

**INFLUENCE OF PUBLIC PROCUREMENT PROCESS ON COMPLETION OF ROAD
CONSTRUCTION PROJECTS IN KENYA: A CASE OF NAIROBI COUNTY, KENYA**

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DECLARATION

This Research Project paper is my original work and has not been submitted to any other college, institution or university other than the University of Nairobi.

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DEDICATION

I dedicate this research to my family and friends. Special gratitude to my wife Jacqueline Aronda for her love and encouragement. My daughter Sanura Singo for her patience with me especial when I could not get time to be with her. My Father Julius Obong'o who has been my source of inspiration, wisdom and knowledge. I also dedicate this research paper to my late mother, Wilfrida Akumu for her encouragement in my life and a source of my inspiration-May her soul Rest in Peace.

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LIST OF ABBREVIATIONS AND ACRONYMS

ABV	: Average Bid Value
ICT	: Information Communication and Technology
ISO	: International Organization for Standards
NA	: New Average
NH	: New Highest Offer
NL	: New Lowest Offer
PPADA	: Public Procurement and Asset Disposal Act
PPDA	: Public Procurement and Disposal Act
QMS	: Quality Management Systems
RFP	: Request for Proposal
RFQ	: Request for Quotation
RFT	: Request for Tender
SAW-G	: Simple Additive Weighting with Grey Relations
TOPSIS	: Technique for Order Preference by Similarity to Ideal Solutions

ABSTRACT

Road construction sector has registered huge growth in the past decade, with massive projects being undertaken across the country in effort to upgrade the road infrastructure, to global standards and boost the economic growth. In advance to the commencement of any road construction project, prior planning operations have to take place in order to plan for the road construction and also identify the contractors who will undertake the actual construction works. Public procurement processes take precedence in the course of identification of the potential contractors and also lays down the framework for engagement throughout the course of the project. The research sought to find the influence of Public procurement on the completion of road construction projects in Kenya. researcher examined public procurement processes; needs identification, bids solicitation, bids evaluation and contract management and their impact on the road construction projects completion. The study adopted descriptive research methodology as the research design. Descriptive methodology was convenient for this research since it enabled the researcher to structure the data collection tools in a heterogeneity way to accommodate both qualitative and quantitative data aspects of the research tool. The target population comprised of the licensed road construction companies operating within Nairobi region and the ministry of roads and public works. The study was undertaken in Nairobi City County, motivated by the fact that the region has the highest concentration in the number of road construction projects being undertaken by the national government. The primary data collection tool used was questionnaire. The researcher sought opinions from the respondents on public procurement process and completion on roads construction. The study makes a finding that needs identification assists in the determination of all the critical project construction initiatives that are central to the timely completion of road construction projects. The study established that bids solicitation process offers the potential contractors opportunity to present their proposals on road construction laying down critical details on the way to deliver on the road construction project. The study found that, financial capitation and the overall determination of road construction budget in line with aspects of quality forms a critical basis in the bid evaluation process. The study established that that the approach and favorable model to management and administration of the road construction process is critical in the timely completion of a road construction projects. The study concludes procurement processes, including; needs identification, bids solicitation, bids evaluation and contract management wields significant influence on time completion of road construction projects. The study recommends that, qualified professionals should certify the needs identification process in project preplanning. The study also recommends that, financial components should form the primary qualification in bid solicitation and subsequent bid evaluation. Finally, the study, recommends for the adoption of a formal charter laying down agreeable rules of engagement throughout the period of project implementation.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Public procurement offers a framework that can be used to implement initiatives and programs that are geared towards the realization of social-economic objectives (Kiiru, 2015). Further, procurement in public is a vital economic pillar as it cuts across all the economic sectors. In addition, as independent economic facet, Aketch (2005) estimates that, public procurement accounts for about 60% of public expenditure, thus underscoring its impact as a significant economic component. In the past decade, Kenyan economy has been growing, largely driven by massive investments in the development and construction of numerous infrastructural projects (Kiiru, 2015). Between the years 2012 to 2013, there was a 16.8% increase in rates on the completion of public construction works (Republic of Kenya, 2014).

The scope of public procurement is influenced by a common factor, consistent all through which is the requirement for a level playing field. This requirement is driven by the need to award a contract to the most suited bidder and equally reciprocate by delivering on critical aspects of punctuality, quality and cost effectiveness (Wan and Zainordin, 2006). This is the cardinal tenet of public procurement; however there is a need for supporting policy and legislative framework to guarantee this level playing field (Kibogo and Mwangangi, 2014).

Before the year 2001 there was no sound legal framework on the subject of public procurement in Kenya (Getuno, Awino, Ngugi and Mwaura, 2015; Aketch, 2005). The numerous and conflicting circulars from the Ministry overshadowed the manual guidelines.

The need for procurement reforms became urgent because of the growing scrutiny and pressure from within and outside the country. According to publications on studies carried out by SGS Consultants and the World Bank in 1986 and 1997 respectively to assess the country's public procurement system was said to lack transparency, equitable competition, and that purchasing staff did not have the necessary skills accompanied with professionalism (Basheka, 2009). From

the studies it was evident that, public procurement needed to be reformed to create confidence in the system once again (Aketch, 2005).

Despite commencement of reforms in the public procurement, an evaluation into the process by the Independent Procurement Review (IPR), in the year 2005, identified numerous existing weaknesses in the prevailing Public Procurement legislative framework (Getumo *et al.*,2015). Eventually, the Public Procurement Act of 2005 was passed at parliament and enacted to become the formal Legislative framework guiding public procurement in Kenya.

Public procurement procedures should expound on all the planning components that comprise execution timelines, quality and cost estimation to give an overall framework of the blue print on the duration of the construction project, to avoid any setbacks that can disrupt the project delivery timelines. The implementation of procurement-Act 2005 failed to meet its expectations in leaning out the public procurement system (Afred, 2008). In hindsight, PPDA of 2005 failed to address many aspects of public procurement in the execution of public projects such as road construction, exposing significant levels of weaknesses (Juma, 2010). The setbacks of PPDA 2005, were compounded with inefficiencies over many years in persistent lack of compliance with procurement procedures to ensure competition, fairness, cost effectiveness, and transparency in the procuring process (Kiiru, 2015).

1.1.1 Public procurement

According to Calender and Mathews (2000), PP is an important function of government because of the great impact it has economic pillar and needs proper management through a sound purchasing system.

Procurement means to buy or acquire (Wan & Zainab, 2006). Public procurement processes incorporate an array of exercises notably; needs identification, bids solicitation, bids evaluation and contract management which influence the timelines in implementation of road construction projects.

1.1.2 Road construction

Construction sector is significant in the economy-policy of a country as it involves building, creation and the development of vital infrastructure and facilities required for spurring economic development (Munano, 2012). The sector is estimated to consume about half of the world

resources (Economy watch, 2010). Kenya being a developing economy, it's at the stage of improving existing dilapidated road infrastructure and also creating new road networks to expand the transportation corridor.

Pre-planning stage of road construction project involve operations geared towards identification of tasks, deciding on technology, evaluation of resources needed, scheduling of tasks and determination of how this tasks interact (Munano, 2012). Evidently, despite reforms in the procurement policies with the advent of the PPDA of 2005, there have been visible setbacks in implementation characterized by numerous failures in timely completion of road construction projects (MOPW, 2009).

1.1.3 Road construction in Nairobi County

The advent of Kenya's 2010 constitution herald the creation of counties, which are semi-autonomous administrative regions headed by the County governor. However, existing framework in Kenya roads classification, the national government is responsible for classes A, B and C whereas the counties are responsible for classes D and E (Government of Kenya [GOK], 2013). Unlike many other counties across the republic, Nairobi is an urban metropolis covered with standard paved road network (GOK, 2014). Data from Nairobi city County, show that, Nairobi has a road network of 2,968 km (Njenga, 2014). This road network is paved in different surface standards, notably; bituminous, gravel and earth.

The overall responsibility of maintaining and overseeing servicing the Nairobi road network is vested with KURA which is a Parastatal that was formed in 2007. The agency operations are funded by the Kenya Roads Board, KRB (Njenga, 2014). KURA being a government agency tasked with the duty of overseeing construction, maintenance and servicing of roads in Nairobi County, often delegates these tasks to certified contractors (Wairimu, 2016). All the contractors, contracted to operate within the Nairobi road network are registered with National Construction Authority (NCA) (GOK, 2013). Njenga (2014) and Wairimu (2016) established that only 34 contractors are certified to undertake road construction, maintenance and servicing in Nairobi City County. The researcher then administered the questionnaires in person to the respondents within the public universities located within the precincts on Nairobi city. The study made follow-up to all the participants by contacting them via email, text messages and phone calls. Afterwards, the study will make arrangements in advance with the respondents on the dates

when shall be proceed and collect the questionnaires ready for data analysis. The participants who were sent digital formatted questionnaires, mailed it back once they were done with the responses.

1.2 Statement of the Problem

Public procurement activities form very crucial administrative undertakings that are central to delivery of services to the citizens. The Public procurement process involves a number of stages, notably;

Needs Identification-Which is the process of evaluating the current state of affairs and determining what is required to be accomplished in the completion of road construction projects (Divakar & Subramanian, 2009). Munano (2012) explained that failures in effective execution of public construction projects pre-planning tasks wielded impact on the delivery timelines with likelihood of increased late deliveries due to unforeseen disruptions which might could have been avoided with proper needs identification mechanisms.

Bids Solicitation-This is the procedure of presenting official communication on the on-bid solicitor's request for bids on construction projects (Oyeyipo, Odusami, Ojelabi and Afolabi, 2016). Kariungi (2014) posited that, effective framework on public procurement should highlight pre-project execution initiatives such as bid solicitation, to guarantee seamless project implementation and timely completion.

Cruz and Marques (2013) argued that public procurement framework form the foundational constraints that defined the purview of contract management agreements which are signed prior execution of construction projects. As such, it legitimizes the contractual agreement along the framework as defined in the official procurement regulations, which makes it possible for acceptance of formal retributions in case of any violations in any part of the contract. Fundamentally, procurement process should be viewed in its conclusiveness, since it's a long-term activity and not instant event, therefore procurement should be observed from time it commences through its conclusion (Puri and Tiwari, 2014).

Having enacted new public procurement legal framework with the inception of the PPDA of 2005, there was hope across the public service sector that pitfalls, red tapes and endless

bureaucracy surrounding the public procurement processes would be eliminated. However, halfway through the decade, after the implementation of the PPDA of 2005, procurement challenges were still evident, resulting to late completion of numerous road construction projects (Munano, 2012). For instance, in the years, 2008 – 2009, 2009 – 2010 and 2010 – 2011, completion of road construction projects was 47.53%, 33.14% and 21.88% respectively (MOPW, 2012).

Public procurement law elaborates the legal processes through all the public procurement processes should follow. All the processes need to be put into consideration at the pre-planning phase for the project duration determination (Chandra, 2006). ICPAK (2016), hailed the enactment of PPADA of 2015 as an important step in the realization of effective public procurement processes. Enactment of this new legal framework, seeks to instill international best practices in public procurement.

Studies by Munano (2012), Chemoiywo (2014), Gwaya (2015), Kiiru (2015) and Kwatsima (2016) focused on the broader aspect of delays in the completion of public construction projects, which include wide array of bridges, roads and housing construction. The studies identify procedural factors, funding and unforeseen constraints in project execution that lead to delay in finishing. There are no past studies having investigated the influence of public procurement processes, in the completion of Road construction projects.

1.3 Purpose of the Study

The research seeks to assess the impact of public procurement processes on the completion of road construction projects in Nairobi County, Kenya.

1.4 Objectives of this Study

This study was guided by the following specific objectives;

- i) To assess extent to which needs identification influence the completion of roads construction projects in Nairobi County, Kenya.
- ii) To determine how bid solicitation, influence the completion of roads construction projects in Nairobi County, Kenya.

- iii) To examine the extent to which bids evaluation influence the completion of roads construction projects in Nairobi County, Kenya.
- iv) To evaluate the extent to which contract management influence the completion of roads construction projects in Nairobi County, Kenya.

