore, this study intends to enrich literature on performance of construction projects and fill the knowledge gap.

2.7 Summary of literature review

The researcher begun by highlighting, the empirical literature for the four independent variables namely, management stability, staff expertise, team work and availability of resources. After that the researcher has discussed the two theories of project management important to this research topic in question, namely the theory of project management and the theory of uncertainty before embarking on the conceptual framework where the four identified independent variables have been shown to influence performance of road construction projects hereby by as the dependent variable.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter identifies the research design of the study. It further highlights the target population, Sampling procedures and the methods of data collection. Also include measures undertaken to

ensure the validity of data collected, and its reliability in this study. A summarized table at the end of this chapter is provided to highlight the operational variables and show how they are scaled.

3.2. Research design

A research design is the arrangement of conditions for collection and analysis of data in manner that aims to combine relevance to the research purpose with economy in procedure. It is the conceptual structure within which research is conducted. It stipulates the blue print for collection, measurement and analysis of data (Kothari 2003). In this study descriptive research design was employed. The reason for selecting descriptive research design was that design describes the state of affairs as it exists at present; in this case the researcher has no control over the variables. One can only report what is happening or what has happened. Also descriptive research design provides an opportunity to gather detailed data that give explanation to research questions and logically structure the inquiry into the problem of study.

3.3 Target Population

Target population is defined as all the members of a real or hypothetical set of people, events or objects to which a researcher wishes to generalize the results of the research study. The target population of the study was 56 respondents from Kenya rural roads authority Meru region because there are the persons involved mostly in construction of low volume road projects in Imenti North Sub County. The 34 contractors targeted are those that had ongoing projects in the County, or had completed a project in the last six months.

Table 3.1 Target population

Category	population
KeRRA	12
County inspectorate	10
Contractors	34

3.4. Sample Size and sampling procedure

The sampling frame describes the list of all population units from which the sample will be selected (Cooper & Schindler, 2003). Sampling is selecting a given number of subjects from a defined population as representative of that population. Gay (2001) pointed that a sample of 10-40% is representative. In this study, all the 56 respondents were included in the study.

3.4.1 Sampling Procedure

The study adopted a census approach where all the members of the target population were included into the study sample. Census approach is appropriate where the target population is small and all can be easily contacted as is the case for this study.

3.5 Data Collection procedure

Data was collected by the use of questionnaires. A written questionnaire is a data collection tool in which written questions are presented that are to be answered by the respondents in written form. These written Questionnaires were administered to respondents via hand-delivery and collected later. Questionnaires incorporated both open-ended and closed-ended questions items which were used to gather the necessary data to conduct this study. According to Cooper and Emory (2008), the questionnaire is conveniently used because it is cheaper and quicker to administer, it is above researcher's effect and variability, and is highly convenient for the respondents as they could fill them during free times or when workloads are manageable.

3.5.1 Pilot Testing of the instrument

Six questionnaires were administered in isiolo County which neighbors Meru County. The respondent were selected randomly, a week before the main study so as to allow the researcher enough time to make changes to the questionnaire, before the questionnaire is presented to the respondents.

The respondents were asked to respond to the questions as the researcher observes whether each question measures what it is supposed to measure, how long it takes to interview one respondent, whether response choices are appropriate, whether the tool collects the information needed among other things. Necessary adjustments were made to the tool. To facilitate this, the

researcher will seek permission from local leaders, for example, the chief and assistant County Commissioner.

3.5.2 Validity of the instrument

Validity is the accuracy and meaningfulness of inferences, which are based on the research results; it is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study (Mugenda & Mugenda, 2003). To enhance validity of the questionnaires the instruments were reviewed under the supervision of the research supervisors in order to ensure they captured valid and reliable information. Questionnaires were pre-tested to ensure their validity.

3.5.3 Reliability of the instrument

Joppe (2000) defines reliability as the extent to which results are consistent over time and an accurate representation of the total population under study. If the results of a study can be reproduced under a similar methodology, then the instrument is considered to be reliable.

