# DETERMINANTS OF PROJECTS DELAY IN THE CONSTRUCTION INDUSTRY IN KENYA; THE CASE OF SELECTED ROAD PROJECTS IMPLEMENTED BY KENYA NATIONAL HIGHWAYS AUTHORITY IN KENYA'S COAST REGION

BY

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## DECLARATION

I confirm that this research project report is my original work and has not been submitted for a degree in any other University.

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# DEDICATION

This research is dedicated to my mother, Mrs. Milka Kimemia, who taught me that the best kind of knowledge to have is that which is learned for its own sake. It is also dedicated to my wife Mrs. Rahab Mbugua, who taught me that even the largest task can be accomplished if it is done one step at a time.

# TABLE OF CONTENTS

# LIST OF FIGURES

# LIST OF TABLES

# ABBREVIATION AND ACRONYMS

| | | |
|---|---|---|
| **CBD** | : | Central Business District |
| **CPM** | : | Construction Project Management |
| **EIA** | : | Environmental Impact Assessment |
| **EPC** | : | Engineer, Procure and Construct |
| **EU** | : | European Union |
| **GDP** | : | Gross Domestic Product |
| **GoK** | : | Government of Kenya |
| **JKIA** | : | Jomo Kenyatta International Airport |
| **KeNHA** | : | Kenya National Highways Authority |
| **KeRRA** | : | Kenya Rural Roads Authority |
| **KRB** | : | Kenya Roads Board |
| **KURA** | : | Kenya Urban Roads Authority |
| **LAPSSET** | : | Lamu Port South Sudan Ethiopia |
| **LDCs** | : | Least Developed Countries |
| **MoR** | : | Ministry of Roads |
| **MoTI** | : | Ministry of Transport and Infrastructure |
| **NCA** | : | National Construction Authority |
| **NGOs** | : | Non-Governmental Organizations |
| **PPDA** | : | Public Procurement and Disposal Act |
| **SPSS** | : | Statistical Package for Social Scientists |
| **USA** | : | United States of America |

# ABSTRACT

The Principle objective of this project was to establish the major causes of delays in projects implementation in the construction industry in Kenya. The study delimited itself my limiting the scope into the roads maintained /constructed by the KeNHA in the Coast region of Kenya. This was deeply looked at by taking into account four major objectives that included: to establish the extent to which construction project financing influence the delay of construction projects in the road sector, to investigate the extent to which construction project planning influence the delay of construction projects in the road sector, to find out the extent to which Contractor's experience influences the delay of construction projects in the road sector, and ,to investigate the extent to which supervision of work influences the delay of construction projects in the road sector. The study employed a survey research design, since it was an in depth investigation of an individual group of respondents. The questionnaires were used as the main source of gathering information from selected 55 respondents that cut a cross categories like Contractors, Surveyors, Engineers and many more. These questionnaires were emailed to some respondents; others were dropped and picked later while some were administered by research assistants. Questionnaires were sorted out, data keyed in into the SPSS for analysis. This information then was presented by use of frequency tables. From the hypothesis testing using the Chi-Square, the calculated Chi-Square values were found to be greater than the critical value of 9.488 thus the alternative hypotheses were adopted in all the four cases as per the objectives. Findings have shown that there is a significant link between the objectives discussed in the literature review and what is seen in chapter four and as it is entirely proven by the hypothesis that has been tested. Therefore, from the findings on the first objective that aimed at establishing the extent to which construction project financing influence the delay of construction projects in the road sector and the responses gotten showing that, 5 respondents agreed with the idea that the road projects have been allocated enough finances, 45 went for no while those who were not sure made 7.4% of the responses, bringing the total to 4 respondents. First and foremost, the study recommends that the national government should increase the budgetary allocation to KeNHA. Secondly, the study recommends that KeNHA should undergo proper and checked planning at all levels in order to achieve timely deliveries. The third recommendation is that the experience of the contractors should be scrutinized, their track records be well understood and proper procedures of testing these contractor's experience be checked. Finally, the study recommends that supervision should be continuous and in fact it should be made a daily activity. Absentee supervisors shouldn't be even allowed to take part in any road construction in the country.

<center>**CHAPTER ONE**</center>

<center>**INTRODUCTION**</center>

**1.1 Background to the Study**

According to Aon (2012), a project refers a series of task, arranged in a defined sequence or relationship that produces predefined output or effect and it always has a start and an end. In his writing, Aon looks at a project like a football hit from one point of the goal and aimed at achieving the objective immediately it enters the opponent's goal; adding up to a score. He goes ahead to define the other major element of projects implementation that is called Construction Project Management (CPM). He defines Construction Project Management (CPM) as an approach used in the construction industry with the aim to increase the efficiency and effectiveness in performance in the management and coordination of a project during its lifecycle. Most construction projects usually suffer delay and surpass the outlined contract sum (World Bank, 2014). The result of such overrun can at time lead to abandonment of a project. Ideally projects are supposed to run continuously without delays and the responsibilities to keep this in check lies squarely with the project manager and other stakeholders who are linked directly with the projects. Within the project team there should be an outlined strict mechanism discouraging parties to the project from laxity that may lead to stalling or delays (Oyewobi, et al.2011).

In my study, the major projects am going to look into are infrastructural projects. Infrastructure can be categorized into "hard" and "soft" infrastructure. The former refers to physical structures or facilities that support the society and economy, such as transport (ports, roads and railways); energy (electricity generation, electrical grids, gas and oil pipelines); telecommunications (telephone and internet) and, basic utilities (water supply, hospitals and health clinics, schools, irrigation). The latter refers to non-tangibles supporting the development and operation of hard infrastructure, such as policy, regulatory, and institutional frameworks; governance mechanisms; systems and procedures; social networks; and transparency and accountability of financing and procurement systems (Oyewobi & Ogunsemi, 2010). Globally, infrastructure is an important factor in the development of a nation through its direct and indirect contributions to economic growth. According to a World Bank (2014) the following three factors of infrastructure fosters economic growth: infrastructure directly or indirectly reduces costs in the production process, infrastructure induces structural change which influences production and consumption trends; and infrastructure contributes to sources of income and better income levels.

However, reports across the developed and LDCs has shown the construction projects like roads and other infrastructures have been faced with a major common problem of 'delays in delivery.' According to Nyamwaro (2011), Construction project delivery is affected by many factors. Every investor wants to be sure of the project time and cost. This is because challenges that may affect project completion have far reaching effects ultimately on the owners' interest. Chism and Armstrong (2010) in study carried in USA aver that in the current economic landscape, project owners are scaling down or eliminating capital construction projects due to lack of financing, uncertainty over costs, and concerns about potential delays that could impact the feasibility basis of projects. While in a study carried out in the UK Fapohunda and Stephenson (2010) state that in construction, conflicts exists between the projects' stated objectives with regard to the appropriateness of cost time and quality. They also identify the distinct knowledge management areas for project managers' efficient performance to include among others project time management which includes providing an effective project schedule for project delivery besides actually delivering on the schedule.

Chism and Armstrong (2010) for example studied the construction of the proposed road network in the Illinois states that was to be funded by the US government and the county development assembly between 1994 and 1999. They discovered that the road prolonged by 3 more years; meaning additional expenses/overrun coasts, negative impact to the community and political repulsion from the Democrats. They cited two major caused of this delay as those coming from the natural environment (Hurricane Katrina, hails stones, ice caps, extreme cold weather etc.) and human caused factor ( insufficiency of financial resources, change in technology, politics etc.). McNair (2011) referring to the Australian context of applying EPC contract advances the importance of a contractor delivering a complete facility for a guaranteed price and by a guaranteed date. He looked at the construction of feeder roads in the city of Newcastle and argued that, up to 30% of the projects failed due to weather situations that faced the cold desert continent between 2000 to 2005, the political indifferences between the upper house and the construction industries, newly adopted technology from China, expertise demands, financial constrains due to the economic crisis of the millennium and many more. He further observed that failure to achieve this completion of roads construction will usually result to a contractor incurring monetary liabilities. The subject of completion of project is therefore a universal concern that affects all parties to a construction project (Musa, 2012). It is thus in the interest of the project management as an emerging profession to address all the factors that affect completion of construction project. The contractor usually has a limited ability to claim additional money which is limited to the circumstances where the project company has delayed the contractor or has ordered the variation of the works (McNair, 2011).

In a study carried out in Johannesburg South Africa, Ahmed, Azhar, Castillo and Kapagantulla (2012) state that delay of roads construction projects in all the cities and slums of SA are indeed a universal phenomenon. They are also most always accompanied by cost and time overruns. Roads Construction project delays in South Africa just like any other countries further have a debilitating effect on all parties (owner, contractor, and consultant). It is therefore correctly deduced that factors affecting construction project completion is a study of interest to all parties. This in agreement with Karim & Marosszeky (2012) observation that project delays have been a topic of concern in the construction industry. In their studies, they for example observed that up to 45% of the roads upgrading projects in troubled Soweto slums were not delivered in time between 2004 to 2009 due to factors that ranged from: political disagreements especially when refugees from Zimbabwe infiltrated into the country, Thabo Mbeki's failure to command the majority votes in the ANC that could favour him in allocating this project funds, the regular strikes by mines led the partners walk away in the view of bad governance, corruption, low level of technology applied in construction industry etc. According to The World Bank (2014), the political issue-especially-with the uprising Malema and his opposing youths has left up to 30% of roads unattended because the youths feel that the tenders were irregularly awarded.

Hussin and Omran (2011) state that in Nigeria, seven out of ten roads construction projects in Borna and Kano Plains surveyed suffered delays in their execution. Also Fugar & Agyarkwa (2010) observed that in Nigeria 5-10% of construction pre-contract cost is based on contingency. This has been found inadequate which means extra financial commitments occasionally beyond the capacity of the owner. Clients are sometimes not prepared for this and so fund in terms of loans are sought to offset this additional costs. It is in this agreement that Chiocha (2011) argues in his book, 'Corruption and its effects on the development of the construction industry in Nigeria' that, up to 78% of the roads in rural Nigeria and its northern part will be under dust for the coming 15 or more years because of factors that can be controlled like: corruption from the local chiefs (Ogas), governors, national government, NGOs and many more. In his writing, Chiocha tends towards the argument that up to 60% of the roads have failed to meet deadlines due to corruption that leads to poor contractual awards, misappropriation of little funds, poor expertise selection, poor technology employment and many more.

