

**INFLUENCE OF PROJECT MANAGEMENT SKILLS ON PERFORMANCE OF
ROAD CONSTRUCTION PROJECTS IN MACHAKOS COUNTY, KENYA**

CHEPKEMOI JENNIFFER

A Project Report Submitted in Partial Fulfillment of the Requirement for the
Award of the Degree of Master of Arts in Project Planning and Management
of the University of Nairobi

2020

DECLARATION

This research project report is my original work and has not been presented for an award in any other University.

Signature.......... Date.....18/11/2020.....

Chepkemai Jenniffer

L50/89639/2016

This research project report has been submitted for examination with my approval as the University supervisor.

Signature.......... Date.....18/11/2020.....

Prof. Dorothy Kyalo

Department of Open Learning

School of Open and Distance Learning

University of Nairobi

DEDICATION

This research project is dedicated to my mother Annah Chepkwony for believing in me and my father George Chepkwony for persistently encouraging me to further my studies.

ACKNOWLEDGEMENT

My sincere gratitude goes to the University of Nairobi for giving me the opportunity to pursue Master of Arts degree in project planning and management. My gratitude also goes to my supervisor Prof. Dorothy Kyalo of the University of Nairobi for the help she has been giving me throughout the entire project writing. My family as well that is my husband Richard Koros, our children Melanie, Melinda, Shirlene and Sephan for unwavering support. I wish to thank all my school mates at the Continuing and Distance Education of the University of Nairobi, Thika Campus for their cooperation and assistance during the entire period of the course. I also wish to appreciate all those whom in one way or the other contributed to the success of this Research Project.

ABBREVIATIONS AND ACRONYMS

ADB	African Development Bank
CBK	Central Bank Kenya
CM	Contract Management
FP	Financial Performance
GDP	Gross Domestic Product
KNBS:	Kenya National Bureau of Statistics
HC	Hard Skills Competency
MCG	Machakos County Government
MoU	Memorandums of Understanding
NCA	National Construction Authority
O & G	Oil & Gas
UK	United Kingdom
USA	United States America
PMO	Project Management Office

TABLE OF CONTENTS

DECLARATION	Error! Bookmark not defined.
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABBREVIATIONS AND ACRONYMS	v
TABLE OF CONTENTS	vi
LIST OF FIGURES	ix
LIST OF TABLES	x
ABSTRACT	xi
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	5
1.3 Purpose of the Study	7
1.4 Research Objectives	7
1.5 Research Questions	7
1.6 Significance of the Study	7
1.7 Delimitation of the Study	8
1.8 Limitations of the Study.....	8
1.9 Assumptions of the Study	9
1.10 Definitions of Significant Terms as Used in the Study.....	9
1.11 Organization of the Study	9
CHAPTER TWO	11
LITERATURE REVIEW	11
2.1 Introduction.....	11
2.2 Performance of Road Construction Projects	11
2.3 Contract management skills and the performance of road construction projects ...	12
2.4 Procurement management skills and the performance of road construction projects	15
2.5 Financial management skills and the performance of road construction projects ..	17
2.6 Theoretical Literature Review.....	18
2.6.1 Pareto analysis.....	18
2.6.2 Project Management Competency Theory	19

2.6.3 Prospect Theory.....	20
2.7 Conceptual Framework	20
2.9 Summary of the Literature Review	23
CHAPTER THREE	24
RESEARCH METHODOLOGY	24
3.1 Introduction	24
3.2 Research Design.....	24
3.3 Target Population	24
3.4 Sample Size and Sampling Procedure.....	25
3.5 Data Collection Instruments.....	25
3.5.1 Piloting of the Instrument.....	26
3.5.2 Validity of the Research Instrument.....	26
3.5.3 Reliability of the Research Instrument.....	26
3.5.4 Results of the Pilot Study.....	27
3.6 Data Collection Procedure	27
3.7 Data Analysis Techniques.....	28
3.8 Ethical Issues.....	28
3.9 Operational Definition of Variables.....	29
CHAPTER FOUR.....	30
DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION	30
4.1 Introduction	30
4.2 Questionnaire Return Rate	30
4.3 Background Information	30
4.3.1 Gender of the Respondents.....	31
4.3.2 Age of the respondents	31
4.3.3 Education Level.....	31
4.4 Contract Management Skills	32
4.5 Financial Management Skills	34
4.6 Procurement Management Skills	35
4.7 Aspects of Project Performance	37
4.8 Correlation Analysis.....	38
4.9 Regression Analysis Results	39

4.9.1 Regression Model	40
4.9.2 Analysis of Variance of the Regression (ANOVA).....	40
4.9.3 Significance of Independent Variables	41
4.9.3.1 Contract management skills	41
4.9.3.2 Procurement management skills.....	41
4.9.3.3 Financial management skills	42
CHAPTER FIVE	44
SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS	44
5.1 Introduction	44
5.2 Summary of the Findings	44
5.2.1 Contract Management Skills	44
5.2.2 Procurement Management Skills.....	44
5.2.3 Financial Management Skills	45
5.3 Conclusion.....	45
5.3.1 Contract Management Skills	45
5.3.2 Procurement Management Skills.....	46
5.3.3 Financial Management Skills	46
5.4 Recommendations	46
5.4.1 Contract Management Skills	46
5.4.2 Procurement Management Skills.....	47
5.4.3 Financial Management Skills	47
5.5 Suggestions for Further Research	47
REFERENCES.....	48
APPENDICES.....	56
Appendix I: Letter of Transmittal of Data Collection Instruments.....	56
Appendix II: Questionnaire	57
Appendix V: List of Construction Firms in Machakos County	61
Appendix VI: Map of Machakos County	62
Appendix VI: Research Permit.....	63
Appendix VII: Similarity Report	65

LIST OF FIGURES

Figure 2.1: Conceptual Framework	21
--	----

LIST OF TABLES

Table 2.1: Summary of the Knowledge Gap	22
Table 3.1 Sample size	25
Table 3.1: Operationalization of Variables.....	29
Table 4.1 Response rate	30
Table 4.2: Reliability Analysis	27
Table 4.3 Gender.....	31
Table 4.4 Ages	31
Table 4.5: Level of Education.....	32
Table 4.6: Aspects of Contract Management Skills.....	32
Table 4.7: Aspects of Financial Management Skills	34
Table 4.8: Aspects of Procurement Management Skills.....	35
Table 4.9: Aspects of Project Performance.....	37
Table 4.10: Correlations Analysis.....	39
Table 4.11: Regression Model Parameters	40
Table 4.12: Analysis of Variance of the Regression.....	40
Table 4.13: Significance of Independent Variables	43

ABSTRACT

Construction sector covers a range of activities which include the construction of buildings, infrastructure and specialty trades. The sector activities can be a solution to the challenges of development in the global world of today. Road construction projects have been on the rise in Machakos County recently. However, many projects have failed to achieve success. Since the advent of devolution, Machakos County initiated many road developments projects. Some of them are still on-going; others failed to achieve the intended objective. This is despite there being talk of project risk management integration in project management. The study sought to establish how project management skills influence performance of road construction projects in Machakos County. This research specifically sought to establish how contract management skills influence the performance of road construction projects; how the procurement management skills influence the performance of road construction projects and how financial management skills influence the performance of road construction projects based in Machakos County. The study targeted contractors who have previously overseen Kenya Urban Roads Authority projects and who have a valid registration by the national Construction Authority within categories NCA4, NCA5, NCA6, and NCA 7 located in Machakos County. A population of 135 of contractors involved in site labour contracts or sites within Machakos County participated in the survey. The technical personnel of the contractors who participated in the survey on the site included; general foremen, construction managers, cost estimators, operatives and subcontractors. The data analysis was performed utilizing a blended techniques approach: Secondary data was subjected to descriptive, correlation as well as regression analysis. The study findings if adopted is to benefit project managers by giving understanding into the connections between the project manager capabilities and the achievement/disappointment of road construction projects particularly in the Machakos County. Findings was to also add to the advancement of the Machakos area construction firms which lead to the maintenance of road projects work effectively that help on achieving the customer expectation aligning with the PMO requirement. Regarding contract management skills, the study confirms that contract management skills affect performance of road construction projects in Machakos County. The study further established that procurement management skills had a significant and positive effect on the performance of road construction projects in Machakos County. The study also established that financial management skills had significant and a positive effect on the performance of road construction projects in Machakos County. The study recommends that project managers need to establish a highly co-operative project team in which competent specialist contractors and skilled laborers are staffed. Procurement management skills was found in this study to be one of driving force of the performance of road construction projects in Machakos County. This study recommends that financial managers hired should have a high level of competence to ensure that the right project leadership team.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Construction sector covers a range of activities which include the construction of buildings, infrastructure and specialty trades. It can be a path of transformation in addressing some of the majority of regular development challenges of today's world: social stability, swift urbanization, environmental change including natural disasters (Takey & Carvalho, 2015). It is observed that without an infrastructure that facilitates green and inclusive expansion, countries will not only be in a difficult situation to meet fundamental needs, but will struggle to get competitive (Wesselink, 2014). The demand for such a service has continued to grow both locally and internationally. As a result the process itself has become more complex presenting a network of transactions that needs to be undertaken to ensure the success of the industry while considering the fact that the main target is the performance of the individual projects. The purpose of project management is to help in the design and development of a project and bring about structure in the execution of a project (Blok, 2015). Project managers are important stakeholders who set expectations for the project and drive the project (Chipulu, 2014).

In order to set and meet the expectations for the project, the project manager needs to be well equipped to come to a common understanding with all the stakeholders involved and also agree on the scope of the project (Chipulu, 2014). Hence, the need for competencies for project managers. These competencies is important to drive project success (Keil, 2013). Competencies are often studied by individual attributes, like skills, knowledge and attitudes, that perform tasks (Rainsbury, Hodges, Burchell, & Lay, 2016).

According to Bhardwaj, (2015) contract management skills have become very essential universal for optimal performance road construction projects for any organization that seeks professionalism. Contract management skills concepts have been found to be in practice before the first and the Second World War. Its emergence

can be traced back to the early fifties, when it was implemented on large scale projects (Carbone, 2014). According to Bajari, (2014) there have been urgent needs for the development of procurement management skills in the road construction projects due to the changing nature and emergence of new technologies related to procurement and the relaxation of trade regulations, which have resulted in a highly competitive advantage marketplace.

Effective financial management skills are critical success factors for public-private partnership projects like road construction projects (Dikmen, 2017). The success of a project would normally be measured by the extent to which the predetermined targets set by the client are attained, additionally whether it achieves the function intended to meet adequately and if it solves an identified problem within the stipulated time, cost and quality standards (Eskander, 2013). To meet the purpose, effective and prudent financial management control will be required through the application of project management skills (Colins, 2013).

Globally, the factors that directly affect the timely completion of road related projects are rarely discussed as costs and deliverables often take a lead (Shehu and Akintoye, 2009). In the French, Li, Akintoye, Edwards and Hardcastle (2005) contends that effective procurement, project implementation ability, government guarantees, and favorable economic conditions are critical success factors (CSFs) for public-private partnership projects. In Bulgaria, Alexandrova and Ivanova (2012) considers competence of project manager, competence of project team, quality of subcontractor services, and top management support as CSFs of project management. In Lithuania, Gudiene, Ramelyte and Banaitis (2013) states that project management's experience, project value, project manager's experience, experience of contractor, project size, competence of project team members, clear and realistic goals, decision making effectiveness of project management, and technical capability of project management are the most important success factors for road construction projects.

In a study carried out in Australia by McNair in 2011, the importance of a contractor delivering a complete road facility for a guaranteed price and by a guaranteed date has been advanced. It must also be performed to a specified level. It must too be

performed to specified standard. It has been observed that failure to achieve this will usually result in a contractor incurring monetary losses.

In the UK a study carried out by Fapohunda and Stephen in 2010, states that in road construction, conflicts exist between the projects stated objectives with regard to the appropriateness of cost, time and quality. They identified the distinct knowledge management areas for project manager's efficient performance to include among others project cost management which includes to provide an effective project schedule for project delivery besides actually delivering the project on the schedule (Fapohunda and Stephen 2010).

