INFLUENCE OF CONTRACTORS' CAPACITY ON PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN KAKAMEGA COUNTY, KENYA

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A Research Project Report Submitted In Partial Fulfillment of The Requirements For The Award of The Degree of Master of Arts In Project Planning And Management of The University of Nairobi

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DECLARATION

Declaration by the Student

This research project report is my original work and that it has not been submitted to any university for the award of any degree.

Sign: …… Date: ……

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Declaration by the Supervisor

This research project report is submitted for examination with my approval as the University Supervisor.

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DEDICATION

This research project is dedicated to my loving wife, Anne Khaoya Wekesa, sons Agripah Kings Akali and Zak Zimri Akali not forgetting my dear mother Jerusa Othieno for their encouragement and support throughout my study.

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ABBREVIATIONS AND ACRONYMS

BPM	Building Project Management
CTP	Construction Time Performance
ECI	Early Contractor Involvement
ESI	Early Supplier Involvement
GDP	Gross Domestic Product
GNP	Gross National Product
GoK	Government of Kenya
JIT	Just in Time
KACC	Kenya Anti-Corruption Commission
KeNHA	Kenya National Highway Authority
KeRRA	Kenya Rural Roads Authority
KPIs	Key Performance Indicators
KRB	Kenya Roads Board
KURA	Kenya Urban Roads Authority
MCP	Mega Construction Projects
NACOSTI	National Commission of Science, Technology and Information
NCA	National Construction Authority
ODA	Official Development Assistance
PAR	Performance Appraisal and Reporting
PM	Project Management
PPI	Project Performance Indicators
PPMS	Project Performance Monitoring System
SPSS	Statistical Package for Social Science
TPM	Total Productive Maintenance
TQC	Total Quality Control
TQM	Total Quality Management
WB	World Bank

ABSTRACT

Over the years, a lot of construction projects have not been completed due to various factors that are linked to contractor's capacity on performance to these projects. The study purpose was to establish influence of contractor's capacity on performance of road construction projects with key interest of road construction projects in Kakamega County. The study sort to establish the influence of contractors' financial capacity on performance of road construction, to examine the influence of contractors' technical skills on performance of road construction, to determine the influence of contractors' equipment holding on performance of road construction and to assess the influence of contractors' management skills on performance of road construction. The study adopted descriptive statistics with a target population of 203 respondents who were composed of contractors and supervising engineers. The sample was 135 respondents derived using a formulae propagated by Yamane in 1967. Questionnaires and interview schedules were used to collect both the primary and secondary data. The study findings revealed that financial capacity of the contractors was tied to timely completion of the road projects as the required finances enabled majority of the activities outlined in the project to be done effectively and efficiently. Furthermore, it was found that technical skills were paramount in executing the various activities that were required in ensuring that the entire project achieved the set standards and complied with the set requirements. It was also found that contractor's equipment holding capacity was found to influence the performance of road construction as the type and condition of the equipment played an important role in the completion of the project on timely basis and quality of the final road project. Management skills of the contractors was found to influence the performance of the road construction projects as the ability of the contractor to management and asses the project to ensure that it was within the scope and specifications blue print were necessary as it also involved allocating duties to team members who understood the project well. Based on spearman's ranking correlation technical skills was found to influence the performance of road construction projects greatly followed by equipment holding capacity then financial capacity and finally management skills being the last. The study concluded that technical skills needed to be enhanced to ensure good workmanship thus timely completion of the road construction projects, constructors needed to enhance their equipment holding capacity and adopt new technologies to improve on the existing ones, financial capacity of the contractors should be enhanced so as to ensure that the projects are finished on time and quality is achieved and management skills should be enhanced to ensure that the contractors can be able to oversee the entire project and be able to what is required of them and their teams in the end.

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

In Europe, the construction industry mainly relieson financially focused performance at the project level which leads to creation of philosophies; for example concurrent construction and lean production. Othersnon-financial indicators considered include: Just in Time (JIT), Total Quality Management (TQM), and Total Productive Maintenance (TPM) (Yu, Kim, Jung, & Chin, 2007). A study by Ghalayini & Noble (2011) showed that financial metrics are historical in nature and do not reflect the current status of performance of a project.

A study by Kagioglou Cooper, & Aouad, (2011) financial measures do not have a strategic focus and are unable to provide quality data; they lack responsiveness and flexibility. Therefore, to realize optimal project performance, construction firms need to be measured, evaluated and managed. Kagioglou*et al*. (2001) further stated that project performance is a way of accomplishing cost and time objectives while adhering to the product specifications.

A survey by Koushki Al-Rashid, & Kartam, (2015) that involved 450 respondents was executed with the help of a random selection of residential private projects and it was unearthed that financial limitation and insufficient technical knowhow were the leading causes for delay in Kuwait. A study conducted by Faridi & Elsayegh (2012) sought to establish the cause of delay in development projects in the United Arab Emirates, 50 percent of these projects had delayed completion. This emanated from bureaucracies in approval for drawings, failure to plan earlier and complicated processes of making decision.

In a study conducted by Ling, Low, Wang & Lim (2011) showed that cost overrun and financial constraints were the main factors that affected road construction projects in Singapore. Obelle (2012) carried out a study on factors that affected road construction projects in Lagos, Nigeria. It was concluded that inadequate planning, delays and government approvals and regulations delayed construction of road projects.

A study by Karim (2011) revealed that financial constraints and cost overruns were the key factors that affected road construction projects in Dar es Salaam. In Kenya, Wambui, Ombui&. Kagiri (2015) indicate that completion of road projects was greatly enhanced

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

For a construction project to be considered as successful it must meet certain performance measures such as timely completion, within budget as well as satisfying all the stakeholder's needs in the project. The absence of reworks as well as 'fitness of purpose' for the occupiers has also been considered as project success (Pidd, 2012). The Government of Kenya worked out an investment programme to recover the economy through creating employment and wealth in March 2004, and listed the development of road infrastructure as a key pillar for economic growth (Ministry of Planning and National Development, 2003).

Furthermore, as the succeeding plan of roads construction projects, Kenya Vision 2030 was developed in 2008; and as the first period mid-term plan, the developments of all transport related infrastructure, including the road sector was stipulated in the First Medium Term Plan in 2008-2012 (Ministry of Planning and National Development, 2007). Kenya's vision 2030 set Improvement of Road Network, Efficiency and Safety as the development results. But despite of this, the road network has not been completed by now. The contribution of road infrastructure in economic growth of a country can easily be contributed by successful implementation of development projects.

Owing to the significance of roads in socio-economic development of the country, Kenyan government has in the recent past steadily increased budg*et al*location to the road sub-sector. Maina, (2013) reported that road projects in Kenya have been facing various challenges, which include delay in completion, cost overruns, demolition of residential and businesses houses and abortive works.

1.2 Statement of the Problem

Road construction projects are essential components in the development of a country since they form part of the key drivers of economic growth and an important pillar

towards achieving Vision 2030. It is important that the contractors accomplish projects timely, within cost and as per required quality. However, according to Brown & Adams, 2011) most road projects locally are not completed within the initial set targets of time due to a number of factors that impact negatively on the performance of these road projects for example availability of capital, management skills, organizational culture and technical skills among other factors. Road projects are complex in nature since they involve many parties. These include the Government which is a regular customer, road contractors, stakeholders, shareholders and regulators.

Maina (2016) stated that several construction projects do not complete within the planned budget, within the stipulated schedules and failing to meet the desired quality due to factors such as time inefficiency, inadequate funds and lack of advance implementation equipment. KNBS (2015) report indicated that there were many projects in Kakamega County which did not complete as expected due to client related obstacles, material unavailability, poor infrastructure, financial inadequacy and poor management abilities. There is slow uptake of road construction projects in Kakamega County. Failure of these construction projects will result in reduced supply of quality roads as well as a less vibrant economy which consequently contributes to a lower standard of living for residents of Kakamega County as well as increased unemployment in the County.

Local scholars such as Madukani (2013), Chinyio & Olomaliye (2010) and Kihara (2012) among others have studied on performance of construction projects. These scholars have focused on variables such as project management systems, procurement methods as well as project leadership skills. However the current study will narrow to roads projects in Kakamega County and will focus on the relationship between planning, stakeholder management, contractors' competency as well as timely availability of construction resources on performance of road projects in order to determine why some projects succeed while others do not and therefore fill the knowledge gap.

1.3 Purpose of the Study

The purpose of the study was to establish the influence of contractors' capacity on performance of road construction projects in Kakamega County, Kenya.

1.4 Research Objectives

The objectives of the study were:

i. To establish the influence ofcontractors' financial capacity on performance of road construction in Kakamega County.
ii. To examine the influence of contractors' technical skills on performance of road construction in Kakamega County.
iii. To determine the influence of contractors' equipment holding on performance of road construction in Kakamega County.
iv. To assess the influence of contractors' management skillson performance of road construction in Kakamega County.

1.5. Research Questions

The study was guided by the following research questions:

i. How does contractors' financial capacity influence performance of road construction in Kakamega County?
ii. How does contractors' technical skill influence performance of road construction in Kakamega County?
iii. How does contractors' equipment holding influence performance of road construction in Kakamega County?
iv. How does contractors' management skill influence performance of road construction in Kakamega County?

1.6 Significance of the Study

This study will help construction professionals increase the success of construction projects completion and project performance by managing well the factors that will help their successful completion. The architects, engineers, quantity surveyors, construction project managers and site agents may benefit from this study by applying the results of its findings while carrying out construction projects.

The government will be aware of the factors that cause delay in roads construction projects and performance of the projects and ways of addressing those delays so as the roads construction process is harmonized therefore efficiency in the production of this gold infrastructural facility.

Project developers/clients may also benefit from the findings of this study and therefore achieve greater success in their construction projects. This is because they may apply the

findings of this study in ensuring the risk factors that may cause their projects not be delivered successfully are mitigated.

The study will also help in application of theoretical training to policy makers to address practical problems in the sector, and to provide insights to today's and the future managers on the importance of properly road construction completion.

The study will encourage further researchers on the area to research as it's not exhaustive. The study will also benefit scholars who would wish to undertake further studies aimed at establishing determinants of performance of roads construction projects.

1.7 Delimitation of the Study

The study basically sought to establish determinants of performance of road construction projects in Kakamega County, Kenya. The study focused on four aspects of contractors' capacity that influence the performance of road projects that are contractors' financial capacity, contractors' technical skills, contractors' equipmentholding and contractors' management skills. The study targeted a total population of 203 roadcontractors and the supervising engineers in Kakamega County. The study will be conducted in Kakamega County between the month of April and May 2018.

1.8 Basic Assumptions of the Study

The study had an assumption that the respondents would be available; they would also be prepared to respond to the research questionnaires.

It was also assumed that the respondents would be honest and faithful while responding to questions in the research questionnaire. It further assumed that the four mentioned factors in the objectives in one way or the other determine the performance of road construction projects.

1.9 Limitations of the Study

In course of this study, the researcher faced challenges that hindered access to information and thus affecting validity and reliability of information that was to be collected by the researcher. The target respondents were reluctant to give information due to fear that the information could be used against them or their competitors. The researcher overcame this limitation by first explaining the objective of the study to the respondents before starting to collect data. A letter for data collection was obtained from

University of Nairobi as proof that the information to be collected will be purely for academic purposes.

1.10 Definition of Significant Terms

Construction Project: This refers to all those activities and resources necessary for coming up with an infrastructure for occupation by the end users,

Contractor: Refers to duly registered construction firm that firm that agrees to deploy materials and human resources inputs to execute specified construction project works at an agreed upon price and within a specified time frame to another independent entity called client or project owner

Contractor's technical skills: Refers to technical qualifications and registration requirements necessary for a contractor to qualify to carry out road buildings construction. In this study it is measured through number of technical staff, level of experience in road construction and the level of training for technical employees.

Contractors' equipment: These are the tolls/machinery and plants a contractor use to do the projects. In this study it is measured through type of equipment, age of equipment, number of equipment, ownership

Contractors' financial capacity: This is ability for the contractor to fund or raise funds that can enable the contractor to undertake a project. Contractors' financial capacity in this study is indicated by cash-flow, current assets, liquidity ratio

Contractors' management skills: These are the know-how to coordinate skills a contractor has to enable effective and smooth undertaking of the project. In this study it is measured through organizational structure, level of training, number of office staff

Intervening variables: These are the controlling aspects of the projects between the independent and dependent variables. In this study, the intervening variables are measured through government policy, site conditions and weather conditions

Project: Any human undertaking that has a clear beginning and a clear end. In the current study, a project is defined in terms of the various construction activities which are undertaken within a given timeline with an objective of having constructed a facility for the use of the community.