1.5 Research Questions

The study sought to answer the following questions;

- i) To what extent does needs identification influence the completion road Construction projects in Nairobi County, Kenya?
- ii) How does bids solicitation influence the completion road Construction projects in Nairobi County, Kenya?
- iii) To what extent does bids evaluation influence the completion road Construction projects in Nairobi County, Kenya?
- iv) To what extent does contract management influence on the completion road Construction projects in Nairobi County, Kenya?

1.6 Significance of the Study

The researcher focused on the component of public procurement and how this influence the completion of road construction projects. The researcher hoped that the findings in this study highlighted the deficiencies in public procurement process that contributes to delays in road construction. The researcher hoped to benefit the Nairobi County government and the management of KURA through highlighting the relative association between the proper implementation of public procurement processes and the effective and timely delivery of road construction projects. The study hopes that it has extensively highlighted the mechanism, through which the PPADA of 2015 can be used to positively effect on completion of road construction projects. The researcher hoped that, the findings of this study identifies genuine gaps in the implementation of Public procurement policies and the completion of road construction projects which can form basis for future amendments or reviews in government policy on the component of public procurement policies on road construction projects. The researcher hoped that the findings of this study scholars and academicians benefit from the new

perspectives offered by this study, which they can use as reference for their own future studies on public procurement.

1.7 Delimitation of the Study

The researcher investigated the influence of public procurement-related factors on completion of road construction projects. The researcher focused on the County of Nairobi County which hosts the longest road network concentrated in one geographic region. In addition, Nairobi is a complete urban region, whose road network is under the national government, whose activities are subject to public regulations. Furthermore, in the past 5 years, over 10 road construction projects have been undertaken, one being Langata Road Extension project whose completion was stalled for a very long time, due to a protracted legal battle. Finally, Nairobi County is convenient in conducting the study as the researcher will be able to physically assess the ongoing road construction works and experience the first-hand construction of road projects.

1.8 Limitations of the Study

The researcher used descriptive design in conducting the field survey for this study. The researcher anticipated encountering resistance in convincing the respondents to take part in the study. The researcher also anticipated that the respondents will be concerned with their privacy when taking part in a field survey. The researcher overcame these challenges by assuring the respondents of their confidentiality.

The researcher anticipated that the respondents, will be busy in their daily works hence may not have enough time to respond to a lengthy questionnaire. The researcher overcame this challenge through adoption of a structured close ended questionnaire, which is straight forward and very simple to fill, hence reducing the burden of the respondents having to think through before answering a question as it happens with open ended questions.

The participants in the study were drawn from different entities and organizations which are spread out across Nairobi region. Reaching all of them to deliver the questionnaires physically presented a geographic challenge. In overcoming this challenge, the researcher created electronic copies of questionnaires which were distributed to all the respondents through email and follow-up made via phone calls.

1.9 Assumptions of the Study

The researcher came up with the following assumptions; that the public procurement practices wield a critical influence on the completion of road construction projects, the respondents understand their roles in regard to the adherence to the scope and incumbency of the Public Procurement and Asset Disposal Act of 2015. The researcher assumed that, the respondents will respond to the research questions without bias and fear and finally the findings of the study can be inferred to the larger scope, across the country within jurisdictions of Kenyan procurement laws.

1.10 Definition of Significant Terms

Bid Evaluation: Involves undertaking initiatives notably; contractor selection, cost consideration, TOPSIS and SAW-G grey technique and pre-qualification.

Bids Solicitation: This is the procedure of presenting official communication, on bid solicitor's request for bids on construction projects.

Completion of Road construction: This is the timely delivery in all construction phases of a road construction project within the agreed period of time between the contracting party and the contractor supported by legally binding regulatory framework.

Contract Management: Is the process that involves the evaluation of quality control, efficiency and posterity project completion.

Needs Identification: This is the process of evaluating the current state of affairs and determining what is required to be accomplished through undertaking operations notably; project-preplanning, project stakeholders, competencies and skills diversity and planning tools.

Procurement Processes: This incorporates needs identification, bids solicitation, bids evaluation and contract management which influence the timelines in implementation of road construction projects.

1.11 Organization of the Study

The researcher is organized the research paper in the following way;

First Chapter contain introduction of the topic area, statement of the problem for which the research is to be conducted, main and specific objectives of the research, researcher's questions, significance of the research, delimitation, limitations, the definition of significant terms and finally of the assumptions of the study. Second chapter contains the review of the literature which details the various aspects of public procurement processes notably; needs identification, bids solicitation, bids evaluation and contract management and evaluation on each process individual components. The section also examines literature on the impact of these public procurement processes on the completion of road construction projects. Chapter three discusses the research methodology which includes design of research, population target, methods of sampling, tools for collecting data, data collection methods, data analysis methods, ethical considerations to ethics and definition of the research variables. Chapter four of the study will cover data analysis and results observed and Finally Fifth Chapter will present the summary of findings, the conclusion drawn from chapter four and the recommendations based on the conclusions.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section of the study explored on the past studies on the influence of public procurement practices on the completion of construction projects with procurement process as a focus. The section examined the influence of public procurement processes on needs identification, bids solicitation, bids evaluation and contract management towards the completion of road construction projects.

2.2 Public Procurement Processes on the Completion of Road Construction Projects

Public procurement is a fundamental undertaking that is central to the effective management on the utilization and distribution of public resources (Amber & Badenhorst-Weiss, 2012; Getuno, Awino, Ngugi & Mwaura, 2015). The procurement function in the public sphere is fundamental as it makes it lay down the framework that guides the government or government agencies in making public purchases. Getuno et al. (2015) posit that, public procurement highlights the standards, determination and execution of procurement activities and also sets the limits in terms of quality for any form of public purchases. The public procurement presents the central framework where public entities make important purchases that involve the acquisition of goods and services using public resources hence the essence for higher levels of standards and fairness.

Public procurement wields significant influence on efficiency and the acquisition of services and goods that are meant to benefit the public (Chan & Mohan, 2009). Public procurement espouses numerous transactional initiatives such as the procurement activity for public construction works, such as infrastructure projects, construction of public housing, bridges and roads. Similarly, the procurement framework lays down the procedural model that is followed before the commencement of such construction projects, which include identification of particular projects and the subsequent budgeting that is critical in financing of these projects. The commencement of road construction projects and the subsequent completion is determined by the adherence to

numerous public regulations and the framework that guide the construction process (Wambui, Ombui & Kagiri, 2015).

The completion of road construction process is determined by numerous factors including socio-economic and political factors. Becerik (2007) acknowledged that, socio-economic and political environment can prevent the timely delivery of a road construction process. Chan (2007) noted that to prevent external factors intervening and preventing the timely delivery of construction projects there has to an existing performance indicating and measuring mechanism to track the construction process. Tracking the construction activities right from the commencement of the procurement process is critical to identification of any possible detractions that can prevent the smooth execution of the whole procurement process. Wambui et al. (2015) postulated that integrating performance indication mechanism for road construction within the public procurement framework is critical to ascertain the delivery timelines in all the projects.

2.2 Needs Identification and Completion of Road construction projects

Needs identification is the process of evaluating the current state of affairs and determining what is required to be accomplished (Divakar & Subramanian, 2009). Needs identification, falls in the project pre-planning stage, where assessment is made on the availability of resources vis-à-vis the determination of what ought to be prioritized in the course of construction process (Enshassi, Mohammed & Abushaban, 2009). Needs identification informs the formulation of the project delivery schedule and identification of all the project factors critical to efficient project delivery. Zulu and Chileshe (2008) looks at the framework in needs identification and assessment, where they posits that it entails evaluation on efficiency, influence on team, effect on the client, organizational preparedness for the project.

Wambui et al. (2015) noted that while undertaking feasibility prior to the implementation of any construction project, its vital to incorporate public procurement principles in order to ensure the legality in execution of such tasks. Kemps (2012) noted that prior stages for road construction projects are subject to high levels of compliance in public procurement frame work confined within legal parameters. Munano (2012) explained that failures in effective execution of public construction projects pre-planning tasks wielded impact on the delivery timelines with likelihood of increased late deliveries due to unforeseen disruptions which might could have been avoided

with proper needs identification mechanisms. According to Hyvari (2006), timely completion of road construction projects was a component national efficiency standard as prescribed in the public policy framework on public procurement.

2.2.1 Project Pre-planning

Project pre-planning involves clear definition and determination of roles and responsibilities in a project (Munano, 2014). This involves organizing activities and events that will be executed in the period of the project execution.

2.2.2 Project Stakeholders

Significantly stakeholder interferes or is impacted by project team decision on the project delivery (Kariungi, 2014). The researcher notes that, stakeholders are entities affected by a project ,they determined the level of success on project delivery. Analysis of project environment is crucial in assessing stakeholders opinion and the extent to which these opinions affect the program time line.

2.2.3 Competencies and Skills diversity

Preplanning is a standard process that involves technical proficient personnel with owner involvement ensured (Gibson et al, 2006). The team should have the right technical skills and business understanding.

2.2.4 Planning Tools

Munona (2014) explained that Project planning includes collection of data, develop action plan, implement and evaluate. Stakeholders need to been well understood before goals are formulated. Stakeholders will not understand the change process will bring to their lives.

2.3 Bids Solicitation and Completion of Road construction projects

Bid solicitation involves the procedure of presenting official communication on the on bid solicitor's request for bids on construction projects (Oyeyipo et al., 2016

Lau and Kong (2006) postulated that the public procurement policy contains an elaborate comprehensive framework which highlights limitations in bids solicitation. Lau and Kong added

that effective public procurement framework yields effect on execution of all pre-bidding activities and overall efficiency. Kariungi (2014) posited that, effective framework on public procurement should highlight pre-project execution initiatives such as bid solicitation, to guarantee seamless project implementation and timely completion. Divakar and Subramanian (2009) noted that uniqueness in undertaking bid solicitation exercise determined the eventual success rate in the adherence to the project completion timelines on public construction projects.

2.3.1 Invitation to Bid

Lin and Chen (2004) observed that invitation to bid is a written request that could also be oral that is passed across to prospective suppliers requesting them to submit bids on their services. The invitation to bid process is largely an open request where any contractor is free to participate since it's still the bid solicitation phase. According to El-Mashaleh (2012), invitation to bid is largely a balanced process as it doesn't involve extensive determination for qualification amongst the participants since the only consideration amongst all the submissions is just the price quotation.

2.3.2 Request for Proposal

Request for proposal is an undertaking executed at the bid solicitation phase, where official documentation is prepared and presented to potential contractors, requesting them to present prepositions on the project at hand (Anderson & Damnjanovic, 2008). Request for Proposals often highlights the comprehensive technical details on the expectations for the listed prepositions from the contractor (Alder, 2011). In case the existing underlying issues on the proposed project, they are discussed supported by evidence on the root causes of these issues and suggestions should be presented on how to solve them. This forms the basis for contractor consideration at the review stage.

2.3.3 Quotations Request

Request for Quotation (RFQ) is detailed document that highlights all the parameters of a project (Mhay & Coburn, 2009). The RFQ state is an important bid solicitation stage as it enables for comparison and standardization to be made, through making comparison of all submitted quotes then deciding on when to commence the negotiations (McMinimee, 2011).

2.3.4 Request for Tender

Request for Tender (RFT) is largely an open invitation presented to potential suppliers indicating the existence of a need that needs to be addressed (Mhay & Coburn, 2009). The RFT covers specific requirements for services and is often expressed in an open format. RFT is often preferred as it's a simpler approach that is considered less costly and very fast to implement (Bearup, 2011).

2.4 Bids Evaluation and Completion of Road construction projects

The underlying bid determinant that is shared across the between the bidders and the contracting organizations is the cost component (Dulaimi and Shan, 2002). Public procurement framework should be structured in a manner that makes it possible for all players (potential bidders) to have a level playing field. Lowe and Parvar (2004) and Oo, Drew and Lo (2008) postulated that , public procurement framework should empower decision makers tasked settling on bidding choices since it wields influence on the success rate on all the constructions execution operations from the time of commencement to the time of completion. Puri and Tiwari (2014) noted that the effectiveness in evaluating bidders, is subject to the quality of evaluation criteria that is adopted.