In Africa, the challenge of timely road project delivery can take multiple dimensions depending on the project's environment. A study by United Nations Commission for Trade and Development (UNCTAD), (2001) on African construction industry's turmoil's and their implications for New Partnership for Africa's Development (NEPAD) identified costly project delays as a major problem and identifies poor project time, quality and cost performance as a major issue.

In Ghana, Frimpong et al, (2003) identified five factors as the major causes of delays to road projects. These include monthly payment difficulties to contractors, poor contract management, material procurement difficulties, poor technical performance and material price escalations. Poor professional management, fluctuation of prices, rising cost of materials and poor site management have also been identified as factors causing a delay in project completion time. In order to forestall the challenge of timely project delivery, Samuel (2008) recommends that project time management be a key priority for the contractors and that the appointment of a registered project manager for each contract should be a mandatory condition of tender.

Locally, in Kenya road construction industry has been robust with a lot of roads and buildings being constructed. Foreign investors have shown a lot of interest to have a stake in Kenyan road construction industry. They consider Kenya as a business hub in East and Central Africa and a centre from which they can operate within Africa as a consequent, Nairobi and its environs has witnessed a boom in road construction projects. Other construction projects include government, Private individuals, private

companies, international businesses and institution sanctioned (Kenya facts and figures, Kenya National Bureau of statistics, 2012) In Kisumu many road projects fail to be completed in time causing cost overruns.

This can be seen in the various number of road projects which have not been completed on time. Even more are those road projects that are in the end finished but at an inflated budget and at a date later than agreed in the road project schedule. For example is the expansion of Kisumu International Airport Phase II(Road works) ,which was scheduled to be completed in Fifteen Months but ended up being completed in twenty five months and experienced a lot of cost overruns due to change in scope and Price Variations. Besides, some road projects are completed but with very poor quality workmanship (Kenya Engineer Magazine, 2015).

Performance is related to many topics and factors such as time, cost, quality, client satisfaction; productivity and safety. Road construction industry in the Kenya suffers from many problems and complex issues in performance. For example, construction of 10 dwelling road in Nairobi County suffered from poor performance because of delay for about 3 months. There are many realistic reasons such as closures, amendment of drawings and amendment of the design and delayed funds release. In addition, there are other different reasons affecting road construction projects performance in the Kenya such as poor management and leadership; inappropriate participants; poor relations and coordination; absence of motivation, control, monitor or decision making systems; inadequate infrastructure, political problems; cultural problems and economic conditions (Strenman, 2012).

There is an increased demand for project managers in the road construction industry in Kenya, They are tasked with overseeing every single aspect of the project from inception all the way to its successful completion (Moris 2012) this has been characterized by constant fail in performance. In addition, performance measurement systems are not effective or efficient to overcome this problem. Road construction projects performance problem appears in many aspects in Kenya (Weil, 2005). In 2009 there were many road projects which finished with poor performance because of many evidential reasons such as: obstacles by client, non-availability of materials, road closure, amendment of the design and drawing, additional works, waiting the

decision, handing over, variation order, amendments in Bill of Quantity (B.O.Q) and delay of receiving drawings (Strenman, 2012).The construction sector contributed 4.8% of Kenyan's GDP, and the construction industry is expected to sustain its strong growth since the country plans to roll out several big dollar projects such as the 10,000 kilometres road annuity project, phase 2 of the standard gauge railway, construction of Lamu port among others (Wanyoike, 2017).

Kenya's vision 2030 identifies infrastructure development as one of the very crucial pillars to economic growth. Vision 2030 aspires for a country firmly interconnected through a network of roads, railways, ports, airports, water and sanitation facilities, and telecommunications (African Development Bank, 2013). The construction industry in Kenya contributes 7 percent of the gross domestic product (GDP) (Central Bank of Kenya, 2013). The Kenya construction industry rose by 5.8% in 2013 and 13.1% in 2014 according to figures from Kenya National Bureau of Statistics (KNBS, 2016). The Kenyan construction sector is anticipating a growth of 9% year-on-year in 2019 (Kenya Infrastructure Report, 2017). The growth in the sector is expected to remain over a 10 year forecast period up to 2027. Economic survey (2015) attributed the double-digit expansion to steady growth in property development, including the ongoing construction of mega projects.

Despite the economic and social value of reliable and efficient construction, many projects in Kenya have experienced delays in timely completion (Wambugu, 2017).Major causes of failures were insufficient implementing capacity, poor project management, weak project design and political interference (Ogolla, 2017). In order to sustainably implement infrastructure projects, it is necessary that the construction industry has to build sufficient capacity to undertake the projects to ensure timely, quality and cost effective implementation of these development projects.

1.2 Statement of the Problem

The responsibility of achieving success in the implementation of a road construction project largely depends on the contractor's performance. However in current scenarios contractors are not performing to their clients' expectations and indeed many contractors have failed in performance. Delays in project completion and poor

performance in the construction industry has been experienced in Kenya and has led to failure in achieving effective time and cost performance (Aftab, 2012).

Machakos County has seen a significant rise in road construction projects in the recent past. However, many projects have failed to achieve success. Since the advent of devolution, Machakos County initiated many road development projects. Some of them are still on-going; others failed to achieve the intended objective. This is despite there being talk of project risk management integrated into the projects. For instance there are more than 200 road projects drawn in the County that have been undertaken since 2013 (CSK, 2017) and 68% of those road projects have experienced project failure despite adoption of project risk management strategies (KPMG, 2017). According to World Bank (2017), 60% of the county respondents complained that the road projects from the county failed to satisfy their needs with 35% indicating the road infrastructure service delivered to them failed to achieve the intended objective. ADB (2017) also indicated that almost 52% of these road development projects registered loss forcing the County firms to decline in performance.

Studies on project management hard skills competency and performance of construction firms have been presented in various literatures. Rotimi and Ramachandra (2012) conducted a study on the skill sets required for managing complex construction projects. However, the study did not look into project manager's financial management skills impact on performance of road construction projects which presents a clear gap in the findings considering the dynamic requirements call for project managers.

Similarly, Chandra (2017) conducted a case study of Project management competencies and project performance on Philips Healthcare which focused on the hard skills that are required by a project manager. The study did not look into project manager's procurement skills and it also limited to a case study which makes it difficult to generalize the findings.

Generally, studies in Kenya have almost exclusively focused on soft skills and success of construction firms (Wambua, 2014). This leaves a gap in the literature focusing on the hard skills of projects managers and performance of construction

firms in Kenya (Buigut, 2015; & Kipkorir, 2014). It is against this background that this study seeks to establish the influence of project management hard skills competency on performance of road construction projects in Machakos County.

1.3 Purpose of the Study

The purpose of the study was to establish the influence of project management skills on the performance of road construction with a focus on road construction projects in Machakos County, Kenya.

1.4 Research Objectives

The research was guided by the following research objectives:

- i. To establish how contract management skills influence the performance of road construction projects in Machakos County.
- ii. To determine how the procurement management skills influence the performance of road construction projects in Machakos County.
- iii. To examine how the financial management skills influence the performance of road construction projects in Machakos County.

1.5 Research Questions

The study was guided by the following questions;

- i. How does contract management skills influence the performance of road construction projects in Machakos County?
- ii. How does procurement management skill influence the performance of road construction projects in Machakos County?
- iii. How does financial management skill influence performance of road construction projects in Machakos County?

1.6 Significance of the Study

It is the expectation that this survey may enrich the understanding of the critical skills required by the contractors that may improve their performance on road construction projects in Kenya and other developing countries. The findings can be used by the government to provide the necessary incentives and regulations to ensure sustainable growth, capacity building and policy framework to regulate the road construction

industry toward achieving millennium goal such as Vision 2030. The outcome of the study is also useful to the contractors in providing an in-depth perceptive of the factors that inhibit their performance and therefore ensure that they improve in the organization of their finances and employ competent skilled manpower in order to improve on their profitability and reputation. The study is useful for construction supervision consultants who may comprehend how their services impact performance of contractors in the sector.

1.7 Delimitation of the Study

This study was limited to Machakos County. The study focused on variables as described in the conceptual frame work which are contract management skills, procurement management skills and finally financial management skills and performance of construction firms in Machakos County. The target population included contractors who have previously overseen Kenya Urban Roads Authority projects and who have a valid registration by the national Construction Authority within categories NCA4, NCA5, NCA6, and NCA 7 located in Machakos County. The technical personnel of the contractors who participated in the survey on the site will include; general foremen, construction managers, cost estimators, operatives and subcontractors.

1.8 Limitations of the Study

This research was limited by difficulty in obtaining questionnaires on schedule since construction projects work was fieldwork, so I did prior appointments with the concerned team. Secondly, it was difficult to move around the county due to its vast geographical location so I sorted assistance from two other people to transverse the area. Employees and Employers could withhold information because of competition which could jeopardize the reliability of the information given. To overcome this challenge, I presented an introduction letter from the university to identify myself as a student and that the study was purely for academic purposes.

1.9 Assumptions of the Study

This research was based on the assumption that the respondents cooperated enough to provide accurate and relevant information when responding to the research questions. These targeted respondents were assumed to greatly understand the dynamics, challenges and mechanics of the diverse workings of the construction projects. It is also assumed that Successful completion of projects in this construction sector is mainly influenced by the variables stated in the study objectives.

1.10 Definitions of Significant Terms as Used in the Study

Contract management skills:	It is the ability of one to administer a legally binding agreement between two or more parties. It could be a proprietor and his/her customer; employers and employees; partners and vendors.
Financial management skills:	Deals with the efficiency and effectiveness in the administration of money in such a manner as to accomplish the set objectives of the organization.
Hand Skills Competences:	Involves the collective technical capabilities required to the desire results of a project being undertaken.
Procurement Management skills:	It is the capability required when handling goods and services that are acquired from different organizations and firms.
Project Management:	Is an activity of planning and implementing project undertakings in order to accomplish the set goals and objectives.

1.11 Organization of the Study

Chapter one contains the introduction of the study and it consists of the background to the study in which contextual and conceptual issues were highlighted. It covers the statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, scope of the study, limitations of the study, assumptions of the study and definitions of significant terms.

The second chapter reviews related literature based on the objectives. This chapter also contains theoretical, empirical, conceptual frameworks and the knowledge gap identified from the literature reviewed. The third chapter comprise of the research methodology which relates to the research design, target population, sample size and sampling procedure, research instruments, data collection procedures, data analysis techniques, validity and reliability of the study and ethical considerations.

Fourth chapter discusses the results of the study findings, that is the analysis and findings of the study. Fifth chapter contains the conclusion, discussions of the study, recommendations based on what was found in the study and finally recommendations for further research related to the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This Chapter covers significant literature on the influence of project management skills on the performance of road construction projects. The research about project management skills that enable road constructors' team to perform in an optimal manner and be successful has been developed over a period of time due to the importance of road construction projects to private sector and Government, therefore the literature relating to the study is quite extensively done.

Chapter two consists of; theoretical review, empirical review, conceptual framework and a summary of the knowledge gap is given towards the end of the section.

2.2 Performance of Road Construction Projects

A typical road construction is multilayered in form, comprising of unbound materials. Essentially, the lower indigenous sub grade layer is covered by a bound sub base, providing drainage and frost protection for sub grade, and the road base layer upon which the asphalt layers are laid as a final surface coating. The structural design of a road relates to the ability of the road to carry the imposed loads without the need for excessive maintenance (Serfass and Courteille, 1980). Road performance is defined as the ability of a pavement to satisfactorily serve traffic over time (AASHTO, 2003). Performance is a broad, general term describing how road condition changes or how pavement structures serve their intended functions with accumulating use (George, et al, 1989). Therefore its important during road construction to ensure that all measures are put in place so that the road users enjoy the usage of that road for a longer period of time.