In a study carried out to examine roads construction projects performance in Sudan, Omran (2012) observe that despite large number of reported cases, construction ranging from the simplest to more complex roads projects platforms have increasingly experienced cost overruns due to silly delays that could be prevented up to 95%. This phenomenon is also similarly observed in Ghana and Uganda where Gaba (2013) observes that studies reveal increase in cost overruns, delayed completion,

unsatisfactory and unmet roads project objectives in most construction projects. While investigating the subject of roads projects delays in Sudan and Uganda, Olatunji (2010) observes that it is a phenomenon that can be attributed to the inability of the client/his representative and the project team to have a comprehensive view of the construction project from inception to completion. Aibinu and Jagboro (2012) state that construction delay has become endemic in Nigeria, Sudan, Uganda, Eritrea etc. Delay they found out had significant impact on completion cost and time of 61 building projects studied.

In Kenya, building and construction industry has been robust (Kenya facts and Figures, Kenya National Bureau of Statistics, 2012). Foreign investors have shown a lot of keenness to have a stake in Kenya considered a business hub in east and central Africa and a center from which they can operate within Africa. As a result of this, major cities like Nairobi, Mombasa, Kisumu and their environs have witnessed a boom in construction projects especially those addressing locomotive infrastructure. These projects are government, private individuals, private companies and international businesses and institutions sanctioned. Remarkably is the Thika super highway. In his research about roads infrastructure in Kenya, Mbogo (2011) argues that, Road construction industry plays a major role in development and achieving the goals of the Kenya's society. Roads Construction is one of the largest industries and contributes to about 10% of the gross national product (GNP) in industrialized countries (Maxwell, 2012), and 6.1% LDCs like Kenya. Construction industry has complexity in its nature because it contains large number of parties as clients, contractors, consultants, stakeholders, shareholders and regulators. The performance of the construction industry is affected by national economies (Kikwasi, 2012).

A report done by the GoK (2012) and Work Bank (2013), In Kenya, the construction of Thika Superhighway for example which was set to be completed in the year 2011 was realized a year later. The deadline was moved twice resulting in both cost and time overruns. The project cost kshs.7 billion more than the original budget. Major citations of the factors of delays were not limited to: political differences and heat in the coalition government, lack of community involvement ,bad weather conditions as a result of el-Niño rains of 2011/2012, poor technology that came from the local sub-contractors, economic fluctuation; owing to the factor that the project was never hedged etc. A closely cited project that was never completed in time due to the issue of financial resources and technology (GoK, 2013) is the construction of Greenfield terminal at Jomo Kenyatta International Airport, that had its start date postponed several times which make the project far behind its schedule at the moment (The Quantity Surveyor and Construction Claims, 2011). This had an overall negative impact to the government which lost almost Ksh.98, 324,900 as inconvenience adjustments.

A feature of road Construction Firms in the Mombasa is that, they are often believed to be one-man enterprises, having low financial and capital base and also lacking the requisite managerial skills to adequately face up to the numerous and difficult challenges they constantly have to encounter in a typical developing economy such as Kenya's (Chilipunde, 2010). Due to this lack of enough expertise and lack of sufficient financial resources, there is a number of roads constructions/maintenance that has stalled for ages now. In his writing, Waihenya (2011) argues that the delay in implementation of development projects like roads, electricity, water and sewerage projects in the Kenya's coast date back to the Arabs and Portuguese infiltration into the region who made the region dependent on the ideas of the masters, live at their comfort zones, reject any European associated technology and be in constant religious repulsion among themselves. His has been a challenge for example for the roads construction sector to get enough support from the community in terms of expertise, dedicated laborers, modern technology, necessary development resources, political support and many more.

Official statistics indicates that, indeed, these so-called small firms represent over 95% of contractors operating in the Kenya's economy (Ahadzie, 2011). In Nairobi County for example, most contractors, particularly road contractors have shown a lot of interest in the sector. Although, most of these firms have been performing minimally but they have an impact in Nairobi than Mombasa. In Mombasa, 20% of the local construction firms are owned by the local Arabs and Swahili community while the Mijikenda community shares only 5% and the greater percentage is left to the foreign companies from established towns and cities like Nairobi (Chai & Yusof, 2013).

This has left the coast region's development projects to be under the government. However, studies by the Kenya National Bureau of Statistics (2012) show that up to 47.5 % of the roads projects handled by the government of Kenya via Kenya Urban Roads Authority (KURA) who get the funding from the Kenya Roads Board (KRB) have never been completed in time between 2008 and 2013 due to various reasons. According to the Ministry of Planning (2010), Multinational: Arusha – Holili/Taveta – Voi Road Project that covered, The Holili-Taveta-Mwatate Road section of 135 km long consisting of Holili (border) to the end of the project at Mwatate (86.492 kms); the road from Mwatate to Wundanyi (15.580kms) and the proposed Taveta bypass (11.965 kms), was delayed by almost 3 years that the actual planned completion due to factors like contractual agreements and funding criteria between the Kenyan government and the Tanzanian government.

Related to the above is the construction of various projects like the LAPSSET construction project which is said to be part of Vision 2030 initiative, the year 2030 seems will be here before any substantial steps have been made and not forgetting Konza Technology City which is now seen as a dream of real estate project that is almost unachievable( World Bank, 2014).Other cited case by the

World Bank (2012) report indicates that Physical progress on the Mau Summit-Kericho and Kericho-Nyamasaria remains unsatisfactory; ranging between 14-24% compared to about 89-71% of the contracted time elapsed, Upgrading to Bitumen Standards of Mariakani-Kilifi (C107) Road Phase II: Kaloleni-Kilifi section ;which has been delayed for over 15 months since its planned operation, Periodic Maintenance of Mombasa-Miritini (A109) Road, and, Routine Maintenance of Voi loop (C105) Road which has always been affected due to finances and political intrigues. Specifically cited incidences are of the last two projects that are under the Kenya National Highways Authority – KeNHA that has from time to time faced with political repulsion (Matesehe, 2013),corruption and embezzlement of funds (Ndegwa, 2013), and constrained financial resources form the national government and donors (GoK, 2012).

**1.2 Statement of the Problem**

Many road contractors whether from the government agencies or limited local firms have failed or perform minimal in their performance, particularly in maintenance of road. The criticism against their performance has attracted the government attention forcing it to come up with performance contract and even settling the authority to oversee the contractors 'performance'. However, according to government of Kenya (2012) the poor performance of the road contracts is due to poor management of funds and poor delivery of services to the road user. In addition, performance measurement systems are not effective or efficient to overcome this problem. Road contractor's performance problem appears in many aspects, ranging from fail in time performance, cost performance and others fail in other performance indicators. Ugwa and Haupt (2007) opined that the failure of any road contractor is mainly related to the problems associated with resource management and even political interferences. Moreover, there are many reasons and factors which attribute to this problem including poor management of the minimal resources available, low levels of technology that make the whole exercise very expensive, politics and many more.

In Kenya, there are many road contractors who have failed in performance. In the past, many road projects were finished with poor performance because of many contractors' reasons such as: obstacles by client, non-availability of materials, roads closure, amendment of the design and drawing, additional works, waiting the decision, handing over, variation order, amendments in Bill of Quantity and delay of receiving drawings (Wambugu, 2013). For example, project of rehabilitation of Waiyaki highway finished with problems in both of time and cost performance (GoK, 2010). In addition there are other indicators of performance such as project managers, coordination between participants, monitoring, and feedback and leadership skills. However, there are three important issues related to failures and problems of performance in Kenya which are economic, environmental and socio-cultural issues like politics. Local studies done by Musa (2012) on effects of total quality management on

performance of Companies in Kenya a case study of Interbuild Company Limited. He found that human resource management and resource management affects performance of the building company to a great extent. Bundi (2011) did a survey on challenges in the management of procurement services within Kenya Rural Roads Authority. She found that political interferences and inadequate allocations of funds hinder completion of KeRRA activities even though the authority fully implements procurement policies. Nyamwaro (2011) did a study on analysis of challenges facing project implementation a case study of Ministry of Roads Projects. The study deduced that poor communication and lack of awareness on PPDA which is also used in the implementation of the Ministry's Projects were the main challenges facing project implementation. Despite immense study focusing on ministry of road and its associates, no study has focus on the Factors Influencing Delay of Projects in the Construction Industry with biases to roads maintained by the Kenya National Highways Authority. Thus, this study aims to bridge this knowledgeable gap by evaluating determinants of effective, efficient and timely delivery of construction projects in Kenya with focus to selected road projects in coast region.

## 1.3 Purpose of the Study

The study seeks to investigate determinants of projects completion in the construction industry; the case of selected road projects implemented by Kenya National Highways Authority in Coast region.

## 1.4 Objectives of the Study

The objectives of the study were:

1. To establish the extent to which construction project financing influence the delay of construction projects in the road sector.
2. To investigate the extent to which construction project planning influence the delay of construction projects in the road sector.
3. To find out the extent to which contractor's experience influences the delay of construction projects in the road sector.
4. To investigate the extent to which supervision of work influences the delay of construction projects in the road sector.

## 1.5 Research Questions

The research was guided by the following questions:

1. To what extent does construction project financing influence the delay of construction projects in the road sector?
2. What is the extent to which construction project planning influence the delay of construction projects in the road sector?

3. To what extent does the contractor's experience influences the delay of construction projects in the road sector?

4. What is the extent to which supervision of work influences the delay of construction projects in the road sector?

**1.6 Study Hypothesis**

The study was guided by the following alternative hypothesis:

1.  $H_1$: Construction project financing has a significant influence in the delay of construction projects in the road sector.

2.  $H_1$: Construction project planning has a significant influence in the delay of construction projects in the road sector.

3.  $H_1$: Contractor's experience has a significant influence in the delay of construction projects in the road sector.