Road Project Performance: This is the extent to which a project achieves the intended objectives on prescribed metrics. In this study project performance is expressed in terms of time, cost, quality, safety, site disputes and environmental impact. In this study, it is measured through Completion time, cost management and quality standards

1.11 Organization of the Study

This study was organized in five chapters. Chapter one discusses the background of the study, statement of the problem, purpose and objectives of the study, research hypotheses, significance of the study and delimitations of the study, assumption and limitations of the study, delimitations of the study, definition of terms and the organization of the study. Chapter two covered the literature review and the specific objectives and the theoretical framework. The chapter also presented the conceptual framework and the knowledge gaps.

Chapter three consisted of the research methodology that used for the study. It outline the research design, the target population, the sample size and sampling procedures, research instruments, data collection procedures and data analysis methods.

Chapter four covered data analysis, presentation and interpretation. Chapter five comprised of the summary of findings, conclusion and recommendations and suggestions for further research.

CHAPTER TWO
LITERATURE REVIEW

2.0. Introduction

The chapter gives detailed review of the road construction projects, road sector and its activities locally, the study variables and constructs have been discussed extensively to show how they relate to the objectives of this research. The literature discussed is a summary of research findings of other researchers who have carried out their research in the same field of study so as to provide a theoretical foundation underpinning the study

variables. A discussion is made of the concept of project success criteria, a review of empirical studies on the various factors, conceptual framework and finally the research gap.

2.1 Concept of Performance on Projects

A number of studies have been conducted to examine project performance in projects in developing countries. Faridi and El-Sayegh (2006) reported that shortage of skills of manpower, poor supervision and poor site management, unsuitable leadership; shortage and breakdown of equipment among others contribute to construction delays in the United Arab Emirates. Hanson et al. (2003) examined causes of client dissatisfaction in the South African building industry and found that conflict, poor workmanship and incompetence of contractors to be among the factors which would negatively impact on project performance. Nyandomo & Kongere (2010) established that quality and attitude to service is one of the key factors constraining successful project delivery in South Africa. The performance of contractors in Zambia is apparently below expectation; it is not uncommon to learn of local projects that have not been completed or significantly delayed. This poor performance of many local contractors has huge implications in terms of their competitiveness (Zulu &Chileshe, 2008).

The construction industry is complex in its nature because it comprises large numbers of parties as owners (clients), contractors, consultants, stakeholders, and regulators. Despite this complexity, the industry plays a major role in the development and achievement of society's goals. It is one of the largest industries and contributes to about 10% of the gross national product (GNP) in industrialized countries (Navon, 2005). Palestine is no exception; the local construction industry is one of the main economic engine sectors, supporting the Palestinian national economy. However, many local construction projects report poor performance due to many evidential project-specific causes such as: unavailability of materials; excessive amendments of design and drawings; poor coordination among participants, ineffective monitoring and feedback, and lack of project leadership skills. The ever-important macro-level political and economic factors have also been related to poor projects performance (Zulu & Chileshe, 2010).

Project performance can be measured and evaluated using a large number of performance indicators that could be related to various dimensions (groups) such as time, performance, health and safety (Zulu & Chileshe, 2010). Time, cost and quality are,

however, the 3 predominant performance evaluation dimensions. Another interesting way of evaluating project performance is through 2 common sets of indicators (Zulu & Chileshe, 2010). The first set is related to the owner, users, stakeholders, and the general public; the groups of people, who will look at project performance from the macro viewpoint. The second set comprises the developer and the contractor; the groups of people who will look at project performance from the micro viewpoint. Generally, performance dimensions may have one or more indicators, and could be influenced by various project characteristics.

Zulu & Chileshe (2010) found that project time and cost performances get influenced by project characteristics, procurement system, project team performance, client representation's characteristics, contractor characteristics, design team characteristics, and external conditions. Similarly, Iyer and Jha (2015) identified many factors as having influence on project cost performance, these include: project manager's competence, top management support, project manager's coordinating and leadership skills, monitoring and feedback by the participants, decision- making, coordination among project participants, owners' competence, social condition, economic condition, and climatic condition. Coordination among project participants, however, was identified as the most significant of all the factors, having maximum influence on cost performance. Interestingly, Samson & Lema (2011) examined project time-cost performance relationship, and their results indicate that cost is a poor predictor of time performance. Elyamany (2007) introduced a performance evaluation model for construction companies in order to provide a proper tool for the company's owners, shareholders and funding agencies to evaluate the performance of construction companies in Egypt.

2.2 Empirical Review of Road Construction Projects

To enhance project performance, the project implementers, project sponsors and other stakeholders should agree on the project goals (Zulu & Chileshe, 2010). They should be guided by clear guidelines to ensure that projects cater the needs of the end-users and implementation is executed on-time. The project implementers should have a clearly defined plan having assigned responsibilities on how the deliverables ought to be defined including the required tasks that should be carried out and the risks involved. Project

implementers should manage the scope of the project effectively; this involves defining goal setting and planning project stages.

Samson & Lema (2011) reported that the project implementer must be prepared for any changes to the scope and find ways to effectively cope with the changes. This can be achieved through cultivating a culture of communication between the stakeholders of the project. This assists to improve on efficiency since the project facilitators are aware of what they are expected to do. The management and project sponsors might want to know the status of the project, many projects fail as a result of poor communication approaches.

Top management aligns project's resources and implementers in working towards implementation this highly motivates them to commit their resources and support to ensure that the project is implemented. Failure of top management support is a major reason why many development projects fail. Samson & Lema (2011) posited that efficient project implementation contributes to reduction of costs. In developed economies, most road construction projects are well implemented due to a number of reasons for example top management support, availability of funds and effective communication and coordination of activities by all the stakeholders involved in road construction projects. Road projects performance is achieved when the projects get completed on time to the satisfaction of the stakeholders who are contracting firms, the customer and the end-users. Performance of road construction projects is attributable to cost reduction and on-time project completion. Performance can be defined as observing time and cost and adhering to the products specifications. Recent studies have however proved that project implementation is multidimensional; it broadens the focus of performance to incorporate characteristics such as project management performance.

Wongrassamee & Vimonsatit (2013) contend that different kinds of people measure projectperformance in different ways at different times. Zulu & Chileshe (2008) explain that achieving the satisfaction of the main project stakeholders including the customer is one of the fundamental goals of project performance. Project stakeholders are satisfied when the project is completed in good time and quality criteria are met. This minimizes cost overruns and hence saves the cost of the project. The commonly utilized tool for

measuring performance is referred to as the Balanced Score Card (BSC) while the indicators include; Key Performance Indicators.

Shaban (2008) in his thesis on factors affecting the performance of construction projects in the Gaza Strip, found out that the most important factors agreed by the owners, consultants and contractors were: average delay because of closures and materials shortage; availability of resources as planned through project duration; leadership skills for project manager; escalation of material prices; availability of personals with high experience and qualification; and quality of equipment and raw materials in project. Bui and Ling, (2010) in the study that was carried out in Vietnam on factors affecting construction project outcomes discovered that major enablers that lead to project success are foreign experts' involvement in the project, government officials inspecting the project, and very close supervision when new construction techniques are employed. A factor which leads to poor performance is the lack of accurate data on soil, weather, and traffic conditions.

Kigari and Wainaina, (n.d) in a journal of emerging trends in economics and management sciences time and cost overruns in power projects in Kenya by closely relating the factors to the various variables, it was observed that they resulted to overrun on the projects by varying magnitudes. The Projects had time overruns ranging from –4.6% to 53.4 %, while the cost overruns varied between 9.4% and 29%. Amusan, (n.d) studied factors affecting construction cost performance in Nigerian construction sites. It was discovered from the analysis that factors such as contractors' inexperience, inadequate planning, Inflation, incessant variation order, and change in project design were critical to causing cost overrun, while project complexity, shortening of project period and fraudulent practices are also responsible.

Fetene, (2008) did a study on causes and effects of cost overrun on public building construction projects in Ethiopia. From the results it was found that 67 out of 70 public building construction projects suffered cost overrun. The rate of cost overrun ranges from a minimum of 0% to the maximum of 126% of the contract amount for individual projects. Iyer and Jha (2006) did a research on factors affecting cost performance evidence from Indian construction projects and found out that the project manager's competence and top management support are found to contribute significantly in enhancing the quality performance of a construction project.

Nyangilo, (2012) did an assessment of the organization structure and leadership effects on construction projects' performance in Kenya, he found out that lack of appropriate project organization structures, poor management systems and leadership are the major causes of poor project performance. Gbadura and Oke, (2010) examined project management leadership styles of Nigerian quantity surveyors, on the general note, Nigerian quantity surveyors were found to be autocratic using Jerrell/Slevin measuring instrument while in the opinion of Nigerian construction professionals; they are more of task oriented in discharging their duties as construction project managers.

Iyagba, Odusami & Omirin, (2003) did a research on the relationship between project leadership, team composition and construction project performance in Nigeria. The tests of the hypotheses led to the conclusion that there was significant relationship between the project leader's professional qualification, his leadership style, team composition and overall project performance. No significant relationship was found between the project leader's profession and overall project performance.

2.3 Contractors Financial Capacity and Performance of Road Construction Projects

According to Harris and McCaffer (2005), the contractors' financial capacity is the resource he requires to smooth the progress of implementation of the construction work on site. It is made up of money at hand, bank credit, overdraft, credit purchases, and work-in-progress and invoiced amount. Financial capacity also includes resources needed to grease the daily business of the construction firm.

The management of financial capacity includes planning, sourcing, and controlling the use of financial capacity during construction. The sufficiency of financial capacity depends on the correct composition and correct financing at all times during construction. Nwude (2010) observed that it requires a determined positive effort by the contractor as mismanagement can weaken productivity and profit level. Management of financial capacity is very critical. To ensure that the level of financial capacity is maintained and that there is sufficient provision of funds to finance current assets to facilitate projects to be project completion within cost and time, there is need of establishing the optimum level of financial capacity needs of a project. Further there is need of continuous checking and monitoring the quantum of individual parts that comprise the financial capacity to ensure that the requirements are not exceeded.

Awards of major construction contracts in developing countries are skewed in favour of foreign counterparts against citizen contractors since the foreign firms are considered more technically and managerially advanced and well-organized in funds acquirement including competence. In comparison with this, citizen contractors have over the years had challenges related to inadequate financial capacity, poor project performance in terms of adhering to completion deadlines, poor work quality and capital management which has in many cases led to bankruptcy and in extreme cases, abandonment of projects. In other words, majority of citizen contractors usually do not complete construction contracts within initial contract sums and hardly within scheduled completion times. Ogbebor (2002), Oseni (2002) and Akintude (2003) in their studies in the Nigerian construction industry confirmed that indigenous construction companies have challenges of under-capitalization.

To ensure successful project execution there must be adequate financial capacity. Rahman (2013) observed that monetary strength of contractors and sufficient cash flow is critical in keeping construction progress as planned. Ameh (2011) observed that inadequate funds lead to time overrun and sufficient funding guarantees reasonable cash flow. Kenyatta et al (2015) carried out a study on influence of payment default to contractors in the Kenyan construction industry and found that late payment of one or several certificates, underpayment or paying intermittently and nonpayment have led to cash flow hardships to contractors. This has led to late completion of projects, disputes in construction and even bankruptcy. The study recommended industry players to consider legislating on a payment specific regime just like it has happened in other countries. Others factors noted by many other studies which have been eroding financial capacity during construction include; access to credits, diversion of contract funds for other use as opposed to the project, poor project planning and control, foreign exchange fluctuations, and high cost of finance.

In road construction projects in Zambia, a study by Kaliba et al (2009) identified the most significant causal factors for performance of projects as inadequate and inconsistent release of funds by clients, poor financial management by contractors or lack of capacity by contractors. The factors that influence construction quality implementation at the execution phase in Indian construction industry include financial limitation (Ashokkumar, 2014).

In water projects in Kenya, Kanda, Muchelule & Mamadi (2016) found that client related factors such as financial capacity, owner interference, decision making ability and scope variation, and consultant related factors such as financial capacity, equipment availability and quality skilled workforce, site supervision ability, material availability, and control over sub-contractors have significant influence on project quality.

Contractual capacity basically means the ability of a contractor to execute the contractual works successfully to completion. Contractual capacity can be reviewed from three main dimensions including financial, management and technical according to Ministry of Public Works evaluation procedures. This research will mainly concentrate on the technical aspect of contractual capacity of contractors.

Prequalification is the process used to investigate and assess the capabilities of the contractors to carry out a job if it is awarded to them. One of the major factors that is key to the project completion of the buildings construction project is the technical capacity of the contractor. Indicators for technical capacity include the education level, experience of the technical staff, plant and equipment and the class of registration of the contract firm according to the Ministry of Public Works evaluation criteria. Different magnitudes of work in terms of complexity and cost, requires appropriate classes of registration of contractors as well as level of technical staff qualification. Contractor prequalification is a decision-making process involving a wide range of decision criteria as well as decision-making parties and has received the attention of several researchers (Moselhi and Martinelli, 1993; Ng, 1992; Herbsman, 1992; Ellis and Herbsman, 1991; Merna and Smith, 1990). This is normally carried out by a client's representative and eventually leads to be selection of a contractor to carry out implementation of a construction project.