Egemen and Mohammed (2007), and Oyeyipo et al. (2016) agree that timely completion of construction projects, like road and bridge construction, is a factor of contractor's abilities that were listed in the bid proposals and the subsequent evaluation stage.

Shane and Gransberg (2010), cited Hatush (1996) where they identified different criterion that is used in bid evaluation, which include; contractor selection, cost consideration, the TOPSIS & SAW-G Grey Technique and Pre-Qualification criterion.

2.4.1 Contractor selection

Panel (2011), observed that selecting a bid winner is complicated. Bid selection process is complicated and requires consultative engagement. Processes and frameworks have been developed to get the best suitable bidder.

2.4.2 Cost consideration

Over the years some modification to the cheapest bidder system was developed, such as value of the service to be offered, public advice and prequalification criteria for selection methods to be adopted instead of the single criterion system lowest bidder system has to be put in place.

2.4.3 TOPSIS and SAW-G Grey Technique

Kotter and Schlosinger (2008) explained the grey theory as the technique in performing predictions, was applied for any alternative. Assessment method TOPSIS (Technique for Order Preference by Similarity to Ideal Solution), process with values indicated at every stage (TOPSIS-grey).

2.4.4 Pre-Qualification Criterion

In order to check the quality of contractors, Hatush (1996) postulated that valuation is a must before. Alvarado (2011) while citing Moore (1985) prequalification is the screening of contractors by tender committee or their representatives to evaluate the contractor's level competence or ability to take in the project bid.

2.4.5 Bid Reward System

Opong (2013) listed numerous models used in bid rewarding systems that are specific to the construction industry that include; Lowest Bid System (LBS), the Average Bid System (AVBS) Multi-criteria Evaluation Systems (MES), the Utility Function (UF) and the Most Advantageous Tendering (MAT).

2.4.5.1 Lowest Bid System

The most commonly applied systems for contract awarding is to the lowest bidder. This system according to Opong (2016) while citing Aitah (1988), explained that it comes under competitive bidding through which a large number of contractors obtain their work in construction and generally all public works are done by this method.

2.4.5.2 Nearest to the Average of all Bids Received

This is another approach of bid awarding that comes under open competitive bidding. In this system once the owner has received the offers from all participants he does a simple mathematical calculation to find the average bid value (A.B.V), where all the participants offers are added and divided by the sum of bids received (Opong, 2013; Schierholz,2012).

$$(A.B.V) = \sum \frac{\text{Participants Offer}}{\text{Number of Bids Received}}$$

To award the contract, the client looks for the nearest offer to the average bid value (A.B.V) and considers this the successful bid for the award of the contract. Through this system, used in some European countries, the owner is trying to avoid low bidder who may not have studied the contract carefully or do not have enough experience and also to avoid overestimated bids. On the other hand, the client will probably not have enough information about the degree and the type of experience the successful bidder has (Opong, 2013).

2.4.5.3 Limited by Average Bid and Clients Estimate

This is another open competitive bidding system for bids awarding. Whereas in the previous system all bids received are summed and the summation is divided by the number of bids received to get the average bid value (A.B.V), the client also through his own resources and experience come out with his estimated cost for the project (Panel, 2011; Opong , 2016). To award the contract, the owner reviews all the participating offers and looks for the offer nearest to the average bid value (A.B.V) but which at the same time does not exceed his estimated cost. The offer that satisfies these two requirements is the successful bid and the one to be awarded the contract. That is

$$\text{Client's estimate} > \text{offer of successful bidder} < (A.B.V)$$

This system might not have a brighter future than the previous one except perhaps as the successful bid is between the client's estimate and the average bid, the system may give the client some indication about the seriousness of the offer and the contractors understanding of the project documents, these two qualities are reflected in his reasonable offer (Opong, 2016).

2.4.5.4 Danish System

This is also another system of bid awarding that is under the umbrella of open competitive bidding. As in the previous system, this system also avoids the two extreme offers (highest and lowest) which were rejected. A new highest and lowest offer will exist and a new average (NA). The rest of the offers are considered in relation to the high offer (NH). The new low offer (NL) and mean average (A) of all offers are calculated. New average (NA), which will help in selecting the successful bidder, is calculated as follows:

$$NA = (NL + 4A + NH) / 6$$

2.4.5.5 Negotiated Offer

Where the client negotiates the contract with a preselected contractor or group of contractors, this means the client may go through the competitive process entirely and handpick the qualified (Alder, 2012; Opong, 2016). The forms of such contracts are almost limitless because they could include many provisions that are best suited for particular work involved and are agreeable to both parties. Negotiated contracts are normally limited to privately financed work because competitive bidding is a legal requirement for public projects except under extraordinary or unusual application of negotiated contracts across board in the private sector. This can only be interpreted as a sign that owners are increasingly finding that such arrangement are in their best interest.

2.5 Contract management and Completion of Road construction projects

Cruz and Marques (2013) argued that public procurement framework form the foundational constraints that defined the purview of contract management agreements which are signed prior execution of construction projects. As such, it legitimizes the contractual agreement along the framework as defined in the official procurement regulations, which makes it possible for acceptance of formal retributions incase of any violations in any part of the contract. Gabula (2012) noted public procurement framework determined the terms of agreement on the components of the contractual agreements in undertaking construction projects, thus its scope is crucial in the subsequent success throughout the period of engagement.

Joyce (2014) and Trent (2007) posited that, the most important tasks in public projects administration is the nature and the model of contract management as it influences its overall outcome and the measures of success. Trent (2007) added that, project completion was subject to how the overall activities defined in all project phases were coordinated and implemented. Pollit and Tabort (2004), explained that contract management should enforce all project implementation statutes such as strict adherence to timelines and quality standards.

Existing evidence indicate that, contract management is central to the delivery and the eventual completion of the project, thus forming a critical aspect of project delivery. Contract management supports project delivery factors such as quality control, efficiency and posterity (Gabula, 2012; Joyce, 2014).

2.5.1 Quality Control

One of the primary requirements for contractors to fulfill before their bids are considered is that must show they have quality management system as per ISO 9001:2000 standards (Gabula, 2012). In addition, Gabula (ibid) suggested that quality control is a contract management aspect that enables the attainment of all project delivery timelines. In pursuit of successful projects, organization needs to comply with the QMS and modeling for them to maintain the highest quality standards. Love and Edwards (2004) lack of quality standards permeates poor project management which is the leading contributor to project delays and to worst case scenario, project reworks.

2.5.2 Delivery Timelines

Contract management helps in streamlining the activities in the contractual period hence enhancing the levels of efficiency and compliance to standards (Pollit and Talbot, 2004). Every contract should establish its basic principles, have clear scope, define execution terms and define procedures essential for successful communication between the contractor and contracting authority (Joyce, 2012). It should also implement changes, evaluate contractor performance, accept or reject the contractor's deliverables, identify and manage risks, handle problems, resolve disputes, approve payments, and finally close the contract process (Trent, 2007). Further, Cruz and Marques (2013) an organization is certainly undertaking effective contract management practices if it has effective evaluation procedures. These procedures should be

clearly defined and implemented in compliance with the respective regulations in order to achieve integrity, objectivity, nondiscrimination, transparency, confidentiality and secrecy. This ensures that the most appropriate candidate is awarded the contract.

2.5.3 Posterity

The aspect of posterity in contract management is compounded on the post-contract period and the status of the contractor in ability to deliver future projects. Joyce (2014) postulated that poorly managed contracts affect the contracted firm's credibility through a snowball effect. This will have impacts on the future of the company and ability for it to secure new tenders. Authors postulate that, the present commitment to execution of the undergoing project; wield influence as to whether the company can be contracted for future works (Lowe, 2012).

2.6 Theoretical Framework

The study will adopt three theories relevant to the subject of project management; 2-factor, the planning and contingency theory.

2.6.1 Two Factor Theory

The two factor theory was pitched by Fredrick Herzberg in his study on the dual contributors to satisfaction. A central component in the evaluation of the success of a road construction project is an assessment on the dual prospects of success or failure.

2.6.2 The Planning Theory

Munano (2014) while citing Neale and Neal (1989) explained that the planning is critical in any construction project to achieve the deliverables intended.

2.6.3 The Contingency Theory

The study adopts contingency theory in view that, factors compounding project delivery are numerous non-constant determinants that wield significant impact on the delivery of the project within predetermined period.

2.7 Conceptual Framework

This brings out the independent variables include; needs identification, bids solicitation, bids evaluation and contract management. The dependent variable is the completion of road construction projects.

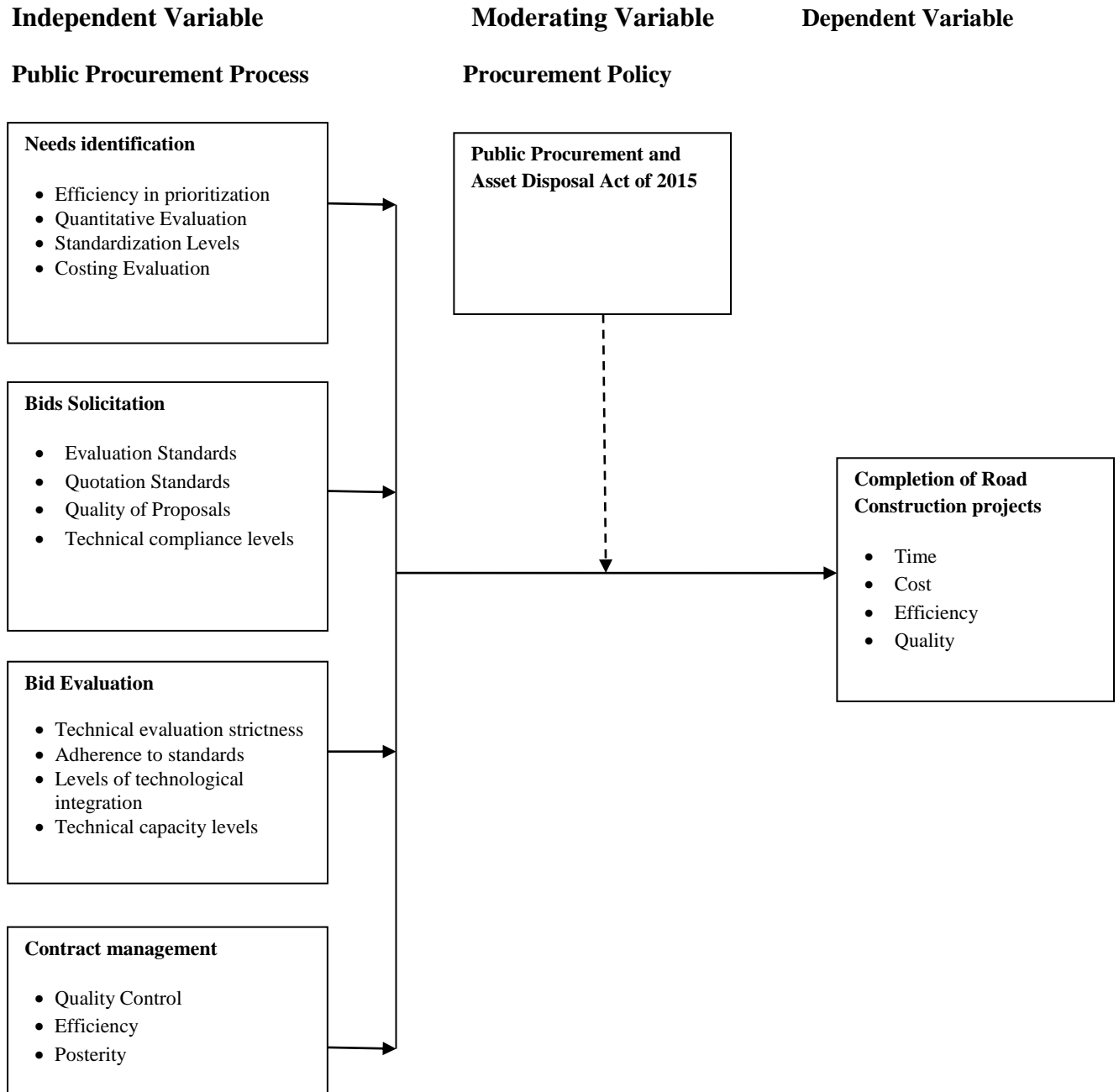


Figure 1.0: Conceptual Frame-work

2.8 Literature in summary and Research Gaps

This section covered the review of the literature section which highlights the concepts adopted in this study in relation to past studies. The Chapter covered the theoretical review which encompassed an evaluation into the existing theoretical frameworks on construction project management notably; the two-factor, the planning and the contingency. The section explored past studies on the influence of procurement practices factors namely; needs identification, bids solicitation, bids evaluation and contract management on the completion of road projects.