4.  $H_1$: Supervision of work greatly influences the delay of construction projects in the road sector.

**1.7 Significance of the Study**

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

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

Project developers/clients may also benefit from the findings of this study and therefore achieve greater success in their construction projects. This is because they may apply the findings of this study in ensuring the risk factors that may cause their projects not be delivered successfully are mitigated.

**1.8 Limitations of the Study**

This study was faced by the challenge of time which was a constraint. Time between studies, research and work were somewhat competing, though extra time was sought to compensate for this. The study also was faced with the challenge of inadequate budget. The unavailability of budget also negatively affected the study. Therefore an alternative source of finances was sought.

**1.9 Delimitation of the Study**

The research study limited itself to roads construction projects under Kenya National Highways Authority – KeNHA in the Kenyan coast region. It further selected only five projects from the coast

region that have had their projects delayed for a long time. These projects were: Periodic Maintenance of Mtito Andei-Voi (A109) Road, Periodic Maintenance of Mombasa-Miritini (A109) Road, Upgrading to Bitumen Standards of Mariakani-Kilifi (C107) Road Phase II: Kaloleni-Kilifi section, Periodic Maintenance of Kombani-Marere Bridge (C106) Road, and, Routine Maintenance of Voi loop (C105) Road.

The study specifically focused on the World Bank, government of Kenya and county governments funded projects in the Kenya road sub-sector. The sample population targeted included architects, structural engineers, civil engineers, construction project managers, mechanical engineers, electrical engineers, quantity surveyors, land surveyors and developers.

## 1.10 Basic Assumptions of the Study

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

It is also assumed that the respondents were to be honest and faithful while responding to questions in the research questionnaire.

It further assumed that the four mentioned factors in the objectives in one way or the other had have an influence in the delay of roads construction and, the record of delayed roads constructions still exist.

## 1.11 Definitions of Significant Terms

**Construction project completion-**this refers to successful carrying out of a construction project as per the time agreed to in the contract agreement and as captured by the project schedule, within the budget and design scope.

**Project-** an overall task which has a definable beginning and definable end, it consists of a number of related and dependent activities, all of which utilize resources and upon which there are imposed internal and external conditions.

**Project delay-** The delay referred to in this study is the failure of government road construction projects to meet standards, to reach target group, cost and time overruns.

**Project financing-** this refers to the ways that a client provides the funds that cater for the cost of design, planning, labour and approvals required to ensure the construction project is successfully carried out.

**Project performance-** This is an aspect of project accomplishment in regard to the subjective matter of the client and the public at large.

**Project planning-** this involves, looking ahead and developing objectives, programs, schedules, budget and procedure that help in delivering construction project.

**Supervision of work-** this refers to the actions taken by the project team leadership in ensuring that the project is carried out as per the specification. The aim is to ensure that the construction project plan is successfully implemented and any difficulties experienced during implementation are appropriately addressed.

**1.12 Organization of the Study**

This research report is organized in five chapters. Chapter one is the introduction which includes the background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, statement of the problem, purpose of the study, objectives of the study, research questions, research hypothesis, significance of the study, delimitations of the study, basic assumptions and the definition of significant terms. Chapter two of the study consists of the literature review with information from other articles which are relevant to the researcher. Chapter three entails the methodology to be used in the research. Chapter four has given the insights of data analysis, the findings and discussions of the study. Then lastly in chapter five, the study has given a summary of findings, discussions, conclusions and recommendations.

# CHAPTER TWO

## LITERATURE REVIEW

### 2.1 Introduction

This section summarizes the literature that is already in existence regarding the factors leading to delay in construction projects in the world and Kenya with specific emphasis on the roads construction projects. It presents an overview of previous work on related topics that provide the necessary background for the purpose of this research. It further organizes the work into various sub-topics that are strongly guided by the four given objectives.

### 2.2 Construction Projects Financing and their Completion

Chiocha (2011) defines project financing as raising of funds to finance an economically separable capital investment project which the providers of funds look primarily to the cash flow from the project as the source of funds to service their loans and provide the returns of equity invested in the project. Matesehe (2013) also defines project financing as financing a particular economic unit in which a lender is satisfied to look initially to the cash flow and earnings of that economic unit as the source of funds from which a loan will be repaid and to the assets of the economic unit as the collateral for the loan. Financing of construction projects like roads, railway, port harbors and many more is therefore expected to be an economic investment. In an economy of a country, construction industry helps in creating wealth and employment opportunities Olatunji (2010). It helps build and or expand infrastructure that facilitates the service industry. This way it can spur economic growth across the board. Further in development of any country, the construction industry plays vital roles in transforming the aspirations and the needs of its people into reality by implementing various physical structures (Bundi, 2011). As such government agencies prioritise investments in construction projects like roads and other transport projects not to spur economic development alone but to have the wider associated benefits reach the citizens.

A report published by the world bank on the state of redoing the major urban roads in the Tennessee Valley USA after the deadly Tsunamis insisted on only two major factors that will be central in determining the time a project will take to be effectively constructed. The two aspects key to every construction contract according to the World Bank (2012) are time and money. According to Dissanayaka & Kumaraswamy (2009), with the items of time and money, the essence of a construction contract can be defined. For a specified sum of money, a road construction contractor for example will be required to perform within the specified period of time (Chism & Armstrong, G. 2010). When every investor ventures in a construction project therefore they invest money within a specified time and expect the investment to repay itself. As such timely completion of the project

ensures the cost incurred to be the necessary project cost. Any delay leads to cost overruns which raise the project cost.

Indeed Hussin and Omran (2012) states that 70% of the projects abandoned in Malaysian transport construction projects were due to financial problems of developers, contractors, the local and national governments, stakeholders like the donors and many more. In a similar study carried out by Piper (2011) in Malaysia and Madagascar, he found out that between 1999 to 2007 up to 71% of the roads and other construction projects that in a way failed or took longer than planned for or changed the dates of commencement than the planned dates were as a result of squeezed financial allocation and the contractual times agreements that were never practical. Citing the repair of the main road linking the major international airport in Madagascar and the capital city's CBD took long by 3 years between 2008 and 2011 due to limited financial resources and the then political unrests due to coups.

A study that looked at the projects delayed in East Africa focused on major road projects that links Kenya, Tanzania, Uganda and by extension Burundi in 2011and found out that the governments of Kenya and Uganda were affected up to the tune of 45% roads construction projects (GOK, 2012).Among the cited hindrances include the poor financial management, corruption, limited financial resources due to project finances diversions etc. Gaba (2013) argues that, in government projects like those managed by KRB, KeRRA, KURA, KeNHA etc. There are continued payments that take longer time and this also affects the project timely completion negatively. It is not quite easy to understand the entire construction process from inception to completion especially when the finances provided can never be enough to hire qualified personnel who have the first experience in these projects. This is because even for the most experienced professional hand, there will always be uncertainties posed by the environment, soil conditions, climate, political situation and even the economic situation that need more than an individual expert or local expert at times; who most of the times are preferred by local contractors just because they are relatively cheap labour. This uncertainty due to various factors raises an element of risk in construction project management. Any risk needs to be mitigated and risks mitigation calls for big financial investments. A good risk management strategy will then need to be put in place and properly implemented for a timely project implementation. This in the end should retain financial viability of the project as an investment. The overall lack of finance to complete a project, or delays in the payment of the services by the project owners or clients can lead to significant problems (Hussin and Omran, 2012).

In Kenya, there are enough cases of project failure to meet project timely completion in the construction projects. It has been contented that the diverse and multifaceted natures of construction projects make it "difficult to plan for, forecast, manage and control" (Ganiyu & Zubairu, 2010). As a

construction project is an investment that should in the end make economic sense, there is therefore the need for the construction professionals to offer tangible solutions in terms of overcoming construction delays. Projects are strategic activities "initiated to create economic value and competitive advantage" (Olatunji, 2010). Key to financing projects is sustainability. The traditional forms of financing projects have been equity and debt. However in the recent past innovative ways of financing projects have come up and these include special project vehicle, venture capital etc. Construction projects are also funded by multilateral bodies and foreign aid.

Contributions to the delay emanating from the government/owner of these road projects can include late release of funds. If the owner/government does not pay the services of the contractor in time, then the project implementation may greatly be affected by contractors' poor cash flow. This will affect the contractors' ability to ensure sustained supply of the construction materials. Clearly therefore, owners' financial position will greatly affect project finance flows and which will influence construction project completion. Olatunji (2010) identifies project finance as one of the constraints or circumstances/situations which outside the immediate control of parties to the contract agreement but still affect the smooth flow of scheduled activities. Many observers agree that if payment by project owner is slow, the contractor may begin to commit fewer resources to a project, and may even ease work if cash flows become a problem.

Besides finances for management, risk mitigation, contracting and many more, scholars like Wambugu (2013), Chepkoech (2012) and Desai (2013) have identified the major areas where finances become relevant in Kenyan roads construction. While studying the multimillion Kericho-Miruka-Chabera-Ahero-Kisumu road, Chepkoech (2012) argues that the road that was to be completed long time ago between 1999 and 2002 had to take relatively longer by two and half years for it to be completed in mid-2005.This was due to effects that we felt from the Moi's government when he withdrew the allocated funds for the project on political grounds. This has been a case similar during the construction/maintenance of almost five road projects rated as A, B and C in the Kenyan coast region (Desai, 2013). A report by the Republic of Kenya (2015) indicates that three classes in Kenya are under the Kenya National Highways Authority (KeNHA), that is responsible for the management, development, rehabilitation and maintenance of national roads classified as classes A, B, and C Roads. Periodic Maintenance of Mtito Andei-Voi (A109) Road, Periodic Maintenance of Mombasa-Miritini (A109) Road, Upgrading to Bitumen Standards of Mariakani-Kilifi (C107) Road Phase II: Kaloleni-Kilifi section, Periodic Maintenance of Kombani-Marere Bridge (C106) Road, and, Routine Maintenance of Voi loop (C105) Road has been under KeNHA. However, studies indicate that the KeNHA has been hit by delayed finances from the national government, constrained budgets, donors withdrawal due to heated political alignments, poor contractual agreements caused by poor budgets,

lack of proper experts besides technology and many more, as a result of limited finances and this for long has delayed regular operations of KeNHA in the area (World Bank, 2014; Oraro, 2012 and O'shea, 2013).