The capacity of the construction industry in many developing countries has been noted to be deficient as has been widely reported (World Bank, 1984; United Nation, 1984; Kirmani, 1988; Wells, 1986). In construction, the formation of joint-venture between local and foreign contractors has been recommended by the World Bank (1981). This is supported by Carrilo (1993), the integration of local and foreign constructors in construction project can facilities the transfer of technology. Studies carried out (Wallender III (1977), Bradbur (1978), Campbell, Marton (1984), indicate their indigenous construction firms in developing counties are mostly characterized by lack of capacity, confidence, motivation and long term aspiration among others. Many are

struggling without basic foundation which construction firm's internal strength depends on.

Prequalification provides a client with a list of contractors that are invited to tender on a regular basis. This is the approach most currently used by many countries and in which many and different types of criteria are considered to evaluate the overall suitability of contractors. To gain entry to an approved standing list, a contractor applies initially to the client and is then assessed on grounds of financial stability, management capacity, organizational structure, technical expertise and the previous record of comparable construction (Merna and Smith, 1990). It is necessary to consider technical, management and financial criteria in the prequalification process. These comprise the applicant's permanent place of business, adequacy of plant and equipment to the work properly and expeditionary, suitability of financial capacity and experience, performance of work of the same general type and the amount of the proposed contract, the frequency of previous failures to perform contractors properly or fail to complete them on time, the current position of the contractor to perform contracts well, and the contractors relationship with subcontractors, or employees (Hunt, Logan, Corbetta, Crimmins, Bayard, Lose, Bogen, (1996).

Thwala and Phaladi (2009) in their study examined problem facing small contractor in South Africa and found that poor record keeping, lack of effective management, and lack of entrepreneurial skills are major cause of business failure for small contractors. AlsoWasi, Bridge and Skitmore (2001) examined the factors affecting the performance of small indigenous contractors in Papua New Guinea; level of cash flow, financial skills, poor communication between the contractors and the client's site representative are the factors affecting the performance of indigenous contractors. In a research conducted on the assets structure of medium-sized building construction contracting firms in Nigeria and its implications on operation, Kehinde and Mosaku, (2006) found that the assets structure of these firms comprise of fixed assets being less than half of the total assets. This means that a greater portion of the total is current assets (held mainly as account receivables that sometimes may not be available within one year). Pre-qualification of contractors is a common practice across projects, yet the investigation on the ability of the selected contractors‟ performance are:- Soundness of business and workforce; Planning and control; Quality management; Past performance; Rise management; Organizational capability; Commitment and dedication.

Multiple linear regression models reveal that technical expertise, past time in business, work methods and working capital significantly impact on contractor's performance across time, cost and quality success (Munns and Bjeirmi 1996). Another basic requirement is that financial material and human resources are fully available for the implementation. In the United Kingdom there is evidence that the Construction Skills Certification Scheme (CSCS) is viewed by employers as the approach to tackling the skills crisis (Mackenzie et al; 2000). Amongst developing countries, skill certification was pioneered in Singapore but has recently been taken up by the construction Industry Development Board (CIDB) in Malaysia. There are categories of skills registered by the CIDB-skilled and semiskilled workers, construction site supervisors and construction managers. Applicants have to prove their competence by submitting their relevant certificates or they can be tested on site. In certain trades (such as scaffolding) they may be obliged to undergo CIDB courses before registration. In other less developed countries, where many construction workers are illiterate, higher priority would have to be given to practical, as opposed to written tests (Abdul-Aziz, 2001). A variant on the testing and certification of individual skills is the certification and registration of subcontractors. Employers in Singapore set up a scheme in 1993 to register subcontractors, known as the Singapore List of Trade Subcontractors, or SILOTS. The objective was to improve their performance as well as to help them to provide continues employment and better welfare on public workers. The scheme subsequently received government support with main contractors on public sector projects required since 1996 to engage only SLOTS listed subcontractors (Debrah and Ofori, 1997).

Dlugwan, Nxumalo, Hysteen, and Rwelamila (2002), say that in South Africa the Government has put emphasis to transform the construction sector to allow participation of emerging and small contractor but this was not properly regulated as most of these contractors did not have experience and skills to operate sustainable construction firms. Exacerbating this problem is the adequate investment skills development across all levels in the sector; despite sufficient funding available from the construction Education and Training Authority (CETA) and specific deficiencies include inadequate recognition of prior learning and work place training. The Construction Industry Development Board (CIDB) was established in 2000 as a statuary body to provide leadership to stakeholders and to stimulate sustainable growth, reform and improvement of the construction sector for effective delivery and the industry's enhanced role in the country's economy.

Construction Industry Development Board (CIDB) regulations were that a vibrant and successful construction industry is only possible if those employed within it have the required skills and competency to function effectively in their roles. This initiative is seen by some as a mechanism amongst others to minimize the advert of insolvent situations in the construction industry.

In Kenya according to former Prime Minister Raila Odinga, as quoted in the parliament Plenary Hansard (2011) report of 25.05.2011, "the construction industry has been in shambles and faced with a number of problems. These includes but not limited to invasion by quacks and rogue practitioner, poor capacity corruption and lack of funding." To address this situation, a law has been enacted in parliament creating the National Construction Authority (NCA), a body that is mandated with the task of overseeing the regulation of the construction industry. All contractors must be registered with this authority. This saw the enactment of parliament regulation creating the National Construction Authority (NCA). Among the mandates of the NCA is to regulate and control the technical capacity of the contractors. This is to be achieved by; regulating the conduct of all stakeholders in the industry, establishing the qualification of all stakeholders, establishing the experience levels of various stakeholders in the industry, establishing the resources capacity of a given stakeholders to do specified construction works (National Construction Authority Regulations 2012). The Authority is also charged with passing regulations from time to time on the quality of construction offered by contractors and also has powers for accrediting training institutions that offers courses related to construction. However, small constructions like construction of residential homes are not catered for in the Act. When it comes to protection of the local industry from unfair competition, no foreign entity can carry out construction works in Kenya without obtaining the necessary license and regulatory approval. Hilary Patroba (2013) says the emergency of Chinese contractors in Kenya has created some business in this industry, but the Government was being held ransom by cowboy contractors.

The enactment of the national construction authority bill will go a long way in ensuring that only capable and qualified contractors are registered for construction works. One objective the Kenya Government is to strengthen the capacity of Kenya's construction industry especially in the housing construction which is a labor-intensive activity that will create jobs for youth and the unemployed. Recent discoveries of petroleum oil, natural gas and other minerals are likely to trigger more foreign direct investments

inflows. An investment in the construction industry is likely to remain robust against a background of stable interest rates coupled with the on-going government infrastructural projects necessitated by decentralization of services though devolution. Cement consumption, a key indicator in the construction industry grow by 6.9 percent in 2013(Construction industry development policy: GOK)

2.4 Contractors' Technical Skills and Road Project Performance

Technical skills can be defined as knowledge and abilities that is needed to execute a task. Sambasivan (2016) defined technical skills are the ability to perform role with the help of certain tools and equipment. Such tools may be tangible or intangible. Employees having technical skills perform their roles more efficiently because they possess practical aspects and expertise which in most cases is acquired through specialized training and development programmes.

An organization seeking to achieve project performance should develop and maintain employees with technical skills and expertise to accomplish their tasks efficiently. This can save the project huge costs and contribute towards efficient flow of activities. Iyer and Jha (2015) contended that projects that perform have been associated with presence of a technical team and a lean and competent team of employees.

Project implementers lead the organization in project implementation; this is an important role that requires the implementers to have technical skills to effectively guide employees towards implementation of projects. Organizations that exploit its employees' technical skills perform its functions efficiently, this helps to streamline coordination of activities and work towards set goals and targets. Karim and Marosszeky (2011) posited that through continuous training and development programmes, employees are able to sharpen their technical skills and expertise. These skills assist employees to easily solve technical problems and save the organization costs of hiring expertise. In so doing, this creates a platform to employees to exploit their innovation in providing products and services that add value to customers. In projects implementation, employees should be engaged in trainings to improve their skills in implementation and practical aspects of use of tools and equipment that support project implementation (Zulu and Chileshe, 2010).

To effectively harness their technical skills in implementation of projects, top management should ensure that employees' duties and responsibilities match their

technical skills and knowledge. Bygrave (2014) observed that employees that possess knowledge and technical skills are motivated and have the right attitude which enables them to cope with project implementation challenges.

Project team leader must have skills in general management (Bonham, 2008). Skills such as leadership, negotiation, communication, team building and other human resource management skills are necessary in any management position. Second, the Project team leader must have knowledge of the generally accepted project management areas, such as project scope management using a work breakdown structure; project time management using program evaluation and review technique (PERT) methods; and project cost management using budgeting and accounting methods. Third, the PM of an IT project must have IT management skills, such as skills in lifecycle phasing, estimating, constructing of software, reporting progress based on technical milestones and testing (PMI, 2013).

The communication skills of the project team leader are critical. Wang, (2013) did a study and reported that cooperation levels were higher when team leaders clearly explain project objectives and team member responsibilities. One study asked project managers and participants to identify the threshold and superior competencies of project managers. The study found project team leader's role as a technical expert, team builder (team cohesiveness, team spirit), gatekeeper (collecting, interpreting and disseminating information from external sources to team members) and strategic planner (setting project goals, time planning, resource allocation, project evaluation etc.), all positively related to team performance. Project team leaders pushed team members to overcome obstacles.

The framework that senior management places on project team leaders is an important area for consideration. As well as manage their team members the project leader should be able to manage upwards, as the senior management team will significantly influence the environment they operate in. 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, 2012).

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.

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.

2.5 Contractors' Equipment Holding and Performance of Road Construction Projects

Equipment are the tools, machines, or other things that you need for a particular job or activity Tangible property (other than land or buildings) that is used in the operations of a business. Examples of equipment include devices, machines, tools, and vehicles (Hyvari, 2006).

Krazner (2005) defined construction equipment as to heavy-duty vehicles, specially designed for executing construction tasks, most frequently ones involving earthwork operations. They are also known as heavy machines, heavy trucks, construction equipment, engineering equipment, heavy vehicles, or heavy hydraulics. They usually comprise five equipment systems: implement, traction, structure, power train, control

and information Heavy equipment functions through the mechanical advantage of a simple machine, the ratio between input force applied and force exerted is multiplied. Some equipment uses hydraulic drives as a primary source of motion.

Sanders & Thomas (2010) stated that material management is one of the most important factors in construction industry. Productivity can be affected if required materials, tools, or construction equipment for the specific are not available at the correct location and time. Selection of the appropriate type and size of construction equipment often affects the required amount of time it is, therefore, essential for site managers to be familiar with the characteristics of the major types of equipment most commonly used in construction. In order to increase job-site productivity, it is beneficial to select equipment with the proper characteristics and a size most suitable for the work conditions at a construction site. Laborers require a minimum number of tools and equipment to work effectively to complete the assigned task. If the improper tools or equipment is provided, productivity may be affected (Chen 2007). The size of the construction site and the material storage location has a significant impact on productivity because laborers require extra time to move required materials from inappropriate storage locations, thus resulting in productivity loss.

Krazner (2005) mentioned that project equipment is necessity and should influence performance by saving cost; also he added that project equipment enhances increased production. Fringenti (2010) mentioned that project controlling is a combination of monitoring, evaluating and taking corrective action. Chan (2011) has elaborated that a loose project management can result in a project getting out of control and on the other hand extreme and over reactive control can bring the project to a standstill. They further mentioned that controlling a project too tightly makes team members nervous and may lead to be less creative.

Angus et al. (2000) also confirms that “monitoring and controlling of a project must be done very carefully”. The balance between the three controlling aspects varies from project to project and also from time to time in the same project. Also, the balance depends on the maturity of the organization. So, it is more than necessary for companies to implement best practices in control process. Jackson (2004) stated that information and good reporting system are essential for an effective project control system. The process established should enable accessing quality information from projects.

Chan & Mohan (2009) mention that, performance information is easier to get than progress information which is subjective. The success of the St. Lucie Unit 2 nuclear power project can be attributed to timely reporting of results, skilled personnel, and team work for solving problems, quality improvement program, indicators, and incentives. This explains the reason for balance between process approach and ability approach in controlling (Cleland et al., 2008).

Also, Cleland et al. (2008) though various cases such as New England power company, Iowa Public service co, NEPCO Supra Re Salem Nuclear Generating Station, Minnesota Power and Light company, mentions that the strict contract laws prove shadowy behavior, poor qualities of project managers, improper use of project management tools as factors for project failures. This again brings out the importance of balance between the tools and abilities. Construction companies when confronted by cost and time overruns, becomes un-balanced in control approach i.e. they either overdo (or) under do controlling process in terms of monitoring, evaluation or corrective actions. As, Jackson (2004) revealed that tracking deviations between actual and planned performance throughout the project will help in taking corrective actions.