Table 2.1 Research and Knowledge Gap

Variable	Author (year)	Title of Study	Findings	Gaps in Knowledge
Needs Identification	Burger (2013)	Project Management In The Built Environment: The Need For Industry Specific Knowledge	Project team must be evaluate the environmental effects of each project to make costing a factor for environment	The study fails to include the effect off added costs dependent on different construction environments on the success of a particular project
	Maarouf and Habib (2011)	Quantity surveying role in Construction Projects -a comparison of roles in Sweden and the UK	The quantity survey role is critical in construction project and its key component of delivery effectiveness	There should be a comprehensive preplanning phase that incorporates project pre-planning, in addition, the study fails to demonstrate subsequent effect of continued role of quantity surveying on eventual project success
	Lau and Kong (2006)	Identification of Constraints In Construction Projects to improve Performance	There is value in identifying the operational constraints that limit performance of construction projects in advance	The study fails to explain the approach to identifying the internal constraints and external constraints on the project preplanning
Bids solicitation	Al-Basir (2015)	To Bid Or Not To Bid: A Framework For Contractor Decision Making	Structured bidding system should be adopted in accommodating unique bidding models	The findings were widely general, not consistent on specific to road construction sector
	Lin and Chen (2006)	Bid/no-bid decision-making - a fuzzy linguistic approach	The identification of bidders should be based on agreed standardized norms	The study fails to highlight , some of the basic standardization approaches to bidding systems to create level playing field
	Han and Diekmann (2001)	Making A Risk-Based Bid Decision For Overseas Construction Projects	The prior construction success should wield much weight in consideration for potential contractors	The study is too limited to only cross border success as fundamental consideration in contractors, instead of a more comprehensive considerate approach
	El-Mashaleh (2010)	Decision to bid or not to bid: a data envelopment analysis approach	The availability of previous data contributes to better evaluation of potential contractors	The study fails to recognize the importance of internal construction data protection and its effect on the company's success in tender bidding
Bids evaluation	Oppong (2013)	A Study On Performance Of Contractors Selected Using The Lowest Bid Evaluation Method As Major Criteria For Government Projects In Ghana, A Kumasi Study	The lowest bidding system is vulnerable to unforeseen constraints that can hinder the success of a project.	The study fails to identify any significant exposures that a low cost bidding criteria is exposed to potential vulnerabilities of project constraints
	Mechegiaw (2012)	Performance Study Of Lowest Bidder Bid Awarding System In Public Construction Projects	There is correlation between Low bidders success in tenders and Costing mechanisms in public projects	The study fails to expose the correlation between the overall costing models against the low bidding systems, and its effect on the project quality
	Puri and Tuwari (2014)	Evaluating The Criteria for Contractors' Selection and Bid Evaluation	The evaluation of basic bidding criteria improves the bidding system	The integral criteria should be based on national and international standards, thus the study fails to highlight the importance of global benchmarks in improving internal project consideration criteria's

Contract management	Gabula (2012)	Factors Influencing the Construction Project Success Rates of Reconstruction Development Program (RDP) Housing Projects in the Eastern Cape: A Quality Perspective: A Census Study	There is need for a braod construction management approach to the success of the construction project	The study fails to show the specific project management models that are central to the success of the construction projects and how they differ in contexts with regard to enforcement
	Joyce (2012)	Contract Management Practice And Operational Performance Of State Corporations In Kenya	The structure of contract management policies are critical in success of any operational undertaking in procurement projects	The study fails to highlight the mechanisms of effective enforcement of contractual agreements which are agreed amongst the parties
	Saghera (2008)	Fundamentals of effective program management: a process approach based on the global standard.	The standardization of management programs should integrate global benchmark as yardstick for success	There is no proposals on the adoption of global standards in different contextual settings

CHAPTER THREE RESEARCH METHODOLOGY

3.1 Introduction

This section presents; design, population targeted, sample size and procedure, data collection instruments, data collection procedure, pilot study, validity and reliability, data analysis and presentation, ethics considerations and research variables.

3.2 Research Design

The Researcher used descriptive survey research design as the researcher considers it to be perfect for this kind of study. The descriptive survey design was used in examining the impacts of public procurement practices on the completion of road construction projects in Nairobi.

Descriptive survey research was convenient for this study as it enabled the researcher gather quantitative data that was analyzed using descriptive statistics approach (Bouckenooghe *et al*, 2007). Quantitative data was very helpful and extremely useful as it enabled the researcher to perform statistical analysis and identify existing patterns which highlighted the association between the variables.

3.3 Target Population

The researcher targeted all the licensed contractors who have offered their services in Nairobi county and the Ministry of Roads and Public Works. Data from National Construction Authority (NCA), a government agency indicate that, there were 34 licensed road construction contractors based in Nairobi County and have been engaged by the Kenya Urban Roads Authority (KURA) for varied construction jobs (GOK, 2016). The 34 construction companies and the ministry of public works formed the unit of analysis in this research. The unit of observation was the construction companies whereas the unit of analysis comprised of senior managers from the procurement department, finance, engineering and the operations departments within the construction companies. For each construction companies the study targeted 2 employees, which summed to a total of 68 respondents from the construction companies and 4 officials from the ministry ,this brings the total target population to be 72 respondents. Cooper and Schindler

(2003) defined target population as a large population from which a sample population is selected.

3.4 Sample Size and Sampling Procedure

3.4.1 Sample Size

This researcher drew sample size from the road construction contractors and ministry of roads and public works enforcement officials. The study used purposive sampling in identifying the participants of study based on their knowledge on the public procurement procedures that lay down the framework which govern contractual agreements between government and state corporations and the certified contractors. The researcher relied on experience as the main factor in selecting respondents. Sampling is in some way “representative” of the population of interest without sampling at random. It was more applicable in this study since the study required unique respondents to respond to the study question.

3.4.2 Sampling Procedure

The researcher utilized census approach and cover all the entities that are responsible for road construction within Nairobi County. This encompassed all the construction companies and the ministry of public works. Representatives from all the 34 registered and licensed road construction companies in Nairobi were represented by 2 officials each and the ministry of roads and public works were also represented by 4 officials. Saunders and Lewis (2012) observed that when selecting a sample size, a researcher must ensure that the right procedures are followed so as to get the most adequate number of respondents.

The researcher selected 2 respondents per company. Therefore the total number of respondents were;

34 road construction companies \times 2 employees = 68 respondents

4 officials from the ministry of Public Roads and Public works (2 Civil Engineers, 1 legal officer, 1 Procurement manager who sits in the government construction bids evaluation committee)

$68 + 4 = 72$

Therefore, the researcher settled on **72 respondents**.

3.5 Research Instruments

This Researcher utilized questionnaire for primary data collection. Data collection instrument is the tool adopted in data collection process collect for the purpose of the research (Orodho, 2009). The questionnaires were structured with both open-ended and close-ended questions, which were useful in ensuring efficient and faster response time from the respondents.

3.5.1 Pilot Study

Before proceeding to data collection phase the researcher did a pilot study to whether the tools that were used in the data collection process passed the validity and reliability tests.

Studies done by Bryman (2012), revealed that pilot test was vital in examining the accuracy and effectiveness of the research design and research tools. The study sample was 72 respondents, and the researcher identified 5 participants who took part in the pilot survey. According to Kothari (2004) and Sekeran (2006) an estimate of about 1% of the target population should participate in the pilot study. Considering the study target small unit and all the units of analysis represent separate organizations which were all participating in the study, the researcher opted to select 5 respondents from the sample to participate in the study who were not part of the final study.

3.5.2 Validity of the Research Instrument

The researcher measured content validity of the research data collection tool. For content validity the researcher examined the items listed to be measured to evaluate whether they offered an accurate reflection of the theoretical domain. The items which were measured were selected as representative sample for all the questions, of which were derived from the construct.

The content validity focuses on whether the tools used in the study cover representative sample of the target population. Content validity helped in assessing the degree to which the contents covered the area under study (Saunders *et al*, 2007).

The content validity sought to examine as to whether the questionnaire items used in this study represented the actual field domain. The study variables had the following number of items; needs identification (7 items), bids solicitation (7 items), bid evaluation (8 items) and Contract management (8 items). Each of the items was measured against the 5-point likert scale and

overall evaluation assessed against the Content Validity Index (CVI). Each respondent's answers will be measured for each item against a CVI scale. Neuman (2000) posited that a CVI of 0.5 and above will indicate the tool is valid for research. All variable items in the test recorded a CVI of over 0.5, which certified all the questionnaire items as valid for data collection.

3.5.3 Reliability of the Research Instrument

In order to ascertain as to whether the research tool is reliable, it should be able to produce similar results across different contexts, as long as the research methodology and the group of respondents share similar characteristics.

The study will utilize the Cronbach's alpha coefficient to calculate the reliability.

$$\alpha = \frac{N C^-}{V^- + (N-1) \times C^-}$$

Where; N = the number of items, C^- = the average inter-item covariance, and V^- the average variance.

Table 3.1 Pilot Test on Reliability

Variable	Cronbach Alpha value	Cronbach Alpha when variable omitted	Number of questionnaire items
Needs identification	0.821	0.823	7
Bid Solicitation	0.838	0.831	7
Bid Evaluation	0.812	0.809	8
Contract Management	0.826	0.825	8

The tabulations for Cronbach alpha revealed the findings presented in table 3.1. The outcome for alpha value in case the questionnaire was removed was also above 0.7. Nunnally and Bernstein (1993) ascertained that if a coefficient of over 0.7 is computed, it will signify the justification of the tool with acceptable reliability. The study therefore satisfied that the tool was valid for data collection.

3.6 Data Collection Procedures

Kothari et al. (2010) recognized that research procedure is the sequence of activities that are followed when carrying out field study. The researcher drafted a transmittal letter that was used to request for permission to conduct a field survey at different construction companies in Nairobi and the Ministry of roads and public works. The letter explained the details regarding the field survey. Upon granting of the permission the researcher distributed all the questionnaires to the participants using the drop and pick strategy. The researcher made prior communication to all the identified respondents to request and appeal to them to offer their input on the questionnaires. The researcher proceeded to collect the questionnaires upon confirmation from individual respondents that they were through in responding to the questionnaires.

3.7 Data Analysis Techniques

Upon completion of the field exercise, the data was sorted, cleaned, coded and edited for completeness and consistency.

Cooper and Schindler (2012) posited that regression analysis assists in examination of the levels correlation through which inferences from a study can be drawn to a larger population. The qualitative data was captured in raw format from all the individual responses contributed by the respondents. The research selected answers that were provided by multiple respondents that were analyzed as independent comments by the respondents.

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e$$

Where:

Y dependent variable (completion of road construction projects)

B₀ constant term

B_i coefficient of the independent variable where $i = [1, \dots, 4]$

X_i independent variable where, $i = [1, \dots, 4]$

e, is the error term.

3.8 Ethical Issues

Ethical issues refer to conduct that guides the researcher's behavior while undertaking research (Mugenda and Mugenda, 2008). Before proceeding with the data collection exercise the researcher sought approval from the relevant departmental managers at the ministry of roads and public works and the construction companies whose staff took part in the study. This was helpful in identifying the respondents. The researcher explained to the respondents that the research was purely an academic activity and would maintain the anonymity of the respondents and subsequently will not use its findings for any other purposes than the one mentioned.