**2.3 Construction Project Planning and Construction Completion**
Construction project like roads and railway lines generally takes various stages. The first stage is usually project initiation where the project is identified and a feasibility study carried out to establish the viability and build a business case. The second stage is the project planning stage and in here the project design is carried out, resources and finances allocated. Project execution which is the third phase involves implementing the designs within the allocated resources in the set duration and to the set specification and quality (Mohammed, 2012).

A number of researches have been done for a long time on the causes of projects closure/ failure, the effects felt as a result of these projects failing to meet the deadlines and the advantages achieved when the projects are implemented within the stipulated time frames. According to Makone (2010) for example, Project closure involves handing over the final product to the customer, handing over the as-is-built drawings, giving the operation and maintenance plan, terminating the contracts and informing all stakeholders that the project is closed. If project completion date has been frozen without arranging inputs and proper planning, this can lead to hasty and unsystematic work towards the end of the project. Failure to clearly comprehend the project, all its aspects can lead to works being executed erroneously and the attendant correctional steps to remedy the errors will cause project delay. The consequences are actually grave, ranging from litigation to claims and disputes, to outright abandonment of the project (Olatunji, 2010).

Hussin and Omran (2011) argue that, when a project delay can no longer be absorbed by the client, the project is abandoned. It helps then to predict and identify problems in the early stages of construction. Planning stage is therefore very key to success of construction project. "Delivery of materials on site will quite affect the project progress. If that supply does not ensure that quality materials are delivered on site then it will cause delay of project completion" (Wambugu, 2013). This is because material not meeting the quality of design will most likely be rejected and the process of getting the right material will be taking more project implementation time. When materials are lacking on site it means that the employees will not have work to do. This is quite demoralizing and will affect the project delivery negatively.

This is largely a product of poor planning in the construction project. Indeed material availability is the most frequent problem that leads to delay in majority of the countries as identified by Olatunji (2010). While doing a comparative study of delays in roads construction in Nigeria, SA and DRC, he

continues to argue that these governments have had poor planning of the roads construction just like in any other government construction projects. He continues to say that this has left the projects delayed by 32% to 56% that the planned periods just because the implementers lacked basic things like required operational materials. Another projects delaying factor identified by Hamzah (2012) when doing his study on the effect of delayed housing construction in India, Indonesia, Madagascar and Mauritius in relation to planning is, inadequate planning methods and ineffective coordination of resources.

According to him, failure at the conceptual planning and design stages may lead to significant problems in the successive stages of the project. Koushki et al., (2005) cited in Fugar & Adwoa, (2010) in a study carried in Kuwait, Kenya Ghana and Gabon illustrates that project handlers/owners who carried out pre-planning phase prior to the commencement of the planning phase experienced shorter time delays that their counterparts who did not. Quoting specific examples of prior planned roads construction projects in Kenya like, the A104 from JKIA to Likoni road/Southern Bypass junction and dualling of airport south road, A104 Likoni road/Southern Bypass to James Gichuru road junction, and, A104 James Gichuru road junction, Nyamwaro (2011) argues that some of these roads including the three that are to be complete by March 2015 may be faced with minimal delay challenges because of various interactions; including that of prior planning by the ministry's KeNHA body and other county government stakeholders in Mombasa county. Various researchers have supported the view of Nyamwaro (2011) by arguing that, the amount of time delay also increased with an increase in pre-planning time period.

Chilipunde (2010) identifies contractors' improper planning as one of the causes of project delay. If a contractor fails to come up with a workable work program at the initial stages, this will affect project timely completion. A similar observation is made by Jagboro and Aibinu, (2002) in Nigeria. Equally emphasizing on the need for proper planning of construction project is Pakir et. al (2012) in a study carried out in Sudan. McMinimee et. al., in (2009) stated that it was clear that investments in advance planning and project development paid off. Mojahed (2005) states that proper planning in all phases and components of construction project are necessary to avoid re work which in turn leads to delay in project completion.

In his writing on the factors influencing women in participating in development infrastructural projects, Kabue (2011) argues that the success of the execution phase of the project is highly depended upon the quality of planning in the prior planning phase. Wambugu (2013) observes that planning affected the timely completion of rural electrification projects in Kenya, the roads links between Mahi-Mahiu and Nairobi, Narok- Bomet road, the notorious Taita-Taveta –Arusha road

among others and that the quality and importance of project planning had been considered a major cornerstone of every successful project. Tabishl and Jha, (2011) in a study carried out in Singapore conclude that comprehensive site investigation helps in sound planning which in turn helps in clarifying the scope and developing a thorough understanding. This also helps minimize change of scope during construction. Pakir et al., (2012) state that accurate construction planning is a key determinant in ensuring the delivery of the project on schedule and within budget. In his writing about the role played by planning in determining the future of the developing countries, Kaming et al. (2009) argue that, just like it is difficult to properly plan for finances, labour, risks, monitoring and evaluation, materials providence and many more in the manufacturing industry, the infrastructure implementation sector in developing states has been hit with the same problem for long. The World Bank (2013) report shows that the state of infrastructure in Kenya is hindered by planning as a major element whereby the people involved in developing plans do quality planning on paper that considers the project implementation and evaluation only but it is limited in terms of actualization. This has left up to 49.89% of the Kenyan projects taking longer than planned or others dying on the way.

Quoting a relevant example in the Kenya's coast, the Republic of Kenya (2014) writes that there are cases of the three levels of roads maintained by KeNHA that include: The Taveta – Mwatate road which is owned by the Government of Kenya through the Kenya National Highways Authority (KeNHA) who are responsible for its operation and maintenance, A104 from JKIA to Likoni road/Southern bypass junction and dualling of airport south road, and, Mariakani-Kilifi (C107) Road Phase II whereby the contractors working with the government offered shoddy work due to poor plans for both materials, experts, finances, natural calamities/risks etc. and this delayed the completion and maintenance of the roads from time to time by almost 55%.

## 2.4 Contractors Experience and Completion of Projects

Contractors' experience is a variable that affect adherence to timely completion of projects. A contractor is the one who carries the actual construction; the contractor who has been awarded the tender starts by identifying the best plan, allocating both manpower and required resources, linking all the legal partners and above all delivering within the assumed times (Elshakour, 2012). In his work of the 21st century projects in LDCs that are emerging like Angola, Libya, Ghana, SA and East Africa's Rwanda, Kaming et al. (2012) argue that the contractor's knowledge, competence and experience in construction projects have forced up to 85% of these countries run to sourcing for external experts from countries like China, Japan, Israel and many more so that their projects can achieve the time frames and quality targets. This was rated as one of the highest benefactor that is experienced across the world.

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

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

In the research on why projects in Kenya and Uganda fail to adhere to the deadlines up to the tune of 55% Fapohunda and Stephenson (2010) conclude that, the dependence of cost escalation on the contractors' experience is firmly established for construction projects. There is good reason to be concerned about experience in the event of planning and implementation of such projects. The contractors' ability may, quite simply, be extremely expensive .Consequently, before a project owner decides to go ahead and build a project, every effort should be made to conduct preparation, planning, authorization and ex ante evaluation in a manner where such problems are negotiated and eliminated that may otherwise resurface as delays during implementation and this is usually achieved through a competent contractor (Flyvbjerg et al, 2012). Similarly, after the decision to build a project, it is of crucial importance that the project organization and project management are meticulously set up and operated in ways that minimize the risk of cost estimates. If the contractor responsible for a project fail to take such precautions aimed at proactively minimizing the effects and long implementation phases, the evidence indicate that the financiers, be they taxpayers or private investors, are likely to be severely penalized as a result of unprecedented cost escalations of a high magnitude that could threaten project viability (GoK, 2012).

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

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

Using a scientific approach on why the almost 32 roads constructed/maintained by the GoK, World Bank, KURA, KeNHA, Australian Development Bank etc. across the country failed to meet the deadlines between 2008- 2012, Oraro (2012) used the approach below and results published. Cross tabulation and the Chi-Squared test was carried out to determine the relationship between the contractors' experience and adherence to the time estimates by Oraro in 2012. The Chi-Squared critical value at $\alpha = 0.05$ was 3.841 whereas the calculated value was 10.2011 which translates to a p-value of 0.00609339. As a result, the study established that the relationship between contractors experience and adherence to time estimates was very significant, at 0.05 level of significance. The Pearson coefficient of correlation at 0.05 confidence level was found to be 0.397 and a p-value of 0.041, which also showed that the relationship was significant at 0.05 confidence level. This is in agreement to Gakuu and Kidombo (2013) observation which attested that in contracts where the contractors' experience is questionable, there is a strong likelihood of cost escalations .However no research has been done on the role of the contractor's experience on projects implemented by the KeNHA in the coast region and the country at large, a factor that this study has sought to address.

## 2.5 Supervision of Work and Completion of Projects

The competence of the project manager during project implementation will also affect the timely completion of a project. Positive attitude of project manager and project participants has emerged to be the most important success attribute for quality compliances at project sites (Kenig et al, 2012). The authors additionally observed that some of the attributes that are with high importance are all related to the project manager. For example effective monitoring and feedback by the project manager, project managers technical capability, leadership quality of the project manager, effective monitoring and feedback by the project team members. Also looked at is the authority to take day to day decisions by the project managers' team at site. Furthermore, the success of project hinges on the

efficacy of the project team in managing the process (Olatunji, 2010). This indicates adequate capacity of the project manager as well as the project team to ensure proper inspection and investigation of work done on site.

According to McMiniminee et al. (2010), a weak link in the process such as a lack of project management experience, could adversely affect timely execution/ timely completion of the projects. When there is no proper inspection/supervision, quality control is greatly compromised. Chism and Armstrong (2010) agree by stating that inspection and workmanship standards are quite important to achieve quality. Fapohunda and Stephenson, (2010) state that to achieve the pre-determined project objectives, the construction site manager should have a significant influence over cost, time, scope and quality which make it paramount for the manager to have ability of exercising authoritative and absolute control.