According to Bajari, (2014), road contractor's performance problems appear in many developing countries. Many road projects fail in terms of cost, quality and time performance. Many road projects have failed in the past which is evidently seen by having some road closure, changes in handing over, non-compliance on the road construction materials needed, amendment of design and additional work are some of the areas which indicates that a road construction has performed purely. A competent

construction contractor is one of the indispensable conditions of a proper process and completion of a construction project according to Xiaohong (2011)

Time management for timely completion of road construction project can be expensive, fraught with pressures, and subject to much uncertainty. Some key factors having an influence on successful road construction project delivery include the use of overly complex scheduling specifications, construction brokering by the contractor, errors and omissions, differing site conditions, user changes, and inadequate time extensions (Besteiro,2015).These can be compounded by reservation of rights for delay, cumulative impacts, and ignoring possible completion date waivers.Blok, (2015) noted that there is still uncertainty and misunderstanding that remains in terms of what constitutes acceptable standards of proof for excusable delay and impacts. While computers and scheduling software have greatly increased the potential for enhanced scheduling capabilities, they have also contributed to a variety of user quality problems. The situation is often compounded by failure of both the owner and contractor to recognize from the start the need for timely resolution of delays and keeping the schedule up to date by reflecting actual performance and delays as they occur (Buigut & Kipkorir, 2014).

The cost of the labor may be one of the biggest expenses of road construction project. The project manager must rely on time estimates to predict the cost of the labor to complete the project work. In addition, the cost of the equipment and materials needed to complete the project work must be factored into the project expenses thus cost management is vital for any project (Carbone, 2014).It constitutes the management of project costs, how to predict them, account for them, and then, with plan in hand, to control them. How costs are planned for and taken into consideration by the performing organization and how the size of the project affects the cost estimating process is essential for any given project (Caupin & Snyder, 2015).

2.3 Contract management skills and the performance of road construction projects

Contract management is the management of contracts made with customers, vendors, partners or employees (Saade, 2014). According to Saade, contract management skills include negotiating the terms and conditions in contracts and ensuring compliance

with the terms and conditions. It includes documenting and agreeing on any changes that may arise during its implementation or execution (Slevin, 2014). It can be summarized as the process of systematically and efficiently managing contract creation, execution, and analysis for the purpose of maximizing financial and operational performance and minimizing risk (Bhardwaj, 2015).

A contract is the foundation of the establishment and maintenance of a favorable relationship between the contractor and contracting authority (Lowe, 2013). It also forms a basis for the acceptance of the project deliverables hence ensuring the achievement of value for money. If a contract fails to address the relevant issues required in the agreement, such as, word ambiguities, it becomes hard for the contracting company to base a positive working relationship with the contractor. Management capability is one of the major criteria for evaluating construction contractors during prequalification and tender evaluation (Bajari, 2014). Developing competencies help project managers to keep pace and help adapt to the current market and industry demands (Chipulu, 2013). Contract management starts with contractor monitoring and acceptance management. It is important at this point to check on the contract management competences to establish whether the project manager will undertake his/her duties diligently while fulfilling the obligations in compliance with the contract.

A study done by Starkweather and Stevenson (2014), on project managers from the health services industry found that project managers were preferred to have specific competencies for specific projects. In another study conducted by Khan (2013) in the Healthcare Leadership Alliance Summit, found that there were 5 important competencies required by healthcare executives and leaders that include communication and relationship management, professionalism, leadership, knowledge of the healthcare system and business skills and knowledge. According to Khan (2013), additional responsibilities that were not technical were found to be vital for project managers to be successful. Napier, Keil and Tan (2013) argued that a project manager is the person who possesses all the competencies in order to avoid failure and succeed in a project. Mantel (2013) came up with hard skills that included Project integration management, Project scope management, Project Time management, Project Quality management, Project Cost management, Project Human resource

management, Project Communication management, Project Risk management, and Project Procurement management among others. Similarly, Crawford (2014) in his study which was conducted in Australia, UK and USA found a number of hard skills essential for project management. They included contract management, time management, cost management, procurement management, and human resource management among other competencies. The project management competencies are at the core of business, and are often used as a tool to leverage project success (Isik, Arditi, Dikmen, & Birgonul, 2014).

A study done by Beijer (2014) on design of project manager performance measurement and evaluation system, the study used different kinds of data collection methods such as: extensive literature review, desk research, unstructured and structured interviews and group meetings. The study recommended “Quality” and “Delivery” as performance criteria to monitor the operational performance of contractor because these performance criteria can be used to both monitor and analyse contractor. The study did not consider financial management skills as one of the criteria to monitor contractor performance, hence a gap which is addressed in this research.

A case study carried out by Sunindijo and Zou (2013) on essential skills for construction project managers examined previous studies on project manager skills to propose a set of skills that is applicable in the construction industry. The study argued that four skills, namely conceptual, human, political, and technical skill are essential for construction project managers to perform their job. The study discussed components that form each skill construct and why they are essential for construction project managers. The key contribution of the research was the inclusion of political skill as one of essential skills for construction project managers. Nesbit and Martin (2014) conducted a study on interdisciplinary nature of the skills needed by project managers. The study aimed to explore and analyze the additional skills that are transferrable across different sectors, which project managers require and that go beyond technical project management skills to enable them to be successful in what is becoming an increasingly interdisciplinary role. The study found that the project management role requires a range of non- technical project management skills and characteristics to enable project management to be carried out successfully.

2.4 Procurement management skills and the performance of road construction projects

According to Masterman (2014), project procurement is described as the organizational structure needed to design and build construction projects for a specific client. According to Masterman, Procurement skills have become an important issue in the construction industry. Masterman averred that Procurement of construction projects involves a series of processes that are interrelated and sequential. The effectiveness and efficiency of the processes have considerable impact on the success or failure of projects (Chua, 2014). Chua posits that there are several procurement methods that are available for a developer to adopt in procuring a project. According to Chua, one major challenge that the project developer faces is the method to adopt among the available procurement options.

Performance has been described as the degree of achievement of certain effort or undertaking (Egan, 2013). It relates to the prescribed goals or objectives which form the project parameters (Khalfan, 2015). From project management perspective, it is all about meeting or exceeding stake holders' needs and expectations from a project (Eriksson, 2013). Eriksson argues that it invariably involves placing consideration on three major project elements: time, cost and quality. Yates and Eskander (2013) defined a successful project as a project that has been completed on schedule, within budget, within scope and satisfied the required quality. On stakeholders' satisfaction, clients remain the most important stakeholder when considering project performance. Neto and Mourao (2014) stated that matching or exceeding the client's expectations result in a satisfied client. Michell, Bowen & Pearl (2014) remarked that the primary concern of construction clients is that their projects are completed within budget, on time and at the required level of quality. On objective measurement of project outcome, two parameters namely: schedule and cost are common with research studies (Edward, 2015). Pearl (2013) identified time and cost as the principal factors.

Factors related to competence and experience, such as poor site management, supervision and planning on behalf of the contractor, are common causes of cost and time overruns (Chan and Kumaraswamy, 2014) and poor customer satisfaction (Maloney, 2013). Careful partner selection through bid evaluation based on suitable

soft parameters considering desired competences, experiences and attitudes can therefore reduce cost growth (Chua 2014). Procurement skills need to be tailored to enhance the fulfilment of different project objectives (Cox and Thompson, 2013). Love and Wardani (2015) posit that clients tend to choose those procurement procedures they have a habit of using, regardless of any differences between projects. In order to enhance change, an increased understanding of how different procurement procedures affect different aspects of project performance is vital (Laedre, 2013).

A recent research by Muturi (2014) tilted assessment of effectiveness of procurement contracts management in public organisations in Tanzania, a case study of Kinondoni Municipal Council. The study objectives were to assess adequacy of skills for the key contract management staff, assess the extent of contract variation, and examine on time delivery of goods and services at the case organisation. Methodology used on the study was exploratory design, nominal and ordinal scale used to test the data collected, interview, documentary review and questionnaire used to collect data, researcher used probability method for sampling purpose. The study discloses that, there are a problem of un-controlled variations to contracts and lack of effective professionalism. The study recommended use of early supplier/contractor involvement strategy in order to identify the expected problems and solve them before its impact; prompt payment to supplier invoices which will encourage and motivate contractor or supplier; and lastly contract management staff should attend continuous professional development at least 72 hours per year. The study did not consider the construction sector; no manager's procurement skills was addressed in the research, did not provide how contract management influences contractor performance and therefore, a gap which is discussed in this research work.

A case study conducted by Salim (2013) on the role of procurement contract management in the effectiveness of project management at MIC-Tanzania. The study addressed a need of contractors' compliance to contract terms and conditions, technical capability and contract monitoring towards project management. The study methodology was descriptive design, purposive non-probabilistic sampling technique was used, and data were collected by using interview and questionnaire. The author's conclusion includes the following, staff inadequacy in CM function, disputes caused by late delivery by suppliers, poor quality of works/services, vague specifications,

supplier's technical incapability and little attention to make contract visible to other stakeholders

2.5 Financial management skills and the performance of road construction projects

In today's environment, the role of the financial manager in a construction organization is essential to organizational success, and more importantly, is vital to avoiding failure (Faridi, 2014). According to Faridi, in many circumstances, competition is so fierce and margins are so thin, reliable financial information and analysis certainly can make the difference between success and failure. The construction financial manager's role may vary from company to company, partly because different financial managers have different skills and personalities (Olsen, 2015). The role also varies depending on the size of the company.

A construction financial manager's background often indicates the areas in which the manager will concentrate (Manley, 2013). For example, a construction financial manager whose background is in construction operations - estimating and project management initially will concentrate on the proper recording of job costs (Maloney, 2013). A construction financial manager whose background is in public accounting probably will initially emphasize financial reporting and income tax planning (Swan, 2014). The financial manager should recognize these influencing factors and make efforts to compensate for any deficiencies.

The skills and personalities of the other members of the management team also affect the role of the construction financial manager (Cheung, 2014). The majority of a company's administrative work can be performed in any department and will be allocated among departments partly based on the skills and personalities of the respective department managers (Colins, 2013). Collins averred that most construction financial managers feel that cash management is their responsibility. If the other management team members share this feeling, responsibility for cash management probably will be assigned to the finance department. However, Gadde (2014) argue that if another management team member feels that responsibility for cash management should be shared, some compromise will be made.

To a great extent, sharing of responsibilities depends on the skills and personalities of the management team members (Ofori, 2014). Successful financial managers respect the need for compromise in sharing responsibilities. Pinto (2015) argues that different types of projects need different types of project managers. The financial manager should ensure that margins on jobs are maximized through cost recovery (Dubois, 2015). According to Dubois, complex projects need project managers that are equipped with special skills to achieve successful outcomes. Complexity in the system does not require complex management but needs project managers with open minds and thinking outside the box.

A study done by Soderlund, (2014) stated that projects need some initiatives from project managers to create and produce things that are outside their job description. The most efficient project managers should be able to decompose the apparent complexity of the project situation in order to view it more simply (Kendra, 2014). Taplin (2015) observed that, with great occurrence, projects are becoming cross-functional and progression-related and require personal skills and knowledge, interpersonal and general management skills. Project success is dependent on factors such as planning, monitoring and controlling, team selection, technical performance, communication, leadership, strategic direction, team development, risk management (monitoring and controlling), organisational support, stakeholder management, organizational structure, and project definition (Carbone, 2014).

2.6 Theoretical Literature Review

This area presents two key hypotheses which are: - The Principal-agency theory and Pareto analysis. The hypotheses are discussed in accordance with the particular targets of the investigation indicating how the speculations identify with the present theme.

2.6.1 Pareto analysis

The Italian statistician Pareto (1923) discovered a common statistical effect. According to Pareto theory, about 20% of the population own 80% of the nation's wealth. About 20% of employees cause 80% of problems. About 20% of items account for 80% of the firm's expenditure. This analysis is very applicable to this study in a sense that the operating company has to put more effort, time and resources

on contract management for 20% of contracts to monitor contractors' performance which amount 80% of the whole total contract value in the organisation. Due to limited resources on contract management function, organisations should focus and put more effort on key contracts to monitor contractors' performance (Lysons and Farrington, 2015). According to Farrington (2014) company will spend more contract management resources on high value and high risk contracts which makes 20% of whole contracts. In the context of road construction project management; it is assumed that if the project manager and the project team have all the required contract management skills for the work then the road project implementation will be successful.