Many times, actual progress do not match the planned progress making it essential to keep the management, client engineer, and sponsor, informed of the progress and the precise conditions that can effect each occurrence. Ross (2008) argued that controlling includes monitoring, but it also includes taking timely, corrective action to meet project objectives or goals. So, depending upon the extent of variation between planned and actual, the management should initiate appropriate control actions. Leslie (2005) showed that most information is analyzed by variance i.e. difference between planned and actual performance and it is the management which is will determine what is useful in analyzing individual situation. Also, Changes in time, cost, scope and quality leads to variations and many times variations leads to cost escalation than savings (Archer, 2006).

2.6 Contractors Management Skills and Performance of Road Construction Projects

Contractors' experience is a variable that affect adherence to timely completion of projects. A contractor is the one who carries the actual construction; the contractor who has been awarded the tender starts by identifying the best plan, allocating both

manpower and required resources, linking all the legal partners and above all delivering within the assumed times (Elshakour, 2012). In his work of the 21st century projects in LDCs that are emerging like Angola, Libya, Ghana, SA and East Africa's Rwanda, Kaming et al. (2012) argue that the contractors' knowledge, competence and experience in construction projects have forced up to 85% of these countries run to sourcing for external experts from countries like China, Japan, Israel and many more so that their projects can achieve the time frames and quality targets. This was rated as one of the highest benefactor that is experienced across the world.

In their work entitled, 'Productivity Improvement in Construction,' Oglesby, Parker & Howell (2009) argue that, Contractors are selected on the basis of price, experience in undertaking particular types of construction project and their reputation or track record in producing high quality work within budget and on time. In most cases there is a trade-off between price, experience and track record but the desire to accept the lowest tender does not always lead to a project that is completed within time and budget. In contracts where the Engineer's estimate is at least 15% greater than the contractors' bid amount there is a strong likelihood of cost escalations (Kog &Loh, 2012). Therefore, these construction projects across the globe need to be carefully tracked and documented. There are cases where the prime contractor and sub-contractors go into bankruptcy during the construction period. This can lead to significant delays and extra costs arising as the project owner has to re-tender the remaining work to be undertaken by another contractor.

The inherent contractors experience during preparation, planning, authorization and evaluation procedures for large infrastructure projects creates obstacles to the implementation of such projects (Commission of the European Union, 2010). There is a fear that obstacles in the planning and implementation phases translate into cost escalation, if they do not block projects altogether (Ardity et al, 2010).

In the research on why projects in Kenya and Uganda fail to adhere to the deadlines up to the tune of 55% Fapohunda and Stephenson (2010) conclude that, the dependence of cost escalation on the contractors' experience is firmly established for construction projects. There is good reason to be concerned about experience in the event of planning and implementation of such projects. The contractors' ability may, quite simply, be extremely expensive .Consequently, before a project owner decides to go ahead and

build a project, every effort should be made to conduct preparation, planning, authorization and ex ante evaluation in a manner where such problems are negotiated and eliminated that may otherwise resurface as delays during implementation and this is usually achieved through a competent contractor (Flyvbjerg et al, 2012). Similarly, after the decision to build a project, it is of crucial importance that the project organization and project management are meticulously set up and operated in ways that minimize the risk of cost estimates. If the contractor responsible for a project fail to take such precautions aimed at proactively minimizing the effects and long implementation phases, the evidence indicate that the financiers, be they taxpayers or private investors, are likely to be severely penalized as a result of unprecedented cost escalations of a high magnitude that could threaten project viability (GoK, 2012).

In Kenya, a number of scholars have conducted researches on why the contractor is responsible for the failure/delay of construction projects and various results have been achieved over time as follows.

A study by Hussin and Omran (2011) on 120 selected contractors in Kenya and Malaysia found out that, 80% of the respondents indicated that experience with rating "high" is a significant factor to adherence to cost estimates and time in the construction industry. At pre-qualification stage, the study established that contractors past experience in similar assignments and environment coupled with the entire team is among the parameters used in qualifying the contractors invited to bid for works. The study established that aspects of contractors' experience that affect adherence to cost and time estimates to a great extent or quantum are poor distribution of labour, poor site management, technical and management skills. Quality has been known to be having hidden costs which cannot be quantified quite easily and extra time that cannot be measured. When proper controls are not put in place, the project is put in jeopardy. However, the bankruptcy and communication skill on adherence to time was found to affect adherence to time to a greater extent.

Using a scientific approach on why the almost 32 roads constructed/maintained by the GoK, World Bank, KURA, KeNHA, Australian Development Bank etc. across the country failed to meet the deadlines between 2008- 2012, Oraro (2012) used the approach below and results published. Cross tabulation and the Chi-Squared test was carried out to determine the relationship between the contractors' experience and

adherence to the time estimates by Oraro in 2012. The Chi-Squared critical value at $\alpha = 0.05$ was 3.841 whereas the calculated value was 10.2011 which translates to a p-value of 0.00609339. As a result, the study established that the relationship between contractors experience and adherence to time estimates was very significant, at 0.05 level of significance. The Pearson coefficient of correlation at 0.05 confidence level was found to be 0.397 and a p-value of 0.041, which also showed that the relationship was significant at 0.05 confidence level. This is in agreement to Gakuu and Kidombo (2013) observation which attested that in contracts where the contractors' experience is questionable, there is a strong likelihood of cost escalations .However no research has been done on the role of the contractors' experience on projects implemented by the KeNHA in the coast region and the country at large, a factor that this study has sought to address.

2.7 Theoretical Framework

This study will be guided by Goldratts' (Goldratt, 1984) Theory of Constraints (ToC). This theory holds that a system is faced by constraints that limit it from achieving its objectives. Some of these limiting factors emanate from production, planning, production control, managing a project, logistics, accounting, performance measurement and other lines of business which might impact on performance. In this theory, constraints define the output of a system whether acknowledged or not. The aim of the top management is findings appropriate ways to minimize the constraints of a system in the organization. This way the organization can effectively be able to realize its goals and maximize profits. This theory describes the causes of the system constraints and also sheds light on the best ways to deal with these constraints (Goldratt, 2006).

An organization operates with the help of systems. A system can be described as a collection of independent and interrelated process which works together in turning inputs into outputs in the pursuit of certain goals. The limitation for this system is a constraint which prevents the system from its efforts of achieving organizational goals (Noreen, Smith & Mackey, 2008).

Theory of constraints is applicable in this study since, project planning, stakeholders' management, contractors' technical skills and procurement procedures are constrains that face road contractors when implementing road projects. The best way to handle such

kind of a problem is to find ways of countering these challenges to remove barriers in implementing road projects.

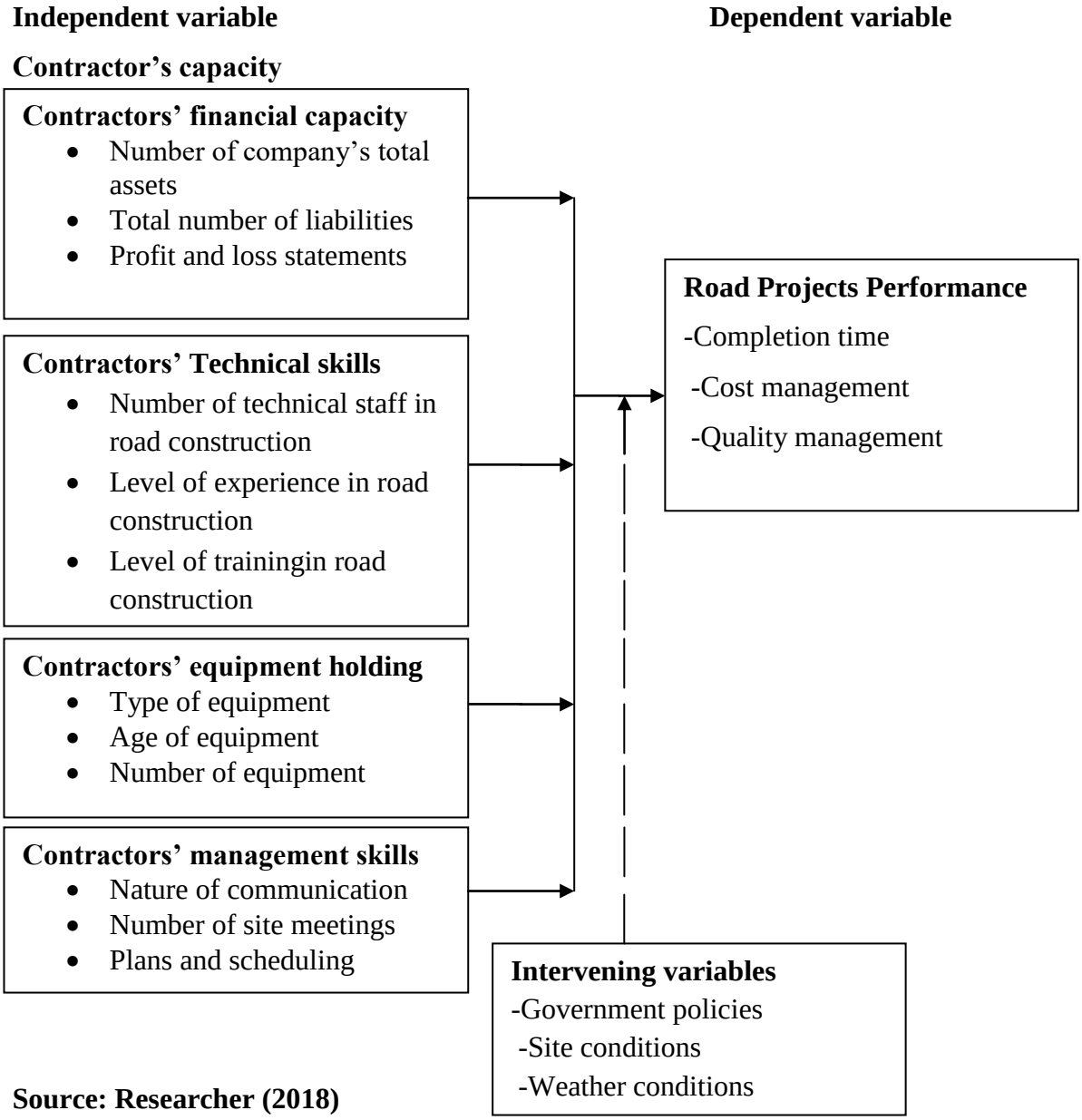
Stakeholders are an important part of road projects and they should participate in effectively managing road projects to enhance their performance (Ruhl, 2011). Some of the impediments that affect performance of projects are inadequate finances, poor leadership and inadequate technical skills. These limitations highly contribute to failure of project completion resulting into inefficiencies and delay which might lead to an increase in costs of the project. However, the supporters of this theory; Noreen (2012) put more emphasis on the significance of project teams identifying the limitations and establishing effective ways to deal with these limitations at early stages to reduce their impact on road projects.

2.8 Research Gaps

Although most studies had been done in relation to factors that affected road construction projects, little focus was laid on the key factors that influenced road construction projects performance especially project planning and contractors' technical skills. Most studies that have been reviewed limited themselves on labour shortages, unworkable deadlines, unexpected ground conditions, failure to plan and project scheduling, ambiguities in specifications, and drawings; bureaucracy in decisions, unqualified engineers and consultants. Secondly, a shallow focus was given to the factors that influenced road projects performance in Kenya laying more concentration on road Contractors in Kakamega County. It is on this basis that there is need to investigate the influence of contractors' capacity on project performance of road contraction projects in Kakamega County.

2.9 Conceptual Framework

The study was conceptualized as presented in Figure 2.1



Source: Researcher (2018)

Figure 2.1 Conceptual Framework

A conceptual framework can be defined as an analytical device that consists of variations and contexts. It is applied to make conceptual differences and organize ideas. It captures real issues in a simple way that is easy to remember and apply. The conceptual framework helps in clarifying concepts and proposing relationships among the study concepts (Hobbs & Norton, 2010). It provides a context to interpret the findings of the study and enhance theory development which is essential for practice.

The Conceptual Framework gives a depiction on how the variable relates to each other. The variable distinct here is the independent, dependent and moderating variable. Independent variable affects and determines the effect of another variable. The conceptual framework depicted the hypothesized relationships between the study variables. The independent variables are assumed to influence the changes in the dependent variable. Dependent variable is referred to as the criterion variable. It explained the result of the impact of the independent variables. In this study, the independent variable is the contractors' capacity. It included contractors' financial capacity, contractors' technical skills, contractors' equipment and contractors' management skills.

The dependent variable was road project performance. The moderating variable is measured and manipulated to discover whether or not it modifies the relationship between the independent variable and dependent variable. Government policies and construction laws are identified as moderating variables. Performance of contractors could be researched and examined by means of many indicators of performance, articulated by factors such as; quality, time, client satisfaction cost including environmental impacts, safety and health.

