

**FACTORS INFLUENCING COMPLETION OF ROAD CONSTRUCTION
PROJECTS IN EMBAKASI, NAIROBI COUNTY KENYA**

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DECLARATION

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

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DEDICATION

This research is dedicated to my parents Mr. Joseph Macharia and Mrs. Margret Macharia and my siblings, Faith Muthoni, Samuel Wanjohi and Peter Kairebi.

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TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGMENTS	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS AND ACRONYMS	xi
ABSTRACT.....	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the study	1
1.2 Statement of the problem	7
1.3 Purpose of the study	9
1.4 Objectives of the study.....	9
1.5 Research questions	9
1.6 Significance of the study.....	10
1.7 Limitations of the study	11
1.8 Delimitation of the study	11
1.9 Basic assumptions of the study	11
1.10 Definition of significant terms	12
1.11 Organization of the study	13
CHAPTER TWO: LITERATURE REVIEW	14
2.1 Introduction	14
2.2 State of roads in Kenya	14
2.3 Cases of non-completion of construction projects	16

2.4 Availability of resources and their influence on completion of road construction projects	19
2.5 Competence of staff and completion of construction projects	23
2.6 Stakeholder participation and completion of road construction projects	26
2.7 Procurement Procedures and completion of road construction projects	31
2.8 Theoretical framework	35
2.9 Conceptual framework	36
2.10 Knowledge gap	38
2.11 Summary of the literature reviewed	38
CHAPTER THREE: RESEARCH METHODOLOGY	39
3.1 Introduction	39
3.2 Research design	39
3.3 Target population	39
3.4 Sample Size and Sampling procedures	40
3.5 Research instruments	41
3.6 Validity of the instruments	42
3.7 Reliability of the instruments	42
3.8 Data collection procedures	43
3.9 Data analysis Techniques	43
3.10 Ethical considerations	45
3.11 Operational definition of variables	40
CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION	41
4.1 Introduction	41
4.2 Questionnaire return rate	41

4.3 Demographic characteristics of the respondents	42
4.3.1 The Gender of the respondents	42
4.3.2 Period of service in years in construction industry	43
4.3.3 Education level of the respondents	43
4.3.4 Positions held by the respondent	44
4.3.5 Main clients of road contractors	45
4.4 Resources	45
4.4.1 Influence of resources on project completion	45
4.4.2 Indicators on the influence of resources on completion of road construction projects 46	
4.4.3 Variables on completion of road projects	47
4.5 Competency of staff	47
4.5.1 The rating on influence of competency of staff on completion of construction projects	48
4.5.2 Indicators of competency of staff and completion of road construction projects	49
4.5.3 Rating on how project staff skills improve their ability to handle assigned duties competitively	49
4.6 Stakeholder participation on completion of road infrastructure projects	50
4.6.2 Stakeholder’s participation activities	51
4.6.3 Stakeholders’ engagement and completion of construction projects	52
4.7 Procurement procedures and completion of road construction projects	53
4.7.1 Time taken to process procurement documents	54
4.8 Inferential analysis	54
4.8.1 Coefficient of determination	55
4.8.2 Multiple regression analysis	56

CHAPTER FIVE: SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATION	58
5.1 Introduction	58
5.2 Summary of the findings	58
5.3 Discussions of findings	59
5.3.1 Resource Adequacy and completion of road construction projects	59
5.3.2 Staff Competency and completion of road construction projects	60
5.3.3 Stakeholder participation and completion of road construction projects	61
5.3.4 Procurement Procedures and completion of road construction projects	62
5.4 Conclusions	62
5.5 Recommendations of the study	63
5.6 Suggestions for further research	64
REFERENCES	65
APPENDICES	72
Appendix 1: Letter of transmittal	72
Appendix 2: Individual Questionnaires for road contractors, engineers and supervisors	73
Appendix 3: List of road contractors in Nairobi County	80

LIST OF TABLES

Table 3.1: Target Population	40
Table 3.2: Sample and sample size	41
Table 3.3: Operational definition of variables	40
Table 4.1: Response rate	41
Table 4.2: Gender of the respondents	42
Table 4.3: Period of service in year's construction industry	43
Table 4.4: Education level of the respondent	44
Table 4.5: Positions held by respondents	44
Table 4.6: Main clients of the contractors	45
Table 4.7: The influence of resources on project completion	45
Table 4.8: Indicators on the influence of resources on project completion	46
Table 4.9: Variables of completion of road projects	47
Table 4.10: Rating on influence of competence of staff on project completion	48
Table 4.11: Indicators on competency of staff	49
Table 4.12: Rating on project staff skills and completion of projects	50
Table 4.13: Influence of Stakeholder's participation on completion of construction projects	51
Table 4.14: Stakeholders' participation activities	51
Table 4.15: Stakeholders level of engagement and completion of construction projects	52
Table 4.16: Extent to which procurement influence completion of construction projects	53
Table 4.17: Time taken to process procurement documents and its influence in completion of construction projects	54
Table 4.18: Coefficient of determination	55
Table 4.19: Multiple regression analysis	56

LIST OF FIGURES

Figure1: Conceptual framework	37
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LIST OF ABBREVIATIONS AND ACRONYMS

FY	Financial Year
GDP	Gross Domestic Product
GoK	Government of Kenya.
KACC	Kenya Anti-Corruption Commission
KeNHA	Kenya National Highway Authority
KeRRA	Kenya Rural Roads Authority
KURA	Kenya Urban Roads Authority
MCP	Mega Construction Projects
MDG	Millennium Development Goals
NCA	National Construction Authority
ODA	Official Development Assistance
SPSS	Statistical Package for Social Scientists
WB	World Bank

ABSTRACT

This study aims to find out factors that influence completion of road construction projects in Embakasi, Nairobi County Kenya. The research will be guided by the following research objectives; to establish the extent to which availability of resources influences completion of road construction projects, to determine the influence of competency of staff toward completion of roads construction project, to establish the extent to which stakeholder participation influences completion of road construction projects and finally to determine the influence of procurement procedures on completion of road construction projects. The study will focus on how resources, competency of staff, stakeholder participation and procurement procedures influence completion of road construction projects. The research design to be used will be descriptive research design. The study will employ stratified sampling technique in coming up with a sample size of 42 from a total population of 106. The study relied mostly on primary data sources where self-administered questionnaires was utilized as source of data. Quantitative data was coded and entered into Statistical Package for Social Scientist (SPSS) and analyzed using descriptive statistics. The findings were presented in form of frequency tables while explanation was presented in prose. The findings of this study will help policy makers on key issues related to project development and management with particular reference to road and other infrastructure development and construction. Project managers can also benefit immensely from understanding some of the underlying causes of project construction delays as will be documented by this study. The study concluded that availability of resources influenced completion of road construction projects and one of the resources that is mostly not enough is financial resource. The study also concluded that competency of staff also influences completion of road construction projects since if the staff have the required skills, experience and knowledge in the area this would help them undertake the task placed on them. Lastly the study concluded that stakeholder participation also influences completion of road construction projects and that stakeholders should be encouraged to participate in projects.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

In the construction industry, the aim of the project control is to ensure the projects finish on time, within budget and achieving other project objectives. It is a complex task undertaken by project managers in practice, which involves constantly measuring progress; evaluating plans and taking corrective actions when required (Kerzner, 2003). The goal of all the parties involved in construction projects, owners, contractors, engineers and consultants in either public or private sector is to successfully complete the project on schedule within planned budget, with the highest quality and the safest manner. When projects are completed in time, their duration is not extended beyond the scheduled and thus operates within budget (Gollapudil, 2003).

Construction delays occur all over the world and many studies have been carried out to assess the causes of delays in construction. Sambasivan and Yau (2007) stated that about 17.3% of government contract projects in Malaysia were considered sick, which means they are delayed by more than three months or abandoned completely. Besides that, Assaf and Al-Hejji (2006) from Saudi Arabia studied the causes of delay in large construction projects and discovered that only 30% of construction projects were completed within the scheduled completion dates and the average time overrun was between 10% and 30%.

Road construction in Africa is a scarce undertaking and where roads are available, they are largely poorly maintained. A survey carried out by the World Bank reveals that average road density in Africa is 20.4km per 100 square kilometres of land area. Worse still, of these only a quarter are paved. Southern Africa is the only region in Africa with a fairly good road transport system. South Africa in particular is reported to have 62km

of road per 100km square kilometres close to the United States of America that has 67km of roads per 1000 square kilometre. This success story has been attributed to the country's revitalization of its road and railway system before the FIFA World Cup Of 2010. The low road construction in Africa has had dire consequences. The effects of poor road connectivity in Africa cannot be over emphasized. The World Bank notes that with poor road connectivity the cost of goods significantly goes up.

The contractors and consultants have varying experience, capabilities and management skills, all of which have a major impact on the completion times of construction projects. The growth in the number, of these players in the industry has not seen a corresponding improvement in the timely delivery of projects. Although with more contractors and consultants, there is increased competition among themselves and the clients have a greater variety of service providers from which to select. The construction industry in Malawi is now at a stage where most contractors both emerging and as well as long established, can hardly deliver their projects on schedule, not to mention failing to perform all together. This failure to deliver road projects on time annoys both the clients and road users who expect to benefit from the completed roads. This state of affairs is undesirable to both the contractors and clients, as it costly for both parties and has the potential to trigger disputes, whose resolution is time-consuming and expensive (Kamanga, 2013). In Ghana for instance 33 out of total of 47 projects completed between 1979 and 1999 were delayed and 38 projects suffered cost overruns. (Frimpong et al, 2001).

The construction industry is very important in the economic development of any nation especially in developing countries such as in expanding economy like Sub Saharan countries (Ibironke, 2008). The growth of construction industry in Nigeria in the past two decades indicates its success in greatly contributing to the country's Gross

National Product, which was 1.72 in year 2007 (Federal Bureau of Statistics). Aminudin (2006) stated that up to 30% of construction is rework, labour is used at only 40% to 60% of potential efficiency and at least 10% of materials are wasted. It was posited that rework costs could be significantly higher than figures reported in the previous literature (Love & Smith, 2006).

Ellis and Thomas (2003) argue that a significant annoyance to the public is when important projects are not completed in a timely manner and when the actual construction takes longer than necessary, thereby prolonging the inconvenience. Apart from inconveniencing road users, various studies (Ahmed et al, 2002; Aibinu & Jagboro, 2002; Assaf & Al-Hejji, 2006) have shown that a delay usually leads to cost overruns and disputes, and negatively impacts the economic feasibility of such projects. Projects that are delayed are not just costly for the contractor and client, but also for other stakeholders. The cost of deprived benefits to the users, which by definition is higher than the cost of the project is a major result of construction delays (Malotaux, 2009).

Road construction projects in Kenya are procured through the traditional systems where the consultant civil engineer is in charge of design and construction process on behalf of the client. According to the traditional system, the design process ought to be completed prior to commencement of construction. The client commissions of the consultant civil engineer who is briefed by the client. The consultant civil engineer then develops the design and prepares contract documents. The tendering process begins by pre-qualifying contractors on the basis of experience, work capacity and past performance. The pre-qualified contractors are then invited to tender. The contract is normally awarded to the lowest bidder. The standard form of contract that is commonly used for civil engineering works in Kenya is FIDIC (International Federation of

Consulting Engineers). The consultant civil engineer appoints a Resident Engineer to be permanently based on site to supervise the project. The consultant Civil Engineer delegates some of his duties and powers under the contract to the Resident Engineer. The Resident Engineer holds monthly site meetings with the contractor. The consultant Civil Engineer and the client usually attend these meetings. At the practical completion stage, an inspection is carried out and the project handed over expected to make good any defects within the Defects Liability Period that normally lasts for one year.

The Kenya vision 2030 aspires to a country with integrated and firmly interconnected transport and communication infrastructure consisting of roads, railways, ports, airports, waterways and telecommunication infrastructure. Government of Kenya recognizes that the attainment of Kenya Vision 2030 and millennium development goals will depend heavily on the quality of our road network. Road transport is cardinal in Kenya's transportation sector as it caters for over 93% of all freights and passenger traffic in the country. With the implementation of the roads subsector investment programmes and strategy, Kenya stands to reap immense benefits as a result of high quality road network (Ministry of Roads, 2011). However, as in many other African countries, road projects in Kenya have been facing numerous challenges, including completion delays, the associated cost overruns as well as the demolition of residential and business houses and abortive works to pay for such projects (Maina, 2013). For instance in the construction of now famous and successfully completed Thika Superhighway, the cost escalated from 26.44 billion to 34.45 billion (World Bank, 2014). The date of completion itself had to be revised from the earlier one of July 2011, to July 2013, a difference of two whole years.