2.6.2 Project Management Competency Theory

The work of McClelland & McBer in the 1980s established the competence theory. The authors defined competency as the underlying characteristic of an individual that is causally related to criterion-referenced effective and/or superior performance in a job or situation. Since then a number of competency frameworks have been developed by different project management institutes. Crawford (as cited in Boyatzis, 1982 & Spencer, 1993), puts a model of competence that integrates knowledge, skills, demonstrable performance, and core personality characteristics, noting the last, personality characteristics, as challenging to develop and assess through training. She argues that two of the most influential project management standards, the PMBOK, address only the knowledge aspect of competence while a third, Australia's National Competency Standards, draws from knowledge but focuses only on demonstrable performance. Crawford, (2010) study found out that procurement managers "do not necessarily have the required procurement management skills or perform the full activities required to promote and implement the changes that they are leading as part of their projects.

Interest in project management competence stems from the very reasonable and widely held assumption that if people who manage and work on projects are competent, they will perform effectively and that this will lead to successful projects and successful organizations (Beer, 1990; Smith, 1976). Competence is generally accepted, however, as encompassing procurement knowledge, procurement skills, attitudes and behaviors that are causally related to superior job performance.

Crawford (as cited in Boyatzis, 1982 & Spencer, 1993), stated that procurement competence in project management is attained by combination of knowledge acquired from training and its subsequent application and other skills developed in the course of work.

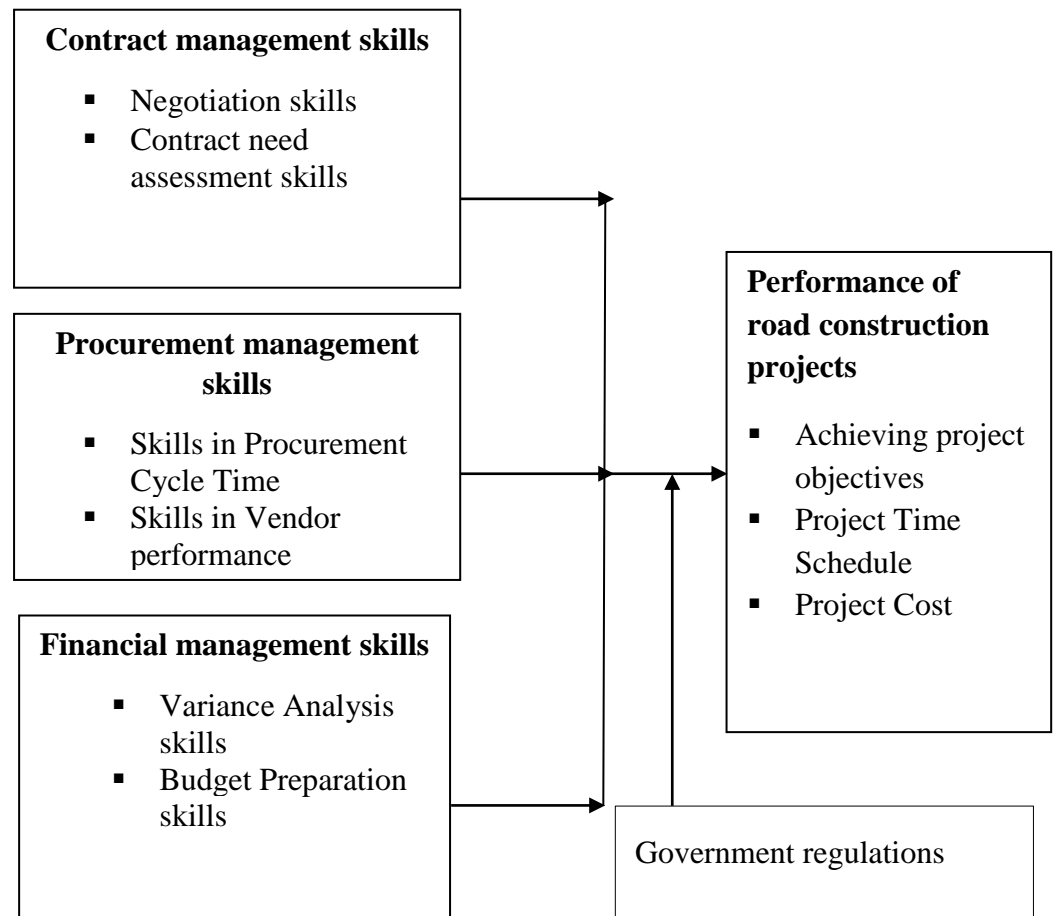
2.6.3 Prospect Theory

Prospect theory was developed by the Kahneman and Tversky in 1979. The theory holds that decisions pertaining to financial matters of organizations are always between alternatives that involves risks. This is due to the alternatives having no certain outcomes. This model theory is descriptive in that it tries to describe real life choices rather than optimal decisions. The theory therefore speculate that before any organization makes any financial decision it has to consider the risk involved.

Based on this theory, the decision made by road management should be done with some level of expertise and this require financial management practices. The practices will enables the management in the road construction industry to manage their finances effectively. Hence the theories implication is that through understanding the financial management practices, they may able to minimise any risks occurred thus improved performance of the road construction projects.

2.7 Conceptual Framework

The conceptual framework was based on project management skills competency and performance of road construction projects. The independent and dependent variables were broken down into various parameters aimed to answer the research questions as shown below;



Independent Variables Dependent Variable

Figure 1.1: Conceptual Framework

Table 2.1: Summary of the Knowledge Gap

Author	Year	Title	Findings	Knowledge Gap
Ogunlana	2009	Critical success factors in large scale construction projects in Thailand	Project planning and control, project personnel and involvement of client influence project success.	The study focused on the wider perspective of the factors while the current study is narrowing on the project management skills in the context of road construction projects
Jaselkis and Ashley	1991	Impact of project team, planning and control efforts as they relate to achieving overall 'project success	The key success factors affected the project outcomes differently. For example, increasing the number of budget updates has better schedule and overall project performance	The study evaluated the wide perspective of the overall process success while the current study is assessing the performance of the specific sector which is the road construction projects
Amaka	2011	The critical success factors influencing construction project performance in Nigeria	The operating environment has a vital role in determining the critical success factors influencing project performance of a project. The result revealed six critical success factors which influenced project performance in Nigeria. These factors were objective management, management of design, technical factors, management support and risk management	The study was done in the different context which is not Kenya while the current study is done in the context of Kenya
Deviprasadh	2009	Evaluation of the risk management study in the construction industry in India.	Risk factors identified included financial failure by contractors; poor working condition; closure; defective design; delayed payment; unstable security circumstances; poor communication; unmanaged cash flows and unqualified designers.	The study evaluated risk managing in the context of the construction industry without considering the project management skills that the current study intends to fill

2.9 Summary of the Literature Review

The chapter focused on literature concerning project management skills in the context of the contract management skills, procurement management skills and finally financial management skills. The main theories that the study covered include: Project Management Competency Theory and the Prospect Theory. The literature review indicated that there exists a significant lapse in the performance of road construction projects in Machakos County, which has ultimately contributed to uninformed construction steps. However, the essence and importance of roads in ensuring social and economic growth remained apparent and appeared as a key indicator to achieving a self-sustainable economy in the county and seamless connectivity.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The research methodology that was applied to the study is outlined and explained. Areas covered include; research design, population that was targeted, research instruments utilized, procedures used to collect data and data analysis techniques applied to research data collected.

3.2 Research Design

The research design used in this study was descriptive research design. Descriptive study design is the method of collecting information by administering questioners to a sample of individuals (Mibei, 2007). Descriptive studies are not only restricted to fact but may often be used in the formulation of important principles of knowledge and solution to significant problems. Descriptive research design was preferred because it present data in a meaningful form thus help to understand the characteristics of a group in a meaningful form thus help to understand the characteristics of a group in a given situation, think systematically about aspects in a given situation and help make certain simple decision (Orodho & Kombo 2002)..

3.3 Target Population

Mugenda and Mugenda (2003) describes population as a group of individuals, events or objects with common observable characteristics. Target population relates to the population to which findings are generalized by a researcher. For this study, the target population is the contractors with Kenya Urban Roads Authority projects and who have a valid registration by the national Construction Authority within categories NCA4, NCA5, NCA6, and NCA 7 located in Machakos County. A population of 135 of contractors involved in site labour contracts or sites within Machakos County participated in the survey out of the 450 contractors. The technical personnel of the contractors who participated in the survey on the site include; general foremen, construction managers, cost estimators, operatives and subcontractors.

3.4 Sample Size and Sampling Procedure

This research used stratified random sampling to get the sample population. From the stratum, the researcher used simple random sampling to select respondents. Oliver (2012) state that stratified random sampling is accurate, and allows for better comparison across strata. The sample size is the number of observations that constitute it(Yin, 2009). In this research, 135 contractors were sampled. This was thirty percent of the population which is sufficient according to Mugenda and Mugenda (2003). Furthermore, the sampling allowed the researcher to collect data from respondents. The distribution of the sample size is as shown in Table 3.1

Table 3.1 Sample size

NCA Category	Project cost	Population	Sample size	Proportion (%)
NCA 7	20	50	15	11%
NCA 6	500	80	24	17%
NCA 5	100	100	30	22%
NCA 4	200	220	66	50%
Total		450	135	100%

Source: National Construction Authority, 2018

Formula for arriving to Sample Size

$30/100 = \text{Sample size}$

$\text{NCA } 7 \ 30/100 * 50 = 15$

$\text{NCA } 6 \quad 30/100 * 80 = 24$

$\text{NCA } 5 \quad 30/100 * 100 = 30$

$\text{NCA } 4 \quad 30/100 * 220 = 66$

3.5 Data Collection Instruments

Secondary data was collected from the construction firms' audited financial reports for a 3-year period. Construction firms provide annual financial reports to prospective clients with the provisions of National Construction Authority Regulations (NCA, 2015). To support secondary data, primary data was collected through a questionnaire comprising of open and closed inquiries to inspire reactions for quantitative and subjective investigation separately. A portion of the closed ended inquiries will

require a reaction on a five-point Likert scale, demonstrating the degree to which Project management skills competency influence performance of construction firms in Machakos County.

3.5.1 Piloting of the Instrument

The study carried out a pilot test to test the validity and reliability of the questionnaires in gathering the data required for purposes of the study. Kombo and Tromp (2009) and Kothari (2004) describe a pilot test as a replica and rehearsal of the main survey. As part of preparation for the main research, a pilot study was done among 10 respondents who did not form part of the main study sample. The pilot group was conducted through random sampling. Mugenda and Mugenda (2003) suggested that considering sample size selected, a pilot study sample should be in the range of one (1) to ten (10) percent. Piloting is key in data collection as it helps in unmasking study questions that could be unclear or ill-defined so that they are retested so that they are simple with a clear meaning (Creswell, 2008).

3.5.2 Validity of the Research Instrument

Based on Kumar (2005), validity is the degree to which empirical results correspond to reality. Validity is either internal or external. Internal validity refers to the relation of the theories to empirical study. Hence, the questionnaires are designed to reflect the main objective of the study. To ensure internal validity, the researcher used of experts to check on the instrument and give recommendations on changes to the instrument. External validity relates to the contents of the study in a wider perspective like possibility of generalization of the findings (Kumar, 2005).

3.5.3 Reliability of the Research Instrument

Reliability is the consistency of the scores from tests (Christensen & Johnson, 2000). If a test procedure is reliable, it produces similar scores on for every test. Pilot data was used to determine instrument reliability of the instrument and thus the rigor to secure correct instruments, which was considered a basic foundation for reliability for this research. The researcher then assesses the reliability or internal consistency of the Likert scales using Cronbach's alpha.