This study espoused the test retest reliability approach as a measure of consistency. Reliability was tested using the Cronbach's alpha which was calculated from pilot questionnaires that was conducted so as to assess the survey tool before the study; all variables were found to have an alpha of 0.7 and above hence considered acceptable, for use in data collection.

3.6 Data Collection Procedure

A full list of respondents to be interviewed was first prepared. The local administration offices were then informed of the research and an introductory letter was sought from them, permission was also sought from the national council of science and technology (NACOSTI) so as to make of the study conform to the set standards. The physical location of the respondents was established for ease of delivery of the questionnaires which were delivered and collected after a week.

3.7 Data Analysis Technique

Raw data collected from the field was first be cleaned for errors, coded, analyzed and categorized as per the research questions in order to simplify it for presentation. Data was analyzed and presented descriptively using statistical package for social science version 21. The researcher then used regression analysis and cross tabulation to show the link and relationship that exist between the independent variables and performance of road construction projects. Qualitative

data was checked for completeness and cleaned ready for data analysis. Content analysis was used in processing the data and results presented in prose form. Content analysis is summarizing qualitative data that relies on the scientific method. The study also used multivariate regression model. The independent variables of this study are management stability, staff experience and competence, team work and availability of resources. The multivariate regression model for this study is;

$$Y=A+B_1X_1+B_2X_2+B_3X_3+B_4X_4$$

Where Y is the dependent variable, performance of road construction projects, while the independent variables X_1 management stability, X_2 staff experience and competence, X_3 team work and X_4 availability of resources.

3.8 Ethical Consideration

Ethical measures are principles the researcher should bind herself to in conducting the research before data collection (Macmillan and Schumacher, 1993). Initial approval was secured from the University of Nairobi. A research permit was sought from the NACOST.

The respondents were assured that the information given was for the purpose of this research only and therefore were treated with utmost confidentiality.

3.9 Operationalization of Variables

The Operationalization of a variables means manipulating both the independent and dependent variables in such a way that they end up having a few levels thus becoming measurable.

Objective	Variables	indicators	Data collection method	Measurement Scale	Type of analysis/Type of data
To examine the influence of management stability on performance of road construction projects	Independent variable	Level of commitment	Questionnaire	Nominal	Quantitative (regression)
		Allocation of resources.	Questionnaire	Interval	
		Conflict resolution	Questionnaire	Nominal	Quantitative
		Management control skills	Questionnaire	interval	Quantitative
To establish the influence of staff expertise on performance of road construction projects	Independent variable	Academic qualifications.	Questionnaire	Nominal	Quantitative
		Technical expertise.	Questionnaire	Nominal	Quantitative
		Prior experience.	Questionnaire	Interval	Quantitative Regression
		Staff competencies	Questionnaire	Interval	

To determine the influence of team work on performance of road construction projects	Independent variable	Team roles	Questionnaire	Nominal	Quantitative
		Communication channels	Questionnaire	Interval	Quantitative
		Team interactions	Questionnaire	Interval	Quantitative
		Team training	Questionnaire	Interval	Quantitative (regression)
To examine the influence of resource availability on performance of road construction projects.	Independent variable	Project budget	Questionnaire	Nominal	Quantitative
		Cost of materials	Questionnaire	Interval	Quantitative
		Type of financing	Questionnaire	Nominal	Quantitative
		Usage of finances	Questionnaire	Interval	Quantitative regression/

CHAPTER FOUR

DATA ANALYSIS, PRESENTTION AND INTERPRETATION

4.1 Introduction

The chapter is organized as follows: First it presents the response rate and the background information of the respondents. This is followed by management practices influencing performance of road construction projects. The chapter concludes with an analysis of the relationship between various management practices influencing construction of road projects.

4.2 Response Rate

The response rate was 96% since 54 Out of 56 targeted respondents filled and returned the questionnaires. This response rate was within what Cooper and Schindler (2012) set as a significant response rate (above 50%) for statistical analysis.