According to Escribano et al (2010), they argue that evidence from enterprise surveys suggest that infrastructure constraints are responsible for about 30% of productivity handicap faced by Kenyan firms while poor governance, red tape and financing constraints are the major contributing factors to infrastructure constraints. Power is the infrastructure constrain that weighs most heavily on Kenyan firms, with transport a close second.

In Nairobi County, most contractors, particularly road contractors have shown lot of interest in the sector. However, most of these firms have been performing minimally. Small-Scale Building Contractors who constitute over 90% of the job market in construction sector have been left out of the sampling frame. Yet although these firms are classified as small, in financial terms, they collectively contribute substantially to overall construction GDP, especially in the development of decentralized and local government areas. Indeed these small firms could also be accounting for over 50 % (cost-wise) of all building materials production and nearly 80% of all short-term employment (casual labour) especially for unskilled workers in many deprived communities in Kenya (Ministry of Planning, 2010).

From the records available with the City Engineers department, Nairobi County, the total road network is 2,968 km out of which n1, 331.1 km have been paved with bituminous surface. 504.1km are of gravel standards and 1,133.6 km have earth surface. The responsibility of maintaining this road is vested with the Kenya Urban Roads Authority, KURA, who get the funding from the Kenya Roads Boards, KRB. However, KURA delegates maintenance of the roads by engaging road contractors. There are 34 fully registered road contractors under the National Construction Authority (NCA) (Ministry of Roads and Public Works, 2013). The road contractors are registered and categorised according to their experience, capability both in technical and financial.

The governments on the other hand strive to allocate enough funds to ensure the road are maintained and improved. This is because it is clearly understood that the existence of good and well-functioning road network is vital for economic growth, poverty reduction, and wealth and employment creation. Through the provision of basic infrastructure facilities to the public by developing, maintaining, rehabilitating and managing of road network in the country, the Ministry of Roads therefore is expected to play an important role in the attainment of “Kenya vision 2030” goals, Millennium Development Goals (MDGs) and Kenya’s Economic Recovery Strategy for wealth and Employment Creation Strategy (ERS), (Mbaabu, 2012).

The estimated projected collections of the Road Maintenance Levy Fund (RMLF) during the Financial Year FY 2012/2013 are Ksh.24,000,000,000(twenty four billion shillings). Similarly, the estimated collections of the Transit Tolls (TT) during that same Financial Year are Ksh, 400,000,000 (four hundred million shillings).These two primary sources of funds; contribute to more than 99% of the funds deposited into KRBF. Additionally, about Ksh.90, 000,000 (ninety million shillings) was received from agricultural cess. This brings the total KRBF to Kshs 24,490,000,000 (twenty four billion, four hundred and ninety million). Despite immense allocation of the fund by the government in all its financial budget, the sector face a challenge with poor management of funds, completion delays and poor delivery of services to the road user being mostly cited as the major drawback in the performance of the road sector (Ministry of Roads and Public Works, 2013).

Project delays frustrate the process of development due to their immeasurable cost implications to the society. It leads to opportunity costs as the intended use of the particular project by the people takes time to materialize often with the costs either of a social, economic, environmental or political nature or a combination of all these. It

moreover leads to the irrecoverable loss of reputation of the parties involved in projects execution. Mbatha (1986) and Talukhaba (1988) posit that the time performance of construction projects in Kenya was poor to the extent that over 70% of projects initiated in Kenya are likely to escalate in time with a magnitude of over 50%.

Construction of roads are important and this requires that financial support reaches its intended destinations. The case of Garissa exemplifies all northern and eastern parts of the country, which have poor infrastructure, if at all a useful network of roads to link the climatically, less fortunate areas to the rest of the country and to enable food transport. The concentration of a well-developed infrastructure in the parts of the country where there is agglomeration, on the other hand causes a contrasting situation.

The US-Army, which currently has one of its bases in Kenya, stated that “the stores in Eldoret and Kitale are bursting with excess grain while people are dying a few hundred meters away from hunger” (Waira, 2006). As the statement continues “they are not dying because of war of civil strife, but because there is no transport and other logistics in place to ensure delivery of the much needed relief”. Therefore, the importance of a viable road network does not simply lie in practical connection of places one to another but rather roads are elixir of life, running through the country like veins in a body and enable the population to have adequate access to food supplies, especially where the local production is not successful.

1.2 Statement of the problem

Construction and maintenance of standard road networks plays an important role in the maintenance of proper living standards to residents of Nairobi County. To attain and maintain the road standards, investment comes in handy in the form of monetary investment from state corporations which are: Kenya Urban Roads Authority (KURA),

Kenya National Highway Authority (KeNHA), Kenya Rural Roads Authority (KERRA), Kenya Roads Board (KRB), Engineers Board of Kenya, (ERB) and also external donors. These state corporations are under the Ministry of Transport and Infrastructure Development, and they strive to meet the demands and needs of the residents and are also mandated to maintain and improve the states of roads in Embakasi.

The stretches of roads in Embakasi are short, some less than a kilometre long but dilapidation is their worst characteristic. These roads play a key linking role for some residential estates and commercial hubs within the area, but using them has become a headache for motorists and pedestrians. The Eastern Bypass-Mihang'o-Kangundo Road in Embakasi constituency is one of the road that has been faced with delayed completion. In 2010, the Nairobi City Council allocated 300 million for the road. A contractor, Junjo Commercial Agencies started working on it, however it stopped due to non-payment according to correspondences. Komarock Road in Embakasi North Constituency which starts at the Kariobangi Roundabout to Dandora is another example that faces delayed completion. The D.K contractors has been refilling the potholes but the final result has not made transport any better on the four-kilometre stretch which has led to delayed completion of the road (Daily Nation,2014).

Construction of Nairobi Outering Road which touches most of the areas in Embakasi, is already behind schedule by a year with the contractor having done only 5% of the work. Infrastructure Principle Secretary John Mosonik said the delay was as a result of land acquisition and relocation of services. "The El-Nino rains expected are likely to further interfere with the man hours dedicated to the job", said the PS. The road risks further delay as project variation doubles more than the initial costs.

The present position concerning road construction projects in Embakasi is worrying and lacks empirical research. There have been increases in arterial roads within the area although not at equal rates and these roads have not escaped delayed completions. It is against this background that this research seeks to study factors that influence completion of road construction projects in Embakasi, Nairobi County.

1.3 Purpose of the study

The purpose of the study was to assess the factors influencing completion of road construction projects in Embakasi, Nairobi County Kenya.

1.4 Objectives of the study

The objectives of this research was guided by:

- i. To establish the extent to which availability of resources influence completion of road construction projects in Embakasi, Nairobi County Kenya.
- ii. To determine the influence of competency of staff on completion of road construction projects in Embakasi, Nairobi County Kenya.
- iii. To establish the extent to which stakeholder participation influences completion of road construction projects in Embakasi, Nairobi County Kenya.
- iv. To determine the influence of procurement procedures on completion of road construction projects in Embakasi, Nairobi County Kenya.

1.5 Research questions

The research was guided by the following research questions:

- i. To what extent does availability of resources influence completion of road construction projects in Embakasi, Nairobi County in Kenya?
- ii. To what extent does the competency of staff influence completion of road construction projects in Embakasi, Nairobi County Kenya?

- iii. To what extent does stakeholder participation or absence of it influence completion of road construction projects in Embakasi, Nairobi County Kenya?
- iv. To what extent does the relevant procurement procedures influence completion of road construction projects in Embakasi, Nairobi County Kenya?

1.6 Significance of the study

The findings of the study was hoped to be of great importance to the government as it would apply the findings of the study to ensure construction companies play their role more particularly in economic growth and job creation.

Further the findings of this study would benefit the government through ensuring policies put in place to govern construction sectors and that are favourable to their growth and that their performance will play a key role in national building toward achieving millennium goal such as vision 2030. Road construction companies would benefit from the findings of this study since they would be able to know the challenges of and strategies that can be applied to achieve efficiency and effectiveness in road construction projects.

The findings of this study would help policy makers on key issues related to project development and management with particular reference to road and other infrastructure development and construction. The findings of this study would therefore be of great help in improving the efficiency and management procedures of road construction projects in Embakasi, Nairobi County Kenya so as to ensure that such projects are completed on time and in accordance to set objectives. The study would also be of great interest to scholars and researchers interested in and working in the area of road construction projects.

1.7 Limitations of the study

The main limitation of the study was its inability to include more construction firms around the country. This was a study focusing on road contractors within Nairobi. The study should have covered road contractors across the country so as to provide a more broad based analysis.

Some of the respondents targeted were reluctant in giving information fearing that the information would be used to intimidate them or print a negative image about them or the firm. The researcher handled the problem by carrying an introduction letter from the University and assured them that the information they gave would be treated confidentially and it would be used purely for academic purposes.

1.8 Delimitation of the study

The study was delimited to government representatives from Ministry of roads and public works, contractors (supervisors in the projects), consultants (technical consultants by contracts), engineers and technical auditors participating in road construction projects in Embakasi, Nairobi County Kenya because they were perceived to be knowledgeable in the area.

1.9 Basic assumptions of the study

The researcher assumed that the respondents would be honest and cooperative in their response to the research instruments and would be available to respond to the research instruments in time. The researcher assumed that the authorities in the firms would grant the required permission to collect data from employees.

1.10 Definition of significant terms

Delay: refers to the time overrun either beyond completion date specified in a contract or beyond the date that the parties agreed upon for delivery or at the outset.

Completion of construction projects: refers to the completion of given projects according to the time schedule set out for the projects without any delays in time.

Project: this refers to the temporary organization that is needed to produce a unique and predefined outcome or result at a pre-specified time using predetermined resources.

Procurement: this refers to the acquisition of goods, services and/or infrastructure at the best possible total cost of ownership in the right quantity and quality, at the right time in the right place for the direct benefit or use of governments, corporations or individuals generally via a contract.

Resources: this refers to people, equipment, facilities, funding or anything else usually other than labour required for the completion of a project activity.

Stakeholders: this refers generally to people or small groups with the power to respond to, negotiate with and change the strategic future of the organization, any group or individual who can affect or is affected by the achievement of the organization's objectives.

1.11 Organization of the study

The study was organized in 5 chapters. The first chapter comprised of the introduction, background of the study, statement of the problem, purpose of the study, objectives and research questions, significance of the study, limitations and delimitations of the study, basic assumption and definition of significant terms and an overview of the research proposal. The second chapter comprised of relevant studies (Local and International) relating to the subject matter of this study. The third chapter dealt with the study research design as well as methodology. Thus it articulated the research design, population sample, sampling, data collection and data analysis. This chapter gave insight on the appropriateness of the research methods in addressing the objectives of the study. The fourth chapter comprised of the discussion of the results. The chapter also dealt with the findings and interpretations in accordance with the study's stated objectives. The last chapter dealt with the summary and conclusion of the study as well as recommendations and discussions of the research findings and will also offer suggestions on further research in this area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presented the literature reviewed on factors influencing completion of road construction projects. Reviewing relevant literature would assist in laying the foundation for this study. The chapter therefore presented arguments on the concepts by various authors based on the research objectives. The main areas presented here were: literature on the dependent and independent variable, theoretical review and the conceptual framework which explains the relationship.

2.2 State of roads in Kenya

Road transport represents a significant portion of the government's total financial investment in fixed assets. The scope of road transport infrastructure comprises the entire road network in Kenya and includes all road facilities upon which road transport operates. In Kenya, the road subsector as a component of the physical infrastructure sector is an enabler for the realization of vision 2030. This is because 93% of the country's land freight and passenger traffic are conveyed through the road network. The road sub sector is relatively large, with a total classified network of 160,866 km of which 61,946 km is currently classified while 98,940 km is unclassified, GOK (2012). This provides a reasonable network of roads in the densely populated parts of the country and some access through the rest. The key challenge for Kenya is to bring the network in poor condition (56%) to good condition (currently just 11 percent), while ensuring that adequate maintenance is carried out on to the rest. The life expectancy of roads in Kenya is 8 years and according to Menhe (2002:102), far shorter than that. This is due to various reasons such as lack of government responsibilities for road

maintenance, climatic conditions as Kenya is subject to tropical influences and conditions of vehicles, which are often overloaded and carry unacceptable axle loads.