3.5.4 Results of the Pilot Study

In order to test for scale reliability or content validity, Cronbach's Alpha was used which is a widely used measure of reliability and is defined as the proportion of a scale's total variance that is attributable to a common source, presumably the true score of a latent variable underlying the items (DeVellis, 2003). The Cronbach Alpha assesses the association between each item in each construct with every other item in the same construct and it runs from 0 to 1, and the higher the score the higher the internal consistency of the set of items. DeVellis, recommends the following alpha levels when assessing the internal consistency of a scale: below .60 is unacceptable; between .60 and .65 is undesirable; between 0.65 and 0.70 is minimally acceptable; between 0.70 and 0.80 is respectable; between 0.80 and 0.90 is very good; and anything much above 0.90 may indicate the scale needs fewer items. Low reliability has severe implications on the entire instrument as the instrument may not correlate with a gold standard instrument or may also have implications for the instrument's convergent and concurrent validity. An average alpha of over 0.9 for this study, as Table 4.2 shows, indicates a respectable scale which is highly internally consistent.

Table 4.2: Reliability Analysis

Cronbach's Alpha	No. of Items	
Contract management skills	0.98	10
Procurement management skills	0.91	7
Financial management skills	0.96	6
Performance of road construction projects	0.91	5

3.6 Data Collection Procedure

Primary data was used which involved the collection of data for the purpose of this study. The data collected was informed by the objectives of this study. The approach was to give the researcher and the research assistant an opportunity to meet the respondents. This was followed by telephone conversations. Some questionnaires were sent via email followed up for responses. In physical delivery approach questionnaires were hand delivered and collected later after an agreed period of time. The entire exercise took one month. After the data collection, checking for errors and inconsistencies was undertaken.

3.7 Data Analysis Techniques

According to Gall and Borg, (2007), data processing and analysis refers to inspection, cleaning, transformation, and modelling data with the goal of discovering useful information. The researcher edited the completed questionnaires for completeness followed by data cleaning. The data was analysed through descriptive statistics. The findings were presented through tables and graphs. The statistical tool (SPSS) was used by the researcher to describe the data.

3.8 Ethical Issues

The hard fact is that research is inherently intrusive and the data obtained could easily be abused. Thus, the respondents were assured that there is no harm whatsoever, as a result of their participation in the research. Participants were given enough time to study the information and they were not put under pressure. The respondents' right to privacy was respected, respondents were provided with sufficient initial information about the study which enabled them to give their informed consent concerning participation and the use of the data. Permission to conduct the study was sought from National Commission of Science, Technology and Innovation at the Ministry of Education, Science and Technology and it was the researcher's moral and professional obligation to maintain the level of confidentiality and anonymity that was promised to the respondents at the onset.

3.9 Operational Definition of Variables

Table 3.1: Operationalization of variables

Variables	Indications	Measurement Scale	Data Analysis
Dependant variable Project management skills	Completed on time	Interval	
Independent Variable performance of road construction projects.	Delivered within budget	Nominal	Descriptive Analysis Correlation
Dependent Variable Performance of construction projects	Delivered with intended objectives	Ordinal ratio	Descriptive analysis
Independent Variable Contract management competency	Number of contracts completed		Correlation
Dependent Variable Performance of construction projects	Committed or signed contracts		Descriptive analysis Correlation
Independent Variable Procurement management competency	Vendor analysis Procurement Allocations	Ordinal ratio	
Dependent Variable Performance of construction projects	Completed within budgeted cost Minimized wastages	Ordinal ratio	Descriptive analysis Correlation
Independent Variable Financial management competency			

CHAPTER FOUR
DATA ANALYSIS, PRESENTATION, INTERPRETATION AND
DISCUSSION

4.1 Introduction

The results and discussion of the study findings are presented, that is the analysis and findings of the study as set out in chapter three which is the research methodology and according to the objectives as highlighted in the first chapter. The chapter starts with the results of the pilot study, the descriptive statistics, and correlations conducted to test the relationship between variables, conditional test for multiple linear regressions and regression analysis of the variables. Data presentation was based on the specific objectives of the study.

4.2 Questionnaire Return Rate

Out of 135 questionnaires that were administered, 120 were completed and returned. This gives a response rate of 88.9%. This response was good enough to give the findings of the study and therefore the researcher relied on them. However, in that case, after filtering and cleaning of the data, it was eventually realized that 5 questionnaires had erroneous responses and were discarded leaving the researcher with 115 well filled questionnaires that proceeded to data analysis.

Table 4.1 Response Rate

Table 4.1 Presents the response rate of the target population.

Table 4.1 Response Rate

Category	Frequency	Percentage
Completed and returned	120	88.9
Not returned	15	11.1
Total	135	100

4.3 Background Information

Background information that includes Gender of the Respondents, Age of the Respondents and finally Education Level are highlighted.

4.3.1 Gender of the Respondents

Gender of the Respondents that is male and female is presented in the study.

Table 4.2 Gender of the Respondents

Table 4.2 tabulated the finding related to the gender of the respondents as shown below.

Table 4.2 Gender of the Respondents

Category	Frequency	Percentage
Male	71	61.7
Female	44	38.3
Total	115	100

On the gender, results showed that 61.7% of the sample were men while 38.3% were female. This can be explained by the fact that the male gender dominates in the business sector with women taking the household chores.

4.3.2 Age of the respondents

Ages of the Respondents were presented in the study.

Table 4.3 Age of the respondents

Table 4.3 tabulated the finding related to the ages of the respondents as shown below.

Table 4.3 Age of the respondents

Category	Frequency	Percentage
Below 30yrs	26	22.6
31-40yrs	38	33
Above 40yrs	51	44.4
Total	115	100

The researcher requested the respondents to indicate their ages. Findings showed that 44.4% were over 40 years. A total of 33% indicated 31years to 40 years while those below 30 years taking the lesser percentage. This implies that majority of the road project managers in Machakos county were aged below 40 years.

4.3.3 Education Level

Education level the Respondents that ranges from diploma to PHD were presented in the study.

Table 4.4: Level of Education

Table 4.4 tabulated the finding related to the level of education of the respondents as shown below.

Table 4.4: Level of Education

Education level	Frequency	Percentage (%)
PHD	0	0
Masters	14	12.2
Degree	63	54.8
Diploma	38	33.0
Total	115	100

The author sought to establish the education level of the respondents. Findings in Table 4.5 showed that 54.8% had a degree, 33% had a diploma with 12.2% having a masters degree. This shows that the sample respondents were educated and would understand the objectives of the study to answer the questions as required.

4.4 Contract Management Skills

The study sought to establish how contract management skills influence the performance of road construction projects in Machakos County.

Table 4.5: Aspects of Contract Management Skills

Table 4.5 tabulated the finding related to the aspects of contract management skills as shown below,

(1-Strongly Agree,2-Agree,3-Neutral, 4-Disagree, 5-Strongly Disagree)

Table 4.5: Aspects of Contract Management Skills

Statement	5	4	3	2	1	Mean	Std Dev
Project team implementing road projects in our County have relevant work experience	6%	10%	4%	20%	60%	3.95	.818
Lack of competency labour delays or stalls altogether the road construction project performance	12%	3%	20%	15%	50%	3.6364	.89506

Project team implementing road projects in our County are efficient in their work	5%	15%	10%	40%	30%	3.92	.803
Skilled labour provides quality performance of construction projects	10%	10%	0%	40%	40%	3.95	.818
The Project boosts the employees' abilities by helping to save time	7%	20%	10%	30%	33%	3.3636	.74239
Skilled labor saves wastefulness of resources during construction of roads	15%	20%	10%	35%	20%	3.3030	1.01504
The project manager communicates with their teams frequently.	30%	40%	15%	10%	5%	2.41	0.89
The project manager provides direction to inspire others.	30%	39%	10%	16%	5%	2.52	1.11
The project manager uses creative thinking process to solve problems.	6%	7%	9%	36%	42%	3.3636	.74239
Enthusiastic in communication, engages others and wins support	11%	5%	10%	24%	50%	3.9688	.96668

On contract management, the researcher requested respondents to state their level of agreement with various aspects of the contract management skills. The results established that 80% agreed that project team implementing road projects in Machakos County have relevant work experience. Also, the study established that 65% of the respondents agreed that lack of competency labour delays or stalls altogether the road construction project performance. Furthermore, the study established 65% of the respondents agreed that project team implementing road projects in Machakos County are efficient in their work

From the findings, the respondents agreed with a percentage of 80% that skilled labour provides quality performance of construction projects. Also, the respondents agreed with a percentage of 63% that the project boosts employees' abilities by helping save on time. Furthermore, the respondents agreed with a percentage of 55%

that skilled labour saved wastage of resources during road construction. However, the respondents disagreed with a percentage of 70% that the project manager communicates with their teams frequently. Finally, the respondents also disagreed with a percentage of 69% that that the project manager provides direction to inspire others.

4.5 Financial Management Skills

The study sought to establish how the financial management skills influence the performance of road construction projects in Machakos County

Table 4.6: Aspects of Financial Management Skills

Table 4.6 tabulated the finding related to the aspects of financial management skills as shown below.

(1-Strongly Agree,2-Agree,3-Neutral, 4-Disagree, 5-Strongly Disagree)

Table 4.6: Aspects of Financial Management Skills

			5	4	3	2	1	Mean	Std Dev
Statements									
Project manager's experience helped to eliminate unnecessary resources			5%	5%	10%	30%	40%	3.92	.803
The project was finished on or under budget			40%	20%	15%	20%	5%	2.50	1.20
The Project decreased the cost of some activities with no effect on quality.			5%	10%	5%	40%	40%	3.95	.818
The Project was handed upon the company's overall standards			7%	8%	20%	35%	30%	3.6364	.89506
The project deliverables always fulfil the customer requirements			15%	24%	5%	36%	20%	3.3030	1.01504

On financial management skills, respondents were requested to indicate their level of agreement with statements of the financial management skills. The findings showed that 70% of the respondents agreed that project manager's experience helped eliminate unnecessary wastage of resources. The study also established that the respondents agreed with a percentage of 80% that the project decreased the cost of some activities with no effect on quality. Furthermore, the study established that the respondents agreed with a percentage of 65% that the project was handed upon the company's overall standards. A further, the study established that the respondents agreed with a percentage of 56% that the project deliverables always fulfilled customer requirements. However, respondents disagreed with a percentage of 60% that the project was finished on or under budget.

4.6 Procurement Management Skills

The study sought to establish how procurement management skills influence the performance of road construction projects in Machakos County.

Table 4.7: Aspects of Procurement Management Skills

Table 4.7 tabulated the finding related to the aspects of procurement management skills as shown below.

(1-Strongly Agree, 2-Agree, 3-Neutral, 4-Disagree, 5-Strongly Disagree)

Table 4.7: Aspects of Procurement Management Skills

Statements	5	4	3	2	1	Mean	Std Dev
The project manager uses mind mapping to map objectives and milestones	10%	15%	15%	20%	40%	3.72	.943
Project manager organizes all resources and coordinates them efficiently and effectively	6%	4%	20%	40%	30%	3.92	.803
The project manager communicates instructions clearly to staff with communications tailored to the audience's interests	5%	5%	5%	40%	45%	4.03	.760

The project manager is willing to make decisions involving significant risk to gain a business advantage.	5%	15	10	50	20	3.92	.803
		%	%	%	%		
The project manager knows his team members' strengths and weaknesses and encourages them to take on challenging tasks	5%	20	20	30	25	3.53	1.03
		%	%	%	%		6
The project manager invests time in developing others' competencies, and invests time and effort in coaching them	40	15	10	32	3%	2.52	1.11
	%	%	%	%			
The project manager shows personal commitment to pursuing an ethical solution to a difficult business issue or problem	30	30	7%	25	8%	2.50	1.20
	%	%		%			

On procurement management, the researcher requested the respondents to indicate their agreement aspects relating to procurement management. Findings showed that 60% of the respondents were in agreement that all stakeholders always aware of the procurement contracts before implementation in my County. Further, 70% of the respondents agreed that involving stakeholders made them own procurement contracts and appreciate it as beneficiaries. Furthermore, the finding established that 85% of the respondents were in agreement that all stakeholder's participation made procurement contracts relevant through meeting user satisfaction requirements. Respondents also agreed with 70% that it was important to have stakeholders engaged before implementing procurement contracts for increased transparency. Further, 55% of the respondents agreed that all stakeholders always participated in monitoring and controlling. However, the study established that the respondents disagreed with a percentage of 55% that the project manager invests time in developing others' competencies, and invests time and effort in coaching them. Finally, respondents also disagreed with 60% that project manager shows personal commitment to pursuing an ethical solution to a difficult business issue or problem.