3.9 Operational Definition of the Research Variables

Objective	Variable	Indicator	Measurement	Tool of Analysis
	Independent			
To assess the extent to which needs identification influence the completion of roads construction projects in Nairobi County.	Needs Identification	Efficiency in prioritization	Likert /Ordinal	Frequency and Mean Tables
		Quantitative evaluation	Likert /Ordinal	Frequency and Mean Tables
		Standardization levels	Likert /Ordinal	Frequency and Mean Tables
		Costing evaluation	Likert /Ordinal	Frequency and Mean Tables
To determine how bid solicitation influence the completion of roads construction projects in Nairobi County.	Bids solicitation	Evaluation standards	Likert /Ordinal	Frequency and Mean Tables
		Quotation standards	Likert /Ordinal	Frequency and Mean Tables
		Quality of proposals	Likert /Ordinal	Frequency and Mean Tables
		Technical compliance levels	Likert /Ordinal	Frequency and Mean Tables
To examine the extent to which bids evaluation influence the completion of roads construction projects in Nairobi County.	Bids evaluation	Technical evaluation	Likert /Ordinal	Frequency and Mean Tables
		Adherence to standards	Likert /Ordinal	Frequency and Mean Tables
		Levels of technology integration	Likert /Ordinal	Frequency and Mean Tables
		Technical capacity	Likert /Ordinal	Frequency and Mean Tables
To evaluate the extent to which contract management influence the completion of roads construction projects in Nairobi County.	Contract Management	Quality control	Likert /Ordinal	Frequency and Mean Tables
		Efficiency	Likert /Ordinal	Frequency and Mean Tables
		Posterity	Likert /Ordinal	Frequency and Mean Tables

Objective	Variable	Indicator	Measurement	Tools of analysis
	Dependent			
Identify the determinants of timely completion of road construction projects	Completion of road construction projects	Time of completion	Likert /Ordinal	Frequency and Mean Tables
		Total cost of completion	Likert /Ordinal	Frequency and Mean Tables
		Efficiency of road completion		Frequency and Mean Tables
		Quality of road projects	Likert /Ordinal	Frequency and Mean Tables

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This section of the study presents the data collected from the field survey, the analysis, presentation and interpretation. The specific study variables that were used to provide a deep examination on the scope of procurement practices include; needs identification, bid solicitation, bid evaluation and contract management.

4.2 Questionnaire Return Rate

Table 4.1 Questionnaire Response rate

Response	Frequency	Percentage
Responded	58	86.6
Not Responded	9	13.4
Total	67	100

Table 4.1, highlight the distribution RR for the participation in the field survey exercise. 67 questionnaires were distributed out to all the identified respondents and who had formally accepted to take part in the study. A total of 58 questionnaires were returned in time for data analysis. This represents a response rate of 86.6%. Mugenda and Mugenda (2008), a RR of 70% and above is convenient for computing statistical inferences. Therefore, the researcher was satisfied that the data collected was sufficient for carry out data analysis for the respondent's opinions on the influence of procurement practices in road construction projects.

4.3 The Respondent's Demographic Information

The background information covered the demographic details of the respondents. The background information includes; occupation, the year when the organization was formed, age distribution and work experience with the organization.

4.3.1 Distribution of Respondents by Occupation

The data presented in table 4.2 highlights the distribution in terms of respondent's occupation using frequency tabulation and percentage.

Table 4.2 Distribution of respondents by occupation

Occupation	Frequency	Percentage
Procurement officials	26	44.8
Finance managers	8	13.8
Accountants	3	5.2
Projects managers	11	19.0
Civil Engineers	8	13.8
Legal officers	2	3.4
Total	58	100

The findings in table 4.2 indicate that procurement managers 26 (44.8%) in participants, finance managers were represented by 8 (13.8%) of the respondents, accountants were represented by 3 (5.2%) participants, project managers were represented by 11 (19.0%) participants, civil engineers were represented by 8 (13.8%) participants and final about 2 (3.4%) of the respondents represented legal officers. The findings imply that professional distribution among construction companies is largely diverse which indicates that professional and technical skill distribution is critical to the timely completion of road construction projects.

4.3.2 The year when the organization was established

The data in table 4.3 highlight the responses on company formation on a determined period of time.

Table 4.3 Period of formation

Period of formation	Frequency	Valid Percent
1940 - 1979	5	8.6
1980 - 1999	32	55.2
2000 - 2015	21	36.2
Total	58	100.0

The findings indicate that, about 5 (8.6 %) of the construction companies were formed between the years 1940 – 1979, about 32 (55.2%) of the construction were formed between the years 1980 – 1999 and finally about 21 (36.2%) of road construction companies were formed between the years 2000 – 2015. The study findings indicate that majority of the construction companies whose staff participated in the study, have operated for more than two decades. This implies that the period of formation is equivalent to experience in undertaking road construction projects which is a critical determinant of a company’s capabilities towards timely completion of roads construction projects.

4.3.3 The Distribution of Respondents by Age

Table 4.4 Distribution of Respondents by Age

Age Group(in Yr)	Frequency	Percent
20 - 29	1	1.7
30 - 35	4	6.9
36 - 40	26	44.8
41 - 49	19	32.8
Over 50	8	13.8
Total	58	100

Table 4.4 indicate that, 1 (1.7%) participant was in the age group, 20 – 29 years, about 4 (6.9 %) participants were in the age group 30 – 35 years, about 26 (44.8 %) participants were in the age group 36 – 40 years, about 19 (32.8 %) participants were in the age group 41 – 49 years and finally about 8 (13.8 %) participants indicated to be over 50 years of age. The findings imply that age factor is critical amongst among the top managers involved in the implementation of road construction projects and subsequently it shows that it impacts on operational decisions and the timely completion of the road construction projects.

4.3.4 The Distribution of Respondents by Work Experience

The data in table 4.5 highlight the respondent's distribution in relation to work experience.

Table 4.5 Distribution of Respondents Work Experience

Work Experience(in Yrs)	Frequency	Percent
5 - 10	14	24.1
11 - 15	19	32.8
16 - 20	15	25.9
Over 20	10	17.2
Total	58	100

The findings in table 4.5 indicate that 14 (24.1%) of the participants had work experience of 5 – 10 years, about 19 (32.8 %) of the respondents had a work experience of between 11 – 15 years, about 15 (25.9%) of the respondents had work experience of 16 – 20 years, and finally about 10 (17.2 %) of respondents had a working experience of over 20 years. The findings imply that majority of the respondents have more than a decade of working experience. This implies that job experience is critical in amongst personnel involved in road construction projects as it influences the levels of technical knowhow which impact on the completion of road construction projects.

4.4 Needs identification and completion of road construction projects

The researcher sought to evaluate the effect of needs identification as procurement practice on the completion of road construction projects. The data in table 4.6 presents the respondents opinions on numerous needs identification items and tabulated in means and standard deviation.

Table 4.6 Needs identification and completion of roads construction projects

STATEMENTS	n	Mean	Std. Deviation
The organization uses a standardized approach in identifying priorities for projects	58	3.95	.711
There is team of internal consultants that determine the areas of priorities in project undertakings	58	4.02	.761
The organization seeks external input from professional consultants on needs evaluation for each project under consideration	58	4.33	.685
There is a concerted team work in different professions in determining the determining areas of priorities for construction projects	58	4.31	.627
The organization utilizes technological systems in quantitative evaluation of construction project priorities	58	4.03	.648
The organization uses global benchmark models for deciding project priorities in all construction undertakings	58	4.31	.730
Financial consideration form the main contributor in determining areas of priorities on basis of construction projects	58	4.43	.500
Average	58	4.197	0.667

Table 4.6 highlight the respondent’s opinions on the influence of heeds identification on the completion of road construction projects.

The researcher found out that Construction Company’s use standardized approach in identifying priorities for projects with a mean of 3.95 and SD 0.711. Findings imply that standardized approach requires to be addressed as its present implementation is resulting to a negative effect on the timely completion of road construction projects.

The findings indicate that, for a team of internal consultants that determine the areas of priorities in project undertakings (Mean = 4.02, SD = 0.761).The findings imply that the existing model for hiring internal consultant to assist in supervision of road construction projects has not fulfilled its potential (Mean : 4.02 < Average : 4.197). This indicates that, there is need for a change in the approach to accommodating internal consultants as it impacts on the timely completion of road construction projects.

The researcher found that, organizations need to seeks external input from professional consultants on needs evaluation for each project under consideration (mean of 4.33, SD = 0.685).

The findings imply that accommodation of external professional consultants has a positive effect on the realization of timely completion of road construction projects.

It is also established through the findings that, there is need for a concerted team work in different professions in determining the determining areas of priorities for construction projects (Mean = 4.31, SD = 0.627). The findings indicate that concerted team work has a positive effect on the timely implementation and execution of tasks geared towards the delivery of road construction projects. This implies that team work in project tasks results in timely execution of tasks which impacts on the timely execution of road construction projects.

The findings indicate that, organizations need to utilize technological systems in quantitative evaluation of construction project priorities (Mean of 4.03, SD = 0.648). The findings indicate that the present use of technological evaluation quantitative tools, is wielding negative impact in the construction of road projects. This implies that ineffective implementation of technological support system in construction projects wields negative effect on the completion of road construction projects.

The researcher established that construction companies use global benchmark models for deciding project priorities in all construction undertakings (Mean of 4.31, SD = 0.730). The findings indicate that the utilization of global benchmark models result in positive effect on the implementation of road construction projects and consequently results on the timely completion of road construction projects.

It is also established through the findings that, financial consideration form the main contributor in determining areas of priorities on basis of construction projects (Mean of 4.43, SD = 0.500). The findings indicate that, the financial component is critical determinant in the timely completion of road construction projects, thus implying that financial factors wield positive effect on the timely completion of the road construction projects.

The findings imply that, needs identification is an important exercise that has an eventual effect on the timely implementation of road construction projects. The findings show that, the key areas in needs identification are the competency and capacity of project team and the levels of standardization.

4.5 Bids Solicitation and completion of road construction projects

The data in table 4.7 highlight the computed results on the respondent's views on bids solicitation and effect on timely timelines for road construction projects.

Table 4.7 Bids solicitation and Completion of Roads Construction Projects

STATEMENTS	n	Mean	Std. Deviation
The organization uses financial indicators in determining bidding models for construction projects	58	4.16	.644
The structure of bidding designs is structured on the basis of existing procurement framework	58	3.50	.504
There is a policy of level playing field for all the applicants of construction tenders	58	4.07	.769
The organization uses data mining technologies in accommodating all tender applications for construction projects to make it easier for subsequent evaluations	58	3.93	.722
The organizations uses quality based approaches in developing tender proposals	58	3.98	.946
The Organization uses strict technical models in proposal presentations and examination for formulating tender applications	58	3.95	.847
The organization uses open window models to seek all potential applicants for construction tenders	58	4.21	.932
Average	58	3.971	0.766

The findings in table 4.7 highlight the respondent's views on the influence of bid solicitation on the completion of road construction projects

The researcher established that construction companies use financial indicators in determining bidding models for construction projects (Mean of 4.16, SD = 0.644). The findings indicate that financial consideration in bid solicitation yields a positive effect on the implementation of road construction projects. This implies that, proper determination of the financial projections in bid solicitation yields impact on the timely completion of road construction projects.

It is also indicated from the findings that, the structure of bidding designs is structured on the basis of existing procurement framework (Mean = 3.50, SD = 0.504).The findings indicate that the existing structured models in the implementation of bid solicitation models yields negative effect on the timely completion of road construction projects. This implies that, changes in

structured bidding designs are necessary in order to realize timely completion of road construction projects.

The findings show that, there exist a policy of level playing field for all the applicants of construction tenders (Mean = 4.07, SD = 0.769). The findings indicate that the adoption of a level playing field policy in bid solicitation of road construction projects, yields a positive effect on the timely completion of road construction projects.

The data also shows that the construction companies rely on data mining technologies in accommodating all tender applications for construction projects to make it easier for subsequent evaluations (Mean of 3.93 , SD = 0.722). The findings indicate that reliance of data mining in building information profile for contractors yields a negative effect on the implementation of road construction projects. The findings imply that changes in data mining techniques in bid solicitation in order to realize timely completion of road construction projects.