According to the Government of Kenya (2012), substantial progress has been made in the road sub-sector following the reforms informed by sessional paper No.5 of 2006. Currently, the road sub-sector has the following major sources of funds: National budget, Local Government revenues, Road Maintenance levy Fund (RMLF), Mechanical and Transport Fund (MTF), Transit tolls, Agricultural cess and The Development Partners. Although the funds currently allocated for road maintenance and development are inadequate to cater for the road network needs, there is need to identify additional sources of financing.

Otieno (2003) argues that there is evidence that not all money given to the government which is responsible for maintenance of the road, is actually used for that purpose, He continues to argue that a lot of time is lost through the money not arriving immediately at its intended destination. For these reasons the roads have to be built faster, and their surface can't be as thick as it was originally supposed to be, because there is not enough money for the required materials. As the road surface is much thinner than it should be, it wears down faster and new investments are required to restore it to good repair.

Kenya Anti-Corruption Commission Report (2007) highlights the failed state of classified roads and identifies contributing factors to lack of routine and periodic maintenance, rampant corruption in road construction projects, collusion between contractors and government official, increase traffic volume and overloading. The sector has continued to face challenges which have included: weak institutional framework, failure of rail transport in Kenya, shortage of engineers and other technical personnel at the Ministry of Roads and Encroachment on road reserves.

The Government has sought to address these challenges through a variety of reforms which have included establishment of a secure road maintenance funding arrangement, creation of Kenya Roads Board (KRB) and clarification of the institutional arrangement in the management and ownership of the entire road network leading to the creation of the Kenya National Highways Authority (KeNHA), Kenya Rural Roads Authority (KeRRA) and Kenya Urban Roads Authority (KURA). The World Bank has been committed in this sector and has continued to fund road construction projects since 1960s and some of these projects have also experienced delays in their completion (World Bank, 2007).

2.3 Cases of non-completion of construction projects

A project has been defined to have a defined beginning and end, that is, a specified time for completion. A project also has a set of goals, a series of activities and a limited budget. Project completion involves the balancing of three major factors namely cost, quality and time. Project cost is the cost incurred to realize a project (Project Management Institute, 2004). Project time or duration is the total number of work period required to complete a project. A project is on time when the overall project duration does not exceed initially planned project time (Project Management Institute, 2004).

According to Abbas (2006), late completion of works as compared to the planned schedule or contract schedule is what is known as delay. Delay occurs when the progress of a contract falls behind its scheduled program. It may be caused by any party to the contract and may be a direct result of one or more circumstances. A contract delay has adverse effects on both the owner and contractor (either in the form of lost revenues or extra expenses) and it often raises the contentious issue of delay responsibility, which may result in conflicts that frequently reach the courts. A cost

overrun occurs when the final cost of the project exceeds the original estimates (Azhar & Farouqi, 2008).

Construction delays occur all over the world and many studies have been carried out to assess the causes of delays in construction. Sambasivan and Yau (2007) stated that about 17.3 percent of government contract projects in Malaysia were considered sick, which means they are delayed by more than three months or are abandoned completely. According to Assaf and Al-Hejji (2006) from Saudi Arabia only 30 percent of construction projects were completed within the scheduled completion dates and the average time over run was between 10 percent and 30 percent.

Agaba (2009) attributes delays in construction projects to poor designs and specifications, and problems associated with management and supervision. In their study, El-Razek et al., (2008) found that delayed payments, coordination difficulty and poor communication were important causes of delay in Egypt.

Due to the very nature of the construction industry, and varying contract conditions across different projects, contract claims are inevitable. Though claims are raised in numerous areas, delay claims are found to be most common. Yates and Epstein (2006) have observed that delays in construction and the claims originating from such delays are an integral part of the modern construction process. According to them, the construction delay claim process commences at the project inception itself. Referring to numerous past studies, Scott et al (2004) conclude that construction projects have a tendency to suffer from delays and such delays carry potential losses for all parties: for the employer(client, owner) through loss of use, and for the contractor and subcontractors through their prolonged presence on site. However, a delay in a

construction project can be caused by either the owner or by the contractor or by the numerous other reasons.

Al-Momani (2000) studied 130 projects and found that poor design, and negligence of the owner, change orders, weather conditions, site conditions, late delivery, economic conditions and increases in quantities are the main causes of delay. Odeh and Battaineh (2002) have identified 28 causes of delay categorized in eight major groups through questionnaire survey in Jordan. Aibinu and Jagboro (2002) have identified six effects of delays as time overrun, cost overrun, dispute, arbitration, total abandonment, and litigation for Nigerian construction industry. Kurmarswamy and Yogeswaran (2003) opine that the detailed claims related to extension of time are often submitted towards the end of the construction period which is one of the contributory factors to the late assessment of claims. Scott (1997) has studied the attitudes of the contractors and supervisors towards delay claims. In the Indian context, Iyer and Kalidindi (2002) have identified the 'Time Delay and Extension clause' as second most critical clause next to Final and Binding Power in construction contracts. It is observed that there is much concern about disputes related to delay in construction projects.

According to Ssepuyya, (2008) most of the construction projects in Uganda have had problems with delay in completion and cost overruns and this has caused a lot of concern. For example, the Northern by-pass in Kampala which was to take two and half years instead took more than 5 years and the cost had similarly gone up by more than 100 percent. Kaliba et al. (2009) concluded from their study that the major causes of delay in road construction projects in Zambia were delayed payments, financial deficiencies on the part of the client or contractor, contract modification, economic problems, material procurement, changes in design drawing, staffing problems, equipment unavailability, poor supervision, construction mistakes, poor

communication on site, changes in specifications, labor disputes and strikes. Ellis and Thomas (2003) argue that it has become a norm rather than the exception for road construction projects in Malawi to experience delay.

In Kenya, it is a well-known fact that time and cost overruns are widely prevalent in the public sector projects (Musa, 1999). His finding showed that, poor communication, lack of experience by project manager, procurement delays, lack of planning, poor infrastructure, inadequate resources, lack of motivation, tendering methods, variations, project environment, poor project definition as being some of the major contributions to time and cost overruns.

2.4 Availability of resources and their influence on completion of road construction projects

In project management terminology, resources are required to carry out project tasks. According to Wikipedia online dictionary, resources can be people, equipment, facilities, funding or anything else capable of definition (usually other than labor) required for the completion of a project activity. The lack of a resource will therefore be a constraint on the completion of the project activity. Resources may be storable or non-storable. Storable resources remain available unless depleted by usage and may be replenished by project tasks which produce them. Non-storable resources must be renewed for each time periods, even if not utilized in previous time periods. Resource scheduling, availability and optimization are considered key to successful project management. Allocation of limited resources is based on the priority given to each of the project activities. Their priority is calculated using the Critical Path method. For a case with a constraint on the number of resources, the objective is to create the most efficient schedule possible-minimizing project duration and maximizing the use of resources available (Feuerstein, 1986).

Feuerstein (1986) argued that resources ensure effective, quality construction projects. It is critical to set aside adequate financial and human resources at the planning stage. The required financial and human resources for timely completion of construction projects should be considered within the overall costs of delivering the agreed results and not dedicated for the function. Dedicated staff time for effective project implementation, staff should be dedicated for the function. The practices of deployment of personnel for monitoring vary among organizations. The duration of the project will be determined by its purpose.

Gorgen (2001) further notes that the availability and accessibility of construction materials influence the cost of the project exercise. In the absence of these construction materials, the contractor needs to spend more time and resources to locate them. The appropriateness of allocated resources should be assessed to ensure that project runs without delays. If a road construction project is carried out jointly with donors in the context, there should be an agreement in resourcing modalities with potential donors or other counterpart at the outset. Budget limitation is consistently one of the greatest constraints to timely implementation of road construction projects. While projects can often compensate for a lack of technical capacity through training/or outsourcing, they cannot compensate for the lack of money.

Pace (1990) stated that it is important to allocate required funds for each construction project. It is important that partners consider the resources needed for timely completion of projects and agree on a practical arrangement to finance the associated activities. Such arrangements should be documented at the beginning of the program to enable partners to transfer necessary funds in accordance with the procedure which could take considerable time and effort. Human resources are critical for effective implementation and timely completion of construction projects, even after securing adequate financial

resources. For high-quality execution of a construction project, there should be an excellent learning tool as well as a means to improve program.

From global perspectives, resources availability is one of the important challenges facing construction industry characterized by shrinking workforce. Statistics in Canada predicts that in Canada by 2016 there will no longer be enough new workers to replace retirees. In the USA, a conference Board study: Managing the mature work force predicts that by 2010, the number of workers aged 35 to 44 will decline by 19%; age 45 to 54 will increase by 21% and age 55 to 64 will increase by 52%. This is a world – wide phenomenon. The number of workers aged 35 to 44 is expected to decline by 27% in Germany, 19% in the U.K, 9% in Italy. 10% in Japan and by 8% in China.

In African developing countries, construction projects represents a strategic option towards achieving sustainable development objectives. On the other hand, these projects are characterized with the need for high design knowledge and technical skills, competent human resources and managerial capabilities as well as excessive cost investment. Conversely, developing countries experience shortage of many of these requirements which obstruct the development of Mega Construction Projects (MCPs) in developing countries.

Construction projects require unique design knowledge, skills and experience. Lack of professional expertise, shortage of full understanding of scientific and technical requirements (Georgieva, 2012) and improper decisions and overlooking specialists and stakeholders consultation during the decision making process (Kerzner,2006;Jia et al., 2011) obstruct the development of Mega Construction Projects (MCPs) in developing countries. These challenges were clearly noticed in Toshka project, a water infrastructure development in Egypt as not all technical requirements have been taken

into full consideration and the different studies conducted over the years related to the project have not been discussed openly and in public. Examples of the technical failure include: Rationale behind Human Development challenges. The ability to attract, retain and develop talented employees is a key feature of successful business. People are an organization's most valuable assets and this is especially true in relatively low-tech, labor-intensive industries such as construction (Loosemore et al., 2003).

Laborers are the lifeblood of any construction project, especially in construction projects in developing countries. They are the workforce that creates the final product. Therefore it is imperative to improve their skills and enhance their abilities to increase productivity of the construction industry and ensure the quality of the constructed projects (Ramburan and Othman, 2007). In addition, lack of human resources development in management related discipline i.e. project management, contract administration and leadership results in poor supply of experienced staff who can accept critical roles, which they are not prepared for (Georgieva, 2012). Furthermore, there is an agreement between academics and professionals that academic institutions do not equip graduates with necessary skills required to meet the requirements of the construction industry (Nkado, 2000; Chileshe and Haupt, 2007; Rwelamila, 2007) which highlights the need for human development.

The issue of timely completion of construction projects in Kenya is increasingly becoming an issue of concern among the stakeholders in the construction industry. The most important factor influencing timely completion of road construction project in Kenya is financing by the contractor, during the project, changes in design by the owner or his agent during the construction, delays in contractors' payment and non-utilization of professional construction management. In addition, preparation and approvals of shop drawings also contribute to the delays to a significant extent. This is because of

the increasing rates of interests, commercial pressure, inflation and the potential of a construction project to result in disputes and claims leading to litigation and arbitration. Others are cash flow problems during construction process. Owners in their part cause delays when they face labor shortages or engage inadequate labor skills. In a country like Kenya, construction worker are relatively unskilled and lack of adequate planning at the early stages of the project results in time and cost overruns (Gatugu, 2014).

2.5 Competence of staff and completion of construction projects

Competence in human resources is a standardized requirement for an individual to properly perform a specific job. Cuban (2001) observed that there are many ways to define and measure the adequacy of staff competency, capacity and the effectiveness of agencies tasked with the construction projects. The effectiveness of the project team tasked with road construction project administration depends to a large extent on the project staff capacity relative to the demands placed upon them. To be effective, road construction projects need to have sufficient and capable staff with the appropriate mix of skills and expertise, the motivation and will to act, and the incentives and resources necessary to achieve their mandate. Kent (2011) postulates that the ability of a project's staff to meet demands for its services depends on both its numbers and the skills and expertise staff members bring to the job. A project team needs to have at least the minimum necessary mix of skills and expertise and a sufficient number of staff with appropriate skills relative to the scale of its responsibility.