2.10 Summary of the Literature Reviewed

The chapter started with an introduction and went on to look at predicator variables influencing the performance of road construction projects. Since the variables influencing performance of road construction projects are diverse, the chapter reviewed contractors' capacity that is measured through: contractors' financial capacity, contractors' technical skills, contractors' equipment and contractors' management skills. The chapter further looked at other key constructs and concepts that are relevant to the study such as government policy and management style.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology used in the study. It describes the research design, the target population, sample size and sampling technique, research instruments, validity and reliability of the instruments, data collection procedures, data analysis methods and ethical considerations.

3.2 Research Design

This study adopted a descriptive survey research design. According to Cooper & Schindler, (2008) a descriptive survey design involves describing the population with respect to key variables laying a major emphasis towards establishing the nexus between study variables.

This research design was appropriate because the population was large comprising of homogenous characteristics that made it possible for the researcher to collect information. The researcher was in a position to gather the same information from similar demographic groups then interpreted it relatively. This design emphasizes on determining the frequency with which something occurs or the extent to which two variables co-vary. This research design enabled the researcher to determine the extent to which contractors' financial capacity, technical skills, equipment holding and management skills influenced the performance of road contractors in Kakamega County.

3.3 Target Population

Kothari (2005) defined a population as the number of units or objects that possess similar traits. The target population of the study involved road contractors and the supervising engineers in Kakamega County. The total population for the study was 203 respondents who consist of 153 road contractors and 50 supervising engineers in Kakamega County. The number is obtained from the Ministry of Roads and Infrastructure records in the County of 2018.

3.4 Sample Size and Sampling Procedures

3.4.1 Sample Size

Kothari (2005) stated that a sample is a small section of the population representing an entire population. Sampling means choosing several units from a population as a representative. The sample size for this study was 135 respondents. The confidence level

for this study was set at 95% with an error of 5%.In order to determine the sample of the population; the researcher will use Yamane's (1967) formula which is as follows.

$$n = \frac{N}{1+Ne^2}$$

Where: n=the sample size

N= the size of population

e =the error of 5 percent

By using Yamane's formula of sample size with an error 5% and with a confidence coefficient of 95%, the calculation for the sample size will be calculated as follows:

$$n = \frac{N}{1+Ne^2}$$

$$n = 203/\ 1 + 203\ (0.05)^2$$

$$n = 135$$

3.4.2 Sampling Procedure

Stratified random sampling approach was applied to classify all the road contractors supervising engineers in Kakamega County. This was guided by the traffic volume to achieve a reasonable representation of a sample. Kothari (2005) defined stratification as a process of dividing the population members into homogenous subgroups before sampling. The strata were mutually exclusive and each element in the population was assigned to a single stratum. The target population and the sample size distribution according to category were illustrated in Table 3.1.

Table 3.1 Distribution of the Sample Size

Category	Number	Sample size
Road contractors	153	153/203 of 135 =102
Supervising engineers	50	50/203 of 135 = 33
Total	**203**	**135**

Source: Kakamega County Office (2018)

3.5 Data Collection Instruments

Data collection involves gathering of information that is required for analysis in a study (Cooper et al, 2008). The study utilized the questionnaire and interview guide to collect data from respondents. The approach of data collection highly depends on the research

design adopted. Primary data sources were used in this study. Data was collected by administering a semi-structured questionnaire. These questionnaires utilized both open-ended and closed questions.

Closed-ended questions consisted of predetermined answers; these questions collected quantitative data. Likert scale a psychometric scale that is applied to assess attitudes and opinions of the respondents (Morgan, 2007). These responses to these questions will be rated using a five-points Likert Scale as follows: 1-Strongly disagree 2- Disagree 3-Neutral 4- Agree 5- Strongly agree. The advantage of using questionnaires is that the responses were obtained in a uniform way. This implied that the questionnaires were objective and certainly more accurate than interviews. It was an easier and faster way to collect data as compared to interviews.

On the other hand, interview guide was used to collect data from four senior engineers (one each) from Kenya National Highway Authority (KNHA) Western Region, Kenya Urban Roads Authority (KURA) Western Region, Kenya Rural Roads Authority (KeRRA) Kakamega Region and the Ministry of Roads, Infrastructure, Public Works and Energy-County Government of Kakamega. The use of interview guide was because it offers the flexibility to adapt questioning according to the responses of interviewees, to clarify questions or answers, or to probe answers more deeply with supplementary questions as appropriate, to explore issues that emerge from the respondents. This is particularly the case, the more unstructured the interview becomes

3.5.1 Piloting of the Study

The piloting exercise was carried out in one of the sub-counties (Lurambi) in Kakamega County. The pilot study aimed at determining reliability of the questionnaire including the wording, structure and sequence of the questions (Ngechu, 2004). The pilot study involved 5% respondent in the population (7 road contractors and 3 supervising engineers) and they were not part of the main sample size. This means 10 respondents were chosen using stratified random sampling technique. The purpose of the study was to rephrase the questionnaire so that respondent in the main study could not have any problems in answering questions.

3.5.2 Validity of Research Instruments

Validity is degree to which an instrument measures the constructs under investigation (Cooper & Schindler 2008). Validity tests include content, criterion and related construct

validity. Content validity is the estimate of how much a measure represents every single element of a construct. This research applied content validity since it utilized in measuring the degree to which a sample of the items represented the content which the test was designed to measure. At the same time, the validity of the instruments was subjected to scrutiny by the research supervisor and discussing with lecturers.

3.5.3 Reliability of Research Instruments

Kothari (2011) defined instrument reliability as ability of a research instrument to give consistent outcome. Cronbach's alpha is utilized in measuring the level of consistency of the scores got, and the level of consistency of these scores to each individual from one administration of the instrument to another. It is also referred to as a measure of internal consistency of the items in the questionnaire.

A pilot group was selected involving a few individuals from the target population for testing the reliability of the research instruments. Eisinga & Pelzer (2012) indicated that split-half is a measure of consistency in which a test is divided in two and the score for each half of the tests are compared with one another. The study adopted the split-half approach (test-retest) to establish the level of reliability of the research tools. Similar questionnaires were administered to a sample of 10 respondents (7 road contractors and 3 supervising engineers) through dividing the sample randomly into halves in different occasions. Cronbach's Alpha was advanced by Mohsen and Reg (2011), the study revealed that the alpha coefficient of the ten items was 0.754; contractors' capacity on performance of road projects attained a high level of internal consistency..

3.6 Data Collection Procedures

A cover letter was obtained from the University of Nairobi as a proof of permission to collect data for academic purposes only. A letter of authority to collect data in Kakamega County was obtained in addition to National Commission for Science, Technology and Innovation (NACOSTI) permit. The questionnaires were administered by dropping and picking them later through agreeing on a certain time with the researcher. The researcher contracted two research assistants to collect data. Some of the respondents that might

have been difficult to reach due to time constraints were sent questionnaires through emails. Follow-up was made using phone calls.

3.7 Data Analysis Techniques

Descriptive statistics were used to summarize the quantitative data so as to allow a meaningful description of a distribution of the scores. The collected data was compiled, edited and coded into categories using numeric values after assessing its consistency and relevance to the study. Analysis of quantitative data was achieved using Statistical Package for Social Sciences, SPSS version 24. Presentation of analyzed data was done using percentages, mean and standard deviation by use of frequency tables. Inferential statistics was used to analyze data to explain the relationship between the variables. Pearson moment correlation was used to obtain relationship between variables (relations of above 0.7 which showed close relations).

Inferences from analyzed data were made and this assisted the researcher to answer the research questions relating to influence of contractors' capacity on performance of road projects in Kakamega County. These results were compared to previous research findings from various scholars to establish the degree of relationship or accuracy of the research.

3.8 Ethical Considerations

According to Kidder (2009) ethics is moral principles that govern an individual behavior in conducting an activity. The researcher conducted this research with utmost care considering the nature of the information obtained. Firstly, consent was obtained by engaging and interacting with the resident engineer in the respective project areas, this was helpful in commissioning the course, to win their trust, support and permission to investigate road projects. The researcher took time to explain to the respondents the significance of this research and the set goals that he intends to achieve.

The nature of this research was acknowledged to them including the questions, privacy was achieved by assuring the respondents that their identities and all the information that they gave would be kept confidential. This highly motivated them to participate in taking part in this research.

Then, questionnaire administration was done to all the respondents that the researcher had communicated to prior the administration of questionnaires. This aided in improving

their willingness to take part in the research by giving accurate and reliable information and thus improved the quality of the research findings.

3.9 Operational definition of variables

Table 3.2: Operational definition of variables

Research Objectives	Type of variable	Indicators	Measuring Scale	Method of Analysis	Tool of analysis
To establish influence of contractors' financial capacity on performance of road construction in Kakamega County.	Independent variable: Contractors' financial capacity	-Number of company's total assets -Total number of liabilities -Profit and loss statements	Nominal Ordinal	Descriptive statistics	-Frequency Mean percentages. Standard deviation
To determine the influence of contractors' technical skills on performance of road construction in Kakamega County.	Independent variable: Technical skills	-Number of technical staff in road construction -Level of experience in road construction -Level of training in road construction	Nominal Nominal	-Descriptive statistics -Inferential statistics	Mean and Standard deviation -Pearson's Correlation
To find out the extent to contractors' equipment affects performance of road construction in Kakamega County.	Independent variable: Contractors' equipment	-Type of equipment -Age of equipment -Number of equipment	Ordinal	Descriptive statistics	Frequency, percentages
To examine the influence of contractors' management skills on performance of road construction in Kakamega County.	Independent variable: Contractors' management skills	-Nature of communication -Number of site meetings -Plans and scheduling	Nominal Ordinal	Descriptive statistics	Frequency Mean percentages. Standard deviation.
	Dependent variable: Road Project Performance	-Completion time -Cost management -Quality management	Ordinal Nominal	-Descriptive statistics -Pearson's Correlation	Mean and Standard deviation

CHAPTER FOUR
DATA ANALAYSIS, PRESENTATION, INTERPRETATION AND DISCSUSSION

4.1 Introduction

The chapter discusses major findings as per the research objectives. The researcher utilized a quantitative and qualitative approach to analyze data. The output was presented in Figures and Tables form summarized in percentages, frequencies and descriptive statistics.

4.2 Response Rate

The study sought to determine the response rate and the findings were as shown in Table 4.1.

Table 4.1 Showing Response Rate

	Contractors		**Supervising engineers**	
	Frequency	**Percentage** (%)	**Frequency**	**Percentage** (%)
Returned	100	98	25	86
Not returned	2	2	4	14
Total	**102**	**100**	**29**	**100**

The finding in Table 4.1 showed that out of 102 questionnaires that were distributed to the contractors and 29 for engineers for the study; 100 and 25 respectively were successfully filled and taken back. This represents a response rate of 98% and 86% respectively. According to Nachmias (2009), a response rate exceeding 50% was believed to be sufficient for analysis and thus, 76.2% return rate, was considered to be satisfactory.

4.3 Contractors' Financial Capacity and performance of Road Construction

4.3.1 Extent to which Financial Capacity influence Performance of Road

The respondents were asked to rate the influence of contractors' financial capacity on the performance of road projects in Kakamega County. The outcome is presented in Table 4.2. Key: 1-Not at all, 2-Little extent, 3-Moderate extent, 4-Large extent and 5-Very large extent.

Table 4.2 Influence of contractors' financial capacity performance of road construction projects

Statement	5	4	3	2	1
Contractors					
As a road contractor, I have access to capital sources and loans hence effective project cost management	10%	40%	30%	20%	20%
As a road contractor, I have capacity to access funding for road projects which enhances timely completion of road projects	5%	30%	60%	5%	-
My company has adequate and relevant assets which enhances delivery of quality road projects	10%	20%	70%	-	-
Strong profit and loss statements of my company indicates financial capacity which guarantees timely completion of projects	20%	40%	40%	-	-
Engineers					
Banks seek reference from the employer before advancing credit facilities for road projects.	32%	56%	4%	4%	4%
Contractors only bid for projects for which they have the financial capacity to undertake	36%	40%	12%	4%	8%
Valuation and certification of work is completed within the stipulated period	40%	36%	12%	8%	4%
Payment certificates are honored within the stipulated period	36%	24%	24%	4%	12%

Table 4.2 shows that 40 contractors representing 40% indicated that as a road contractor, contractors who have access to capital sources and loans hence effective project cost management to a large extent and 30% cited to a moderate extent. On the other hand, 60(60%) of the contractors were of the opinion that the influence of the statement that As a road contractor, contractors who have capacity to access funding for road projects which enhances timely completion of road projects on performance of road projects is to a moderate extent and 30% indicate to a large extent. Further, 70 contractors who represented 70% of the respondents were in agreement with the statement that my company has adequate and relevant assets which enhance delivery of quality road projects which they cited that it affects performance of road construction project is to a moderate extent as 20(20%) indicated to large extent. Finally, 40(40%) of the respondents indicated to a large extent, strong profit and loss statements of my company

indicate financial capacity which guarantees timely completion of projects and another 40(40%) reported to a moderate extent.