Table 4.1 Response rate

Response	Frequency	Percentage
Yes	54	96
No	2	4
Total	56	100

4.3 Reliability Analysis

Reliability analysis was subsequently done using Cronbach's Alpha which measures the internal consistency by establishing if certain items within a scale measure the same construct.

Table 4.2: Reliability Analysis

	Alpha Value
Management stability	.715
Staff expertise	.819
Team work	.739
Resource availability	.728

Sekaran and Bougie (2010) established the Alpha value threshold to be 0.7. This therefore illustrates that all the four scales were reliable and accepted as their reliability values exceeded the set threshold of 0.7.

4.4 Background Information

This section gives an analysis of the background information of the respondents. The aim of doing this was to enhance understanding of the background information of the respondents and their personal ability to provide relevant data sought for under this study.

4.4.1 Respondents Designation

Table 4.3 shows the respondents' summarised responses to the question about their designation at work.

Table 4.3: Respondents Designation.

Designation	Frequency	Percentage
Contractors	28	51.86
KERRA	12	22.22
County inspectorate	14	25.92
Total	54	100

Findings show that contractors were 51.86% of the respondents, KeRRA officials were 22.22% of the respondents, and County inspectorate officials were 25.92%. This reveals that these respondents were in a position to be able to respond to the questionnaires.

4.4.2 Highest Level of Education of the Respondent

Table 4.4 illustrates the summary of the answers provided by the respondents when they were asked about their highest level of education.

Table 4.4: Highest Level of Education of the Respondent

Highest Level of Education	Frequency	Percentage
Post Graduate	3	4.92
Undergraduate	28	52.46
Diploma	16	29.51
Certificate	7	13.11
Total	54	100

The summary of the answers provided by the respondents on their highest level of education reveals that respondents with highest level of education as post graduate were 3, with highest

level of education as undergraduate were 28 and with highest level of education as diploma were 16 while those with highest level of education as certificate were 7. This reveals that the respondents' level of education was a clear indication that they could give correct information concerning the subject under study.

4.4.3 Length of time working in the Institution

Table 4.5 gives a summary of the responses given by the respondents concerning their length of time in which they have been working.

Table 4.5: Length of Time the working in the Institution

Length of Time	Frequency	Percentage
1 to 5 years	10	18.85
6 to 10years	21	39.34
11 to 15 years	14	26.23
16 to 20 years	6	10.66
21 years and above	3	4.92
Total	54	100.00

Respondents' summary of answers concerning their length of time in which they have been working in the institution indicates that majority of the respondents had been working in the institution for 6 to 10 years (Frequency=21, Percentage=39.34). It also indicates that other respondents had been working in the institution for 11 to 15 years (Frequency=14, Percentage=26.23), for 1 to 5 years (Frequency=10, Percentage=18.85) and for 16 to 20 years (Frequency=6, Percentage=10.66) while the rest had worked in the institution for 21 years and above (Frequency=3, Percentage=4.92). This implies as per the length of time working with the institution that they could give correct information on the subject under study.

4.5 Management practises Influence on performance of road projects

This contains findings for management stability, staff expertise, team work, and availability of resources on performance of road construction projects.

4.5.1 Management stability

The respondents were asked to rate the statements in table 4.6 about management stability using a scale of 1-5 on their level of agreement. The average mean and standard deviations are shown in table 4.6.

Table 4.6: Management stability influence on performance

	N	Minimum	Maximum	Mean	Std Dev.
Level of commitment influence performance of projects	54	2.00	3.00	2.4599	0.4997
Allocation of resources influence performance	54	3.00	5.00	4.016	0.7294
Conflict resolution influence performance	54	2.00	5.00	3.8128	0.9403
Management control skills influence performance	54	3.00	5.00	4.2513	0.72285
Management planning skills influence performance	54	2.00	5.00	4.1925	0.8068
Composite Mean				3.7465	

Ratings of the respondents on statements in table 4.6 show that they agreed with the statements; Management control skills influence performance of road construction projects as shown by mean of 4.2513, Management planning skills influence performance of road construction projects as shown by a mean of 4.1925, Allocation of resources influence performance of road construction projects as expressed by a mean of 4.016 and conflict resolution influence performance of road construction projects as illustrated by a mean score of 3.8128. They also disagreed with the statement level of commitment influence performance of road construction projects as represented by a mean score of 2.4599.