4.7 Aspects of Project Performance

The study sought to establish the aspects of project performance.

Table 4.8: Aspects of Project Performance

Table 4.8 tabulated the finding related to the aspects of project performance as shown below.

(1-Strongly Agree,2-Agree,3-Neutral, 4-Disagree, 5-Strongly Disagree)

Table 4.8: Aspects of Project Performance

Aspects of project performance	5	4	3	2	1	Mean	Std Dev
Timely completion of a road project makes the project successful	5%	15%	10%	30%	40%	3.92	.803
A road project that is completed within the set budget is considered successful	3%	2%	15%	20%	60%	3.95	.818
A road project whose quality of work is top notch is said to be successful	13%	25%	5%	27%	30%	3.60	1.141
A road project whose all stakeholders are satisfied is considered successful.	5%	10%	10%	30%	45%	3.9688	.96668

On project performance, the researcher requested the respondents to indicate their agreement with various aspects of the road project performance. From the results, 70% of the respondents agreed that timely completion of a road project makes the project successful. Also, 80% agreed that a road project that is completed with the set budget is considered successful. Furthermore, a road project whose quality of work is top notch is said to be successful as shown by a percentage of 57%. Finally, respondents agreed that a road project whose all stakeholders are satisfied is considered successful as shown by a percentage of 75%.

4.8 Correlation Analysis

The study sought to establish the influence of project management skills competencies on the performance of road construction projects in Machakos County. To achieve this, correlation was carried out since both independent and dependent variables are in ratio scale. According to Kothari (2004), product moment correlation should be carried out if and only if both dependent and independent variables are in either ratio or interval scale. If the correlation coefficient is -1 then there is an inverse relationship and an increase in dependent variable is associated with a decrease in independent variable and +1 there is a perfect positive significant relationship and an increase in dependent variable is associated with an increase in independent variable (Kothari, 2011; Oso & Onen, 2009).

The study findings depicted in Table 4.10 indicated that there was a significant positive relationship between contract management skills and performance of road construction projects in Machakos County ($R=0.6330$). This implies that a unit change in contract management skills, increases performance of road construction projects by 63.3%.

Secondly there was a positive significant relationship between procurement management skills and performance of road construction projects in Machakos County ($R=0.460$, $p\text{-value} < 0.05$). This implies that a unit change in procurement management skills increases performance of road construction projects by 46.0%.

Finally, there was a positive and significant relationship between financial management skills and performance of road construction projects in Machakos County ($R=0.425$). This implies that a unit change in financial management skills, increases performance of road construction projects by 42.5%. The rest of the results have been summarised in the table 4.9.

The findings are consistent with those found by Rajasekar (2014) who contended that there is significant relationships between the project management hard skills competencies and project performance, but the extent of the project management hard skills competencies' influence varies from the most effective to the least effective project management hard skills competencies.

Table 4.9: Correlations Analysis

		CMS	PMS	FMS	PRS
CMS	Pearson Correlation	1	.503**	.881**	.613**
	Sig. (2-tailed)		.000	.000	.000
	N	115	115	115	115
PMS	Pearson Correlation	.503**	1	.497**	.460**
	Sig. (2-tailed)	.000		.000	.000
	N	115	115	115	115
FMS	Pearson Correlation	.881**	.497**	1	.425**
	Sig. (2-tailed)	.000	.000		.000
	N	115	115	115	115
PRS	Pearson Correlation	.613**	.460**	.425**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	115	115	115	115

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

According to Kothari (2004), product moment correlation should be carried out if and only if both dependent and independent variables are in either ratio or interval scale. If the correlation coefficient is -1 then there is an inverse relationship and an increase in dependent variable is associated with a decrease in independent variable and +1 there is a perfect positive significant relationship and an increase in dependent variable is associated with an increase in independent variable (Kothari, 2011; Oso & Onen, 2009).

4.9 Regression Analysis Results

Multiple linear regression analysis was done to test the cause-effect relationship between the variables. The average ratings for the three independent variables (contract management skills, procurement management skill and financial management skill) were used as the indicators for input into the regression model.

Three measures of performance of road construction projects (achieving project objectives, project time schedule and project cost) were used.

4.9.1 Regression Model

The coefficient of determination is shown by table 4.11. Table 4.11 showed R^2 of 0.858 that implies that the variables used in the study explained 85.8% of the change in performance of road construction projects in Machakos County. This shows that the variables used as indicators were the main factors influencing project performance. The rest of the results have been summarised in the 4.10.

Table 4.10: Regression Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.927 ^a	.858	.847	.44145

4.9.2 Analysis of Variance of the Regression (ANOVA)

The regression output in table 4.12 presents the source of variance, mean of variances and the f value. The results indicate that the overall model was significant (f value = 209.191; $p < 0.05$) and could provide important results. This indicates that the model could provide some predictive significance and was a good fit. The rest of the results have been summarised in the 4.11.

Table 4.11: Analysis of Variance of the Regression

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	10.867	4	2.717	209.191	.000 ^b
Residual	1.429	110	.013		
Total	12.296	114			

a. Dependent : contract management skills, procurement management skills and financial management skills

b. Predictors: performance of road construction projects

4.9.3 Significance of Independent Variables

4.9.3.1 Contract management skills

From the regression results in table 4.3 the coefficient of contract management skills was found to be 0.892. This value shows that holding other variables in the model constant, an increase in procurement management skills by one percent causes the performance of road construction projects to increase by 89.2%. The value of the coefficient is also positive. The positive effect shows that there is a positive relationship between the contract management skills and performance of road construction projects. The coefficient is not just positive but also statistically significant with a t-statistic value of 10.193. In statistics, a t-statistic of 2 and above is normally accepted to be significant in statistical inference. The standard error was found 0.087 and the p-value was found to be 0.002. The variable was also found to be the second most influential variable on the performance of road construction projects. Finally, the respondents also disagreed with a percentage of 69% that the project manager provides direction to inspire others. The findings support (Bajari, 2014) who cited that management capability is one of the major criteria for evaluating construction contractors during prequalification and tender evaluation. The research findings further reaffirm Chipulu, (2013) who laments that developing competencies help project managers to keep pace and help adapt to the current market and industry demands.

4.9.3.2 Procurement management skills

The regression results in table 4.3 indicate that the coefficient of procurement management skills was found to be 0.969. This value shows that holding other variables in the model constant, an increase in procurement management skills by one percent causes the performance of road construction projects to increase by 96.9%. The value of the coefficient is also positive. The positive effect shows that there is a positive relationship between the procurement management skills and performance of road construction projects. The coefficient is not just positive but also statistically significant with a t-statistic value of 11.889. In statistics, a t-statistic of 2 and above is normally accepted to be significant in statistical inference. The standard error was found 0.082 and the p-value was found to be 0.001. The variable was also found to be the most influential variable on the performance of road

construction projects. The findings concur with those of Michell, Bowen & Pearl (2014) who remarked that the primary concern of construction clients is that their projects are completed within budget, on time and at the required level of quality. The study findings also add to the findings of the study by Yates and Eskander (2013) who states that a successful project is a project that has been completed on schedule, within budget, within scope and satisfied the required quality.

4.9.3.3 Financial management skills

Finally, from the regression results in table 4.3 the coefficient of financial management skills was found to be 0.683. This value shows that holding other variables in the model constant, an increase in financial management skills by one percent causes the performance of road construction projects to increase by 68.%. The value of the coefficient is also positive. The positive effect shows that there is a positive relationship between the financial management skills and performance of road construction projects. The coefficient is not just positive but also statistically significant with a t-statistic value of 13.312. In statistics, a t-statistic of 2 and above is normally accepted to be significant in statistical inference. The standard error was found 0.078 and the p-value was found to be 0.004. The variable was also found to be the third most influential variable on the performance of road construction projects. The rest of the results have been summarised in the table 4.12 below.

Table 4.12: Significance of Independent Variables

Model	Un-standardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	692	.033		.000	.000
Contract management skills	.892	.087	.814	10.193	.002
1 Procurement management skills	.969	.082	.855	11.889	.001
Financial management skills	.683	.078	.877	13.312	.004

$$y = 0.692 + 0.892x_1 + 0.969x_2 + 0.683x_3 + \varepsilon$$

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes and discusses study findings while at the same time giving conclusions and recommendations. This chapter is based on the background, problem and the objectives in chapter one, and also the in-depth literature review done in chapter two. Chapter three set out the methodology that the study used to collect data as well as laying out the analysis methods that were used. Chapter four then analysed the data obtained from the research instruments.

5.2 Summary of the Findings

The following sections present the summary of findings for each study objective.

5.2.1 Contract Management Skills

The study established that the project team implementing road projects in the Machakos County have relevant work experience. The study also established that lack of competency labour delays or stalls altogether the road construction project performance. Furthermore; the study established that the skilled labour provides quality performance of construction projects and that the project boosts the employees' abilities by helping to save time. The study further established that skilled labour saved wastefulness of resources during construction of roads and that the project manager uses creative thinking process to solve problems. However, the study established that the project manager communicates with their teams frequently and that the project manager provides direction to inspire others. Generally, the study established that contract management skills affected the performance of road construction projects in Machakos County.

5.2.2 Procurement Management Skills

The study established that the project manager uses mind mapping to come up with the project objectives and milestones. The study also established that project managers organized resources and coordinated them efficiently and effectively and that the manager communicated instructions clearly to staff with communications

tailored to the audience's interests. The study further established that the project manager made decisions involving significant risk to gain business advantage. However, the study found out that the project manager invested time in the development of staff competence and invested time and effort in their coaching. Finally, respondents also agreed that the project manager showed personal commitment pursuant to ethical solutions to difficult issues facing the business or project. Generally, the study established that procurement management skills affected the performance of road construction projects in Machakos County.

5.2.3 Financial Management Skills

Research findings established that the experience of project manager helped eliminate losses of resources. The study established that the project managers decreased the cost of some activities with no effect on quality. Furthermore; the study established that the project was handed upon the company's overall standards. The study further established that the deliverables always fulfil the customer requirements. However, the study established that the project was not finished on or under budget. Generally, the study established that procurement management skills affected the performance of road construction projects in Machakos County.

5.3 Conclusion

The following are the conclusions of the study;

5.3.1 Contract Management Skills

The study found that contract management skills positively and significantly affected performance of road construction projects in Machakos County. The coefficient of contract management skills was found to be 0.892. This value shows that holding other variables in the model constant, an increase in procurement management skills by one percent causes the performance of road construction projects to increase by 89.2%. This implies that if a contract fails to address the relevant issues required in the agreement, it becomes hard for the contracting company to base a positive working relationship with the contractor.

5.3.2 Procurement Management Skills

The study established that procurement management skills positively and significantly affected the performance of road construction projects in Machakos County. The coefficient of procurement management skills was found to be 0.969. This value shows that holding other variables in the model constant, an increase in procurement management skills by one percent causes the performance of road construction projects to increase by 96.9%. This shows that procurement management skills are critical in the construction industry and that the effectiveness and efficiency of the processes have considerable impact on the success or failure of road construction projects in Machakos County.

5.3.3 Financial Management Skills

The research findings showed that financial management skills had significant and a positive effect on the performance of road construction projects in Machakos County. The coefficient of financial management skills was found to be 0.683. This value shows that holding other variables in the model constant, an increase in financial management skills by one percent causes the performance of road construction projects to increase by 68%. This implies that financial management skills improve product quality and leads to reduction in the cost of procurement. This in turn helps in the achievement of quality products and services, timely delivery and cost effectiveness therefore enhancing performance of road construction projects in Machakos County.

5.4 Recommendations

The following are the recommendations of the study;

5.4.1 Contract Management Skills

This research recommends that project managers need to establish a highly co-operative project team in which competent specialist contractors and skilled laborers are staffed. Hiring the right project players in terms of talent and commitment could yield a much higher productive team in terms of creativity and innovation hence success is achieved.