The researcher established that, the organizations uses quality based approaches in developing tender proposals (Mean = 3.98, SD = 0.946). The findings imply that quality based model in bid solicitation have a positive impact on road construction projects implementation which contributes to the on time implementation of construction projects.

The findings show that, construction companies use strict technical models in proposal presentations and examination for formulating tender applications (Mean of 3.95, SD = 0.847).The findings imply that the existing model of adopting strict approach in bid solicitation is wielding negative impact on the implementation of road construction projects. This implies that tighter technical evaluation models need precise determination in adoption as it yields effect on the timelines for implementing road construction projects.

The it is also noted from the findings that, construction companies use open window models to seek all potential applicants for construction tenders (Mean of 4.21, SD = 0.932). The findings imply that embracing an open window model for bid solicitation in project implementation has a positive effect on the timely completion of road construction project.

The findings in this study imply that the structure and approach to bid solicitation is a critical determinant in the timely completion of road construction projects.

4.6 Bid Evaluation and completion of road construction projects

The data in table 4.8 presents the computation of respondent's views on influence of bid evaluation on completion of road construction projects.

Table 4.8 Bid evaluation and Completion of Roads Construction Projects

STATEMENTS	n	Mean	Std. Deviation
The organization accepts structured technical criteria's in bid evaluation	58	4.14	.868
The organization submits financial projections as the primary basis for bidding consideration	58	4.17	.704
The ISO standardization minimums on quality forms the basic consideration for bid evaluation	58	3.72	.874
The prior success data forms the most important factor in the bid evaluation process	58	3.93	.814
The proposal on project timelines on deliveries as the key consideration in tender evaluation	58	4.07	.746
The diversity of human capital forms the basic consideration in the tender application consideration	58	3.67	.846
The level of technology systems integrations in projects executions forms the basic considerations for tender proposals	58	4.03	.794
The approaches to constraints and mitigation plans for unforeseen project disruptions forms a critical consideration in tender evaluation	58	4.10	.718
Average	58	3.973	0.796

Table 4.8 presents mean and standard deviation results on respondents opinions on the influence of bid evaluation on the completion of road construction projects.

The researcher established that, construction companies accept structured technical criteria's in bid evaluation (Mean of 4.14, SD = 0.868). The findings imply that embracing structured technical criterion in bid evaluation wield a positive effect on implementation of road construction project. This implied that, a technical criterion is necessary in enabling timely completion of road construction projects.

The findings indicate that, construction companies often submit financial projections as the primary basis for bidding consideration (Mean = 4.17, SD = 0.704). The findings imply that

financial determination is necessary for the rolling out of a road construction project as it affects the timely delivery of road construction projects.

It is also noted through the finding that, the ISO standardization minimum on quality forms the basic consideration for bid evaluation (Mean of 3.72, SD = 0.874). The findings indicate that existing mechanisms for evaluating standardization in bid evaluation is recording negative outcome on bid evaluation process. This implies that, proper standardization based on ISO benchmarks is necessary in evaluation road construction bids as it wields positive effect on the timely completion of road construction process.

The researcher found that companies experience and prior success forms the most important factor in the bid evaluation process (Mean of 3.93, SD = 0.814). The finding indicates that, bid evaluation based on prior company experience offers ineffective representation of the company. This implies that proper assessment on previous works should go beyond basic assessment as it affects the timely completion of road construction processes.

The researcher established that, proposals on project timelines on deliveries as the key consideration in tender evaluation (Mean of 4.07, SD = 0.746). The findings imply that having a clear picture on construction project timelines is vital in project implementation. This implies that prior set operational timelines have an effect on the timely completion of road construction projects.

The researcher found that the diversity of human capital forms the basic consideration in the tender application consideration (Mean of 3.67, SD = 0.846). The findings indicate that, evaluation of human capital wields negative effect. This implies that, a clear determination of labor capacity distribution among construction companies is necessary as it affects the timely delivery of road construction projects.

The findings show that the level of technology systems integrations in projects executions forms the basic considerations for tender proposals (Mean of 4.03, SD = 0.794). The findings imply that utilization of technological systems in bid evaluation exercise is necessary for the identification of potential contractors. This implies that, technology aids in identifying convenient contractors who can ensure the timely completion of road construction project.

Finally the researcher makes a finding that, the formal approach to constraints and mitigation plans for unforeseen project disruptions that a construction company adopts forms a critical consideration in tender evaluation (Mean = 4.10, SD = 0.718). The findings imply that having a clear picture on the potential constraints that may disrupt road construction helps in determining mitigation mechanisms which make it possible for the timely completion of road construction projects.

The findings imply that bids evaluation process is determined by the existing structural validation mechanisms and approaches and will impact on completion of road construction projects.

4.7 Contract Management and completion of road construction projects

The data in table 4.9 present the data computation of means and standard deviations for contract management on timelines in road construction.

Table 4.9 Contract Management and Completion of Roads construction projects

STATEMENTS	n	Mean	Std. Deviation
The terms of engagements determine the efficiency in delivery of road construction projects	58	3.72	.768
The levels of commitments to project follow-up forms the key determinant in the success of the delivery timelines	58	4.31	.654
The levels of supervisory input across different project phases, determines the timeliness in completion of road construction project	58	4.00	.675
The distribution in technical teams in a construction project determines the speeds in delivery times for different project phases	58	4.38	.587
The level of capacity and competence of supervisory teams determines the likelihood in meeting projects deadlines	58	4.10	.949
The levels of technical knowhow amongst the project managers determines the levels of compliancy to all the quality standards	58	4.05	.759
The division of road construction project across different phases, impacts on the delivery timelines and levels of operational efficiency	58	4.45	.753
The reliance of technology systems in project monitoring helps in avoiding any possible setbacks and disruptions that can result in delays	58	4.40	.591
Average	58	4.178	0.717

The findings in table 4.9 highlight the respondent's views on the influence of contract management on the timely completion of road construction projects.

The researcher established that the terms of engagements determine the efficiency in delivery of road construction projects (Mean of 3.72, SD =0.768). The findings indicate that current practice in determination of terms of engagements wields negative effect on the timely delivery of road construction projects. This implies that, necessary changes are needed to address construction projects engagement charter to ensure timely completion of road construction projects.

Table 4.9 show that, the levels of commitments to project follow-up forms the key determinant in the success of the delivery timelines (Mean = 4.31, SD = 0.654). The findings imply that, commitment to follow-up on the implementation of a construction project is necessary to ensure timely delivery of road construction project.

The researcher found out that, the levels of supervisory input across different project phases, determines the timeliness in completion of road construction project (Mean of 4.01, SD = 0.675). The findings show that supervisory input has little effect on project delivery in actual project implementation. This implies that, overall project supervision during project implementation is better approach towards realization of timely completion of road construction projects.

It is also established through the findings that, the distribution in technical teams in a construction project determines the speeds in delivery times for different project phases (Mean of 4.38, SD = 0.587). This implies that having sufficient number of experts in project execution is necessary for the realization of timely completion of road construction projects.

It is noted through the findings that, the level of capacity and competence of supervisory teams determines the likelihood in meeting projects deadlines (Mean of 4.10, SD = 0.949). This implies that consolidation of competent team of supervisors during road construction enables timely completion of road construction project.

The levels of technical knowhow amongst the project managers determine the levels of compliancy to all the quality standards (Mean = 4.05, SD = 0.759). This implies that, relying only on just the project manager is ineffective in determining project delivery. The findings imply that, overall diversity of project implementation team determines the timely completion of road construction project.

The division of road construction project across different phases, impacts on the delivery timelines and levels of operational efficiency (Mean of 4.45, SD = 0.753). This implies that, setting smaller phases across a bigger project enables easier management of the individual phases which enhance the timelines in completion of road construction projects.

The reliance of technology systems in project monitoring helps in avoiding any possible setbacks and disruptions that can result in delays (Mean = 4.40, SD = 0.591). This implies that, integration of technology support system to assist in real-time project supervision makes it possible for the timely completion of the road construction projects.

The researcher makes a finding that the existing legal framework and regulatory framework, impacts on the timelines for road construction projects.

4.8 Completion of Road Construction Projects

Table 4.10 Completion of Road Construction projects

STATEMENTS	n	Mean	Std. Deviation
The splitting of road construction in difference phases enables easier commitment to completion timelines	58	4.12	.751
Integration of numerous contractors across different road sections in a road under construction will increase effectiveness in undertaking quality control	58	4.41	.650
Use of multiple contractors, across different sections of a road network under construction makes it possible to honor delivery timelines	58	4.17	.775
Integrating legal services in road construction projects enables easier mitigation of any legal challenges that could potentially disrupt construction timelines	58	4.34	.637
Having bigger supervisory teams at every construction phase ensures adherence to all delivery timetables as it enables effective personnel distribution	58	4.22	.727
Having a standby technical team and extra project resources helps in faster and effective fill ins incase of any shortfalls in personnel or construction materials in the course of project execution enabling adherence to project completion timelines	58	4.29	.701
Incorporating services of independent quality control contractor ensures strict adherence to all stipulated standards in road construction projects	58	4.14	.868
Average	58	4.241	0.730

Table 4.10 show the means and standard deviations for the respondent's opinions on the completion of road construction projects.

It is indicated through the finding that, through splitting of road construction in difference phases make it easier to adhere to project completion timelines (Mean of 4.12, SD = 0.751). The findings imply that the level of efficiency in determination of road construction phases determines the overall outcome in adhering to project timelines and subsequently impacts on the timely completion of the road construction project.

The researcher established that, the integration of numerous contractors across different road sections in a road under construction will increase effectiveness in undertaking quality control (Mean of 4.41, SD = 0.650). This implies that redistribution of contactors across different project

phases enables easier project administration which makes it possible for the timely completion of the road construction project.

The researcher makes a finding that the use of multiple contractors, across different sections of a road network under construction makes it possible to honor delivery timelines (Mean = 4.17, SD = 0.775). The findings imply that there is need for clear determination of the contractor distribution process across different phases before implementation of the road construction process. This implies that, the processing of phasing a construction project is critical factor in the completion of a road construction project.

The findings indicate that, through integration of legal services in road construction projects makes it easier to mitigate any legal challenges that could potentially disrupt construction timelines (Mean = 4.34, SD = 0.637). This implies that, integration of legal services creates a buffer from disruptions that can delay project execution therefore ensuring timely completion of the road construction process.

The researcher through the finding noted that, having a bigger supervisory teams at every construction phase ensures adherence to all delivery timetables as it enables effective personnel distribution (Mean of 4.22, SD = 0.727). The findings imply that supervisors numbers don't necessary ensure strict adherence to delivery timelines, but rather ensuring efficient supervision is more critical in ensuring timely completion of the road construction process.

The researcher established that having a standby technical team and extra project resources helps in faster and effective fill ins incase of any shortfalls in personnel or construction materials in the course of project execution enabling adherence to project completion timelines (mean of 4.29 , SD = 0.701). This implies that, standby team supplement any technical requirement incase of a sudden shortfall in workforce distribution thus guaranteeing efficiency and continuity in project implementation which subsequently contributes to timely completion of road construction projects.

The researcher established that, incorporating services of independent quality control contractor ensures strict adherence to all stipulated standards in road construction projects (Mean of 4.14, SD = 0.868). The findings imply that having internal systems for quality evaluation is much

better than relying external independent contractor for the same as it ensures consistent operational quality which is necessary for the timely completion of road construction projects.

Through the findings it is noted that the existing legal and regulatory framework on construction sector forms the most vital component in determining the timelines for road construction projects.

4.9 Regression Model for the Study

The researcher performed a regression test for the field data to assess whether the research variables have inherent characteristics of association and correlation. The regression test also helps in determining whether, the predictor variables (needs identification, bids solicitation, bids evaluation and contract management) wield a statistical significant effect on dependent variable

The data in table 4.11 presents the model summary computed output for the regression test of combined research variables.

Table 4.11 Model Summary for the Test

Model	R	R Sq	Ad R Sq	Std. Error of the Estimate
1	.931	.867	.847	.487
a. Predictors: (Constant), Contract Management , Bid Evaluation , Bid Solicitation, Needs Identification				

Table 4.11 indicates that R – value computed for the test between the predictors and the dependent variables yields 0.931, which accounts for R-Square value of 0.867. This outcome indicates that predictor variables, notably; needs identification, bids solicitation, bids evaluation and contract management are responsible for 86.7 % of variability in the dependent variable (completion of road construction projects). This indicates that 13.3 % variability in completion of road construction projects is attributed to factors outside the four variables.