Construction projects do not implement themselves. They require people to carry out laid down work, there is need to understand whom will work on the system, what skills and knowledge they have and the overall level of human resources available –both within the team and externally-to support your project execution plan. The minimum required mix of skills and expertise and the required number of staff per unit managed

or administered by the agency can be established through estimates provided by knowledgeable informants (Economic Stimulus Programme Handbook, 2009). These informants could include current and past managers of the stimulus project analysts, researchers tracking the stimulus project operations and functioning (Cambridge, 2000).

Based on their informed contractors or consultancy firms' opinion, a range of estimates for the minimum required skill mix and the number of required staff with requisites skills per unit can be established as points of reference. To translate a project's staff skills and expertise into effective action, staff members must have the motivation and willingness to discharge their responsibilities and perform mandated functions according to norms of professional behavior. Staff motivation and will to act is not directly observable, but it is linked to incentives and rewards for good performance within a project team. The relative attractiveness of the agency's compensation package and prospects for professional growth and promotion can motivate staff and serve as incentives for good performance. Norms of professional behavior set standards and expectations on how staff members ought to conduct themselves in the course of their work. The degree to which these standards are adhered to also provide some indication of quality of staff performance and how effectively an agency is managed (Kent, 2011).

Gardner (2003) argued that skilled personnel staff entrusted with project execution should have required technical expertise in the area. Where necessary, skill levels should be augmented to meet the needs and with ongoing investments in developing such capacity within the office as necessary.

Coordination problems due to incompetency of project manager may cause project delays. In a construction project, there are many parties involved such as contractor, consultant, sub-contractor and client. Often, it may be difficult for these various separate parties to coordinate well in order to complete the project. In one study conducted by Assaf et al. (1995) it was found that difficulty in coordination between the parties is one of the factors that contributes to delay. In addition, Majid and McCaffer (1998) also agreed that coordination problems will contribute to delay.

Ali et al. (2008) and Kadir et al. (2005) stated that lack of coordination between contractors and subcontractors will lead to delay, for example in the situation that newly revised contractions drawings of a project may be issued later by the contractors to the subcontractors. This leads to construction mistakes and the work requiring to be redone. Reconstruction work takes additional time, therefore impacting upon the completion time of the project. According to Sambasivan and Yau (2007), most of the unskilled laborers used in the Malaysian construction industry are foreign laborers. These foreign laborers have little formal education (Santos et al., 2003). Thus, coordination is very important to guide and instruct these laborers to perform their work correctly. Without coordination, the project will be delayed due to rectifying defective works and low productivity of laborers.

Poor site management effective and efficient site management by contractors is very important to ensure projects are completed on time. Poor coordination contributes to delay from estimated completion time. Poor site management may occur when contractors do not have enough experience and suffer from a lack of knowledge in managing the project team (Kadir, et al, 2005). A project manager is the leader in a construction project in the sense that he is required to manage all the works on site from monitoring progress of construction works to managing all the administrative work in

the project. It is of utmost importance for the project manager to manage work and project teams effectively. Hence, poor site management from the project manager will affect the whole team and also the progress of works, resulting in the eventual outcome of project delay. This view is supported by studies conducted by Augustine and Mangvwat (2001), Arshi and Sameh (2006), Arditi et al. (1985) who concluded that poor site management is one of the factors that contribute to delay in construction projects.

In a country like Kenya, construction workers are relatively unskilled and lack adequate planning at the early stages of the project impacts on timely completion of construction projects and cost overruns. In the construction of Thika Superhighway for example, The Chinese contractors knew this. They planned on how to train the Kenyan labor force on their construction methods and this reduced the scenarios that we saw of Chinese contractors working with only two or three local workers at the construction site. The more they train and engage in their projects, the more the construction process stayed on course and completed in good time (<http://www.capitalfm.co.ke/business/2012/04/thika-superhighway-completion-set-for-june/>)

2.6 Stakeholder participation and completion of road construction projects

A Stakeholder is anyone who significantly affects or is affected by another's decision pertaining to the project activities (Chevalier, 2010). Globally; projects have changed in the last decade as globalization presents a dynamic and more interactive process which is influencing nowadays everywhere. Therefore, a lot of global projects currently executed in organizations containing completely diverse cultures, working together to reach success. This extra ordinarily and worthy phenomenon which consists of different stakeholders which intervene from various points of view as well as the global project

itself (Annon, 2010). As Aarseth et al. (2012) pointed out the biggest challenge in global perspective is the treatment of external stakeholders. Stakeholders in general need to be considered key to success within global environment (Turner, 2007). Ferreira (1999) argued that influence of stakeholder participation on effective implementation of projects provides opportunities for public operation. Lemos (2002) on the other hand, looked at multi-stakeholder processes and observed that they can aid in the specification and selection of appropriate construction project.

In Africa over the past several years, issue of “participation” have become increasingly important at the African Development Bank. Like other international development institutions, the Bank has recognized that participation is essential to the achievement of its overarching objectives of poverty reduction and sustainable development. Participatory approaches have been shown to enhance project quality, ownership and sustainability; to empower targeted beneficiaries (in particular women and poor people) and to contribute to long-term capacity-building and self-sufficiency.

Numerous development projects documents in Africa refer to the importance of “stakeholder participation” and encourage staff to utilize a “participatory approach” in their day to day operations. For example, the Bank’s vision statement (1999) emphasizes the importance of “a bottom up approach”, participatory approach” and a “client-responsive approach to ensure stakeholder commitment and ownership”. The Bank document entitled operationalizing the beneficiaries of civil society, the donor community and borrower countries are involved from the outset of the program design through to implementation. The Bank has firmly committed itself to mainstreaming participatory development and staff are required to adopt a participatory approach in carrying out their work. In practice, also the Bank is making notable progress in

translating the commitment to participation into concrete actions-in both its policy and project based interventions.

Stakeholder consultations for the proposed Nairobi Outer Ring Road were conducted in order to capture the major concerns associated with the project from all concerned and interested parties. The consultant held three public meetings along the corridor during the development of ESIA Report. A stakeholder's consultation workshop was held on 21st March 2013. The participants included representatives of community based associations such as the Transporters Association, the Traders (Jua Kali) Associations, and Market owners, Parents Association (schools), Athi Water Services Board, Nairobi City Council, KeNHA and KURA. The stakeholder consultative meetings provided views, opinions and suggestions on the most appropriate considerations on the construction and use of the proposed road.

The sessions also laid out fears and concerns to be addressed during construction. To ensure that both women's and men's view were taken on board in the project design; public consultations were conducted in all-inclusive manner. The consultations sought community participation and instant feedback into the project design especially related to matters of road alignment /design, resettlement and compensation. The consultations created awareness and identified positive and negative socio-economic impacts of the road project, proposed mitigation measures to address the potential impacts during project implementation and operation (ESIA, 2013).

Stakeholder's involvement is paramount in development projects. Even though, minor decisions and emergency situations are generally not appropriate for stakeholder participation, a complex situation with far reaching impacts warrant stakeholder

involvement and when done proactively, rather than in response to problem, helps to avoid problems in the future (Maina, 2013).

Stakeholders have different levels of responsibility and authority and influence on a project which may change during the life of the project. Their responsibility and authority range from occasional contributions in surveys and focus groups to full project sponsorship which includes providing financial and political support. Stakeholders who ignore this responsibility can have damaging impacts on project objectives. Also, project managers who ignore stakeholders can expect a damaging impact on project outcomes. Failure to identify key stakeholders can cause major problems for a project (PMI 2006). According to Project Management Institute, (2006), stakeholders may have a positive or a negative influence on a project. Positive stakeholders are those who would normally benefit from a successful outcome of a project while negative stakeholders are those who see negative outcomes from project success. The negative stakeholders' interest would be better served by impeding the project's progress. Negative stakeholders shall be often overlooked by the project team due to the risk of failing, to bring the project to a successful end.

Project's success depends on its ability to formulate, support and management of key stakeholders. Satisfied stakeholders improve the progress and relevance of the project and hence to its success (Kennon, Howden & Hartley, n.d.). According to (Bourne 2006), the stakeholder community consists of individuals and groups each with a different potential to influence the projects outcome positively or negatively. Construction projects just like any other organizational framework comprises of networks of people with various needs, formation and purpose. Bourne and Walker 2005 likened project success to the strength of relationship established and nurtured within and among construction stakeholders. This will in turn influence the project

success and timely completion of the project. Burton and Nobel (2003) also describes project environment as one having high complexity, high uncertainty and high equivocality and such factors make stakeholder management difficult. Oyegoke (2006) opined that construction projects have direct and indirect impacts on different project interest groups and these interest groups are referred to as the stakeholders.

Bourne (2006) suggests that an important aspect of managing the project environment is to understand the direction and influence in which the project manager and management must operate to realize the project successfully. The project managers should therefore try to acknowledge the projects' relevant concerns to all stakeholders as much as possible in order to satisfy every party or at least cater to their minimum requirements (Manowong and Ogunlana, 2010). Stakeholder management is critical to the success of every project in every organization. In a project environment, these stakeholders are usually numerous, and can vary significantly in the degree of influence in both directions. Mitchell, Agle and Wood (1997) suggest that power, legitimacy and urgency are key to stakeholder characteristics. As such, a project manager is required to develop sufficient understanding of such characteristics which are in fact changing variables within the various stakeholders in a project environment.

Karl (2000) states that assessment of the impact of stakeholder participation have been carried out mainly through reviews of ex-post evaluations, case studies, surveys and statistical analysis. There has also been some experience of using both conventional and Monitoring and Evaluation techniques and participatory M & E during the life of the projects. While evidence is still limited, it suggests that stakeholder participation has a positive impact on project and program performance, outcome and sustainability.

2.7 Procurement Procedures and completion of road construction projects

According to Ashworth (2001) Procurement comes from the word procure which literally means to “obtain by care or effort,” “to bring about” and “to acquire”. He goes ahead and argues that the procurement of construction project is vast in scope because it involves the gathering and organizing of myriads of separate individuals, firms and companies to design, manage and build construction products such as houses, roads, and bridges, therefore procurement is concerned with organized methods and procedure of obtaining or acquiring a construction product such as a house, road or jetty. The Aqua Group (2001) described procurement as the process of obtaining or acquiring goods and services from another for some consideration. Barrons Business Forum (2007) defines procurement as the acquisition of goods, services and/or infrastructure at the best possible total cost of ownership in the right quantity and quality, at the right time, in the right place for the right benefit or use of governments, corporations or individuals, generally via a contract. Ombaka (2009) argues that Procurement is the entire process of acquiring materials, property and services required for a particular project.

The process starts with identification of need, followed by a decision on procurement requirements. The process continues through risk assessment, identification and evaluation of alternative solutions, contract award, delivery and payment of the property or service. World Health Organization report (2007) explains that an effective procurement process ensures that materials are available at the right time, right quantity, for the right client, and at a reasonable price and quality. Ombaka (2009) further emphasizes that it does not merely entail the act of buying, but a wide range of business, operational, information technology, legal systems, safety and risk management, all undertaken to address an organization’s needs. The ability to satisfy desired needs

depends on the speed at which the good is delivered; otherwise a negative externality is created on the end users.

According to the analysis of interviews and surveys carried out during the study of Procurement Process described by (Rivas 1998), it argues that currently there is a tendency to manage projects using a fast-track approach in an effort to reduce project schedule. To be able to serve the needs of these projects, the procurement process is subject to important pressures to be carried out in the most expedite and fluid possible manner. Smith and Love (2005) argue that strategies for the procurement of building projects have not changed significantly in the last 25 years, though time and cost overruns are still prevalent through the industry.

Luyimbazi (2014) argues that effective public procurement is crucial for good public services and good government. Government therefore has to apply the highest professional standards when it spends this money on behalf of taxpayers, to ensure good deal and to provide appropriate and necessary goods and services to the quality required to meet user needs. The procurement process spans the life cycle from the identification of the need, through selection of services providers to post-contract award management, including disposal. Given that procurement covers the whole project cycle from conception to delivery, it is a vital operation that has effect on effective resources utilization. Therefore procurement determines when a project will start, when a project will be completed and the quality of outcomes from a project. All these are key determinants of value for money especially when it comes to how soon the public can make use of a public good and the level of service that will be obtained as a result. This in itself clearly shows that procurement can positively or negatively affect completion of projects.