Wambugu (2013) concluded in a study that inadequate supervision and inspection of work in construction project led to rework in instances of poor workmanship and this led to delay in project timely completion. This also leads to project cost overrun and may result to project abandonment. Inadequate site inspection is one of the factors identified as causing project delays in timely completions. Proper site identification, inspection and continuous monitoring becomes effective when it is carried out by the present, continuous monitoring, supervision and evaluation but not absentee monitoring and supervisors as witnessed by almost 42% of construction projects in Kenya and Nigeria (EU, 2012).

A study carried out Omran, Abdalrahman, Pakir (2012) in 211 road projects in Kenya, southern Sudan, and Malawi states that occasions of rework are mainly attributed to incompetent craftsmen because of insufficient working skills and knowledge of drawings or to incompetent supervisors because of lack of experience leading to deficient supervision. The study clearly emphasized the impact of management and supervision on the overall success of the construction project. If there is no proper supervision, workers will tend to take break whenever they desire and work will tend to delay. Timely inspection is of great importance to ensure effective operation, material quality, and timely progress of the project schedule. Subsequent activities on a construction schedule may not be carried out before the required inspection is carried out on the preceding activities. Chai and Yusof, (2013) identify poor site management and supervision as ranking high in the order of causes of construction project delay.

Studies in Kenya have shown that besides corruption, favoritism and nepotism in tender awarding in the Kenyan construction industry, other factors like absentee supervisors and managers has eaten into the future of most projects. In north eastern for example, it was found that up to 18% of the roads

maintained by the national government had up to 97% absentee supervisors situated in Nairobi and absently supervising the projects by use of quarks in the ground ;most of them who have no little knowledge of the construction industry. In Kiambu for example, 20 roads were delayed between 2000 to 2011 because they had to be redone or had to be stopped due to the deviation by contractors from the original plans, a factor that came up due to poor supervision of the projects in the rural or impassable areas (Republic of Kenya, 201).In the coast, the redoing of roads categorized as A, B and C have been hit up to 45.01% lack of proper inspection and supervision of their progress. In the case of Roads terminals Linking Kwale from Likoni, Likoni to Lungalunga border, Taita-Taveta, Mariakani to Voi and many more have been on the spot for a long time with some being cancelled due to the fact that the major supervisors are the employees under the various bodies working with the MoTI, who are few and to some extent corrupt; thus making it difficult for them to be on the ground to offer supervision work and instead opt to send representatives (GoK, 2013).

**2.6 Conceptual Framework**

The conceptual framework outlined the dependent, independent, and moderating variables as discussed in the literature review as shown below.

**Independent Variables**
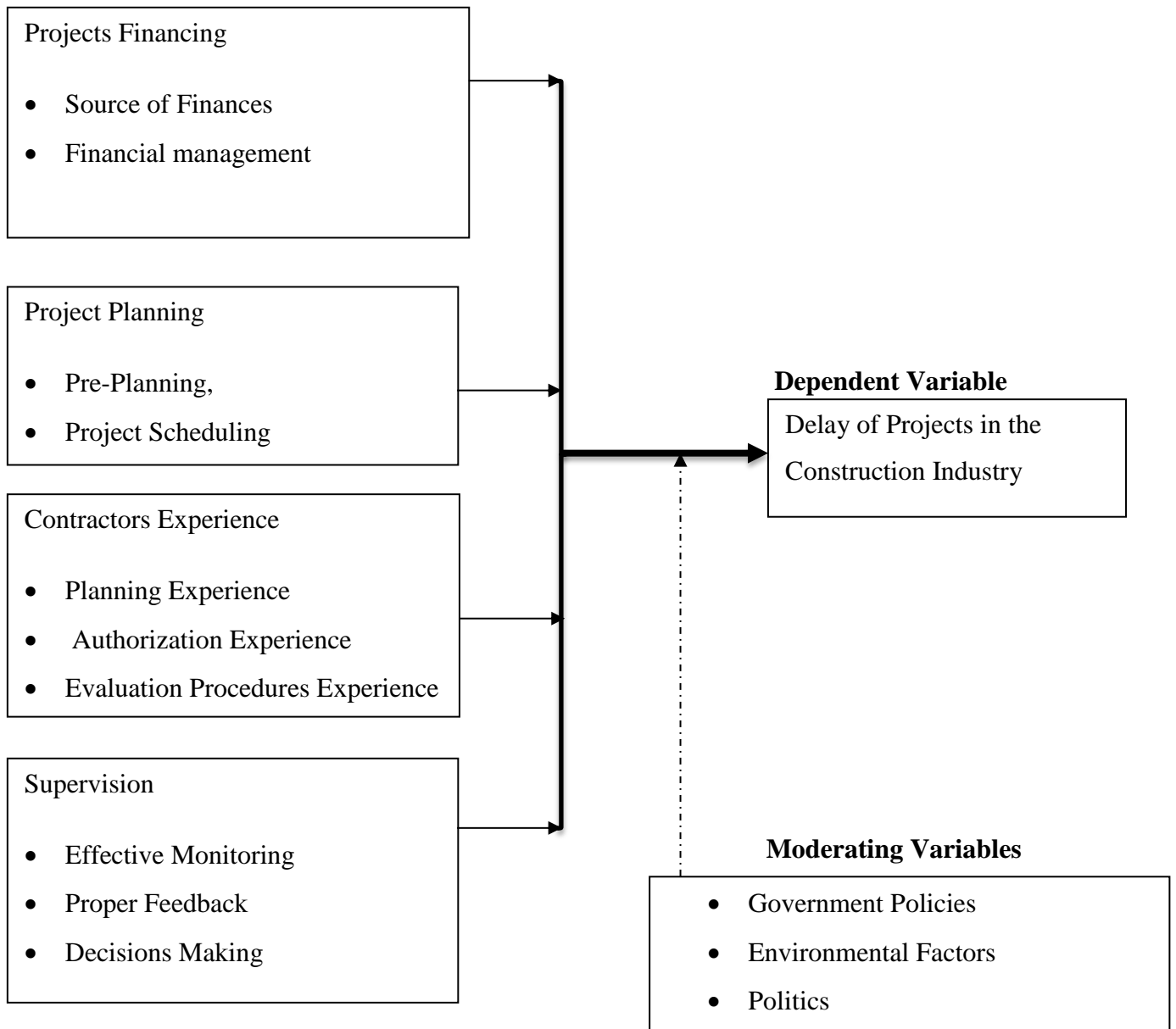


*Figure 1: Conceptual Framework*

In relation to the literature review, the conceptual framework has underlined a number of factors that determine the rate at which the construction projects are completed. On the far right is the dependent variable that is manipulated/ that changes as the independent variables interact. The dependent variable in this case is the delay of construction projects implementation in the construction industry.

Factors that interact to bring this influence on the dependent variable are called independent variables and they include: Projects Financing, Project Planning, Contractors Experience and Supervision. The four factors will be having some indicators that will determine whether the projects delays are caused

by their interaction or not. Also on the right side are moderating variables. These are factors that have a direct impact on the performance of the projects or have it coming indirectly but the final results felt in the rate at which these projects are implemented. Due to time and limitation of the size of the document, these factors have not been included in the literature but they have an impact on the time of projects completion.

**2.7 Summary of Literature Review**

The reviewed literature revealed various studies in different parts of the world that have largely touched on factors relating to project delivery in terms of quality, the most important factors determining project performance in Southern Sudan -2012, impact of project delivery systems, cost minimization and project control on construction project success in Ghana -2013, project cost prediction model in Nigeria-2010, managing the project environment Malasyia-2009, critical factors affecting quality products in construction projects in India-2011, construction contracts duration in USA- 1998 and many more. Further, determinant of successful completion of rural electrification projects in Kenya (Kenya 2013) and influences on construction delivery time (South Africa 2010). These studies have been carried out and published.

Therefore, in relation to the above, the chapter has highlighted the literature that is existing in relation to the delay of projects in the construction industry. The chapter has reviewed the literature in relation to the four objectives and the factors have been looked at from the global perspective down to the study scope area. Among the highlighted factors include: Projects Financing, Project Planning, Contractors Experience and Supervision that are considered to be independent factors while delay in projects implementation in the construction industry is taken to be the dependent variable. The chapter also highlights the conceptual framework, relationship between variables and research gaps.

# CHAPTER THREE

## RESEARCH METHODOLOGY

### 3.1 Introduction

This chapter gives the details of the research approach. The research design is explained and illustrated. The target population is described as well as data collection instruments. Also included in the chapter is data collection procedures, methods of data analysis, operationalisation of variables and ethical issues observed in the research.

### 3.2 Research Design

This study employed a descriptive and correlative research design. For the intent of seeking new knowledge, it was an explorative design (Olatunji, 2010). It was also correlative because it sought to establish a relationship between independent variables and the dependent variable. Their implication for cause and effect were also investigated. Further the study didn't in any way intent to alter the theses and the phenomena but merely discover and explain the relationship. It was descriptive for it aimed its result of data analysis the description of the relationship between the dependent and independent variables. The descriptive research involves gathering data and systematically treating it to present a comprehensive and intelligible inference (Orodho & Kombo, 2002). The authors further describe the entire process as including organization of data, presentation, analysis and interpreting it after collection. A descriptive design sought to give a causal relationship between delay of projects in the construction industry which is the dependent variable and the independent variables being Projects Financing, Project Planning, Contractors Experience and Supervision.

### 3.3 Target Population

Target population as described by Borg and Grall (2009) is a universal set of study of all members of real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result. The target population of this study was road contractors in coast region while the study population was government representatives from the MoTI with major emphasis to KeNHA employees, Contractors, Consultants, Engineers from Coastal Counties and technical auditors participating in road construction projects in the Coastal Counties. This only included the documented information by the Republic of Kenya (2009). Mugenda and Mugenda (2003) explained that the target population should have observable characteristics to which the study intents to generalize the result of the study. This definition assumes that the population is not homogeneous. The main aim of choosing this type of population is to be able to get current and past information from people who have participated in the implementation of roads construction projects and thus experienced the implementation delay challenges that the projects face.