The data in table 4.12 highlights the computed Analysis of Variance Table for the regression test in this study.

Table 4.12 ANOVA Table

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.392	4	0.098	40.083	.000
	Residual	5.28	53	.024		
	Total	5.672	57			

a. **Dependent Variable:** Road Construction Completion

b. **Predictors:** (Constant), Contract Management , Bid Evaluation , Bid Solicitation, Needs Identification

Table 4.12 highlight the ANOVA results of the table which demonstrate the level of association in the study variables. The computation indicate that the Fischer value, F statistic, $F(4, 53) = 40.083$, recording a significance value of 0.000 ($p = 0.000$). The outcome indicates that, there exist a significant statistical association between independent variables, notably; needs identification, bids solicitation, bids evaluation and contract management at significant level 0.01. The test show that the p-value is less than the significance value ($p = 0.000, p < 0.01$). The study thus makes a finding that; a positive statistical association exists between independent and the dependent variables.

Table 4.13 the Coefficients Table

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.571	1.083		8.283	.000
	Needs Identification	0.877	0.114	1.854	14.034	.000
	Bid Solicitation	0.621	0.165	3.301	10.840	.001
	Bid Evaluation	0.955	0.085	0.897	8.312	.001
	Contract Management	0.120	0.101	0.083	3.175	.002

a. Dependent Variable: Road Construction Completion

The findings in table 4.13 presents the computed coefficients outcome for the regression test executed at significance level 0.01. The coefficients values obtained for each variable highlights the relative outcome in variability for each independent variable. The p-values obtained; needs identification = 0.000, bid solicitation = 0.000, bid evaluation = 0.001, and contract management = 0.002, which indicates that there exists significant correlations between all the independent variables and the dependent variable.

Therefore the computed regression equation for the study will be;

$$Y = 4.571 + 0.877X_1 + 0.621X_2 + 0.955X_3 + 0.120X_4$$

The test outcome for the regression test indicates that, the constant value for the equation is 4.571. In addition the findings show indicates that; incase a change happens in needs identification, will result in a 0.877 units change in completion of road construction projects, a change in bid solicitation, will result in a 0.621 units change in completion of road construction projects, a change in bid evaluation will result in 0.955 units change in completion of road construction projects and finally a change in contract management will result in a 0.120 units change in completion of road construction projects. The findings indicate that there exists a positive correlation between independent and dependent variables, with any change in independent variables contributing to positive unit change in completion of road construction projects.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This section of the study presents the summary of the findings, discussion of the findings, conclusion and recommendations of this study.

5.2 Summary of the Findings

The researcher focused on the independent impact of procurement practices factors, namely; needs identification, bids solicitation, bids evaluation and contract management. All the individual aspects of procurement practices were examined independently on the impact they wield on the completion of road construction projects.

5.2.1 Needs identification and the completion of Road construction projects

The researcher established that needs identification is a critical stage in the project conception where critical factors in relation to needs assessment and evaluation are examined. The researcher makes a finding that needs identification assists in the determination of all the critical project construction initiatives that are central to the timely completion of road construction projects.

Furthermore, the researcher makes a finding that; road construction is an activity that requires efficient pre-planning to determine the project delivery timelines. The study makes a finding that all needs identification factors, namely; Financial assessment, External professional input, Team work across diverse professionals, Global benchmark model, Technology Integration in Evaluation, Internal consultants, Standardized approach wield a significant impact on the timely completion of road construction projects.

5.2.2 Bids Solicitation and the completion of road construction projects

The researcher makes a finding that bids solicitation process offers the potential contractors opportunity to present their proposals on road construction laying down critical details on the

way to deliver on the road construction project. The study makes a finding that; bids solicitation process offers the opportunity for the determination of the terms of engagement in the course of road construction project implementation.

The researcher also makes a finding that; bids solicitation offers the contractor opportunity to assess the levels of compliance in different aspects such as, legal requirements, capacity diversity and standards of operations. The researcher makes a finding that, bids solicitation factors notably; open window model, financial indicators, Level playing field, Quality assessment for tenders, strict technical models, Data mining in evaluation, bidding model based on procurement framework are the most critical determinants of road construction project delivery timelines.

5.2.3 Bids Evaluation and the completion of road construction projects

The researcher makes a finding that, financial capitation and the overall determination of road construction budget in line with aspects of quality forms a critical basis in the bid evaluation process. The researcher makes a finding that bid evaluation process focuses project factors in the aspects of constraint and the underlying approaches to tackling all possible disruptions in the middle of project execution.

The researcher also makes a finding that the level of technological integration in the project execution forms an important aspect of evaluating potential contactors as it can demonstrate the levels of efficiency in delivering on the road construction projects. The researcher further makes a finding that; standardization in service delivery among contractor forms a critical aspect in consideration for the consideration of road construction contractors. Finally the study makes a finding that, bids evaluation factors notably; financial projections, diversity in human capital, mitigation of constraints and unforeseen disruptions, project timelines consideration, technological Integration, prior success, ISO standardization and the structured technical criteria wield significant influence on the completion of road construction projects.

5.2.4 Contract management and the completion of road construction projects

The researcher makes a finding that using phased approach in executing of road construction projects is critical in timely completion of road construction projects. The study also makes a finding that the approach and favorable model to management and administration of the road construction process is critical in the timely completion of a road construction projects.

It is noted through the finding that the administrative capacity and competencies in the road construction process, significantly impacts on the realization of the project completion timelines. It is also established that supervisory levels during the actual road construction process impacts on the likelihood of the realization of the project delivery timelines. Finally the researcher established that contract management factors notably; distribution of operational phases, reliance on technology, technical team's distribution, commitment to project follow-up, capacity and competency of supervisors, technical knowhow, levels of supervision and terms of engagement wield significant influence on the timely completion of road construction projects.

5.3 Discussion

5.3.1 Needs identification and Completion of Road Construction Projects

The research findings show that needs identification yields significant effect on the timely completion of road construction projects. The findings in this study are in agreement with Divakar and Subramanian (2009), who explained that needs identification informs the formulation of the project delivery schedule and identification of all the project factors critical to efficient project delivery. The findings in this study also agree with Munano (2012) who noted that any underlying failure to effective execution of public construction projects pre-planning tasks wielded an impact on the delivery timelines and potential for delays to occur.

5.3.2 Bids Solicitation and Completion of Road Construction Projects

The findings of the research indicate that bid solicitation has an effect on the timely delivery of the construction projects. The findings in this study are consistent with findings by Lowe and Parvar (2004) & Oo, Drew & Lo (2008) who established that public procurement framework should empower decision makers tasked settling on bidding choices since it yields impact on the success rate of all the project execution operations from the time of commencement to the time of completion.

5.3.3 Bids Evaluation and the completion of road construction projects

The researcher established that bid evaluation impacts on the timely completion of road construction projects since it's a process that involves the selection of contractors who eventually undertake the actual execution role of implementing the tasks in road construction projects. The

findings agree with Kotter and Scholsinger (2008) who explained that the strategy used for bid evaluation should reflect the client's objectives in relation to cost and time in project delivery.

5.3.4 Contract Management and the Completion of Road Construction Projects

The study agree with Gabula (2012) who explained that public procurement framework determined the terms of agreement on the components of the contractual agreements in undertaking construction projects, thus its scope is crucial in the subsequent success throughout the period of engagement. The study findings are in line with Joyce (2014) ,Pollit and Tabort (2004), and Trent (2007) who observed that the most important tasks in public projects administration is the nature and the model of contract management as it influences its overall outcome and the measures of success. Trent (2007) added that, project completion was subject to how the overall activities defined in all project phases were coordinated and implemented. Pollit and Tabort (2004) explained that contract management should enforce all project implementation statutes such as strict adherence to timelines and quality standards.

The researcher adopted three theoretical models that have direct relationship with the subject of procurement practices notably; needs identification, bids solicitation, bids evaluation and contract management. These theories include; two-factor theory, planning theory and contingency theory. The findings in this study indicate support all the theories. The findings support two-factor theory, agreeing with Gwaya (2013) who indicated that the factors that are related to the implementation of projects wield direct influence on the success of these projects. In additions, the study findings support planning and contingency theories, as was presented by Munano (2012), where planning was proved to be the fundamental determinant in successful implementation of a project. Similarly, planning on contingencies, which could be unforeseen factors that can disrupt the flow of a project, need to be identified and clearly mapped in the process of implementing road construction project to mitigate their effect and guarantee the project delivery timelines.

5.4 Conclusion

5.4.1 Needs identification and completion of Road Construction Projects

The researcher concluded that needs identification is a critical procurement process that determines timely completion of road construction projects. The researcher concludes that the

financial evaluation aspect in relation to the overall expenditures in a particular road construction project forms the primary needs assessment element that impacts on the ability to timely deliver on the particular road construction project. The researcher also concludes that approach to professional evaluation in needs assessment while considering the execution of a construction project determines the likelihood of timely completion of the road construction project. The researcher concludes that utilization of diverse team of professional while making needs assessment for a particular road construction projects impact on the timely completion of the particular road construction project. The researcher concludes that, needs assessment factors notably; financial assessment, external professional input, team work across diverse professionals, global benchmark models, and technology integration in evaluation, internal consultancy and standardized approach impact on the timelines in road construction projects.

5.4.2 Bids Solicitation and Completion of Road Construction Projects

The researcher concluded that bid solicitation is a fundamental procurement process that wields significant effect on road construction completion process. It is also concluded that the existence of a level playing field for all interested contractors in a bidding process impacts on the likelihood of realization of timely completion of the road construction process. The researcher concludes that, bid solicitation processes that accommodates all potential contractors' holds significant impact on subsequent timely completion of the actual projects. It is concluded that, creation of an assessment database impacts on the likelihood of enabling efficient bid solicitation system which impacts on the identification of best suited contractor who can effectively deliver on a particular project. The study concludes that, bid solicitation factors notably; open window model, financial indicators, Level playing field, quality assessment for tenders, strict technical models, data mining in evaluation, and bidding model based on procurement framework form primary determinants when inviting contractors to bid for road construction projects. Finally the researcher concludes that adherence to optimum stands that are prescribed in the bid solicitation process determines subsequent timely completion of road construction projects.

5.4.3 Bids Evaluation and the Completion of Road Construction Projects

The researcher concluded that bid evaluation stage in the procurement for road construction contractor determines the timelines for completing the project. It is concluded that, assessment of financial suitability of contactors offers a picture on the likelihood of contractor adhering in the projection completion timelines. The researcher also concludes that, assessment of the workforce

capacity amongst potential contractors should give a picture on the likelihood of contractor ability to deliver on the project delivery timelines. The researcher further concludes that, human capital assessment forms a key pillar in ensuring timely execution of critical tasks during implementation of a road construction project and subsequent timely completion of road construction projects. The researcher concludes that, bid evaluation factors namely; financial projections, diversity in human capital, mitigation of constraints and unforeseen disruptions, project timelines consideration, technology integration, prior success, ISO standardization, and structured technical criteria are central to assessment and the determination of contractor capable of delivering on project completion timelines.

5.4.4 Contract Management and the Completion of Road Construction Projects

It is concluded that contract management provides the detailed contractual data on the framework that will guide the actual activities that are geared towards the realization of the road construction project and also highlights the roles and the responsibilities towards the delivery of the road construction contract. The researcher concludes that, contract management factors, notably; distribution of operational phase, reliance on technology, technical team's distribution, commitment to project follow-up, capacity and competency of supervisors, technical knowhow, level of supervision, and terms of engagement wield significant influence on the timely completion of the road construction process.

5.5 Recommendations

The researcher recommends the following;

- a) The approach to needs identification should be spearheaded by professionals with experience in the procurement field. This is central as it will ascertain the levels of compliance and seriousness towards the execution of the critical roles on the identification and determination of the priorities on road construction projects, resources and the contractors who will undertake the primary role in road construction.
- b) Bid solicitation process should seek to create a level playing field so as to accommodate all the potential contractors, who may wish to apply for upcoming road construction constructs.