According to United Nations Capital Development Fund (2013), the report argues that procurement is time consuming and can require complex procedures. There are risks of errors and deliberate abuse of the process for the personal gain by officials or contractors and suppliers. Problems in procurement can lead to delays, poor quality or lack of value for money and can undermine the trust of the local community. Good procurement practice includes many of the themes of good governance, including efficiency, effectiveness, transparency and accountability. The procedures to govern procurement are considered onerous and require time and resources to process. The process in Uganda is more rigorous than any other countries and places an increased burden to the authority this is according to Uganda National Roads Authority Report (2014).

According to Bartholomew and Lister (2002), in Vietnam procurement procedures were identified as a major issue for three reasons: Due to their complicated, time consuming and costly nature, with the added complication of differing rules for each donor. Due to restrictions placed on local companies that prevented them from participating in bidding. Hence for instance some donors would not let state owned enterprises bid if they were connected to the ministry involved, while contractors could only be from outside the province in which the project would be undertaken. This was felt to exclude those firms with the most appropriate local experience. If aid is tied then choice is restricted, the equipment purchased is not always of an adequate quality or compatible with existing equipment and it is always more expensive than in a competitive bid. Thus tied aid was cited as a factor that most diminishes the value of aid. In addition respondents noted that donors' lengthy and cumbersome procedures at the project preparation stage often causes delays and have resulted in projects taking several years to come to fruition.

Kenya through The Public Procurement and Disposal Act, 2005 created the Public Procurement Oversight Authority (PPOA), the Public Procurement Advisory Board (PPAB) and the continuance of the Public Procurement Complaints, Review and Appeals Board as the Public Procurement Administrative Review Board (PPARB). The PPOA is mandated with the responsibility of ensuring that procurement procedures established under the Act are complied with, monitoring the procurement system and reporting on its overall functioning, initiating public procurement policy and assisting in the implementation and operation of the public procurement system, Government of Kenya (2005). In Kenya, procurement consumes 45% of the national budget. The close relationship between procurement and development demonstrates there is need for transparency and accountability in the manner which procurement is conducted.

Procurement delays can therefore arise on the projects from various parties involved which can affect the completion of the project. The several stages in procurement which include determining what to procure and when to procure, document product requirement and identification of potential sources, obtaining quotation, bids, offers or proposal as needed, award contracts for selected goods and services, manage relationships with sellers and finally resolving any issues or change orders can also lead to delays especially in high –value contracts as they have to go to the highest levels of approval.

It is very important at the very outset of the project to carefully consider all factors when selecting the most appropriate procurement approach for a construction project. This is because each system has its own feature and peculiarity that will have effect on the cost, time and quality of the project that is, project performance.

2.8 Theoretical framework

The study was guided by stakeholder theory (Freeman (1984), Resource dependency theory (Pfeiffer 1981, 1997) and Institutional theory (Mintzberg et al., 1998): The stakeholder theory organizations and their activities through constituency concepts and propositions. The idea is that “holders” who have “stakes” interact with the organizations and thus make its operation possible (Blair, 1998). It is a theory that explains how organizations functions with respect to various constituencies with whom they are inextricably embedded. Stakeholder theory development has centered on defining the stakeholder concept and classifying stakeholders into categories that provide an understanding of individual stakeholder relationships.

Freeman’s definition of stakeholder as any group or individual who can affect or who is affected by the achievement of the firm’s objectives and continues to provide the boundaries of what constitutes a stake. He argues that a stakeholder has some form of capital either financial; or human at risk and therefore, has something to lose or gain depending on a firm’s behavior. To these elements, Waddock (2002) adds a tie or tether that creates a bond of some sort. Stakeholder theory of the organization requires an understanding of the types of stakeholder influence but also how organizations respond to those influences. Each firm faces a different stakeholder, which aggregate into unique pattern of influence. Ambler and Wilson (1995) demonstrate that firms do not simply respond to each stakeholder individually, they respond rather to the interaction of multiple influences from the entire stakeholder set.

Resource dependency theory suggests that power accrues to those who control resources needed by the organizations thereby creating power differentials among parties (Pfeiffer 1981, 1997b), and confirms that the possession of resource power makes stakeholder important to a firm. Legitimacy is achieved if patterns of

organizations practice are in congruence with the wider society system (Scott 1987; Powell and DiMaggio, 1991).

Institutional theory describes this adaptation. Strategy and processes deriving from resource dependence are primarily proactive: institutionalized processes are reactive (Mintzberg et al., 1998; Mintzberg and Lampel, 1999); while stakeholder engagement is inherently interactive (Preston and Post, 1975) based on mutual interdependence among actors. Corporate responsibility and the maintenance of sound organizational ethics may not invariably depend wholly on the strategic behavior induced by the anticipation of organizational gain. Organizations may act ethically or responsibly not only because of any direct link to a positive organizational outcome but merely because it would be unthinkable to do otherwise. In this way the ,organizational behavior may be driven not by processes of interest mobilization (DiMaggio 1988) but by preconscious acceptance of institutionalized value or practices Within the resource dependency perspective, assumes that an organization may be interest –driven and that organizations exercise some degree of control or influence over the resource environment theory

2.9 Conceptual framework

A conceptual framework is a detailed mental formulation of ideas that give direction to a study. It enables the interaction between dependent and independent variables to be portrayed (Kothari, 2004). In this study, the dependent variable is timely completion of road infrastructure projects while independent variable were those factors that were thought to influence the realization of the dependent variable that is: management skills among project managers, timely availability of funds, stakeholder participation and procurement procedures. However the influence may be moderated by intervening variable such as government policies and management style.

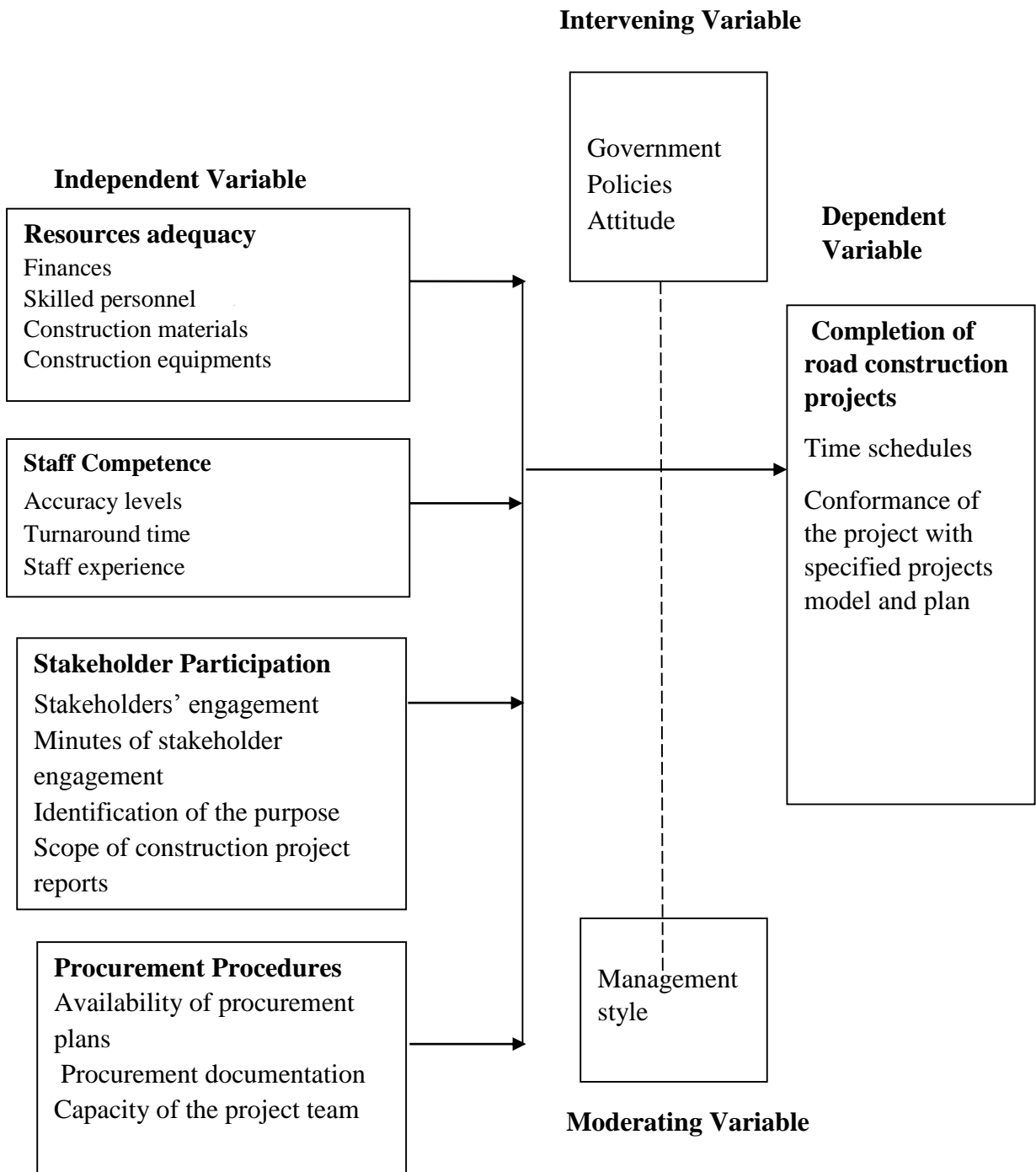


Figure1: Conceptual framework

2.10 Knowledge gap

Construction projects are notorious for failing to complete in time being over-budgeted, late and saddled with scope creep, as well as for poor communication protocols and inadequate controls around scope change management, this especially pronounced in nonprofit organizations (Guerin, 2012). Completion of construction project is fundamental if the project objectives and success is to be achieved. A project that is completed in time exhibits overall efficiency of project planning, management and implementation and effective tracking project progress. Although the causes for project success and failure have been the focus of numerous research studies, there has been no consensus on the issue. Pinto and Slevin (1987) argue that in spite of extensive research there has been limited convergence on the components and causes of project completion.

Embakasi lacks empirical research in this area of study. Thus the study will seek to bridge this knowledge gap by investigating factors influencing completion of road construction projects in Embakasi, Nairobi County Kenya. This research is the first of its kind to investigate the factors that lead to completion of road construction projects in Embakasi.

2.11 Summary of the literature reviewed

The chapter started with an introduction and went on to look at predictor variables influencing the timely completion of road infrastructure projects. Since the variables influencing timely completion of road infrastructure projects are diverse, the study reviewed specific ones which are: management skills, timely availability of funds, stakeholder participation and procurement procedures. The chapter further looked at other key constructs and concepts that are relevant to the study such as government policy and management style.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

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

3.2 Research design

Research design is the general plan that will be used to conduct the study in order to answer the research questions and achieve the objectives of the study. This study used descriptive survey design. Kothari (1985) recommends descriptive design as it allows the researcher to describe, record, analyze and report conditions that exist or existed. This research design was chosen because the study was not only confined to the collection and description of the data but it will also seek to determine the existence of certain relationships among the research variables. Hence the design was selected to satisfy the aspect of the study.

3.3 Target population

Mugenda and Mugenda (1999) define target population as that population to which a researcher wants to generalize the results of a study. The target of this study were road contractors in Nairobi County while study population were government officials representatives from Ministry of Roads, Contractors (supervisors in the projects), Consultant (technical consultants by contractors), Engineer from Nairobi County and technical auditors participating in road construction projects in Nairobi County Kenya. Mugenda & Mugenda (2003) explained that the target population should have observable characteristics to which the study intends to generalize the result of the

study. The researcher targeted this population because they are knowledgeable in the area under study.

Table 3.1: Target Population

	Frequency	Percentage
Contractors	58	54
Contractor consultants	28	27
Ministry of road engineer	10	8
Engineers from Nairobi County	7	7
Technical auditors	5	4
Total	106	100

Source: Ministry of roads and public works 2015

3.4 Sample Size and Sampling procedures

The sampling procedure describes the list of all population units from which the sample will be selected (Cooper & Schindler, 2005). The study employed census to interview construction firm since the number is small. Sample of respondent staff were drawn from all road construction in Nairobi where random stratified sampling technique was employed in coming up with a sample size of 42 respondents from a total of 106 respondents from specific individual concerned in road maintenance and building within Nairobi County. Gay (2001) pointed out that a sample of 10-40% is representative. In this study 40% was considered. The technique was applied so as to obtain a representative sample when the population does not constitute homogenous group. In stratified random sampling subjects are selected in such a way that existing sub-groups in this population are more or less represented in the sample (Mugenda & Mugenda, 2003).