5.4.2 Procurement Management Skills

Procurement management skills was found in this study to be one of driving force of the performance of road construction projects in Machakos County. It is therefore recommended that the capacity of procurement staff be developed through training so as to fully understand and accurately implement provisions of the contract. Stringent procurement performance measures should also be provided within contract clauses so that intentionally erring officials are adequately punished.

5.4.3 Financial Management Skills

This study recommends hiring of financial managers with high level of competence and experience for the right project leadership team to lead implementation of construction projects. This must guarantee proper program of finance which should be followed by good supervision/inspection to ensure it is followed to the letter and all the amendments related to finance issues for successful project delivery.

5.5 Suggestions for Further Research

This research was intended to identify the project management skills competencies on the performance of road construction projects in Machakos County. Future research should focus on other regions within the country as well as inclusion of other factors that could affect effective the performance of road construction projects in Machakos County. In addition, the study suggests that detailed research could be done to ascertain the effect of each component of the project management hard skills competencies individually and not all of them in a package as were the case in this study. Another research is recommended on individual players within each force such as the effect of contract management skills, procurement management skills and financial management skills on the performance of road construction projects in Machakos County to allow for generalization of findings to guide policy in project management.

REFERENCES

- Aftab, J. (2012). Framework for Project Managers to Manage Construction Safety'. *International Journal of Project Management*, 23, 329-341.
- Ahmad, W. (2017). 'Partnering in Major Contracts: Paradox and Metaphor'. *International Journal of Project Management*, 25 (4), 386-393.
- Ayangade, K. (2013). 'Design Documents Quality in the Japanese Construction Industry: Factors Influencing and Impacts on Construction Process'. *International Journal of Project Management*, 21 (7), 537-546.
- Bajari, L. (2014). 'Conceptual Model of Partnering and Alliancing'. *Journal of Construction Engineering and Management*, 133 (3), 225-234.
- Beijer, N. (2014). Causes of Delay in Large Construction Projects'. *International Journal of Project Management*, 24 (4), 349-357.
- Besteiro, F. (2015). Incentives versus Transaction Costs: A Theory of Procurement Contracts'. *Rand Journal of Economics*, 32 (3), 387-407.
- Bhardwaj, A. (2015). Effective Partnering Tools in Construction: A Case Study on MTRC TKE Contract in Hong Kong'. *International Journal of Project Management*, 22 (3), 253-263.
- Blok, Z. (2015). An Analysis of Success Factors and Benefits of Partnering in Construction'. *International Journal of Project Management*, 18, 423-434.
- Boyatzis, Q. (2014). 'Cooperative Innovation Projects: Capabilities and Governance Mechanisms'. *The Journal of Product Innovation Management*, 26 (1), 58-70.
- Branco, K. and Rodrigues, L. (2014). New Project Procurement Process'. *Journal of Management in Engineering*, 17 (4), 192-201.
- Buigut, M. & Kipkorir, O. (2014). Key Performance Indicators for Measuring Construction Success'. *Benchmarking: An International Journal*, 11 (2), 203-221.
- Carbone, P. (2014). A Comparative Study of Causes of Time Overruns in Hong Kong Construction Projects'. *International Journal of Project Management*, 15 (1), 55-63.
- Carlvaloh, F. (2014). 'Establishment of Critical Success Factors for Construction Partnering'. *Journal of Management in Engineering*, 16 (2), 84-92.
- Caupin, O. & Snyder, C. (2015). 'Infrastructure of Partnering for Construction Projects'. *Journal of Management in Engineering*, 17 (4), 229-237.

- Chan, S. and Kumaraswamy, N. (2014). 'Behavioral Aspects in Construction Partnering'. *International Journal of Project Management*, 21 (5), 333-343.
- Chandra, M. (2017). 'Model for Construction Budget Performance - Neural Network Approach'. *Journal of Construction Engineering and Management*, 123 (3), 214-222.
- Cheung, P. (2014). 'Critical Success Factors for Different Project Objectives'. *Journal of Construction Engineering and Management*, 125 (3), 142-150.
- Chiappori, Z. and Salanie, K. (2013). 'Project Success - A Survey'. *Journal of Construction Research*, 5 (2), 211-231.
- Chipulu, L. (2013). 'Fit for Purpose Contractual Relations: Determining a Theoretical Framework for Construction Projects'. *European Journal of Purchasing & Supply Management*, 3 (3), 127-135.
- Chua, P. (2014). Supply Strategy and Network Effects - Purchasing Behaviour in the Construction Industry'. *European Journal of Purchasing & Supply Management*, 6 (3-4), 207-215.
- Colins, C. (2013). 'Consequences of Competitive Bidding in Project-Based Production'. *Journal of Purchasing & Supply Management*, 11 (4), 173-181.
- Cox, L. and Thompson, D. (2013). 'Procurement Effects on Cooperation in Client-Contractor Relationships'. *Journal of Construction Engineering and Management*, 134 (2), 103- 111.
- Crawford, M. & Pollack, P. (2014). Achieving Suitable Competition in Buyer-Supplier Relationships: The Case of AstraZeneca'. *Journal of Business to Business Marketing*, 15 (4), 425-454.
- Dikmen, D. (2017). 'Partnering the Construction of a Swedish Pharmaceutical Plant: Case Study'. *Journal of Management in Engineering*, 24 (4), 227-233.
- Dubois, K. (2015). The importance of human skills in project management professional development, *International Journal of Managing Projects in Business*, 3:3, pp. 495-516.
- Economic survey, (2015). Measuring the Impact of a major project management educational program: The PMP case in Finmeccanica, *International Journal of Project Management*, 31, 285-298.
- Edward, M. and Pearl, P. (2013). A competency model for effectiveness in managing multiple projects, *Journal of High Technology Management Research* 18 pp. 118-131.

- Egan, D. (2013). Information Systems project manager soft competencies: A project-Phase investigation, *Project Management Journal*, 41:1, pp. 61-80.
- Eriksson, T. (2013). A project manager's optimism and stress management and IT project success, *International Journal of Managing Projects in Business*, 4:1, pp 10-27.
- Eskander, Z. (2013). PM critical competency index: IT execs prefer soft skills, *International Journal of Project Management*, 28, pp 663-671.
- Faridi, O. (2014). Indicators for measuring performance of building construction companies in Kingdom of Saudi Arabia. *Journal of King Saud University - Engineering Sciences*, 25(2), 125-134.
- Farrington, P. (2014). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of occupational and organizational psychology*, 63(1), 1-18.
- Fayek, A. & Omar, M. (2016). Linking project health to project performance indicators: Multiple case studies of construction projects in Saudi Arabia. *International Journal of Project Management*, 30(3), 296-307.
- Flores, K. (2015). The empowering leadership questionnaire: The construction and validation of a new scale for measuring leader behaviors. *Journal of Organizational Behavior*, 249-269.
- Gadde, F. (2014). Competencebased VET in the Netherlands: background and pitfalls. *Journal of Vocational Education & Training*, 56(4), 523-538.
- Geoghegan, M. and Dulewicz, L. (2013). Using the balanced scorecard to measure supply chain performance. *Journal of Business logistics*, 21(1), 75.
- Hamid, J. (2015). Competencies of project managers in international NGOs: Perceptions of practitioners. *International Journal of Project Management*, 33(1), 116-125.
- Hodges, K. (2016). Impact of risk management on project performance: the importance of soft skills. *International Journal of Production Research*, 53(2), 321-340.
- Hodges, O. (2016). The impact of a training programme designed to target the emotional intelligence abilities of project managers. *International Journal of Project Management*, 28(5), 461-468.

- Isik, O. Arditi, P. Dikmen, M. & Birgonul, L. (2014). Management's perception of key performance indicators for construction. *Journal of construction engineering and management*, 129(2), 142-151.
- Keil, A. (2013). Senior management perceptions of project management competence. *International Journal of Project Management*, 23(1), 7-16.
- Kendra, Y. (2014). Hard and soft projects: a framework for analysis. *International Journal of Project Management*, 22(8), 645-653.
- Kenya National Bureau of Statistics, (2016). Effects of human resource management practices on logistics and supply chain competencies – evidence from China logistics service market. *International Journal of Production Research*, 53(10), 2885-2903.
- Ketchen, A. and Hult, O. (2006). Developing project management competency: perspectives from the construction industry. *International Journal of Project Management*, 18(2), 111-124.
- Khalfan, P. (2015). Dynamic capabilities: what are they? *Strategic management journal*, 1105-1121.
- Khan, D. (2013). The skills and career path of an effective project manager. *International Journal of Project Management*, 19(1), 1-7.
- Kliem, O. and Ludin, P. (2013). Evaluating Organizational Competencies for Projects in the Construction Industry. *International Journal of Architecture, Engineering and Construction*, 5(4).
- Koome, V. (2017). What practitioners consider to be the skills and behaviours of an effective people project manager? *International Journal of Project Management*, 29(8), 994-1002.
- Kumar, J. and Markeset, L. (2014). Looking again at current practice in project management. *International Journal of Managing Projects in Business*, 4(4), 553- 572.
- Laedre, S. (2013). Learning on the jagged edge. *Journal of Management in Engineering*, 12(1), 23-25.
- Lei, Z. and Skitmore, L. (2004). Impact of corporate strengths/weaknesses on project management competencies. *International Journal of Project Management*, 27(6), 629-637.
- Leung, A. (2013). Trust in project relationships—inside the black box. *International Journal of Project Management*, 22(3), 175-182.

- Love, M. and Wardani, L. (2015). Measuring the relationship between managerial competencies and performance. *Journal of Management*, 32(3), 360- 380.
- Ludin, D. (2013). Key project management practices affecting Singaporean firms' project performance in China. *International Journal of Project Management*, 27(1), 59-71.
- Lysons, L. and Farrington, K. (2015). Improving project management performance of large contractors using benchmarking approach. *International Journal of Project Management*, 26(7), 758-769.
- Maloney, L. (2013). Examining the benefits of project management professional (PMP) certification for IS project managers and organizations. *Journal of International Information Management*, 13(4), 4.
- Manley, S. (2013). Confounded by competencies? An evaluation of the evolution and use of competency models. *New Zealand Journal of Psychology*, 34(2), 117.
- Mantel, O. (2013). Human resource practices, supply chain performance, and wellbeing. *International Journal of Manpower*, 33(7), 769-785.
- Masterman, P. (2014). Exploring the value of project management: linking project management performance and project success. *International Journal of Project Management*, 32(2), 202-217.
- Mathooko, M. (2016). Competence development-some background thoughts. *The journal of agricultural education and extension*, 7(4), 147-158.
- Matu, Y. (2016). IT project managers' construction of successful project management practice: a repertory grid investigation. *Information Systems Journal*, 19(3), 255-282.
- Michell, M. Bowen, S. & Pearl, O. (2014). What do we know about the effective project manager? *International Journal of Project Management*, 9(2), 99-104.
- Mir, J. & Pinnington, L. (2014). Project management and conflict resolution. *Project Management Journal*, 26, 45-54.
- Munywoki, O. (2014). Customer satisfaction: the project manager's role. *International Journal of Project Management*, 10(2), 123-127.
- Muturi, K. (2014). Initial metrics and pilot program results for measuring the performance of the Canadian construction industry. *Canadian Journal of Civil Engineering*, 35(9), 894-907.
- Napier, A. (2015). Understanding human competence at work: an interpretative approach. *Academy of management journal*, 43(1), 9-25.