From the findings, the respondents from the engineers' side indicated that Banks seek reference from the employer before advancing credit facilities for road construction projects hence affects project performance to the greatest extent as indicated by a mean of 4.0. Followed by contractors only bid for projects for which they have the financial capacity to undertake thus affecting performance of road construction projects to a large extent as indicated by a mean of 3.9. The respondents indicated that valuation and certification of work is completed within the stipulated period affects performance of road construction projects to a very large extent as indicated by a mean of 3.9. Finally, the respondents indicated that Payment certificates are honored within the stipulated period has affected the performance of road construction project to a very large extent as indicated by a mean of 3.7. Inadequate funds hinder the contractor from employing skilled labour and acquire materials of the right quality and quantity. Also if funds are unavailable, contractors might not procure good quality machinery. All these factors contribute to quality performance problems in the road construction industry.

Contractors' financial capacity has a crucial part to play as far as performance of road construction projects performance is concerned. One supervising engineer remarked that:

> *"Contractors with sufficient financial capacity tend to complete substantial works before requesting for payments. Financial capacity allows for continuous execution of works hence no time overruns are experienced unlike those with low financial capacity who wait for payments to be honored before they can carry on with the remaining work. Therefore pretty much and entirely, finances form the main resources for executing a contract"* (supervising engineer 1).

Another supervising engineer said that:

> *"To large extent, contactors with poor financial capacity tend to delivery low quality projects and mostly at an overly extended period of time than stipulated thus not serving the purpose the project was initiated/proposed for"* (supervising engineer 2).

These findings relate with the literature review where Pourrostam and Ismail (2012) identified delay in progress payment by client and financial difficulties by contractors as

among the most important causes of delay in Iranian construction projects while Haseeb et al. (2011) indicated that financial ability/financial arrangement and late payment of bills were amongst the major relevant factors in construction projects in Pakistan.

Access to capital, financial prudence and communication enhanced performance of road projects in Kakamega County. These findings are consistent to Kamau (2013) who argued that inadequate finances were a key hindrance to successful project implementation. This led to delays in project completion resulting into increased costs and this impacted negatively on performance of projects.

The findings were in agreement with the study by Busolo & Ombuki (2014) found that contractors in Mavoko Municipality in Kenya rely on clients to release payment for construction of houses and these led to inconvenience in terms of project delays. Inadequate funds have a relationship with other factors such as machinery, labour and material acquisition. Inadequate funds hinder the contractor from employing skilled labour and acquire materials of the right quality and quantity. Also if funds are unavailable, contractors might not procure good quality machinery. All these factors contribute to quality problems in the construction industry. Obuya (2012) found that contractors in Mombasa County of Kenya do not use the materials in the design documents but substitute it with local and cheap materials to save on costs and they also use unqualified people to manage their projects due to the high costs associated with professionals. Finance also influences the ability of small contractors or low income clients to seek approvals of building plans and designs.

4.4 Contractors' Technical Skills and Performance of Road Construction

The study determined the various aspects of technical skills and their contribution to road project performance.

4.4.1 Experience in Road Construction Industry

The participants were asked to indicate the duration that road contractors had served in road projects. The outcome is presented in Table 4.3.

Table 4.3 Contractors on Experience in Road Construction Industry

Experience	**Contractors**		**Supervising engineers**	
	Frequency	**Percentage** (%)	**Frequency**	**Percentage** (%)
1-5 years	30	30	7	30
6-10 years	45	45	11	44
11-15 years	15	15	4	16
Over 16 years	10	10	3	12
Total	**100**	**100**	**25**	**100**

The results in Table 4.3 depicted that 45 contractors representing 45% indicated that they have experience in road construction projects for 6-10 years, 10% of the respondents served in a period exceeding 16 years, 15 contractors (15%) indicated that they had served between 11-15 years and only, 30% of the respondents served between 6-10 years while none of the respondents served between 1-5 years.

On the other hand, that 11 supervising engineers representing 44% indicated that contractors' working experience in road contraction projects ranges from 6 to 10 years and 3 of them (12%) reported that contractors have worked in the road construction industry for over 16 years. Based on the study findings, it is an indication that most road contractors had an experience of more than 10 years in their work.

4.4.2 Number of projects executed in the last five years

The number of road projects executed in the past years determines the level of experience in handling road projects. The aim of this study was to find out if the respondents had executed road construction projects in the past five years.

Table 4.4 Number of road projects executed in the last five years

	Contractors		Engineers	
Number of executed road projects	**Frequency**	**Percentage**	**Frequency**	**Percentage**
1-10	55	55	14	56
11-20	35	35	8	32
21-30	10	10	3	12
Total	**100**	**100**	**25**	**100**

The study findings in Table 4.4 established that slightly more than half of the contractors, that is 55, representing (55%) indicated that the number of road projects they have completed in the last five years is between 1 and 10, 35(35%) indicated between 11 and 20 roads while 10% reported between 21 and 30 road projects. On the other hand, 56% of the engineers reported that the number of road projects constructed and completed by the contractors in the last five years is between 1 and 10, 32% indicated between 11 and 20 roads while 12(12%) cited the number to be between 21 and 30 road projects. The study showed that contractors have finished at least 10 road projects in the last 10 years. The findings show that the contractors have relatively high experience in road construction which has enabled them acquire technical skills necessary for performance of road construction projects.

4.4.3 Training and Development Programmes

The respondents were requested to indicate the level of frequency in which road contractors participated in training and development programmes. The study findings were as shown in Table 4.5.

Table 4.5 Training and Development Programmes

Frequency of training	Frequency	Percentage
Monthly	10	10
Quarterly	65	65
Semi-annually	10	10
Annually	15	15
Total	**100**	**100**

The results in Table 4.5 depicted that majority of the contractors, 65(65%) observed that road contractors took part in training and development on a quarterly basis and 10(10%) respondents observed that road contractors took part in training and development on a monthly basis. The study showed that 15(15%) of the respondents noted that road contractors participated in training and development annually while 10(10%) cited semi-annually. This indicates continuation with update in skills and innovation.

4.4.4 Influence of Technical Skills on Road Project Performance

The study determined the extent to which technical skills influenced performance of road projects. The outcome is given in Table 4.6.

Table 4.6 Influence of Technical Skills on Road Project Performance

Effect	N	Mean	Std. Dev
Contractors			
I have a relevant work experience thus timely completion of projects	100	3.85	0.931
I am efficient in executing road works hence quality management of projects	100	3.67	0.871
I meet deadlines which helps in effective cost management of road projects	100	2.98	0.877
My long experience in road construction projects affects performance of road construction projects in terms of quality management	100	3.21	0.675
My technical skills as a contractor affect cost management of road construction projects	100	3.6	0.49
I have high level of training for technical employees hence quality management of road construction projects	100	3.9	
Engineers			
Contractors have relevant work experience thus timely completion of projects	25	4.71	0.46
Contractors are efficient in their work hence quality management of projects	25	4.22	0.64
Contractors meet deadlines which helps in effective cost management of road projects	25	4.53	0.67
Contractors' adequate experience in road construction projects affects performance of road construction projects in terms of quality management	25	4.53	0.64
Contractors' technical skills affect cost management of road construction projects	25	4.31	0.93
Contractors have high level of training for technical employees hence quality management of road construction projects	25	4.04	0.87

The results in Table 4.6 showed that road contractors were; experienced in their work, efficient, communicated effectively and met deadlines thus timely completion of projects. The mean values are 3.85, 3.67, 3.21 and 2.98 respectively. The grand mean is 3.428 and standard deviation is 0.839. These finding collate with the literature review where a study carried by Subramani, Sruthi, and Kavitha (2014) who found that there were non-performance of sub-contractors and increase in material/machine prices and that the competence of the contractor was significantly the cause of poor performance in the projects.

Further, it was noted from the study with the responses from the engineers on the influence of contractors' technical skills on performance of road construction projects in Kakamega that majority of the respondent strongly agreed that contractors' work experience on road construction industry helps to expedite the achievement of project goals and timely completion of projects hence performance of road construction projects as shown by a mean of 4.71, contractors efficiency in their provides quality performance of road construction projects as shown by a mean of 4.22, contractors who meet deadlines helps in effective cost management of road projects as shown by a mean of 4.53 and contractors' adequate experience in road construction projects affects performance of road construction projects in terms of quality management as also shown by a mean of 4.53.

Adequate technical skills will improve the quality and performance of road construction projects. One supervising engineer remarked that:

> *To large extent, contractors' technical skills influence the performance of road construction projects in Kakamega County. Deficiency in contractors' technical skills impacts negatively impacts on the integrity and quality of works delivered/performed"* (Supervising engineer 3).

Further, another supervising engineer indicated that:

> *"Supervisors' technical skills influence the workmanship and execution time of contracts/projects. Poor or inadequate technical skills of a contractor lead to un-procedural execution of projects. This in turn affects quality of the project and overall project implementation time since the contractor is forced to redo/repeat poorly executed projects thus denying the project beneficiaries chance of enjoying the project benefits"* (Supervising engineer 4)..

To improve their technical skills, road contractors were took part in training and development regularly. This training and development programmes were useful to road contractors in sharpening their skills and expertise and contributing towards implementation of road projects. These findings are in tandem with the Bygrave (2014) who found that training and development programmes impacted positively to implementation of development projects.

4.5 Contractors' Equipment Holding and Performance of Road Construction

The study sought to determine the number of holding equipment the contractors possess. The study established that most contractors have 2 motor graders, 2 road roller machines, 2 crawler excavators, 3 forklift trucks, 2 wheel loaders, 1 truck cranes, and at least 8 lorries. The findings show that the contractors have basic and necessary equipment holding for road construction projects.

4.5.1 Effects of contractors' Equipment Holding on Performance of Road Construction

The study sought to determine how contractors' equipment holding influences the performance of road construction projects in Kakamega County. The findings are shown as in Table 4.5.

Table 4.7 Effects of contractors' Equipment Holding on Performance of Road Construction

Effect	N	Mean	Std. Dev
Contractors			
Road construction projects are done using the correct equipment	100	3.5273	1.29720
There are adequate facilities (equipment) necessary for road construction projects	100	3.6182	1.18075
The contractors have new-age equipment that facilitate timely completion of road projects	100	3.7182	1.06772
Engineers			
Road construction projects are done using the correct equipment	25	4.18	0.91
There are adequate facilities (equipment) necessary for road construction projects	25	4.51	0.73
The contractors have new-age equipment that facilitate the contraction of road projects	25	4.25	0.80

From the finding in Table 4.7, it was noted that majority of the respondents agreed that contractors' equipment holding influences road construction projects performance in Kakamega County. The researcher found that majority agree that the contractors have new-age equipment that facilitate timely completion of road projects in Kakamega County influence performance of road construction projects which attained a mean of 3.7182, road construction projects are done using the correct equipment in Kakamega County scored a high mean of 3.5273 and There are adequate facilities (equipment) necessary for road construction projects a high mean of 3.6182, and The contractors have new-age equipment that facilitate timely completion of road projects in Kakamega County scored a high mean of 3.2273.

Adequacy of facilities (equipment) and new-age equipment that facilitate timely completion of road projects hence performance of road construction. One supervising engineer remarked that:

> *"Lack or inadequacy of equipment holding leads to hiring from another4 party. Processes undertaken during hiring such as getting into an agreement, transportation of equipment to the site etc. consume time which would have been used in the real execution of the project thus causing delay and compromising quality of the roads constructed. At times, when all machined have been hired, out, the contractor is forced to wait for his turn thus delaying project completion time"* (supervising engineer 1).

Yet other supervising engineers cited that:

> *It goes as far as determining the overall cost production and time taken to execute a project. Contractors with good and adequate equipment holding tend to delivery projects on time and at a lower cost having avoided hiring costs which may be high and the risks of machine availability being alleviated* (supervising engineer 2).

The engineers either strongly agreed or agreed with the statements that road construction projects are done using the correct equipment, adequacy of facilities (equipment) necessary for road construction projects affects performance of road construction projects and contractors who have new-age equipment facilitate the contraction of road projects The findings agreed with Sanders and Thomas, (2011) who stated that material management is one of the most important factors in construction industry. Productivity

can be affected if required materials, tools, or construction equipment for the specific are not available at the correct location and time.

4.6 Contractors' Management Skills and Performance of Road Construction

The study sought to determine if the contractors delegated of authority to the right employees and the findings were as shown in Table 4.8.