Table 3.2: Sample and sample size

	Frequency	Sample Size	Percentage
Road contractors	58	13	54
Contractor Consultants	28	11	27
Ministry of road engineers	8	3	8
Engineers from Nairobi city council	7	3	7
Technical Auditors	5	2	4
Total	106	42	100

3.5 Research instruments

The study used questionnaire as a tool of data collection. The questionnaire was self-administered. The research questionnaire assessed the perceptions of respondents on the various factors identified by the researcher and the relative importance of the factors. The questionnaire had both the structured and unstructured questions.

The questionnaire comprised of 2 parts. Part A will capture general information of the respondents. Part B will focus on factors (independent variables) influencing completion of road construction projects those sourced from the respondents and those from literature review by the researcher. This part gave each respondent an opportunity to identify variables that they perceive to have influence on completion delays by responding on a Likert scale from 5(to a very great extent) to 1(to no extent).In this section the respondent will provide their opinions, comments and recommendations.

3.6 Validity of the instruments

Validity of a questionnaire refers to the extent to which it measures what it claims to measure Mugenda & Mugenda (2003). It is the degree to which results obtained from the analysis of the data actually represent the phenomena under study. To ensure content validity, the instruments were reviewed by research supervisors and other research experts. Content validity yields a logical judgement as to whether the instrument covers what it is supposed to cover. Content validity ensured that all respondents understand the items on the questionnaire similarly to avoid misunderstanding. Response options were provided for most of the questions to ensure that answers given are in line with the research questions they are meant to measure. To improve validity, the instrument was pilot-tested among engineers and contractors working in road construction projects before wider distribution. It was also given to my peers and supervisor to ascertain the same.

3.7 Reliability of the instruments

Mugenda & Mugenda (1999) defines reliability as a measure of the degree to which a research instrument yields consistent results for data after repeated trials. Berg (1998) explains that, the use of consistent and systematic line of questions for even anticipated areas is particularly important for reliability and for possible replication of a study. The researcher will use consistent and systematic questions in the questionnaire which will be related to the subject of the study. The reliability of the instruments will be tested through Split-Half Approach. This approach assumes that a number of items are available to measure a behavior. Half of the items are combined to form one new measure and the other half is combined to form the second new measure. The result is two tests and two new measure measures testing the same behavior. The correlation

between the two halves tests must be corrected to obtain the reliability coefficient for the whole test (Nunnally, 1978; Bollen, 1989). Split-Half approach formula is:

Split- Half formula

$$r_{KR20} = \left(\frac{k}{k-1} \right) \left(1 - \frac{\sum pq}{\sigma^2} \right)$$

r_{KR20} is the Kuder – Richardson formula 20

K is the total number of test items

Σ indicates to sum

p is the proportion of the test takers who pass an item

q is the proportion of the takers who fail an item

σ^2 is the variation of the entire test

3.8 Data collection procedures

After approval of the proposal by the University of Nairobi to collect data, the researcher coordinated data collection process after seeking permission from the Nairobi City Council. The researcher engaged 3 research assistant who assisted in data collection. The research assistants were taken through training to clearly understand the research instruments, purpose of the study and ethics of research. The researcher and research assistants administered the questionnaires to the respondents face to face.

3.9 Data analysis Techniques

Data analysis deals with the process of data coding, data entry and analysis in order to make interpretation possible. Data analysis deals with the statistics to be used to analyze data, that is, the organization, interpretation and presentation of collected data (Oson and Onen, 2005). The study generated both qualitative and quantitative data.

Quantitative data was coded and entered into Statistical Package for Social Sciences (SPSS) and analyzed using descriptive statistics. Descriptive statistics involves use of absolute and relative (percentages), frequencies, measures of central tendency and dispersion (mean and standard deviation respectively). Qualitative data was read and categorized into distinct themes as showed by the responses of the respondents. Responses with common themes or patterns were grouped together into coherent categories. The researcher used multiple regression analysis to establish the strength of the relationship between dependent and independent variables.

The regression equation is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \alpha$$

Where: Y is the dependent variable (completion of road construction projects)

β_0 is the regression coefficient/constant/Y-intercept

$\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the slopes of the regression equation

X1 is Availability of resources

X 2 is Competence of staff

X3 is Stakeholder Participation

X4 is Procurement procedures.

α is an error term normally distributed about a mean of 0 and for purpose of computation the α is assumed to be 0.

3.10 Ethical considerations

Kombo and Tromp (2006) note that researchers whose subjects are people or animals must consider the conduct of their research, and give attention to the ethical issues associated with carrying out their research. The researcher treated the information gathered as strictly confidential and information was only used for academic purposes. In addition the information given did not disclose the respondents' names. The respondents who are not willing to fill in the questionnaire will not be forced.

3.11 Operational definition of variables

Table 3.3: Operational definition of variables

NO	Objectives	Variable	Indicators	Measurement Scale	Tools of Analysis	Type of statistics
1	To establish to what extent do availability of resources influence timely completion of urban road infrastructure projects in Embakasi Sub County, Nairobi Kenya	Availability of Resources	Finances, Skilled personnel, Mode of transport, Stationery.	Norminal Ordinal	Frequency distribution tables, tabulation and percentages	Descriptive statistics
2	To determine the influence of competency of staff towards completion of urban road infrastructure project in Embakasi Sub County, Nairobi Kenya.	Competency of staff	Accuracy levels, Turnaround time ,Staff experience, Academic qualification.	Norminal Ordinal	Frequency distribution tables, tabulation and percentages.	Descriptive statistics
3	To establish the extent to which stakeholders participation influences timely completion of urban road infrastructure projects in Embakasi Sub County in Nairobi Kenya.	Stakeholders participation	Identification of the purpose and scope of the construction project, reports. Minutes of stakeholders' engagement. Stakeholder engagement tools. Number of meetings held. Level of participation and contribution.	Norminal Ordinal	Frequency distribution tables, tabulations and percentages.	Descriptive statistics
4	To determine the influence of procurement procedures on timely completion of urban road infrastructure projects in Embakasi Sub County in Nairobi Kenya.	Procurement procedures	Time taken to process procurement document	Ordinal	Frequency distribution tables, tabulations and percentages.	Descriptive statistics
5	Completion of road construction projects.	Dependent variable.	Time taken to complete the project	Norminal Ordinal	Frequency distribution tables, tabulations and percentages	Descriptive statistics

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter comprises data analysis, presentation and interpretation of the findings. The data presented includes response rate, background information of the respondents and a presentation of findings against each individual objective of the study. The data analyzed and presented was based on the response to the items in the questionnaires schedules. The researcher made use of the frequency tables, percentages, mean and standard deviation to present data.

4.2 Questionnaire return rate

The study sampled 42 respondents from the target population of 106 in collecting data with regards to factors influencing completion of road construction projects where the focus was road construction projects in Embakasi, Nairobi County. The questionnaire return rate results are shown in Table 4.1.

Table 4.1: Response rate

Response	Frequency	Percentage
Responded	36	86
Non response	6	14
Total	42	100

From the study, 36 out of 42 targeted respondents filled in and returned the questionnaire contributing to 86%. This response rate was good, representative and conforms to Mugenda and Mugenda (1999) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of over 70% and over is excellent. The questionnaire that were not returned were due to

respondents not being available to fill them in time and after persistence follow-ups, there was no positive feedback from them. The response rate demonstrated the willingness of the respondents to participate in the study.

4.3 Demographic characteristics of the respondents

As part of the general information, the respondents were requested to indicate the gender, department they work in, position held in the organization, period in years worked in the organization and highest academic qualifications.

4.3.1 The Gender of the respondents

To get a balanced perspective, the researcher wished to get the view of both genders. This part therefore was meant to find out the gender of the respondents .The findings are shown in Table 4.2

Table 4.2: Gender of the respondents

Category	Frequency	Percentages
Male	25	69
Female	11	31
Total	36	100

The result indicates that 69% of the respondents were male while 31% were females. This means that the majority of the road contactors, engineers and technical auditors are male. It also implies that both genders were adequately represented.

4.3.2 Period of service in years in construction industry

Table 4.3 Period of service in year's construction industry

Years of Service	Frequency	Percentage
1-5 Years	10	28
6-10 Years	7	19
11-15 Years	3	9
Above 16 Years	16	44
Total	36	100

Table 4.3 illustrates working period in years of the respondents in their respective organization. From the findings, 44% of the respondents had worked in the organization for a period of above 16 years, 28% had worked for a period of 1-5 years, and 19% had worked for a period of 6-10 years while the rest 9% had served in the organization for a period of 11-15 years. This implies that most of the respondents of this study had worked for longer period within the organization hence the ability to provide feedback on the factors which influenced their timely completion.

4.3.3 Education level of the respondents

The level of education of the respondents influences how well the respondents can execute the job and furtherer provide feedback when need be .The respondents level of education was summarized by Table 4.4.

Table 4.4: Education level of the respondent

Education Level	Frequency	Percentage
Primary	0	0
Secondary	0	0
Diploma	5	14
Undergraduate	12	33
Postgraduate	19	53
Total	36	100

The findings indicate that 53% of the respondents were post graduates, 33% were undergraduate while the rest 14% were diploma holders. This depicted that most of the respondents interviewed were well knowledgeable to understand and able to respond to the questionnaire in the manner intended.

4.3.4 Positions held by the respondent

Table 4.5 indicates position held by the respondents in the organization. From the findings, 42% were contractors, 22% were consultant, and the rest 6% were technical auditors, city council engineers and ministry of road engineers. This implies that all the department targeted by the study were involved and findings are not biased.

Table 4.5: Positions held by respondents

Position of the Respondent	Frequency	Percentage
Contractor	15	42
Consultant	800	22
Ministry of Road Engineers	6	17
Nairobi City County Engineers	5	13
Technical Auditors	2	6
Total	36	100

4.3.5 Main clients of road contractors

The researcher also requested the respondent to indicate main clients they offer services to. According to the findings as shown in table 4.6, majority (64%) of the respondents indicated that they were serving public sectors while the rest 36% were serving private sectors this implies that most of the contractors were targeting government and other public institution to maintain and build roads.

Table 4.6: Main clients of the contractors

Client	Frequency	Percent
Private Sector	13	36
Public	23	64
Total	36	100

4.4 Resources

4.4.1 Influence of resources on project completion

Resources availability is one of the important challenges facing the construction industry hence the research posed this question to establish the feeling of the respondents on the influence of the availability of resources, the findings were as per Figure 4.7.

Table 4.7: The influence of resources on project completion

Extent	Frequency	Percentage
To a very great extent	18	50
To a great extent	7	19
To a moderate extent	5	14
To a little extent	4	11
To no extent	2	6
Total	36	100

On the influence of resources on completion of construction projects, results show that 50% of the respondent agreed that resources influence completion of construction projects to a very great extent, while 19% was to a great extent, 14% was to a moderate extent and 6% to no extent. With regards to whether the resources needed for completion of construction projects were available, the interviews indicated that the availability of resources influenced completion of road construction projects.

4.4.2 Indicators on the influence of resources on completion of road construction projects

Table 4.8 shows the extent to which the following indicators influenced effective implementation and completion of constructions projects .The findings were as per Figure 4.8.

Table 4.8: Indicators on the influence of resources on project completion

Indicators	Mean	Std. Dev.
Availability of Construction Materials	3.8352	0.707
Skilled Construction workforce	3.3212	1.045
Availability of Construction equipment	3.4543	1.087
Material mobilization	2.6934	1.079

From the findings, the respondents indicated with a mean of 3.8352 that construction materials influenced completion of road construction projects to a very large extent. The respondents also indicated that availability of skilled construction workforce, availability of construction equipments and material mobilization influenced completion of road construction projects shown by a mean of 3.3212, 3.4543 and 2.6934 respectively. We can therefore infer that these indicators under resources had a very large influence on completion of road construction projects.

4.4.3 Variables on completion of road projects

The study sought to establish the extent to which the following variables influenced effective project completion of road construction project in Embakasi. The respondents were asked to indicate the extent to which the stated variables on resources influenced completion of construction projects. Their responses were as shown in Table 4.9.