- Napier, T. Keil, E. and Tan, R. (2013). Mapping the dimensions of project success. *Project Management Journal*, 28(2), 5-13.
- Nesbit, M. and Martin, O. (2014). Determination of key performance indicators with enterprise resource planning systems in engineering construction firms. *Journal of construction engineering and management*, 135(10), 965-978.
- Neto, P. and Mourao, G. (2014). Project management scholarship: Relevance, impact and five integrative challenges for business and management schools. *International Journal of Project Management*, 30(6), 686-696.
- Nyika, G. (2014). PMP® certification as a core competency: Necessary but not sufficient. *Project Management Journal*, 42(1), 31-41.
- Ofori, L. (2014). Common competencies for all healthcare managers: the healthcare leadership alliance model. *Journal of Healthcare Management*, 53(6), 360.
- Ogolla, Z. (2017). Competency mapping in project management: An action research study in an engineering company. *International Journal of Project Management*, 33(4), 784-796.
- Olsen, O. (2015). Individual competencies for managers engaged in corporate sustainable management practices. *Journal of Cleaner Production*, 106, 497-506.
- Oluka, M. and Basheka, L. (2014). Developing a benchmarking model for construction projects in Hong Kong. *Journal of construction engineering and management*, 139(6), 705-716.
- Pallack, O. (2014). Development of performance metrics for phase-based capital project benchmarking. *International Journal of Project Management*, 34(3), 389-402.
- Pareto, L. (1923). A Process for Developing Partnerships with Subcontractors in the Construction Industry: An Empirical Study'. *International Journal of Project Management*, 25 (3), 250-256.
- Parry, K. (2014). 'Factors Affecting Cost Performance: Evidence from Indian Construction Projects'. *International Journal of Project Management*, 23 (4), 283- 295.
- Patanakul, S. (2015). 'Trust in Project Relationships - Inside the Black Box'. *International Journal of Project Management*, 22 (3), 175-182.
- Pinto, M. (2015). 'Quality, Environmental, and Health and Safety Management Systems for Construction Engineering'. *Journal of Construction Engineering and Management*, 129 (5), 562-569.

- Rainsbury, L. Hodges, L. Burchell, P. & Lay, M. (2016). 'Procurement Routes in Public Building and Construction Projects'. *Journal of Construction Engineering and Management*, 132 (7), 689-696.
- Ringen, Y. (2015). The Low-Trust Route to Economic Development: Inter-Firm Relations in the UK Engineering Construction Industry in the 1980s and 1990s'. *Journal of Management Studies*, 33 (6), 787-808.
- Rotimi, M. and Ramachandra, Z. (2012). 'The Role of Trust and Contractual Safeguards on Cooperation in Non-Equity Alliances'. *Journal of Management*, 30 (4), 471-485.
- Saade, Q. (2014). 'Construction Product/Service and Customer Satisfaction'. *Journal of Construction Engineering and Management*, 128 (6), 522-529.
- Salim, A. (2013). 'Problematic Issues Associated with Project Partnering - The Contractor Perspective'. *International Journal of Project Management*, 20 (6), 437-449.
- Slevin, O. (2014). 'Causes of Construction Delays: Traditional Contracts'. *International Journal of Project Management*, 20 (1), 67-73.
- Soderlund, P. (2014). 'Governance of Complex Procurements in the Oil and Gas Industry'. *Journal of Purchasing & Supply Management*, 11 (1), 1-13.
- Starkweather, W. and Stevenson, R. (2014). 'Potential for Implementing Relational Contracting and Joint Risk Management'. *Journal of Management in Engineering*, 20 (4), 178- 189.
- Sunindijo, M. and Zou, T. (2013). 'Relational Contracting and Teambuilding: Assessing Potential Contractual and No contractual Incentives'. *Journal of Management in Engineering*, 24 (1), 48-63.
- Takey, M. & Carvalho, A. (2015). 'Causes and Effects of Delays in Malaysian Construction Industry'. *International Journal of Project Management*, 25 (5), 517-526.
- Taplin, R. (2015). Implementation of Environmental Management in the Hong Kong Construction Industry'. *International Journal of Project Management*, 20 (7), 535-543.
- Usman, W. (2014). 'Design and Build on a Complicated Redevelopment Project in Hong Kong: The Happy Valley Racecourse Redevelopment'. *International Journal of Project Management*, 18 (2), 125-129.

- Wambua, U. (2014). Partnering Mechanism in Construction: An Empirical Study on the Chinese Construction Industry'. *Journal of Construction Engineering and Management*, 132 (3), 217-229.
- Wambugu, O. (2017). 'Contracting Strategies for the Project Environment'. *European Journal of Purchasing & Supply Management*, 4 (1), 31-41.
- Wanyoike, Q. (2017). 'Comparing Procurement Methods for Design-Build Projects'. *Journal of Construction Engineering and Management*, 132 (3), 230-238.
- Wesselink, N. (2014). 'Trust in Construction Partnering: Views from Parties of the Partnering Dance'. *International Journal of Project Management*, 22 (6), 437-446.
- Wiangnak, C. (2013). 'Changing Governance of Supply Chains in the Building Industry: A Multiple Case Study'. *European Journal of Purchasing & Supply Management*, 6 (3-4), 217-225.
- Woodruffe, X. (2014). 'Framework for Project Managers to Manage Construction Safety'. *International Journal of Project Management*, 23, 329-341.
- World Bank, (2011). 'Partnering in Major Contracts: Paradox and Metaphor'. *International Journal of Project Management*, 25 (4), 386-393.
- Yun, X. Choi, O. Oliveira, M. & Mulva, L. (2016). 'Design Documents Quality in the Japanese Construction Industry: Factors Influencing and Impacts on Construction Process'. *International Journal of Project Management*, 21 (7), 537-546.

APPENDICES

Appendix I: Letter of Transmittal of Data Collection Instruments

Jenniffer Chepkemoi,

P.O Box 30197-00100

Nairobi,

15 /10/ 2018

Dear Respondent,

**RE: INFLUENCE OF PROJECT MANAGEMENT HARD SKILLS
COMPETENCY ON PERFORMANCE OF ROAD CONSTRUCTION
PROJECT.**

I am a Master of Arts' in Project Planning and Management student at the University of Nairobi. I am undertaking a research on influence of project management hard skills competency on performance of road construction project. You have been selected as one of the respondents for the study. Kindly spare a few minutes and answer the attached questionnaire. The information will be used for academic purposes only, treated with utmost confidentiality and will not be shared with anyone whatsoever. Do not write your name anywhere on the questionnaire. I therefore request you to respond to all questions honestly. Thanking you most sincerely for your support.

Yours Sincerely,

Jenniffer Chepkemoi

07222 469343

Appendix II: Questionnaire

TOPIC: INFLUENCE OF PROJECT MANAGEMENT HARD SKILLS COMPETENCY ON PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN MACHAKOS COUNTY, KENYA.

This questionnaire is administered on project managers and support staff from the selected construction firms in Machakos County.

The information to be given in this questionnaire will be confidential and purely for academic purposes.

The Questionnaire aims: - to establish how project manager's contract management skills influence the performance of construction firms in Machakos County; to determine how the project manager's procurement skills influence the performance of construction firms in Machakos County; and to examine how the project manager's financial management skills influence the performance of construction firms in Machakos County.

SECTION A: RESPONDENTS DEMOGRAPHICS

(Fill in the blank spaces and tick once in the below given choices of all questions)

1. Age bracket:

20-29 years []

30-39 years []

40-49 years []

Above 50 years []

2. Gender:

Male []

Female []

3. Highest level of education:

Masters [] Certificate []

Bachelor's degree [] Others (specify).....

Diploma []

4. What is your overall experience as a project manager?

Less than 5 years

5– 9 years

10 – 15 years

More than 15 years

5. What is your project size based on the project's budget on which you have worked as a project manager (*Small is less than 50k; Intermediate is 50k\$ to 150k\$; Large is 150to 300k\$; and Very Large is more than 300k\$*)

Small Intermediate Large Large Very Large

SECTION B: PROJECT MANAGER'S COMPETENCIES

6. Kindly tick the number that describes the degree to which these statements are reflective of your project management practices (*Use a scale of 1-5 where 5- Strongly agree; 4-Agree; 3-Neutral; 2- disagree; 1- strongly disagree.*)

No.	INDICATOR	1 SA	2 A	3 N	4 D	5 SD
	FINANCIAL MANAGEMENT SKILLS					
2	Project manager's experience helped to eliminate unnecessary resources					
3	The project was finished on or under budget					
4	The project decreased the cost of some activities with no effect on quality					
5	The Project was handed upon the company's overall standards					
6	The project deliverables always fulfil the customer requirements					
	MANAGEMENT SKILLS					
1	The project meets its business objectives					
2	Setting alternative plans has reduced the unexpected risks possibility.					

3	The project met most of the scheduled milestones					
4	The project was finished on time					
5	The project boosts the employees' abilities by helping to save time.					
6	The critical tasks and delivery dates were not slipping					
7	The project manager communicates with their teams frequently.					
8	The project manager provides direction to inspire others.					
9	The project manager uses creative thinking process to solve problems.					
10	Enthusiastic in communication, engages others and wins support					
	PROCUREMENT SKILLS					
1	The project manager use mind mapping to map objectives and milestones.					
2	Organizes all resources and coordinates them efficiently and effectively					
3	The project manager communicates instructions clearly to staff with communications tailored tothe audience's interests					
4	The project manager is willing to make decisions involving significant risk to gain a business advantage.					
5	The project manager knows team members' strengths and weaknesses and encourages them to take on challenging tasks					

6	The project manager invests time in developing others' competencies, and invests time and effort in coaching them					
7	The project manager shows personal commitment to pursuing an ethical solution to a difficult business issue or problem.					

Appendix V: List of Construction Firms in Machakos County






1. AMBWERE COMPLEX CONSTRUCTION
2. ASSIS CONS. CO. LTD
3. BLAGE CONTRACTORS
4. BUILDMORE CONSTRUCTION CO. LTD
5. CONTOUR CONSTRUCTION
6. DIHA CONSTRUCTION CO LTD
7. JANE G. B CONTRACTORS LTD
8. KALIAT CONTRACTORS CO.
9. KIMWAYS CONSTRUCTION COMPANY LTD
10. MUMBE CONSTRUCTION COMPANY
11. NDANE CONSTRUCTION CO. LTD
12. RUDAS CONSTRUCTION LTD
13. S.D CONSTRUCTION LTD
14. TANDASA CONSTRUCTION COMPANY LTD
15. VEE DEVELOPERS

Source: National Construction Authority, (2015)

Appendix VI: Map of Machakos County



Appendix VI: Research Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 774347	Date of Issue: 24/October/2019
RESEARCH LICENSE	
	
This is to Certify that Ms. JENNIFFER CHEPKEMOI of University of Nairobi, has been licensed to conduct research in Machakos on the topic: INFLUENCE OF PROJECT MANAGEMENT SKILLS COMPETENCY ON PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN MACHAKOS COUNTY, KENYA for the period ending : 24/October/2020.	
License No: NACOSTI/P/19/2369	
774347 Applicant Identification Number	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code 
NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.	

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is Guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014

CONDITIONS

1. The License is valid for the proposed research, location and specified period
2. The License any rights thereunder are non-transferable
3. The Licensee shall inform the relevant County Director of Education, County Commissioner and County Governor before commencement of the research
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies
5. The License does not give authority to transfer research materials
6. NACOSTI may monitor and evaluate the licensed research project
7. The Licensee shall submit one hard copy and upload a soft copy of their final report (thesis) within one of completion of the research
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice

National Commission for Science, Technology and Innovation
off Waiyaki Way, Upper Kabete,
P. O. Box 30623, 00100 Nairobi, KENYA
Land line: 020 4007000, 020 2241349, 020 3310571, 020 8001077
Mobile: 0713 788 787 / 0735 404 245
E-mail: dg@nacosti.go.ke / registry@nacosti.go.ke
Website: www.nacosti.go.ke

Appendix VII: Similarity Report

INFLUENCE OF PROJECT MANAGEMENT SKILLS ON PERFORMANCE OF ROAD CONSTRUCTION PROJECTS IN MACHAKOS COUNTY, KENYA

ORIGINALITY REPORT

14%	10%	1%	10%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Kenyatta University Student Paper	3%
2	Submitted to Mount Kenya University Student Paper	1%
3	Submitted to Pioneer International Univeristy Student Paper	1%
4	meu.edu.jo Internet Source	1%
5	ijrdo.org Internet Source	1%
6	Submitted to Strathmore University Student Paper	1%
7	Submitted to Asia e University Student Paper	<1%
8	Submitted to Argosy University Student Paper	<1%