The knowledge and capabilities of the managers and staff is especially important, i.e. their knowledge about technologies, marketing and management. According to Kerzner, (2011) to succeed in planning needs to be trained in the various facets of project management such as planning resourcing, monitoring and control so as to be able to effectively manage the projects. Planning underpins the efforts of a management team that does not shy away from the challenges of change and proactively seeks to find better ways of doing things (International Project Management Association, 2006).

4.5.2 Staff expertise and performance of road construction projects

Opinions on the level of agreement with statements on staff expertise were summarized in table 4.7 below.

Table 4.7: Staff expertise influence on performance

	N	Min	Max	Mean	Std Dev.
Academic qualification influence performance of road projects	54	3.00	5.00	4.2513	0.7228
Adequate prior experience influence performance of road projects	54	3.00	5.00	4.4064	0.5637
Technical expertise influence performance of road projects	54	3.00	5.00	4.0535	0.5654
Staff competencies influence performance of road projects	54	3.00	4.00	3.8342	0.4744
Composite Mean				3.6885	

As per the opinions, the respondents agreed that professional and academic qualification influence their performance in road construction projects (Mean=4.2513). Staff adequate prior experience influence their performance in road construction projects (Mean=4.4064), that technical expertise influence their performance in road construction projects (Mean=4.0535) and that staff competencies influence their performance in road construction projects (Mean=3.8342)

Increasing team skill and employing successful practices reduces risk and contributes to successful implementations of projects (Belout, 2008). If something happens during project implementation, then a skilled team can quickly resolve the issue with the management plan that has already been set in place. This will give the team confidence when facing project risks and help the clients feel comfortable with the project's progression (Burke, 2009).

4.5.3 Team Work influence on project performance

Statements on influence of team work shown in table 4.8 were rated by the respondents focusing on their level of agreement with each of the statement.

Table 4.8: Team work influence on performance

	N	Minimum	Maximum	Mean	Std Dev.
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Communication channels influence performance of projects	54	2.00	5.00	4.0428	0.7817
Team interactions influence performance of projects	54	3.00	5.00	3.9947	0.8829
Team roles influence performance or projects	54	2.00	4.00	2.4118	0.9927
Team training influence performance or projects	54	3.00	5.00	3.8342	0.4744
Composite Mean				3.5709	

Statements that the respondents agreed with were, communication channels influence performance of projects as illustrated by a mean of 4.0428, Team interactions influence performance of projects as expressed by a mean score of 3.9947 and Team training influence performance of projects as illustrated by an average of 3.8342. They however disagreed on the statement Team roles influence performance of projects as shown by mean of 2.4118. Acker (2006) observed that team work was a very important as a trait as it can be used to improve performance of construction projects. He argued that it creates a sense of unity and an aspect of working together for a common goal with every individual effort whether male or female being important to the attainment of the overall objectives.

4.5.4 Availability of resources influence on project performance

Statements on availability of resources shown in table 4.9 were rated by the respondents focusing on their level of agreement with each of the statement.

Table 4.9: Availability of resources

	N	Minimum	Maximum	Mean	Std Dev.
Project budget influence performance of projects	54	2.00	5.00	4.0428	0.7817
Cost of material influence performance of projects	54	3.00	5.00	3.9947	0.8829
Type of financing influence performance of projects	54	2.00	4.00	2.4118	0.9927
Usage of finances influence performance of projects	54	3.00	5.00	3.8342	0.4744

Composite Mean	3.5709
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Statements that the respondents agreed with were Project budget influence performance of projects as illustrated by a mean of 4.0428, cost of material influence performance of projects as expressed by a mean score of 3.9947 and usage of finances influence performance of projects as illustrated by an average of 3.8342. They however disagreed on the statement type of financing influence performance of projects as shown by mean of 2.4118.