Table 4.8 Contractors' Management Skills and Performance of Road Construction

	Contractors		Engineers	
Response	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Yes	100	100	20	80
No	0	0	5	20
Total	**100**	**100**	**25**	**100**

The results in Table 4.8 above showed that entire population (100%) of the contractors indicated that road contractors in Kakamega County delegate authority. On the other hand, 20 respondents representing 80% of the engineers agreed that contractors delegate authority. This is an implication that rightful people are delegated road contractors' responsibilities and some key decisions as far as road contraction is concerned as supported by Van, 2012 who addressed the importance of recruiting high quality personnel within the project.

4.6.1 Communication Approach

The study sought to determine from the respondents the form of communication approach that was adopted by road contractors and supervising engineers in the course of road projects implementations and the results were as follows.

Table 4.9 Communication Approach

	Contractors		Engineers	
Communication approaches	**Frequency**	**Percentage**	**Frequency**	**Percentage**
One-way communication approach	90	90.0	21	84
Two-way communication approach	10	10.0	4	16
Total	**100**	**100.0**	**25**	**100**

The study in Table 4.9 showed that 90 contractors representing 90 agreed that road contractors have adopted a two-way communication approach and only 10(10%) of them (contractors) cited that road contractors use a one-way communication approach.

Majority of the engineers, 21(84%), indicated that one-way communication approach is used by the contractors and 4(16%) cited that contractors use two-way communication approach. It is evident from the findings that road contractors adopted a two-way communication approach which allow for feedbacks from all employees as per Costello,2008 findings.

4.6.2 Duration of Involvement in Road Projects

The researcher sought to determine from the respondents on the duration road contractors have been involved in road construction projects. The outcome is provided in Table 4.10.

Table 4.10 Duration of Involvement in Road

Period	Frequency	Percentage
3-10 months	20	20.0
11-18 months	5	5.0
19-26 months	15	15.0
More than 27 months	60	60.0
Total	100	100.0

Source: Survey Data 2018

The results in Table 4.10 revealed that 60(60%) of the contractors agreed that road contractors have been involved in road construction projects for a period of 19 to 26 months, 20(20%) indicated that contractors have been involved in road construction projects for a period ranging between 3 and 10 months while 15(15%) have been involved for a period of 19 to 26 and over 15 years. Only, 5(5%) of the respondents noted that road contractors have been involved in road projects for a period of between 11 and 18 months. This was an indication that most of the road contractors had been involved in road projects for a period of more than ten years and thus had adequate knowledge and experience about road construction and performance of road construction projects.

4.6.3 Influence of Management Skills on Road Project Performance

This research sought to establish the influence of management skills on road project performance. The outcome is outlined in Table 4.11.

Table 4.11 Influence of Management Skills on Road Project Performance

Statements	N	Mean	Std. Dev
Contractors			
Frequent site meetings helps in timely completion of road projects	100	3.781	0.875
I plans and schedule for projects which help in cost management of the projects	100	3.814	0.772
I have a high-level of problem solving skills and techniques which improves quality management of road projects	100	3.661	0.657
I communicate effectively and coordinate efforts which leads to quality management of road projects	100	3.752	0.715
Total	**100**	**3.752**	**0.754**
Engineers			
Contractors' frequent site meetings helps in timely completion of road projects	25	3.94	0.99
Contractors plans and schedule for projects help in cost management of the projects	25	3.59	0.98
Contractors have a high-level of problem solving skills and techniques which improve quality management of road projects	25	3.80	0.92
Road contractors communicate effectively and coordinate efforts which leads to quality management of road projects	25	3.92	0.93

According to Table 4.11 above, the results from the contractors showed that road contractors frequent site meetings helps in timely completion of road projects, plans and schedule for projects which help in cost management of the projects, communicate effectively and coordinate efforts which leads to quality management of road projects and high-level of problem solving skills and techniques which improves quality management of road projects influence road projects performance in Kakamega County. The mean scores were: 3.814, 3.781, 3.752 and 3.661 respectively. The grand mean was 3.752 with a standard deviation of 0.754. This signified that management skills influenced the performance of road projects in Kakamega County. The ability of the contractor to visit, supervise and co-ordinate project activities and tasks at the site largely affect the project completion.

The engineers were in agreement with the statements that contractors' frequent site meetings helps in timely completion of road projects, contractors plans and schedule for projects help in cost management of the projects, contractors have a high-level of

problem solving skills and techniques which improve quality management of road projects and that road contractors communicate effectively and coordinate efforts which leads to quality management of road projects

Road contractors were experienced, experts, creative and innovative in road projects, this enhanced their management skills. These qualities played a key role in enhancing road projects performance. Mashud (2010) noted that implementers who succeeded in implementing road projects attained a high level of expertise and experience.

On the influence of contractors' management skills on performance of road construction, supervising engineer cited that;

> *"Management skills are important in efficient running of a project in terms of time cost. It impacts positively on logistics components and also management of human resource which forms important part of the project. Good management skills equate to well performing projects"* (Supervising engineer 3).

Another supervising engineer indicated that;

> *"Management of a project involves putting all physical, financial, political and economic factors in sync. If any given work in the project is executed with any of the stated factors well regulated it will lead to poor execution which will in turn lead to repletion of the same work and thus resulting in project time overruns"* (Supervising engineer 4).

4.6.4 Performance of Road Projects

The researcher requested the respondents to indicate the extent of performance of road projects. The results are outlined in Table 4.12

Table 4.12 Performance of Road Projects

Statement	N	Mean	Std. dev
There is quality standards on road projects both work in progress and the final product	100	3.95	0.656
The allocated budgets are effectively utilized	100	2.75	0.773
Material management affects quality standards of road projects	100	2.45	0.495
Total	**100**	**3.075**	**0.650**

Source: Survey Data 2018

From the findings in Table 4.12, the respondents agreed to a large extent that the quality of the road projects was good in terms of work-in-progress and final product. The respondents agreed to a moderate extent that road project resources and budgets were effectively utilized. The respondents agreed to a small extent that project deadlines were adhered to. The mean values include 3.95, 3.15, 2.75 and 2.45 respectively. The grand mean is 3.075 and standard deviation 0.650.

4.6.7 Ratings on the Performance of Road Construction Projects

The respondents were asked to rate the performance of road construction projects in Kakamega County and the results were as shown in Table 4.13

Table 4.13 Ratings on the Performance of Road Construction Projects

	Contractors		**Engineers**	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Excellent	0	0	0	0
Good	40	40	10	40
Average	56	56	10	40
Poor	4	4	5	20
Total	**100**	**100**	**25**	**100**

Source: Survey Data 2018

Table 4.13 depicted that majority of the contractors (56) representing 56% rated the performance of road construction projects in Kakamega County as average and 40% rated the performance as good. On the other hand, 40(40%) of the engineers rated the performance of road construction projects in Kakamega County as good and similar number, (40%), rated the performance as average. It is evident from the findings that the performance of road construction projects is generally average.

4.7 Spearman's Ranking Correlation Coefficient

The researcher correlated the influence of contractors' capacity on performance of road construction projects and the results were provided in Table 4.14

Table 4.14 Spearman's correlation

		Road projects performance	Financial capacity	Management skills	Equipment holding	Technical skills
Road projects performance	Spearman's rho	1				
	Sig (2 tailed)	0.000				
Financial capacity	Spearman's rho	0.633**	1			
	Sig (2 tailed)	0.000	0.000			
Management skills	Spearman's rho	0.562*	0.762**	1		
	Sig (2 tailed)	0.003	0.000			
Equipment holding	Spearman's rho	0656**	0.485*	0.490*	1	
	Sig (2 tailed)	0.000	0.000	0.000		
Technical skills	Spearman's rho	0.775**	0.097	0.151	0.09	1
	Sig (2 tailed)	0.011	0.512	0.274	0.470	0.260

Spearman's ranking correlation analysis results in Table 4.14 between financial capacity and performance attained a positive correlation coefficient of 0.633 with a p-value of 0.00. This was an indication that the result was significant at α=5%, and if financial capacity was sufficient, it would improve road projects performance. Management skills and performance attained a positive correlation of 0.562 and a p-value of 0.003 which is significant at 5%. Equipment holding had a positive correlation of 0.656 and a p-value of 0.00. Technical skills and performance had a positive correlation of 0.775 and a p-value of 0.011. This meant that technical skills had the greatest influence on the performance of roads projects followed by equipment holding and then financial capacity while management skills has the least influence on performance of road construction projects in Kakamega County.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter covers the findings, discussion, conclusion drawn from analyzed data and the recommendations. The study's objective involved assessing the influence of contractors' capacity on the performance of road construction projects in Kakmega County.

5.2 Summary of Findings

5.2.1 Influence of contractors' Financial Capacity on Performance of Road Construction Projects in Kakamega County

The study revealed that 40% of the respondents indicated that as a road contractor, contracts have access to capital sources and loans hence effective project cost management to a large extent and 30% cited to a moderate extent. On the other hand, 60% of the respondents were of the opinion that the influence of the statement that As a road contractor, contractors who have capacity to access funding for road projects which enhances timely completion of road projects on performance of road projects is to a moderate extent and 30% indicate to a large extent. Further, 70% of the respondents were in agreement with the statement that my company has adequate and relevant assets which enhance delivery of quality road projects which they cited that it affects performance of road construction project is to a moderate extent as 20% indicated to large extent. Finally, 40% of the respondents indicated to a large extent, strong profit and

loss statements of my company indicate financial capacity which guarantees timely completion of projects and another 40% reported to a moderate extent.

5.2.2 Influence of Contractors' Technical Skills on Performance of Road Construction Projects in Kakamega County

The study findings showed that road contractors were; experienced in their work, efficient, communicated effectively and met deadlines thus timely completion of projects. The mean values are 3.85, 3.67, 3.21 and 2.98 respectively. The grand mean is 3.428 and standard deviation is 0.839.

5.2.3 Influence of Contractors' Equipment Holding on Performance of Road Construction Projects in Kakamega County

From the finding it was noted that 80% of the respondents agreed that contractors' equipment holding influences road construction projects performance in Kakamega County. The researcher found that majority agree that the contractors have new-age equipment that facilitate timely completion of road projects in Kakamega County influence performance of road construction projects which attained a mean of 3.7182, road construction projects are done using the correct equipment in Kakamega County scored a high mean of 3.5273 and There are adequate facilities (equipment) necessary for road construction projects a high mean of 3.6182, and The contractors have new-age equipment that facilitate timely completion of road projects in Kakamega County scored a high mean of 3.2273.

5.2.4 Influence of Contractors' Management Skills on Performance of Road Construction Projects in Kakamega County

It was established that road contractors frequent site meetings helps in timely completion of road projects, plans and schedule for projects which help in cost management of the projects, communicate effectively and coordinate efforts which leads to quality management of road projects and high-level of problem solving skills and techniques which improves quality management of road projects influence road projects performance in Kakamega County. The mean scores were: 3.814, 3.781, 3.752 and 3.661 respectively. The grand mean was 3.752 with a standard deviation of 0.754.

5.4 Conclusions

Based on the findings, the study made the following conclusions

This study found out that financial capacity affects roads construction project performance. The study establishes that difficulty in accessing credit (contractor and sub-contractor) has led to poor project performance. Adequate funds to finance the project and sufficient cash flow to implement project have led to quality standards. There was sufficient cash budgeted for projects during financial allocation of which the budgeted cash was strictly for the planned project. The organization also made a regular comparison of actual cost with a budgeted cost during project implementation so as to be able to plan well with actual cost. Inadequate funds hinder the contractor from employing skilled labour and acquire materials of the right quality and quantity. Also if funds are unavailable, contractors might not procure good quality machinery. All these factors contribute to quality problems in the construction industry.

Regarding the influence of contractors' technical skills on performance of road construction projects in Kakamega, it was concluded that contractors have experience in the road construction industry of between 6 and 10 years. The contractors have executed about 1-10 road projects in the last five years. Road contractors improve their technical skills by taking part in training and development regularly. This training and development programmes were useful to road contractors in sharpening their skills and expertise and contributing towards implementation of road projects. Therefore road contractors had relevant work experience and efficient in executing road works thus timely completion of projects. A few contractors meet deadlines which helps in effective cost management of road projects and those with long experience in road construction projects improves quality management. It was concluded that contractors' technical skills as a contractor affect cost management of road construction projects

The study concluded that most contractors have inadequate equipment holding for road construction projects. Equipment for the specific are not available at the correct location and time. Selection of the appropriate type and size of construction equipment often affects the required amount of time it is, therefore, essential for site managers to be familiar with the characteristics of the major types of equipment most commonly used in construction.

Contractors' competency/management skills, the contractor's decision making capabilities and contractor's experience greatly affect performance of road construction

projects as contractor's competency is the greatest studied factor affecting project performance in Kakamega County.