**Table 3.1 Study Population**

| Category | Frequency | Percentage |
|---|---|---|
| Contractors | 32 | 43.83% |
| Contractor Consultants | 18 | 24.66% |
| Ministry Of Road Engineer | 15 | 20.54% |
| Engineers From Coast Counties | 5 | 6.85% |
| Technical Auditors | 3 | 4.12% |
| **Total** | **73** | **100%** |

**Source: GOK, 2009.**

### 3.4 Sampling and Sample Size

This section presents the methods and techniques that were used for sampling, the procedure of sampling and eventually how the final study sample was reached from the target population and the details of how data was obtained, processed and analyzed.

### 3.4.1 Sample Size

The sampling frame describes the list of all population units from which the sample will be selected (Cooper & Schindker, 2003 cited by Fugar & Adwoa, 2010). Sampling is selecting a given number of subjects from a defined population as representative of that population. From the target population of twenty four (24) road contractor registered with MoTI and other participants, the researcher purposively sent questionnaires to specific respondents working in specific areas concerned and handled by KeNHA in coast region. These respondents having been in construction sector and directly working in departments perceived to be oriented in dealing with road maintenance and construction therefore aligned to the study research objectives. The rest also were purposively and randomly selected as follows in the table in the next section.

### 3.4.2 Sampling Procedure

The sampling procedure describes the list of all population units from which the sample will be selected (Cooper & Schindler, 2003). The study employed use of questionnaires to the people concerned with roads construction since the number is small. Sample of responding staff was drawn from all construction in the coast region where stratified random sampling technique was employed in coming up with a sample size of 55 respondents from a total of 73 respondents from specific individual concerned in road maintenance and building within the coast region namely; Contractors,

Consultants, MoTI Engineers, Engineers from coast region and Technical Auditors. Gay (2001) pointed that a sample of 10-40% is representative. In this study, 75% of the sample was considered. The technique was applied so as to obtain a representative sample when the population does not constitute a homogeneous group. In stratified random sampling subjects are selected in such a way that the existing sub-groups in the population are more or less represented in the sample (Mugenda & Mugenda, 2003).

**Table 3.2 Sampling and Sample Size**

| Category | Frequency | Percentage |
|---|---|---|
| Contractors | 24 | 46.64% |
| Contractor Consultants | 13 | 23.64% |
| Ministry of T&I  Engineer | 11 | 20% |
| Engineers From Coast Counties | 4 | 7.27% |
| Technical Auditors | 3 | 5.45% |
| **Total** | **55** | **100%** |

**Source: GOK, 2009.**

**3.5 Research Instruments**

The instruments used in this study included questionnaires. Primary data was collected by the use of questionnaires. The questionnaires were used to collect data from the respondents in the coast region. The questionnaire was divided into subheadings that touched on the basic information of the respondents, the items on objectives as discussed in the literature. Piloting was done to test the validity and reliability of the instruments. The instruments were piloted in 7 respondents and the procedure repeated in a week. The respondents of whom the piloting was done were part of the study sample to avoid biased results of the study. Both open ended and close ended questionnaires were employed since the respondents involved are learned and being given the freedom to give the wider view of their thinking didn't compromise the findings. The questionnaire was administered by the researcher and selected enumerators who at one point served as translators in some exceptional cases.

*3.5.1 Piloting the Research Instruments*

The questionnaire was reviewed by the research supervisor and then tested on a small pilot sample of respondents with similar characteristics as the study respondents. The pilot sample consisted of 7 staffs involved in road construction which were selected randomly. Mugenda and Mugenda (2003) suggest that the piloting sample should represent 10% of study sample depending on the study sample

size. The piloting was done in Mombasa Taita, Kwale and Kilifi Counties. Piloting helps in revealing questions that could be vague which allows for their review until they convey the same meaning to all the subjects (Mugenda and Mugenda, 2003).

Validity is the quality of a data gathering instrument that enables it to measure what it is supposed to measure. Creswell (2003) notes that validity is about whether one can draw meaningful and useful inferences from scores on the instrument. Validity is therefore about the usefulness of the data and not the instrument. To ensure content validity, the instruments were reviewed by the research supervisors. Content validity yields a logical judgment as to whether the instrument covers what it is supposed to cover. Content validity ensured that all respondents understood the items on the questionnaire similarly to avoid misunderstanding. Response options were provided for most of the questions to ensure that the answers given are in line with the research questions they are meant to measure.

### 3.5.2 Reliability of Research Instruments

Reliability is concerned with the question of whether the results of a study are repeatable. A construct composite reliability co-efficient (Cronbach alpha) of 0.6 or above, for all the constructs, was considered to be adequate for this study. The acceptable reliability coefficient is 0.6 and above (Rousson, Gasser and Seifer, 2002). Cronbach Alpha was used to test the reliability of the research instrument.

### 3.6 Data Collection Procedure

After approval of the Proposal by the University of Nairobi to collect data, the researcher coordinated data collection process after seeking permission from KeNHA. The researcher engaged three research assistants 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.

### 3.7 Data Analysis Techniques

The study generated both qualitative and quantitative data. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 17.0) and analyzed using descriptive statistics. Qualitative data was analyzed based on the content matter of the responses. Responses with common themes or patterns were grouped together into coherent categories. The hypothesis was tested using the Chi-Square.

### 3.8 Ethical Issues

Ethics in research should be viewed as integral part of the research planning and implementation, not viewed as an afterthought or a burden (Gakuu and Kidombo, 2013). This research was guided by strict adherence to research ethics which do not allow the researcher to engage in deception or

invasion of privacy. The respondents' right not to respond to the questions was clarified from the onset and consent sought from the word go. The anonymity of the respondents was also assured and confidentiality was guaranteed as an integral part of the research. The researcher maintained humility and conduct the research with utmost honesty avoiding distortions and misleading data manipulation. The researcher also strove to uphold intellectual honesty and seek collaborative support which was duly acknowledged. The researcher also endeavored to arrive at conclusions based on objective inferences that are purely and blindly guided by the data collected.

### 3.9 Operational Definition of Variables

| Research objectives | Independent variable: | Indicators | Level of scale | Level of analysis |
|---|---|---|---|---|
| To establish the extent to which construction project financing influence the delay of construction projects in the road sector. | Projects Financing | Source of Finances Financial management | Ordinal scale | Descriptive: Central tendency |
| To investigate the extent to which construction project planning influence the delay of construction projects in the road sector. | Project Planning | Pre-Planning, Project Schedule | Ordinal scale. | Descriptive: Central tendency. |
| To find out the extent to which contractor's experience influences the delay of construction projects in the road sector. | Contractors Experience | Planning Experience Authorization Experience Evaluation Procedures Experience | Ordinal Scale. | Descriptive: Central tendency. |
| To investigate the extent to which supervision of work influences the delay of construction projects in the road sector. | Supervision | Effective Monitoring Proper Feedback Decisions Making | Ordinal scale. | Descriptive: Central tendency. |

# CHAPTER FOUR

## DATA PRESENTATION, ANALYSIS AND INTERPRETATION

### 4.1 Introduction

The data collected was keyed and analyzed by simple descriptive analysis using Statistical Package for Social Scientists (SPSS) version 20.0 software. The data was then presented through frequency tables and narrative analysis. The chapter presents data in different sub-sections that are in relationship with the objectives and the items asked in the questionnaire. Data was then analyzed using the Chi-Square

### 4.2 Response Rate

55 questionnaires were administered to various categories of respondents and the results analyzed. Out of the 55 questionnaires issued, 54 were returned and one was not returned giving a return rate of 98% of the questionnaires issued.

### 4.3 Basic Information of the Respondents

The study wanted to find out the bio data of respondents, age and educational level as shown in the tables below.

#### 4.3.1 Gender Distribution of the Respondents

The study found out the gender composition of the respondents as shown in the table 4.1 below.

**Table 4.1 Gender Distribution of Respondents**

| Sex | Frequency | Percentage |
| --- | --- | --- |
| Female | 14 | 25.92% |
| Male | 40 | 74.08% |
| **Total** | **54** | **100%** |

From the table above, the response was dominated by the male gender with a total of 40 male respondents while 14 of the respondents went for the female gender.

#### 4.3.2 Age Distribution of Respondents

The study sought to find out the age brackets of the respondents in the study and the results were as shown below.

**Table 4.2 Age Distribution of Respondents**

| Age | Frequency | Percentage |
|---|---|---|
| 18-30yrs | 10 | 18.5% |
| 31-40yrs | 11 | 20.4% |
| 30-39 years | 12 | 22.2% |
| 41-50yrs | 15 | 27.8% |
| 51-60yrs | 5 | 9.3% |
| 61-70yrs | 01 | 1.8% |
| Over 70yrs | 0 | 0% |
| **Total** | **54** | **100%** |

From the table, majority of the population that participated in the study was between ages 41- 50 years making 27.8%. This was followed by 22.2% for ages that went for ages 30 – 39 years, ages 31-40yrs followed with 20.4%, 18-30 years followed with a percentage of 18.5%, ages 51-60yrs had 9.3% and finally 61-70yrs 1.8% followed.

### 4.3.3 Educational Level of Respondents
The study sought to establish the level of education of the respondents and the results indicated by the table below were arrived at.

**Table 4.3 Academic Qualification of Respondents**

| Education level | Frequency | Percentage |
|---|---|---|
| Secondary | 4 | 7.4% |
| Vocational Training | 7 | 13.0% |
| Diploma | 10 | 18.5% |
| Degree | 20 | 37.0% |
| Masters | 6 | 11.1% |
| Others | 7 | 13% |
| **Total** | **110** | **100%** |

Respondents with a degree education dominated at 37.0%. They were followed by those with diploma at 18.5%, Vocational Training and others tied at 13%, masters attracted 11.1% and finally Secondary attracted 7.4%.

**4.4 Role of Financial Resources**

The research aimed at investigating the role finances play in roads projects completion and results in the sub-headings below reached upon.

*4.4.1 Management's Allocation of Finances*

The respondents were asked to clearly state how they agreed with the following as it regarded to the implementation of roads projects by KeNHA: 'Do you think the management of the roads is doing enough in allocating resources equitably?'