4.5.5 Performance of road construction projects

Respondents attested the extent of success in the various indicators of performance of road construction projects in the sub county. The table 4.10 shows their opinions.

Table 4.10: Performance of roads

	N	Min	Max	Mean	Std Dev.
Quality of service	54	1.00	4.00	4.1872	0.8114
User satisfaction	54	3.00	5.00	4.0053	0.7999
Cost efficiency	54	3.00	5.00	3.8663	1.24792
Timely completion	54	3.00	4.00	3.0802	0.8545
Composite Mean				3.7848	

In a great extent the quality of service is successful as shown by 4.1872, user satisfaction success is shown by mean of 4.0053 and cost efficiency is successful as shown by a mean of 3.8663. Further timely completion in a moderate extent has been successful as illustrated by a mean of 3.0802. It should be however be noted that the respondent responding to the question above are key stakeholders who might be biased, since they represent the sector.

4.6 Correlation Analysis

This was used to determine the strength and the direction of the relationship between the dependent variable and the independent variable The analysis using Pearson’s product moment correlation was based on the assumption that the data is normally distributed and also because the variables are continuous.

Table 4.11: Correlation Matrix

		Performance of road projects	Management stability	Staff expertise	Team Work	Availability of resources
Performance of road projects	Pearson Correlation	1				
	Sig. (2-tailed)	0.000				
Management stability	Pearson Correlation	0.842	1			
	Sig. (2-tailed)	0.002	0.000			
Staff expertise	Pearson Correlation	0.773	0.502	1		
	Sig. (2-tailed)	0.000	0.008	0.000		
Team work	Pearson Correlation	0.663	0.632	0.546	1	
	Sig. (2-tailed)	0.0002	0.010	0.012	.	
Availability of resources	Pearson Correlation	0.731	0.572	0.506	0.304	1
	Sig. (2-tailed)	0.010	0.016	0.018	0.000	-

From the table 4.11, Management stability has a strong positive correlation with performance of road construction projects which is statistically significant at the 5% significance level ($r = 0.842$; $p = 0.002 < .05$). Staff expertise has a positive correlation with performance of road construction projects and the relationship is statistically significant at the 5% significance level ($r = 0.773$; $p = .000 < .05$). Team work also has a positive correlation which is statistically significant at the 5% significance level ($r = 0.663$; $p = .0002 < .05$). Lastly, availability of resources was found to have a positive correlation with performance of road construction projects and the relationship was statistically significant ($r = 0.731$; $p = .010 < .05$).

From the findings all variables were found to have a positive and significant relationship with performance of road construction projects.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This covers the summary of findings, conclusion and recommendations in line with the topic of study that is to investigate management practices influence on performance of road construction projects.

5.2 Summary of findings

Majority of the respondents had attained academic qualification commensurate with their job designation and it can therefore be inferred that academic qualification influences Performance of road construction projects. The findings of the study concurs with Ngulube&Tafor, (2006) who observed that each organization structure with a matching head count budget to support the business and the persons assigned various duties should possess requisite professional and academic qualifications.

The first objective of the study was to assess the influence of management stability on the performance of road construction projects. The respondents were asked to rate their level of agreement with statements about management stability using a scale of 1-5, whereby majority agreed that, management control skills influence performance of road construction projects as shown by mean of 4.2513, Management planning skills influence performance of road construction projects as shown by a mean of 4.1925, Allocation of resources influence performance of road construction projects as expressed by a mean of 4.016 and conflict resolution influence performance of road construction projects as illustrated by a mean score of 3.8128. They also disagreed with the statement level of commitment influence performance of road construction projects as represented by a mean score of 2.4599.