5.4 Recommendations

Based on the findings and conclusions of the study recommends that:

Road construction firms need to have a reliable working capital base and should only be awarded contracts based on their financial capabilities and technical resources at their disposal. However contractors could improve their working capital by forming public private partnerships with financiers who may be willing to finance big construction projects. On the other hand construction companies could establish a bank for construction industry that could provide them with access to credit at reasonable interest rates to improve their operating working capital. On the other hand the government should ensure consistent disbursement of funds. To overcome the issue of delayed payment the government should come up with a policy that sets timelines for payment of monies due to the contractors and suppliers of goods and services. This policy should also prescribe penalties for delayed payments and should apply on goods and services supplied to both the government and the private sector owners of projects. To ensure that project financing does not affect successful completion and performance of road construction project, enough finances should be set aside for the project before it commences. This will ensure that lack of finances or lack of steady flow of finances is avoided. At the estimation stage experienced engineers should be employed to prepare estimates, so that estimates and the project cost do not vary. Stakeholders, financier should also support the project construction, so that financing is not stopped as the project proceeds.

Highly qualified and experienced road contractors with a relevant experience and technical skills should be hired to implement road projects. This will enable counties to get value for their money, achieve on-time projects completion and save huge costs

In order to increase job-site productivity, it is beneficial to select equipment with the proper characteristics and a size most suitable for the work conditions at a construction site. Laborers require a minimum number of tools and equipment to work effectively to complete the assigned task.

Road contractors should frequently hold site meetings to help in timely completion of road projects. Road contractors should regularly attend training to enable them to acquire

problem solving skills and techniques so as to improve quality management of road projects.

5.5 Suggestion For Further Studies

Regarding the contribution of the study to body of knowledge, the construction sector in Kenya however is comprised of various other contractors which differ in their way of performance and have different settings all together. This warrants the need for other studies which would ensure generalization of the study findings for all the construction industry in Kenya and hence pave way for new policies. The study therefore recommends other studies be done with an aim to investigate factors influencing performance of contractors in Kenya in other construction categories other than in road construction in order to give a general result that depict real situation in the construction sector.

Further research should be conducted to determine the influence of Procurement Affirmative Action Policy on performance of construction projects in Kenya.

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APPENDICES

APPENDIX A: LETTER OF TRANSMITTAL

Timothy Akali

P.O.Box 507 - 30200

Kitale

Email: t.akali@yahoo.com

Dear Respondent,

RE: INTRODUCTION LETTER

I am a student of The University of Nairobi pursuing Master of Arts in Project planning and Management. I am conducting an academic research on “influence of contractors’ capacity on performance of road construction projects in Kakamega County, Kenya”. The questionnaire has been prepared to obtain information on determinants of performance of road construction projects.

Please note that all the information provided for this study will be treated with the utmost confidentiality. Your ability to answer all the questions comprehensively and to the best of your knowledge will be highly appreciated.

Any enquiries you may have concerning this project should be directed to me at the address given above or by telephone on 0722647077

Yours faithfully

Timothy Akali

APPENDIX B: QUESTIONNAIRE FOR THE CONTRACTORS

I am studying Master of Project Planning and Management program at University of Nairobi and I have designed the following questionnaire about ***influence of contractors' capacity on performance of road construction projects in Kakamega County, Kenya"***. Kindly and humbly answer all the questions to the best of your knowledge. Indicate with a tick or filling in the space(s) provided.

Contractors' financial capacity and performance of road construction

1. To what extent do the following factors affect the amount of financial capacity in construction? Use a scale of 1-5 where 5=Very Great, 4=Great, 3=Little, 2=No effect 1=Not Sure

Statement	**1**	**2**	**3**	**4**	**5**
Inflation in prices of construction resources					
Delays in interim payments and settlement of claims for variations, fluctuations, loss and expense					
Taxation at source (withholding tax and VAT)					
Deduction of retention money					
Advance down payments at start of project					
Performance guarantee requirement by the employer					
Insurance requirement by the employer					

2. To what extent do you agree on the following contractors' financial capacity influencing the performance of road construction projects? Tick appropriately. 1-Not at all 2-Little extent 3-Moderate extent 4-Large extent 5-Very large extent

Statement	**5**	**4**	**3**	**2**	**1**
As a road contractor, I have access to capital sources and loans hence effective project cost management					
As a road contractor, I have capacity to access funding for road projects which enhances timely completion of road projects					
My company has adequate and relevant assets which enhances delivery of quality road projects					
Strong profit and loss statements of my company indicates financial capacity which guarantees timely completion of projects					

Contractors' Technical Skills and Performance of Road Construction

3. Indicate your experience in the road construction industry

a) 1-5 years [ ]
b) 6-10 years [ ]
c) 11-15 years [ ]
d) 16 years and above [ ]

4. How many road projects have you executed in the last five years?

a) 1-10 [ ]
b) 11-20 [ ]
c) 21-30 [ ]
d) More than 31 [ ]

5. How frequent do you participate in training and development programmes?

a) Monthly [ ]
b) Quarterly [ ]
c) Semi-annually [ ]
d) Annually [ ]

6. What is the effect of contractor's technical skills on performance of road construction in Kakamega County? Use a scale of 1 to 5 where 1 is strongly agree and 5 is strongly disagree

Effect	5	4	3	2	1
I have a relevant work experience thus timely completion of projects					
I am efficient in executing road works hence quality management of projects					
I meet deadlines which helps in effective cost management of road projects					
My long experience in road construction projects affects performance of road construction projects in terms of quality management					
My technical skills as a contractor affect cost management of road construction projects					
I have high level of training for technical employees hence quality management of road construction projects					

Contractors' Equipment Holding and Performance Of Road Construction

7. How many (in number) of the following equipment do you possess?

i. Motor Grader……..

ii. Road Roller machines…….

iii. Crawler excavator……..

iv. Forklift trucks…….

v. Wheel Loaders……..

vi. Truck Cranes.……

vii. Lorries……..

9. To what extend does contractors' equipment holding influence performance of road construction in Kakamega County? Use a scale of 1 to 5 where 1 is strongly agree and 5 is strongly disagree

Effect	5	4	3	2	1
Road construction projects are done using the correct equipment					
There are adequate facilities (equipment)					

necessary for road construction projects					
The contractors have new-age equipment that facilitate timely completion of road projects					

Contractors' Management Skills and Performance of Road Construction

10. Do you delegate authority to the right people?

a) Yes [ ]

b) No [ ]

11. What kind of communication approach do you use?

a) One way communication approach [ ]

b) Two-way communication approach [ ]

12. How long have you been involved in road projects?

a) 3-10 months [ ]

b) 11-18 months [ ]

c) 19-26 months [ ]

d) More than 27 months [ ]

13. Indicate your level of agreement with the following statements that relate to the influence of contractors' management skills on performance of road construction projects in Kakamega County. Tick appropriately. 1-Not at all 2-Little extent 3-Moderate extent 4-Large extent 5-Very large extent

Statements	**5**	**4**	**3**	**2**	**1**
Frequent site meetings helps in timely completion of road projects					
I plans and schedule for projects which help in cost management of the projects					
I have a high-level of problem solving skills and techniques which improves quality management of road projects					
I communicate effectively and coordinate efforts which leads to quality management of road projects					

14. How can you rate performance of road construction projects in Kakamega County based on the following statements? Use a scale of 1 to 5 where 1 is strongly agree and 5 is strongly disagree

Statement	5	4	3	2	1
There is quality standards on road projects both work in progress and the final product					
The allocated budgets are effectively utilized					
Material management affects quality standards of road projects					

11. How can you rate performance of road construction projects in Kakamega County? Please tick in the appropriate box.

a) (a) Excellent [ ]
b) (b) Good [ ]
c) © Average [ ]
d) (d) Poor [ ]

Thank you for your participation

APPENDIX C: QUESTIONNAIRE FOR THE ENGINEERS

Contractors' Financial Capacity and Performance of Road Construction

1. To what extent do you agree on the following contractors' financial capacity influencing the performance of road construction projects? Tick appropriately. 1-Not at all 2-Little extent 3-Moderate extent 4-Large extent 5-Very large extent

Statement	5	4	3	2	1
There is adequate availability of finance by the contractors which affects timely completion of projects					
The total number of assets owned by contractors affects quality management of road projects					
Total number of assets owned by contractors serve as security hence contractors' access to loans and other credit facilities for timely completion of road projects					
Contractors' total number of liabilities indicates ability to access credit facilities which enhance cost management.					
The contractors' profit and loss statements indicate the ability to access finance which helps in project cost management					

2. To what extend do contractors' financial capacity influence performance of road construction in Kakamega County? Tick appropriately. 1-Not at all 2-Little extent 3-Moderate extent 4-Large extent 5-Very large extent

Statement	5	4	3	2	1
Banks seek reference from the employer before advancing credit facilities for road projects.					
Contractors only bid for projects for which they have the financial capacity to undertake					
Valuation and certification of work is completed within the stipulated period					
Payment certificates are honored within the stipulated period					

Contractors' Technical Skills and Performance of Road Construction

3. Indicate the experience of most contractors in road construction field

a) 1-5 years [ ]
b) 6-10 years [ ]
c) 11-15 years [ ]
d) 16 years and above [ ]

4. How many road projects have been executed by the contractors you have supervised in the last five years?

a) 1-10 [ ]
b) 11-20 [ ]
c) 21-30 [ ]
d) More than 31 [ ]

5. What is the effect of contractor's technical skills on performance of road construction in Kakamega County? Use a scale of 1 to 5 where 1 is strongly agree and 5 is strongly disagree

Effect	5	4	3	2	1
Contractors have relevant work experience thus timely completion of projects					
Contractors are efficient in their work hence quality management of projects					

Contractors meet deadlines which helps in effective cost management of road projects					
Contractors' adequate experience in road construction projects affects performance of road construction projects in terms of quality management					
Contractors' technical skills affect cost management of road construction projects					
Contractors have high level of training for technical employees hence quality management of road construction projects					

Contractors' Equipment Holding and Performance of Road Construction

6. How many (in number) of the following equipment are possessed by contractors whom you have supervised in the last (5) five years?

a) Motor Grader……..
b) Road Roller machines…….
c) Crawler excavator……..
d) Forklift trucks…….
e) Wheel Loaders……..
f) Truck Cranes.……
g) Lorries……..

7. To what extend does contractors' equipment holding influence performance of road construction in Kakamega County? Use a scale of 1 to 5 where 1 is strongly agree and 5 is strongly disagree

Effect	**5**	**4**	**3**	**2**	**1**
Road construction projects are done using the correct equipment					
There are adequate facilities (equipment) necessary for road construction projects					
The contractors have new-age equipment that facilitate the contraction of road projects					

Contractors' Management Skills and Performance of Road Construction

8. Do the contractors' delegate authority to qualified site agents or foremen?

a) Yes [ ]

b) No [ ]

9. What kind of communication approach do the contractors use?

a) One way communication approach [ ]

b) Two-way communication approach [ ]

10. Indicate your level of agreement with the following statements that relate to the influence of contractors' management skills on performance of road construction projects in Kakamega County. Tick appropriately. 1-Not at all 2-Little extent 3-Moderate extent 4-Large extent 5-Very large extent

Statements	**5**	**4**	**3**	**2**	**1**
Contractors' frequent site meetings helps in timely completion of road projects					
Contractors plans and schedule for projects help in cost management of the projects					
Contractors have a high-level of problem solving skills and techniques which improve quality management of road projects					
Road contractors communicate effectively and coordinate efforts					

which leads to quality management of road projects					

11. How can you rate performance of road construction projects in Kakamega County? Please tick in the appropriate box.

a) (a) Excellent [ ]

b) (b) Good [ ]

c) © Average [ ]

d) (d) Poor [ ]

Thank you for your participation

APPENDIX D: INTERVIEW SCHEDULE

1. To what extend do contractors' financial capacity influence performance of road construction in Kakamega County?

……

……

……

2. To what extend does contractors' technical skills influence performance of road construction in Kakamega County?

……

……

……

3. To what extend does contractors' equipment holding influence performance of road construction in Kakamega County?

……

……

……

……

4. To what extent do contractors' management skills influence performance of road construction in Kakamega County?

……

……

……

5. What are other challenges that face road contractors in the implementation of road projects?

……

……

……

6. What measures can contractors put in place to improve performance of construction in Kakamega County?

……

……

……

APPENDIX E: RESEARCH AUTHORIZATION LETTER

APPENDIX E: RESEARCH PERMIT FROM NACOSTI

THIS IS TO CERTIFY THAT:
MR. TIMOTHY AKALI of
UNIVERSITY OF NAIROBI,
594 - 30100 ELDORET, has
been permitted tp conduct
research in *Kakamega County*

Permit No : NACOSTI/P/18/12087/14057
Date of Issue : 13th June,2018
Fee Received:Kshs. 1000

on the topic: *INFLUENCE OF CONTRACTORS' CAPACITY ON PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN KAKAMEGA COUNNTY, KENYA*

for the period ending:
18th July,2018

.....
Applicant's
Signature

Director General
National Commission for Science
Technology & Innovation

INFLUENCE OF CONTRACTORS' CAPACITY ON PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN KAKAMEGA COUNTY, KENYA

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Is the research within to the scope of the journal?	**X**	
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