**Table 4.4 Financial Allocations**

| Structural Difference | Frequency | Percentage |
|---|---|---|
| YES | 5 | 9.3% |
| NO | 45 | 83.3% |
| Not Sure | 4 | 7.4% |
| **Total** | **54** | **100%** |

From the responses, 5 respondents agreed with the idea that the road projects have been allocated enough finances, 45 went for no while those who were not sure made 7.4% of the responses, bringing the total to 4 respondents.

When asked to give reasons for the above answers, the respondents argued that the budgets allocated to the roads construction projects took long procedures and the money was always slashed to the point that the activities they are intended to perform are compromised. Others argued that the management that is centrally operating from Nairobi has been misallocating the funds and at times embezzling them.

*4.4.2 Degree of Rating of the Financial Roles*

The respondents were asked to rate using a scale of 1 to 5, the extent to which the following factors influences the delay of roads construction projects in coast region? (5=very great extent, 4= great extent, 3=fair extent, 2=little extent 1= very little extent).

**Table.4.5 Financial Roles Rating**

| Factor | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Limited Finances | 4 | 7 | 9 | 29 | 5 |
| Financial management | 7 | 7 | 12 | 17 | 11 |
| Project Finances Diversions | 5 | 6 | 14 | 19 | 10 |

From the responses gotten, various factors attracted different degrees of responses on a rating. On the factor that focused on limited finances, 4 respondents said that limited finances influenced the delay of projects to a very little extent, 7 went for little extent, 9 went for fair extent, 29 went for great extent, while, 5 went for very great extent. With the Financial management factor, 7 went for very little extent, 7 went for little extent, 12 went for fair extent, 17 went for great extent while 11 went for very great extent. Project Finances Diversions factor attracted, 5 respondents who went for very little extent, 6 went for little extent, 14 went for fair extent, 19 went for great extent while, 10 went for very great extent

When asked to give reasons for the above responses, respondents said that, the limited amounts of financial allocations from the central government limited the activities of the ministry that deals with highway construction, thus delaying their completion. Also, others argued that the ministry is too corrupt in terms of its tendering processes and this has in the larger field limited the faster completion of roads in the coast region.

### 4.5 Hypothesis Testing Using Chi-Square

$H_1$: Construction project financing has a significant influence in the delay of construction projects in the road sector.

**Table 4.6 Showing Observed and Expected Responses**

| Scale | VLE | LE | FET | GE | VGE |
|---|---|---|---|---|---|
| Observed (O) | 4 | 7 | 9 | 29 | 5 |
| Expected (E) | 11 | 11 | 11 | 11 | 11 |

**Table 4.7 Testing for the First Hypothesis**

| O | E | (O-E) | $(O-E)^2$ | $(O-E)^2/E$ |
|---|---|---|---|---|
| 4 | 11 | -7 | 49 | 4.45 |
| 7 | 11 | -4 | 16 | 1.45 |
| 9 | 11 | -2 | 4 | 0.36 |
| 29 | 11 | 18 | 324 | 29.45 |
| 5 | 11 | -6 | 36 | 3.27 |
| | | | | $\sum (O-E)^2/E = 38.98$ |

$\chi^2_C = 38.98 > \chi^2_{0.05}$ = 9.49 at 4 degrees of freedom and 5% level of confidence.

31

Since the calculated chi-square value of 38.98 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, construction project financing has a significant influence in the delay of construction projects in the road sector.

**4.6 Item on the Project Planning**

The study sought to examine the influence of Project Planning in the delay of projects in the roads construction and the following results were gotten.

*4.6.1 Project Planning*

Respondents were asked whether they thought that lack of proper planning has influenced the rate at which projects are completed in the region and the following responses were given.

**Table 4.8 Project Planning**

| Response | Frequency | Percentage |
|----------|-----------|------------|
| YES | 50 | 92.6% |
| NO | 4 | 7.4% |
| Not Sure | 0 | 0% |
| **Total** | **54** | **100%** |

From the response, 92.6% of the respondents felt that lack of proper planning has influenced the delays in the construction industry significantly, while the remaining 7.4% felt that lack of proper planning had no significant influence in relation to projects completion.

When asked to give reasons, the following became evident: poor planning by the engineers led to delayed completion of road projects, the long procedures involved in planning projects from the national level led to the increased days in which road projects were completed and this significantly led to delay of completion of roads.

**Table 4.9 Rating in A scale**

Respondents were asked a question that read, indicate your position using a scale of: Strongly Disagree = 1, Disagree = 2, Weakly Agree =3, Agree =4 and Strongly Agree =5 in relation to the factors below' and the results were as shown in the table.

| Factor | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Pre-Planning of the roads projects is very poor. | 3 | 3 | 15 | 14 | 19 |
| Project Schedule planning has not been achieved due to poor coordination. | 2 | 5 | 28 | 14 | 5 |
| KeNHA has compromised plans due to external interferences. | 0 | 13 | 21 | 10 | 10 |

According to the responses received, 3 respondents strongly disagreed with the idea that Pre-Planning of the roads projects is very poor, 3 disagreed, 15 weakly agreed, 14 agreed, while the rest 19 strongly agreed with the factor. On the factor that focused on project schedule planning has not been achieved due to poor coordination attracted, 2 respondents who strongly disagreed, 5 disagreed, 28 weakly agreed, 14 agreed, while the remaining 5 strongly agreed with the factor. On the final factors that read, KeNHA has compromised plans due to external interferences had the responses as follows: 0 respondents who strongly disagreed, 13disagreed, 21 weakly agreed, 10 agreed, while the remaining 10 strongly agreed with the statement.

### 4.7 Testing of the Hypothesis

$H_1$: Construction project planning has a significant influence in the delay of construction projects in the road sector.

**Table 4.10 Showing Observed and Expected Responses**

| Scale | SD | D | WA | A | SA |
|---|---|---|---|---|---|
| Observed (O) | 3 | 3 | 15 | 14 | 19 |
| Expected (E) | 11 | 11 | 11 | 11 | 11 |

**Table 4.11 Testing for the Hypothesis**

| O | E | (O-E) | $(O-E)^2$ | $(O-E)^2/E$ |
|---|---|---|---|---|
| 3 | 11 | -8 | 64 | 5.82 |
| 3 | 11 | -8 | 64 | 5.82 |
| 15 | 11 | 4 | 16 | 1.45 |
| 14 | 11 | 3 | 9 | 0.82 |
| 19 | 11 | 8 | 64 | 5.82 |
| | | | $\sum (O-E)^2/E = 19.73$ | |

$\chi^2_C = 19.73 > \chi^2_{0.05}$ = **9.49** at 4 degrees of freedom and 5% level of confidence.

Since the calculated chi-square value of 19.73 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, construction project planning has a significant influence in the delay of construction projects in the road sector.

**4.8 Item on Contractors Experience**

The respondents were asked to indicate the extent to which they agreed with the following statements in relation to roads construction projects in the coast region. (SA-Strongly agree, A- Agree, U-Uncertain, D-Disagree, SD- strongly disagree). Their responses were as follows in table 4.13 below.

**Table 4.12 Rating of Education**

| Situation | SD | D | U | A | SA |
|---|---|---|---|---|---|
| Contractor's planning experience influences the rate of projects completion. | 4 | 2 | 12 | 14 | 22 |
| Authorization experience and channels used by the contractor influence completion. | 2 | 3 | 5 | 14 | 30 |
| Evaluation procedures experience held by the contractor influence projects completion. | 2 | 2 | 13 | 20 | 17 |

In relation to the third objective that touched on the contractors' experience and how the influenced the rate of completion of roads, the results were gotten. 4 respondents strongly disagreed with the idea that contractor's planning experience influences the rate of projects completion, 2 disagreed, 12 uncertain, 14 agreed, while the rest 22 strongly agreed with the factor. On the issue that read, Authorization experience and channels used by the contractor influence completion attracted, 2 respondents who strongly disagreed, 3 disagreed, 5 uncertain, 14 agreed, while the remaining 30 strongly agreed with the factor. On the final idea that read, Evaluation procedures experience held by the contractor influence projects completion, attracted 2 respondents who strongly disagreed, 2 disagreed, 13 uncertain, 20 agreed, while the remaining 17 strongly agreed with the statement. This was later to be proved by the hypothesis testing.

**4.9 Third Hypothesis Testing**

$H_1$: Contractor's experience has a significant influence in the delay of construction projects in the road sector.

**Table 4.13 Showing Observed and Expected Responses**

| Scale | SD | D | U | A | SA |
|---|---|---|---|---|---|
| Observed (O) | 2 | 2 | 13 | 20 | 17 |
| Expected (E) | 11 | 11 | 11 | 11 | 11 |

**Table 4.14 Testing for the Hypothesis**

| O | E | (O-E) | $(O-E)^2$ | $(O-E)^2/E$ |
|---|---|---|---|---|
| 2 | 11 | -9 | 81 | 7.36 |
| 2 | 11 | -9 | 81 | 7.36 |
| 13 | 11 | 2 | 4 | 0.36 |
| 20 | 11 | 9 | 81 | 7.36 |
| 17 | 11 | 6 | 36 | 3.27 |
| | | | | $\sum (O-E)^2/E = 25.71$ |

$\chi^2_C = 18.92 > \chi^2_{0.05}$ = **9.488** at 4 degrees of freedom and 5% level of confidence.

Since the calculated chi-square value of 25.71is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, contractor's experience has a significant influence in the delay of construction projects in the road sector.

**4.10 Item on Supervision**
The Respondents were asked whether they thought that the presence of supervisors in the sites influence the rate of roads project completion Their responses were as tabulated in table 4.15 below.

The respondents were asked to indicate the extent to which they agreed with the following statements in relation to roads construction projects in the coast region. (SA-Strongly agree, A- Agree, U-Uncertain, D-Disagree, SD- strongly disagree). Their responses were as follows in table 4.16 below.

*4.10.1 Responses on Supervision*
Respondents were asked whether they thought that the presence of supervisors in the sites influence the rate of roads project completion?