On the second objective the respondents were asked to rate their level of agreement with statements about staff expertise using a scale of 1-5, whereby the respondents agreed that professional and academic qualification influence their performance in road construction projects (Mean=4.2513). Staff adequate prior experience influence their performance in road construction projects (Mean=4.4064), that technical expertise influence their performance in

road construction projects (Mean=4.0535) and that staff competencies influence their performance in road construction projects (Mean=3.8342)

On the third objective the respondents were asked to rate their level of agreement with statements about team work using a scale of 1-5, whereby Statements that the respondents agreed with were, communication channels influence performance of projects as illustrated by a mean of 4.0428, Team interactions influence performance of projects as expressed by a mean score of 3.9947 and Team training influence performance of projects as illustrated by an average of 3.8342. They however disagreed on the statement Team roles influence performance of projects as shown by mean of 2.4118. Acker (2006) observed that team work was a very important as a trait as it can be used to improve performance of construction projects. He argued that it creates a sense of unity and an aspect of working together for a common goal with every individual effort whether male or female being important to the attainment of the overall objectives.

Lastly the respondents were asked to rate their level of agreement with statements about availability of resources using a scale of 1-5, whereby Statements that the respondents agreed with were Project budget influence performance of projects as illustrated by a mean of 4.0428, cost of material influence performance of projects as expressed by a mean score of 3.9947 and usage of finances influence performance of projects as illustrated by an average of 3.8342. They however disagreed on the statement type of financing influence performance of projects as shown by mean of 2.4118.

5.3 Discussion

5.3.1 Management stability

From the findings on management stability, the knowledge and capabilities of the managers and staff is especially important, i.e. their knowledge about technologies, marketing and management. According to Kerzner, (2011) to succeed in planning needs to be trained in the various facets of project management such as planning resourcing, monitoring and control so as to be able to effectively manage the projects. Planning underpins the efforts of a management team that does not shy away from the challenges of change and proactively seeks to find better ways of doing things (International Project Management Association, 2006).

5.3.2 Staff expertise

As per the opinions, it was revealed that staff expertise has an influence on performance of road construction projects. This is similar to Davis (2014) who says that variables under this factor consist of the skills and characteristics of project managers, their commitment, competence, experience, and authority.

It was also found that technical expertise greatly determines project performance and that staff competencies influence customer satisfaction. This concurs with Serrador and Turner (2014) who claims that the responsibility of top management toward the project is important and its commitment and support is a crucial requirement for project success.

Further it was clear that professional and academic qualification also influence the performance of road construction projects. This was similar to Chan and Kumaraswamy (2011) who remarked that effective communication and fast information transfer between managers and participants help to improve the quality of road construction projects.

5.3.3 Team Work

From the finding of the study communication channels, team interactions, and team training were found to greatly influence performance of projects, however majority of the respondent disagreed on the statement that team roles influence performance of projects. This was in agreement with (Acker 2006) who in his study observed that team work was a very important as a trait as it can be used to improve performance of construction projects. He argued that it creates a sense of unity and an aspect of working together for a common goal with every individual effort whether male or female being important to the attainment of the overall objectives.

5.3.4 Availability of resources

It was clear from the study findings that Project budget influence performance of projects, cost of material influence performance of projects and usage of finances influence performance of projects. They were however disagreement on the statement type of financing influence performance of projects.

5.4 Conclusion

The study concludes that

Investing in adequate professional and technical skills required in project management is an important foundation for ensuring the success of each project. Proper project management practices such as planning, risk management, and monitoring and control seek to cushion the project against present and potential risks or failure.

Poor management practices may result in wastage of resources, time, and distortion in quality of the final product or even total project failure. The amount of time and effort dedicated to planning as an element of project management influences the success or failure of a project. The more effort and time applied, the higher the probability that the project will achieve its set objectives.

Team work is a very important trait as it can be used to improve performance of road construction projects, since it creates a sense of unity and an aspect of working together for a common goal with every individual effort being important to the attainment of the overall objectives.

Project Monitoring and controlling skills can be used to provide feedback between project phases, check the linkages for flow and consistency in order to implement corrective or preventive actions to bring the project into compliance with the project management plan.