Table 4.9: Variables of completion of road projects

Variable	Frequency	Percent
Lack of finances	22	61.1
Lack of skilled personnel	9	25.0
Lack of effective mode of stakeholder engagement	5	13.9
Total	36	100

The respondents indicated that lack of finances and skilled personnel influenced completion of construction projects in Embakasi to a very great extent as indicated by a percentage of 61% and 25% respectively. The respondents also indicate t that stakeholder engagement influenced completion of projects to a great extent of 5%.The respondents indicated that the resources were available but inadequate. In determining how the availability of resources influenced completion of construction projects, the interviewees indicated that resources facilitated effective and efficient running of project activities thus leading to its completion.

4.5 Competency of staff

Contractors and engineers have different skills, expertise, competence and experience. This section addressed objective two which sought to examine the influence of competency in completion of projects. It was important in establishing whether the road

subsector was doing enough in terms of allocating competent staff in their construction projects.

4.5.1 The rating on influence of competency of staff on completion of construction projects

The researcher wished to establish how competency of staff influences completion of construction projects. The findings were as indicated

Table 4.10: Rating on influence of competence of staff on project completion

Extent	Frequency	Percentages
To a very great extent	19	53
To a great extent	8	23
To a moderate extent	5	14
To a little extent	2	5
To no extent	2	5
Total	36	100

The findings show that 53% of the respondent were for the opinion that competency of staff influence completion of construction projects to a very great extent while 23% were for a great extent, 14% were for a moderate extent and the rest 5% were for to no extent. This implies that the respondents felt that competency of staff influence completion of road construction projects to a very great extent.

4.5.2 Indicators of competency of staff and completion of road construction projects

The study sought to establish the extent to which the following factors influenced completion of road construction projects. The results were as shown in the Table 4.10

Table 4.11 Indicators on competency of staff

Statement	Mean	Standard Deviations
Turnaround time(time taken to complete a task)	3.81	1.014
Lack of Experience	3.35	0.486
Lack of required Skills	3.94	0.250
Lack Knowledge in the area of constructions	3.45	0.568
Accuracy levels	3.19	1.167

According to the findings, the respondents indicated that lack of required skills and time taken to complete a task influenced completion of road construction projects to a very great extent with a mean of 3.94 and 3.81 respectively. The respondents further indicated that lack of experience and accuracy levels also influenced completion of construction projects with a mean of 3.35 and 3.19 respectively. This implies that the above factors influence completion of road construction projects to a great extent.

4.5.3 Rating on how project staff skills improve their ability to handle assigned duties competitively

The researcher wanted to know the extent to which project staff skills improve their ability to handle assigned duties competitively and its influence on project completion. In order to do so various respondents were asked to rate capabilities

on a scale of 1 to 5 where 1 is to a very great extent and 5 is to no extent. The results were as shown in Table 4.12.

Table 4.12: Rating on project staff skills and completion of projects

Scale	Frequency	Percentages
1	20	56
2	9	25
3	4	11
4	3	8
5	0	0
Total	36	100

The findings show that 56% of the respondents were to a very great extent, 25% to a great extent, 11% to a moderate extent while 0% to no extent. The outcomes showed that respondents admitted that project staff skills improve their ability to handle assigned duties competitively to a very great extent.

4.6 Stakeholder participation on completion of road infrastructure projects

In this section, the study sought to determine the influence of stakeholder participation on completion of road construction projects. The respondents level of agreement with the selected statements regarding the influence of stakeholder participation is as presented in the following subsections.

Table 4.13: Influence of Stakeholder’s participation on completion of construction projects

Scale	Frequency	Percentage
To a very great extent	17	47
To a great extent	10	28
To a moderate extent	6	17
To a little extent	3	8
To no extent	0	0
Total	36	100

The findings showed that most respondents were in agreement that stakeholder participation influences completion of construction projects which was represented by 48%. However, no respondent felt that stakeholder participation had no extent which was presented by 0%. 28% were for to a great extent while the rest 17% were for to a little extent. This showed that the respondents felt that stakeholder participation influences completion of construction projects.

4.6.2 Stakeholder’s participation activities

The study sought to find out influence of stakeholders’ participation activities on completion of construction projects. The findings are indicated in Table 4.14.

Table 4.14 Stakeholders’ participation activities

Project activities	Mean	St.dev
Identification of project scope	4.06	0.680
Data collection and management	3.39	0.615
Supervision events	3.68	0.475
Performance review	3.71	0.864
Project site visit	3.97	0.180

The respondents indicated that identification of project scope influenced completion of construction projects to a very great extent with a mean of 4.06. They also felt that project site visit and performance review by stakeholders also influenced completion of construction projects which had means of 3.97 and 3.71 respectively. Finally the respondents agreed to a little extent that data collection and management and supervision of events led to completion of construction projects.

4.6.3 Stakeholders' engagement and completion of construction projects

The study sought to find out the level of stakeholder engagement and its influence on completion of construction projects. The findings are indicated in Table 4.15

Table 4.15: Stakeholders level of engagement and completion of construction projects

Statement	Frequency	Percentages
Construction project vision is clear and achievable	6	17
Stakeholder engagement is effective	10	28
The stakeholders engagement enhances the internal process(orientation, supervisor support, change management)	12	33
Stakeholders' engagement influences the performance of construction projects.	8	22
Total	36	100

The findings showed that most respondents felt that the stakeholders' engagement enhances the internal process which was presented at 33 %,28% of the respondents also agreed that stakeholders engagement in road construction projects was effective while

17% of the respondents were for the choice that construction project vision is clear and achievable.

4.7 Procurement procedures and completion of road construction projects

The study sought to find out to what extent procurement procedures contribute to completion of road construction projects. The findings were tabulated in Table 4.16.

Table 4.16: Extent to which procurement influence completion of construction projects

Extent	Frequency	Percentage
To a very great extent	12	33
To a great extent	9	25
To a medium extent	6	17
To a little extent	9	25
To no extent	0	0
Total	36	100

From the findings, 33% of the respondents felt that procurement procedures influence completion of construction projects to a very great extent while 25% felt that procurement procedures influenced completion of construction projects to a great extent. However no respondent felt that procurement procedure had no any influence on completion of construction projects which was indicated by 0%. We can therefore deduce that 100% of the respondents agreed that procurement procedures had an influence in completion of construction projects.

4.7.1 Time taken to process procurement documents

The study sought to determine the extent to which time taken to process procurement document influenced completion of construction projects. The respondents were told to choose from a scale of 1 to 5 where 1 represented to a very great extent, 2 represented to a great extent, 3 represented to a medium extent, 4 represented to a little extent while 5 was for no extent. The findings were as follows

Table 4.17: Time taken to process procurement documents and its influence in completion of construction projects

Extent	Frequency	Percentage
To a very great extent	18	50
To a great extent	8	22
To a medium extent	5	14
To a little extent	5	14
To no extent	0	0
Total	36	100

From the findings, most of the respondents (50%) felt that time taken to process procurement document had an influence in completion of construction projects to a very great extent. 22% were for the option that time taken to process procurement documents influenced completion of construction projects, 14% were for to a medium extent and little extent. None of the respondents opined otherwise.

4.8 Inferential analysis

Inferential analysis is utilized in this study to determine if there is a relationship between an intervention and an outcome, as well as the strength of that relationship. The inferential statistics analysis aimed to reach conclusions that extend beyond the

immediate data alone between the independent and dependent variables in this study. The study conducted inferential analysis to establish the relationship between the independent variables and dependent variables of which involve a coefficient of determination and a multiple regression analysis. The independent variables in the study included, resources availability, competence of staff, stakeholder participation and procurement procedures while the dependent variable was completion of road construction projects.

4.8.1 Coefficient of determination

The coefficient of determination is a measure of how well a statistical model is likely to predict the future outcomes. The coefficient of determination, r^2 is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the extent to which changes in the dependent variable can be explained by the change in the independent variable. Or the percentage of variation in the dependent variable (completion of construction projects) that is explained by all the four independent variables (resources availability, competency of staff, stakeholder participation and procurement procedures).

Table 4.18: Coefficient of determination

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.792(a)	.627	.303		.125

Predictors: (constant), resources availability, competency of staff, stakeholder participation and procurement procedures).

Therefore, independent variables that were studied explain only 62.7% of the completion of projects as presented by the R². This therefore means that the four independent variables only contribute about 62.7% to the completion of projects while the other factors not studied in this research contribute 37.3 % of the completion of projects. Therefore, further research should be conducted to investigate the other factors (37.3%) that influence project completion.

4.8.2 Multiple regression analysis

In addition, the researcher conducted a multiple regression analysis so as to determine various factors that influence completion of construction projects. Multiple regression is a statistical technique that allows us to predict a score of one variable on the basis of their scores on several other variables. The main purpose of multiple regression is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable.

Table 4.19: Multiple regression analysis

	Unstandardized		Standardized		
	Coefficients		Coefficients		
	B	Std.Error	Beta	t	Sig.
(Constant)	1.224	.312		4.358	0.000
Resources availability	0.217	0.1440	0.185	.776	0.0387
Competency of staff	0.272	1.1264	0.089	.849	0.038
Stakeholder participation	0.299	0.0715	0.0235	2.7936	0.044
Procurement procedures	0.118	0.0847	0.023	0.4069	0.046

The regression equation ($Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$) now becomes

$$Y = 1.224 + 0.2176X_1 + 0.1187X_2 + 0.2994X_3 + 0.2725X_4$$

Where by Y = Completion of road construction projects

X1= Resource availability

X2=Competence of staff

X3=Stakeholder participation

X4=Procurement procedures.

According to the regression equation, established, taking all factors (resources availability, competence of staff, stakeholder participation and procurement procedures) constant at zero, the completion of road construction projects realized would be 1.224. The data findings analyzed also shows that taking all other independent variable at zero, a unit increase in resource availability lead to 0.217 increase in completion of construction projects. A unit increase in competence of staff will lead to 0.272 increase in completion of road construction projects, a unit increase in stakeholder participation will lead to a 0.299 increase in completion of road construction projects, whereas a unit increase in procurement procedures will lead to 0.118 increase in completion of road construction projects. These results infer that stakeholder participation contributes most to completion of road construction projects followed by competence of staff.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND
RECOMMENDATION

5.1 Introduction

This chapter deals with the summary of the findings, discussions and conclusions and offers recommendations to the challenges that have been brought forth by this research. In addition the study suggests area for further research .The literature reviewed was utilized in making conclusions of this study. The research objectives were used to guide the collection of data required form the respondents.

5.2 Summary of the findings

The study assessed the factors influencing completion of road construction projects in Embakasi, Nairobi County. The study established that the availability of resources influenced completion of road construction projects in reference to Embakasi, Nairobi County, to a very great extent. The study also revealed that lack of finances, lack of construction materials, lack of skilled construction work force and lack of construction equipment also influenced completion of road construction projects within Embakasi in Nairobi County to a very great extent.

The study found out that there was a strong influence of competency of staff and effective implementation and completion of road construction projects in Embakasi. The study established that competency of staff influenced completion of road construction projects to a very great extent. The study also established that lack of proper academic qualifications, turnaround time (time taken to complete a task), lack of required skills, knowledge of road construction and accuracy levels influenced effective completion of road construction projects.

On stakeholder participation, the study found out that it influenced completion of road construction projects at 47% and finally on procurement procedures, the study found out that it had an influence on completion of road construction projects at 33%.

5.3 Discussions of findings

The study made the following findings on the variables

5.3.1 Resource Adequacy and completion of road construction projects

Regarding the influence of availability of resources the study revealed that lack of finances and skilled personnel influenced effective completion of construction projects in Embakasi, Nairobi County. This is in line with the literature review where Gibbs et al. (2002) argues that the lack of adequate financial resources to carry out project activities is another challenge faced by most organizations. A good number of road construction projects lack adequate funding for their activities. This means that the little resources available are channeled to actual implementation of project activities while not considering how far the funds will sustain a given project activity. Most informants reported the challenge of resources constraint in impacting completion of construction projects. This concurs with Feuerstein (1986) view, who observed that lack of a resource is a constraint on the completion of project activity.

The respondent had reported that the factor of availability of skilled and semi-skilled laborers was a challenge too on completion of construction projects. They also reported availability of construction materials, and construction equipments and inability to secure loans due to lack of collateral also impacted on completion of construction projects. It is critical to set aside adequate financial and human resources at the planning stage. The required financial and human resources for timely completion of road

construction projects should be considered within the overall costs of delivering the agreed results and not as additional costs.