- c) The development of a contractor database that will define the priorities of all the potential contactors that seek to undertake a construction process. This will help in tracking the contactors in relation to the quality of their work and create a priority profile on quality of delivery and the likelihood for success.
- d) The contractual agreements between the parties in a road construction process should be simple and understandable.
- e) The road agreement should define the particular way through which the parties interact while the project execution is underway.
- f) The contractual agreement should define the way supervision process will be executed to ensure the project is delivered within the agreed operational limits in terms of standards and the project delivery timelines.

5.6 Suggestions for further studies

The researcher centered on the subject of public procurement process on the completion of road construction process. The researcher identified that the road construction process is a critical and complex undertaking that involves numerous components that are beyond the purview of public procurement process. For further studies, this study recommends the following;

- i) An investigation into the effect of regulatory frameworks in the timely completion of public projects such infrastructure projects.
- ii) A study on the importance of capacity diversity in the timely execution of road construction projects.
- iii) An examination into the enforceability of contractual agreements to ensure adherence to the timelines that define the road construction process.

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APPENDICES

APPENDIX I: TRANSMITTAL LETTER

Ismael Ochieng Obong'o

P.O Box 78392-00507

Nairobi, Kenya

Dear participant,

I am a Masters of Arts Student in Project Planning and Management at the University of Nairobi. As part of my academic course work, I am undertaking a field study on Project planning and management of road construction projects. My study seeks to evaluate the influence of public procurement processes on the completion of road construction projects. The purview of this study is limited across four critical public procurement factors notably; needs identification, bids solicitation, bids evaluation and contract Management.

Your contribution will go a long way in helping the public construction sector, discover some of the areas, which need be improved in the public procurement and enhance the delivery timelines of road construction projects. The data collected is only going to be used for academic purposes. In addition, the data collected will strictly be handled in a confidential and anonymous manner.

Thank you for your consideration

Yours Faithfully,

Ismael Ochieng Obong'o

Master of Arts in Project Planning and Management Student,

University of Nairobi

APPENDIX II: RESEARCH QUESTIONNAIRE

Questionnaire Number:

Self-administered survey

Please answer the following questions by ticking in the brackets or filling in the blank spaces provided.

Section A: General Information of the Respondent

1. What is your job designation in the company

2. Please indicate the year when the organization was formed

1900 - 1919	1920 -1939	1940 - 1979	1980 -1999	2000 - 2015

3. Select your appropriate age bracket

20 - 29	30 - 35	36 - 40	41 - 49	Over 50 years

4. Select the period your have worked at the organization

Under 5 years	5 – 10 years	11 – 15 years	16 – 20 years	Over 20 years

SECTION B: NEEDS IDENTIFICATION

In the following sub-section, Please indicate the extent to which you agree/disagree with the following statement on the impact of needs identification on the completion of road construction projects using a scale of 1 – 5, indicate how much you agree/disagree with the following statements, where; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

Level of Agreement				
(1)	(2)	(3)	(4)	(5)
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	STATEMENTS	RATING				
		(1)	(2)	(3)	(4)	(5)
1.	The organization uses a standardized approach in identifying priorities for projects					
2.	There is team of internal consultants that determine the areas of priorities in project undertakings					
3.	The organization seeks external input from professional consultants on needs evaluation for each project under consideration					
4.	There is a concerted team work in different professions in determining the determining areas of priorities for construction projects					
5.	The organization utilizes technological systems in quantitative evaluation of construction project priorities					
6.	The organization uses global benchmark models for deciding project priorities in all construction undertakings					
7.	Financial consideration form the main contributor in determining areas of priorities on basis of construction projects					

8. What makes needs identification a critical public procurement undertaking in the construction of road networks? (Explain)

.....

.....

.....

SECTION C: BIDS SOLICITATION

In the following sub-section Please indicate the extent to which you agree with the following statement on the impact of bids solicitation on the completion of road construction projects. Using a scale of 1 – 5, indicate how much you agree/disagree with the following statements, where; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

Level of Agreement				
(1)	(2)	(3)	(4)	(5)
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No	STATEMENTS	RATING				
		(1)	(2)	(3)	(4)	(5)
1.	The organization uses financial indicators in determining bidding models for construction projects					
2.	The structure of bidding designs is structured on the basis of existing procurement framework					
3.	There is a policy of level playing field for all the applicants of construction tenders					
4.	The organization uses data mining technologies in accommodating all tender applications for construction projects to make it easier for subsequent evaluations					
5.	The organizations uses quality based approaches in developing tender proposals					
6.	The Organization uses strict technical models in proposal presentations and examination for formulating tender applications					
7.	The organization uses open window models to seek all potential applicants for construction tenders					

8. What is the effect of bid solicitation on the adherence to the tender processes as enshrined in the regulatory frameworks for public procurement? (Explain)

.....

.....

.....

SECTION C: BID EVALUATION

In the following sub-section, Please indicate the extent to which you agree/disagree with the following statement on the impact of bid evaluation on the completion of road construction projects. Using a scale of 1 – 5, indicate how much you agree/disagree with the following statements, where; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

Level of Agreement				
(1)	(2)	(3)	(4)	(5)
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	STATEMENTS	RATING				
		(1)	(2)	(3)	(4)	(5)
1.	The organization accepts structure technical criteria’s in bid evaluation					
2.	The organization submits financial projections as the primary basis for bidding consideration					
3.	The ISO standardization minimums on quality forms the basic consideration for bid evaluation					
4.	The prior success data forms the most important factor in the bid evaluation process					
5.	The proposal on project timelines on deliveries as the key consideration in tender evaluation					
6.	The diversity of human capital forms the basic consideration in the tender application consideration					
7.	The level of technology systems integrations in projects executions forms the basic considerations for tender proposals					
8.	The approaches to constraints and mitigation plans for unforeseen project disruptions forms a critical consideration in tender evaluation					

9. What is the effect of bid evaluation process in the realization of effective delivery of road construction projects? (Explain)

.....

10. What is the effect of public procurement framework in formulating bid evaluation criteria’s?

.....

SECTION C: CONTRACT MANAGEMENT

In the following sub-section, Please indicate the extent to which you agree/disagree with the following statement on the impact of contract management on the completion of road construction projects. Using a scale of 1 – 5, indicate how much you agree/disagree with the following statements, where; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

Level of Agreement				
(1)	(2)	(3)	(4)	(5)
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

No.	STATEMENTS	RATING				
		(1)	(2)	(3)	(4)	(5)
1.	The terms of engagements determine the efficiency in delivery of road construction projects					
2.	The levels of commitments to project follow-up forms the key determinant in the success of the delivery timelines					
3.	The levels of supervisory input across different project phases, determines the timeliness in completion of road construction project					
4.	The distribution in technical teams in a construction project determines the speeds in delivery times for different project phases					
5.	The level of capacity and competence of supervisory teams determines the likelihood in meeting projects deadlines					
6.	The levels of technical knowhow amongst the project managers determines the levels of compliancy to all the quality standards					
7.	The division of road construction project across different phases, impacts on the delivery timelines and levels of operational efficiency					
8.	The reliance of technology systems in project monitoring helps in avoiding any possible setbacks and disruptions that can result in delays					

9. What are the main areas of focus when implementing project management agreements in road construction projects? (Explain)

SECTION F: COMPLETION OF ROAD CONSTRUCTION PROJECTS

In the following sub-section, Please indicate the extent to which you agree/disagree with the following statement on the completion of road construction projects. Using a scale of 1 – 5, indicate how much you agree/disagree with the following statements, where; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

Level of Agreement				
(1)	(2)	(3)	(4)	(5)
Strongly Disagree	Disagree	Neutral	Agree	Strongly Disagree

Please indicate the extent to which you agree with the following statement on the completion of road construction projects

No.	STATEMENTS	RATING				
		(1)	(2)	(3)	(4)	(5)
1.	The splitting of road construction in difference phases enables easier commitment to completion timelines					
2.	Integration of numerous contractors across different road sections in a road under construction will increase effectiveness in undertaking quality control					
3.	Use of multiple contractors, across different sections of a road network under construction makes it possible to honor delivery timelines					
4.	Integrating legal services in road construction projects enables easier mitigation of any legal challenges that could potentially disrupt construction timelines					
5.	Having bigger supervisory teams at every construction phase ensures adherence to all delivery timetables as it enables effective personnel distribution					
6.	Having a standby technical team and extra project resources helps in faster and effective fill ins incase of any shortfalls in personnel or construction materials in the course of project execution enabling adherence to project completion timelines					
7.	Incorporating services of independent quality control contractor ensures strict adherence to all stipulated standards in road construction projects					

8. Identify one main problem that often causes delays in the delivery of road construction projects?

APPENDIX III: RESEARCH PERMIT

The screenshot shows the Gmail interface. At the top, there is a search bar and navigation icons. A yellow notification bar reads: "Click here to enable desktop notifications for Gmail. [Learn more](#) [Hide](#)". Below this is a toolbar with icons for back, archive, mute, trash, folders, tags, and a "More" dropdown. The main header shows "NACOSTI Oris System" with an "Inbox" label and a close icon. The email content is as follows:

NCST Online Research Information System <oris@oris.nacosti.go.ke> Dec 13 (2 days ago) ☆

to me ▾

Your Application for Research Permit has been Approved. Kindly contact NACOSTI for further details.

[Click here to Reply or Forward](#)

0.51 GB (3%) of 15 GB used
[Manage](#)

[Terms](#) - [Privacy](#)

Last account activity: 1 minute ago
[Details](#)

APPENDIX IV: LIST OF LICENSED ROAD CONTRACTORS

No.	Company Name	Registration Number
1.	AMG Saginn Limited	1/R/0214
2.	HYRAX CONSTRUCTION (K) LTD	3414/R/0214
3.	TIJARA HOLDINGS LIMITED	21047/R/1115
4.	SALAMA HOLDINGS LIMITED	27685/R/1016
5.	SALAN COMPANY LIMITED	19891/R/0915
6.	Peleste Limited	18637/R/0715
7.	Quadcore Communication Limited	1486/R/0814

8.	ALMARJAN CONSTRUCTION & SUPPLIES LIMITED	1486/R/1117
9.	ASMAA VENTURES LIMITED	28587/R/1216
10.	TROIKA COMPANY LIMITED	3314/R/0814
11.	Ali Abdi Baricha Transporters Ltd	10032/R/0314
12.	DEBROSE CONSTRUCTION Company Limited	10041/R/1115
13.	Dymarote Enterprises	10044/R/0214
14.	FLOLIZZ CONTRACTORS LIMITED	10047/R/0816
15.	Kirti Enterprises Limited	10053/R/0214
16.	Majani Holdings Limited	10055/R/0214
17.	Taxan Investment Limited	10067/R/0214
18.	SOMENI INDUSTRIES LTD	10164/R/1014
19.	WANJUGI CONSTRUCUTION LIMITED	10178/R/0214
20.	Zulfa Construction Company Ltd	10179/R/0214
21.	Adotech Limited	102/R/0214
22.	Mapalec Intakes Limited	10232/R/0314
23.	Ray Engineering & Construction International Limited	10261/R/0314
24.	Jaxoo.com (K) Limited	10265/R/0314
25.	Bricarl Construction Solutions K Ltd	1029/R/0214
26.	Ogitco Invest Construction Co Limited	10297/R/0714
27.	PEARLTEK KENYA LTD	10300/R/0414
28.	SOLITON TELMEC LIMITED	10308/R/1017
29.	Tibyaan Enterprises Limited	10319/R/0514

30.	Gradwin Enterprises Limited	10340/R/0915
31.	Randis Construction Co Limited	10345/R/0514
32.	GEMONA ENTERPRISES LIMITED	10347/R/0215
33.	Jiangxi Water & Hydropower Construction Kenya Ltd	10411/R/0614
34.	HALANE CONSTRUCTION CO. LTD	10415/R/0214
35.	Ministry of Roads and Public Works	NA

Source: Kenya Construction Authority (2017)