Management stability and staff expertise have the highest influence on performance of road construction projects, which availability of resources and team work follow closely with significant influence on performance of road construction projects in Imenti north Sub County.

5.5 Recommendations

The study recommend that construction authorities must ensure that adequate plans and resources exist to recruit, motivate, train and develop employees; Key management practices are needed to hedge projects against many uncertainties i.e. resource shortage, contractors' inability to meet completion dates and other types of happenings.

It is essential that all organizations that are involved in projects, trains its project management team so as to raise the standards of results emanating from every project. Government agencies, parastatals, non-governmental organizations and corporate, community and faith-based organizations should ensure that their project teams have the necessary skills such as planning,

communication, risk management, and monitoring and control so as to cushion the project against failure.

5.6 Suggestions for Future Study

The study investigated the influence of management practices on Performance of road construction projects. Further research should be carried out to find out the effect of training project planning, risk management, and monitoring and control on performance of construction projects in general. This information would be important for increasing the rate of success in projects.

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APPENDICES

APPENDIX I: LETTER OF TRANSMITTAL

Veronica Kabacia

University of Nairobi

P O Box 3279 – 00100,

Nairobi.

Dear Respondent,

RE: REQUEST FOR RESEARCH DATA

I am a graduate student at University of Nairobi. In partial fulfillment for the award of a Master of Arts Degree in Project Planning and Management, I am carrying out a research study on factors influencing management risk of county construction projects.

You have been identified as one of the people that could be of assistance with the research and I thus request your participation in the research. Essentially, you would be required to complete a questionnaire. You will be treated anonymously and your responses will be treated with utmost confidentiality. The information you provide will be used only for academic purposes.

Yours Faithfully,

Veronica kabacia

Thank you in advance.

APPENDIX II: RESEARCH QUESTIONNAIRE

Kindly answer the following questions by writing a brief answer or ticking in the boxes provided.

PART A: BACKGROUND INFORMATION

1. What is your role in construction projects?

Contractors

County inspectorate

KeRRA officials

2. Which is your highest level of education?

Post Graduate

Undergraduate

Diploma

Certificate

Any other (specify).....

3. How long have you been in the construction industry?

1 to 5 years

6 to 10years

11 to 15 years

16 to 20 years

21 years and above

PART B: Management stability

To what extent does management stability influence management risk in county construction projects?

Very great extent [5] Moderate extent [3] Very low extent [1]

Great extent [4] Low extent [2]

4. To what extent does the following influence management risk in county construction projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Level of commitment					
Allocation of resources					
Conflict resolution					

5. In your own opinion, how does management stability influence management risk in county construction projects?

.....

PART E: Staff expertise and experince

6. To what extent does staff experience and competence influences management risk in county construction projects?

Very great extent [5] Moderate extent [3] Very low extent [1]
 Great extent [4] Low extent [2]

7. To what extent does the following influence management risk in county construction projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Academic qualifications					
Technical expertise					
Prior experience					
Staff competencies					

8. In your own opinion, how do the facets of staff skills above influence management risk in county construction projects?

.....

PART D: Team Work

9. To what extent does team work influence management risk in county construction projects?

Very great extent [5] Moderate extent [3] Very low extent [1]
 Great extent [4] Low extent [2]

10. To what extent do the following attributes of team work influence management risk in county construction projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Team roles					
Communication channels					
Team interactions					
Team competence					

11. In your own opinion, how do team attributes discussed above influence management risk in county construction projects?

.....
.....

PART D: Availability of resources

12. To what extent does availability of resources influence management risk in construction projects?

Very great extent [5] Moderate extent [3] Very low extent [1]
Great extent [4] Low extent [2]

13. To what extent do the following influence management risk in county construction projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Project budget					
Cost of material					
Mix specifications					
Application procedure					

14. In your own opinion, how do the attributes of availability of resources above influence management risk in county construction projects?

.....
.....

Thank You for Your Participation