5.3.2 Staff Competency and completion of road construction projects

Regarding objective two which sought to determine the influence of competency of staff in completion of construction projects, the study revealed that competency of staff influenced effective completion of construction projects. Cuban (2001) observed that there are many ways to define and measure the adequacy of staff competency, capacity and the effectiveness of agencies tasked with projects. Thus there are also many ways to define indicators. For construction project, in most countries the desired outcome is sustainable management of construction project. The effectiveness of agencies tasked with construction project administration depends to a large extent on the agencies 'staff capacity relative to the demands placed upon them.

The study also established that lack of proper professional and academic qualification, turnaround time, lack of accountability and responsibility among staff and accuracy levels influenced completion of construction projects. Kent (2011) postulates that the ability of an agency's staff to meet demands for its services depends on both its numbers and the skills and expertise of staff members bring to the job. An agency need to have at least a minimum necessary mix of skills and expertise and a sufficient number of staff with appropriate skills relative to the scale of its responsibilities, measures for example in terms of size of its area or territory or volume of its production. Most respondents reported that competency of staff influenced project completion to very great extent. This is in agreement with Gardner (2003) who argued that skilled personnel staff entrusted with project execution should have required technical expertise in the area. From the findings we can deduce that for construction projects to be effective, there is need for qualified personnel.

5.3.3 Stakeholder participation and completion of road construction projects

Ferreira (1999) argued that influence of stakeholder participation on construction projects opportunities enhances public participation that enhances timely completion of these projects. The extent to which stakeholders participate ensures people decision making processes and capacity of stakeholders at different levels. To engage with other projects stakeholders on construction projects' policy decision-making and implementation, existence and effectiveness of conflict resolution and grievance mechanisms is important. Davies (1998) argues that stakeholders may not necessarily agree on the measured results or their interpretation and assessment. However, the areas and extent of disagreement among stakeholders can, in themselves, provide valuable insights and point out the issues requiring greater attention. The dialogue and informed discussion engendered by the results of indicator measurements are often more important than the measured results.

Most respondents reported that road stakeholders engagement was not very effective this is in contradiction to Ferreira, (1999) who noted that influence of stakeholder participation on effective implementation of projects provides opportunities for public participation hence it need to be effectively managed. Respondents further reported that project objectives did not clearly reflect the overall road construction goal. This contradicts Lemos (2000) who looked at multi-stakeholder processes and observed that they can aid in the specification and selection of appropriate construction project. Many respondents were also in agreement that stakeholder's engagement plays a vital role in enhancing the internal processes and on the performance of construction projects.

5.3.4 Procurement Procedures and completion of road construction projects

Most of the respondent agreed that procurement procedures lead to completion of construction projects on time. Construction of road projects use the Government of Kenya procurement guidelines. Filling for the procedure can be a long and tedious process. However the major challenge arises in cases where there are differences in the guidelines in respect to the matter. For fear of appearing to have misprocure, the project teams take upon themselves to ensure they fulfill the different requirements of the guidelines.

5.4 Conclusions

Based on objective one the study concluded from the study that there is a great influence of availability of resources for completion of road construction projects. The study revealed that adequate resources ensure timely completion of road construction projects together with competency of staff.

Regarding objective two, the study concluded that staff competency influences completion of construction projects. This is to mean that the effectiveness of agencies tasked with construction projects administration depends to a large extent on the agencies staff capacity and competency relative to the demands placed upon them.

Regarding objective three, the study also revealed that there is an influence by stakeholder participation on completion of construction projects. This can be taken to mean the extent to which stakeholder participates endures people decision making processes and decision making capacity of project stakeholders at different level. It further enhances ownership and sustainability which is one of the key aspects in monitoring and evaluation of projects.

Finally on objective four, the study revealed that procurement procedures influences completion of road construction projects. If the procedure are done on time, and in the right way the projects can be completed at the right time and within the right budget.

5.5 Recommendations of the study

Based on the findings of this study and conclusion made, the study makes the following recommendations

1. Based on the findings and conclusions, the study recommends that there should be stakeholder engagements to ensure that ideas and perspectives are represented, members of stakeholder group should be invited to participate in project scope identification and planning. Participation improves the quality of project management and that of evaluations accuracy of information, increased credibility and acceptance of findings, and better correspondence to the practical concerns of stakeholders.
2. The study recommends that there where necessary, skill levels should be augmented to meet the needs of the projects .An ongoing investment in developing such capacity for construction project team is necessary. The study also recommends that the various road departments should allocate enough resources needed for construction of the project and monitoring and evaluation and agree on a practical arrangement to support finance of the project and monitoring and evaluation and agree on a practical arrangement to support finance the associated activities.
3. The study also recommends that organizations should consider adopting modern information and communication technologies in carrying out monitoring and evaluation activities.

4. Finally the study furtherer recommends that government leaders should offer the necessary support and goodwill to enhance completion of construction projects. Unnecessary influence and interference on project completion should be deterred.

5.6 Suggestions for further research

There are many factors that influence completion of road construction projects. The study could not exhaustively cover all these factors and therefore there is need for more research in this area.

The study also suggests research in the involvement of the private sector in financing road construction projects through private partner partnerships.

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APPENDICES

Appendix 1: Letter of transmittal

Virginia Macharia

P.O BOX 70380-00400

Nairobi

Dear Sir/Madam

RE: FACTORS INFLUENCING COMPLETION OF ROAD CONSTRUCTION PROJECTS IN EMBAKASI, NAIROBI COUNTY.

I am a Master of Art student at The University of Nairobi and in my final year of study. As part of the required award of the degree of Master of Arts in Project Planning and Management, am conducting a study to investigate the **FACTORS INFLUENCING COMPLETION OF ROAD CONSTRUCTION PROJECTS IN EMBAKASI, NAIROBI COUNTY KENYA**

To facilitate this exercise, you have been scientifically selected as a participant in this study. You are kindly requested to participate in answering the questionnaire. Please be assured that any information obtained will be treated with utmost confidentiality and will be used only for the purpose of this study.

Thank you.

Yours Faithfully,

Virginia Wairimu Macharia

L50/72264/2014

Appendix 2: Individual Questionnaires for road contractors, engineers and supervisors

This questionnaire is intended to gather general information on the factors influencing completion of road construction projects in Embakasi, Nairobi County Kenya.

The questionnaire has 2 sections. Kindly respond to all questionnaire items honestly. Your response will be kept strictly confidential. Please tick in the appropriate box or write in the spaces provided. Your assistance and cooperation will be highly appreciated.

SECTION A: DEMOGRAPHIC INFORMATION

1) Kindly indicate your gender

a) Male ()

b) Female ()

2) What is your age?

a) Below 25 years ()

b) 26-35 years ()

c) 36-45 years ()

d) 45yrs and above ()

3) What is your highest level of education?

a) Primary ()

b) Secondary ()

c) Certificate ()

d) Diploma ()

e) Undergraduate ()

f) Postgraduate ()

4) Indicate the position that you hold in the area of working

a) Contractor () b) Consultant ()

c) Engineer () d) Technical auditors ()

e) Any other specify

5) How long have you worked with in the road construction industry?

a) 1-5 years ()

b) 6-10 years ()

c) 11-15 years ()

d) Above 16 years ()

6) Who are the main clients that you serve?

a) Private () b) Public ()

7) Have you been involved in road construction?

a) Yes () b) No ()

SECTION B: RESOURCES INFLUENCE ON PROJECT COMPLETION

8) In your own opinion does the availability of resources influence completion of road construction projects?

a) Yes () b) No ()

9) If no why?

10) To what extent does the availability of resources influence completion of road construction projects? Please tick next to the appropriate column in the table below

To a very great extent	
To a great extent	
To a moderate extent	
To a little extent	
No extent	

11) To what extent do the following indicators influence the completion of road construction projects? Use a scale of 1 to 5 where 1 is to a very great extent and 5 is no extent

Factors	1	2	3	4	5
Construction materials					
Construction work force					
Construction equipment					
Material mobilization					

12) To what extent does the following influence completion of road construction projects?

Factors	Very great extent	Great extent	Moderate extent	Little extent	Not at all
Lack of finances					
Lack of skilled personnel					
Lack of an effective mode of stakeholder engagement					

SECTION C: COMPETENCY OF STAFF

13) In your own view does competency of staff lead to completion of road construction projects?

- a) Yes () b) No ()

14) To what extent does competency of staff influence completion of urban road infrastructure projects?

To a very great extent	
To a great extent	
To a moderate extent	
To a little extent	
No extent	

15) What is the extent to which the following influence completion of construction projects of roads?

Factors	To a very great extent	To a great extent	To a moderate extent	To a little extent	Not at all
Accuracy levels					
Turnaround time(Time taken to complete a task)					
Lack of experience					
Poor academic qualifications					
Demotivated staff					
Lack of accountability and responsibility among staffs					

16) What would you recommend to be done in order to improve competency of staff in road construction projects?

SECTION D: STAKEHOLDERS PARTICIPATION

17) To what extent do you agree with the following quality of stakeholders' engagement? Use a scale of 1 to 5 where 1 is strongly agree and 5 is strongly disagree

Factors	1	2	3	4	5
Construction project vision is clear and achievable					
Stakeholder engagement is effective					
The stakeholders engagement enhances the internal process(orientation, supervisor support, change management)					
Stakeholders engagement influences the performance of urban road infrastructure projects					

18) To what extent does the stakeholder participation influence completion of urban road infrastructure project?

- a) To a very great extent ()
- b) To a great extent ()
- c) To a moderate extent ()
- d) To a little extent ()
- e) No extent ()

19) To what extent does stakeholder participation in the following project activities influence completion of urban road infrastructure projects?

Project Activities	Vey great extent	Great extent	Moderate	Little extent	Not at all
Identification of road project scope					
Data collection and management					
Supervision events					
Performance reviews					
Project site					

20) What would you recommend to be done in order to improve stakeholders' participation in road construction projects in order to ensure their completion?

SECTION E: PROCUREMENT PROCEDURES

21) Does your organization have procurement plans?

- a) Yes () b) No ()

22) If yes does the state of your organization procurement plans ease the process and procedure of operation for road construction materials?

- a) Yes () b) No ()

23) To what extent does availability of procurement plans contribute to completion of road projects? Please tick against any of the following

- a) To a very great extent ()
- b) To a great extent ()
- c) To a medium extent ()
- d) To a little extent ()
- e) To no extent ()

24) To what extent does the time taken to process procurement document contribute to completion of road projects? Please tick against any of the following

- a) To a very great extent ()
- b) To a great extent ()
- c) To a medium extent ()
- d) To a little extent ()
- e) To no extent ()

25) What would you recommend to be done in order for procurement plans to be done on time to ensure completion of road construction projects?

Thank you for your participation

Appendix 3: List of road contractors in Nairobi County

	CONTRACTORS NAME AND ADDRESS
1.	Ashboro Enterprise Ltd.P.O Box 66227 NRB
2.	Associated Construction CO.Ltd P.O Box 31114-00600 NRB
3	Donwoods CO.Ltd P.O Box 73667-00200 NRB
4.	Gichocho Building Contractor P.O Box 25385-00100 NRB
5.	H.Young & CO.EA .Ltd P.O Box 27718 NRB
6	Imco Holdings Ltd.P.O Box 30118 NRB
7.	Jomwak Enterprise P.O Box 33599 NRB
8.	Junjo Commercial Agencies P.O Box 755-00518 NRB
9.	Kaguanzai Builders Ltd.P.O Box 40083-00100NRB
10.	Kange Construction CO.Ltd P.O Box 6797 NRB
11.	Kimemiah Eng. CO.Ltd P.O Box 51497-00200 NRB
12.	Kualam Ltd.P.O Box 12545-00200 NRB
13.	Magic General Contractors P.O Box 28548 NRB
14.	Mahan Contractors P.O Box 71143-00610 NRB
15.	Max Victor Enterprise P.O Box 2668-00200 NRB
16.	Njuca Consolidated CO. Ltd.P.O Box 550102 Kenol NRB
17.	Nyoro Construction Co.Ltd P.O Box 74416 NRB
18.	Primetech Eng.P.O Box 55151 NRB
19.	Reef Building Systems P.O Box 40439-00100 NRB
20.	S.S Mehta & Sons Ltd P.O Box 41853-00100 NRB
21.	Sinoe Construction CO.Ltd
22.	Sivad Construction Ltd.P.O Box 15026 001000 NRB
23.	Square M. Contractors P.O Box 24372 NRB
24.	Tractor Den (K) Ltd P.O Box 7085-00400
26.	Yellow House P.O Box 4609-00120 Thika