**Table 4.15 Supervision**

| Response | Frequency | Percentage |
|----------|-----------|------------|
| YES | 44 | 81.48% |
| NO | 8 | 14.81% |
| Not Sure | 2 | 3.70% |
| **Total** | **54** | **100%** |

Respondents were asked whether they thought that the presence of supervisors in the sites influenced the rate of roads project completion and 44 of them said yes, 8 of the respondents said no while the remaining 2 respondents were not sure.

*4.10.2 Rating of Supervision*

Respondents were asked to rate the on a scale of 1 to 5, the extent of agreement with the following factors (SA-Strongly agree, A- Agree, U- Uncertain, D-Disagree, SD- strongly disagree) gave the following:

**Table 4.16 Rating of Various Supervision Factors**

| Situation | SD | D | U | A | SA |
|-----------|-----|-----|-----|-----|-----|
| Projects in the region have been delayed due to ineffective monitoring. | 1 | 4 | 17 | 15 | 17 |
| Proper feedback is missing in supervisors leading to delays. | 1 | 3 | 5 | 21 | 24 |
| Poor decisions making from the supervisors have led to delayed projects. | 4 | 6 | 11 | 23 | 10 |

In relation to the above Supervision factors, 1 respondent strongly disagreed with the idea that projects in the region have been delayed due to ineffective monitoring, 4 disagreed, 17 uncertain, 15 agreed, while the rest 17 strongly agreed with this factor. On the factor that read, proper feedback is missing in supervisors leading to delays attracted, 1 respondent who strongly disagreed, 3 disagreed, 5 uncertain, 21 agreed, while the remaining 24 strongly agreed with the factor. On the final factor that read, poor decisions making from the supervisors have led to delayed projects, attracted 4 respondents who strongly disagreed, 6 disagreed, 11 uncertain, 23 agreed, while the remaining 10 strongly agreed with the statement.

**4.11 Testing of the Hypothesis**

$H_1$: Supervision of work greatly influences the delay of construction projects in the road sector.

**Table 4.17 Showing Observed and Expected Responses**

| Scale | SD | D | U | A | SA |
|---|---|---|---|---|---|
| Observed (O) | 1 | 4 | 17 | 15 | 17 |
| Expected (E) | 11 | 11 | 11 | 11 | 11 |

**Table 4.18 Testing for the Hypothesis**

| O | E | (O-E) | $(O-E)^2$ | $(O-E)^2/E$ |
|---|---|---|---|---|
| 1 | 11 | -10 | 100 | 9.09 |
| 4 | 11 | -7 | 49 | 4.45 |
| 17 | 11 | 6 | 36 | 3.27 |
| 15 | 11 | 4 | 16 | 1.45 |
| 17 | 11 | 6 | 36 | 3.27 |
| | | | | $\sum (O-E)^2/E = 21.53$ |

$\chi^2_C = \mathbf{36.83} > \chi^2_{0.05}$ = 9.488 at 4 degrees of freedom and 5% level of confidence.

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Since the calculated chi-square value of 21.53 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis. Thus, supervision of work greatly influences the delay of construction projects in the road sector.

**SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

**5.1 Introduction**

This chapter presents the summary of the study findings, discussions, conclusions and recommendation of the research. The chapter also contains suggestions of related studies that may be carried out in the future.

**5.2 Summary of Findings**

The aim of this study was to establish the determinants of projects delay in the construction industry in Kenya. From an analysis and review of the research data and additional data gathered through interviews and questionnaires filled, issues that follow become evident.

The first objective sought to establish the extent to which construction project financing influence the delay of construction projects in the road sector and from the responses, 5 respondents agreed with the idea that the road projects have been allocated enough finances, 45 went for no while those who were not sure made 7.4% of the responses, bringing the total to 4 respondents. When asked to give reasons for the above answers, the respondents argued that the budgets allocated to the roads construction projects took long procedures and the money was always slashed to the point that the activities they are intended to perform are compromised. Others argued that the management that is centrally operating from Nairobi has been misallocating the funds and at times embezzling them.

In relation to the second objective that sought investigate the extent to which construction project planning influence the delay of construction projects in the road sector, the following responses became apparent. 3 respondents strongly disagreed with the idea that Pre-Planning of the roads projects is very poor, 3 disagreed, 15 weekly agreed, 14 agreed, while the rest 19 strongly agreed with the factor. On the factor that focused on project schedule planning has not been achieved due to poor coordination attracted, 2 respondents who strongly disagreed, 5 disagreed, 28 weekly agreed, 14 agreed, while the remaining 5 strongly agreed with the factor. On the final factors that read,  KeNHA has compromised plans due to external interferences had the responses as follows: 0 respondents who strongly disagreed, 13disagreed, 21 weekly agreed, 10 agreed, while the remaining 10 strongly agreed with the statement.

The third objective sought to find out the extent to which contractor's experience influences the delay of construction projects in the road sector and the following results were gotten. 4 respondents strongly disagreed with the idea that contractor's planning experience influences the rate of projects

completion, 2 disagreed, 12 uncertain, 14 agreed, while the rest 22 strongly agreed with the factor. On the issue that read, Authorization experience and channels used by the contractor influence completion attracted, 2 respondents who strongly disagreed, 3 disagreed, 5 uncertain, 14 agreed, while the remaining 30 strongly agreed with the factor. On the final idea that read, Evaluation procedures experience held by the contractor influence projects completion, attracted 2 respondents who strongly disagreed, 2 disagreed, 13 uncertain, 20 agreed, while the remaining 17 strongly agreed with the statement. This was later to be proved by the hypothesis testing.

In relation to the last objective that sought to investigate the extent to which supervision of work influences the delay of construction projects in the road sector, 1 respondent strongly disagreed with the idea that projects in the region have been delayed due to ineffective monitoring, 4 disagreed, 17 uncertain, 15 agreed, while the rest 17 strongly agreed with this factor. On the factor that read, proper feedback is missing in supervisors leading to delays attracted, 1 respondent who strongly disagreed, 3 disagreed, 5 uncertain, 21 agreed, while the remaining 24 strongly agreed with the factor. On the final factor that read, poor decisions making from the supervisors have led to delayed projects, attracted 4 respondents who strongly disagreed, 6 disagreed, 11 uncertain, 23 agreed, while the remaining 10 strongly agreed with the statement.

## 5.3 Discussion of Findings

Findings have shown that there is a significant link between the objectives discussed in the literature review and what is seen in chapter four and as it is entirely proven by the hypothesis that has been tested. Therefore, from the findings on the first objective that aimed at establishing the extent to which construction project financing influence the delay of construction projects in the road sector and the responses gotten showing that, 5 respondents agreed with the idea that the road projects have been allocated enough finances, 45 went for no while those who were not sure made 7.4% of the responses, bringing the total to 4 respondents.

According to Gaba (2013) argues that, in government projects like those managed by the KRB, KeRRA, KURA, KeNHA etc. there is continued payments that take longer time and this also affects the project timely completion negatively. It is not quite easy to understand the entire construction process from inception to completion especially when the finances provided can never be enough to hire qualified personnel who have the first experience in these projects. This is because even for the most experienced professional hand, there will always be uncertainties posed by the environment, soil conditions, climate, political situation and even the economic situation that need more than an individual expert or local expert at times; who most of the times are preferred by local contractors just because they are relatively cheap labour. This uncertainty due to various factors raises an element of

risk in construction project management. Any risk needs to be mitigated and risks mitigation calls for big financial investments. A good risk management strategy will then need to be put in place and properly implemented for a timely project implementation. This in the end should retain financial viability of the project as an investment. The overall lack of finance to complete a project, or delays in the payment of the services by the project owners or clients can lead to significant problems (Hussin and Omran, 2012).

In relation to the second objective that sought investigate the extent to which construction project planning influence the delay of construction projects in the road sector, the following responses became apparent. 3 respondents strongly disagreed with the idea that Pre-Planning of the roads projects is very poor, 3 disagreed, 15 weekly agreed, 14 agreed, while the rest 19 strongly agreed with the factor. On the factor that focused on project schedule planning has not been achieved due to poor coordination attracted, 2 respondents who strongly disagreed, 5 disagreed, 28 weekly agreed, 14 agreed, while the remaining 5 strongly agreed with the factor.

According to Olatunji (2010), failure at the conceptual planning and design stages may lead to significant problems in the successive stages of the project. Koushki et al., (2005) cited in Fugar & Adwoa, (2010) in a study carried in Kuwait, Kenya Ghana and Gabon illustrates that project handlers/owners who carried out pre-planning phase prior to the commencement of the planning phase experienced shorter time delays that their counterparts who did not. Quoting specific examples of prior planned roads construction projects in Kenya like, the A104 from JKIA to Likoni road/Southern Bypass junction and dualling of airport south road, A104 Likoni road/Southern Bypass to James Gichuru road junction, and, A104 James Gichuru road junction, Nyamwaro (2011) argues that some of these roads including the three that are to be complete by March 2015 may be faced with minimal delay challenges because of various interactions; including that of prior planning by the ministry's KeNHA body and other county government stakeholders in Mombasa county. Various researchers have supported the view of Nyamwaro (2011) by arguing that, the amount of time delay also increased with an increase in pre-planning time period.

The third objective sought to find out the extent to which contractor's experience influences the delay of construction projects in the road sector and the following results were gotten. 4 respondents strongly disagreed with the idea that contractor's planning experience influences the rate of projects completion, 2 disagreed, 12 uncertain, 14 agreed, while the rest 22 strongly agreed with the factor. On the issue that read, Authorization experience and channels used by the contractor influence completion attracted, 2 respondents who strongly disagreed, 3 disagreed, 5 uncertain, 14 agreed, while the remaining 30 strongly agreed with the factor. A study by Hussin and Omran (2011) on 120

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

In relation to the last objective that sought to investigate the extent to which supervision of work influences the delay of construction projects in the road sector, 1 respondent strongly disagreed with the idea that projects in the region have been delayed due to ineffective monitoring, 4 disagreed, 17 uncertain, 15 agreed, while the rest 17 strongly agreed with this factor. On the factor that read, proper feedback is missing in supervisors leading to delays attracted, 1 respondent who strongly disagreed, 3 disagreed, 5 uncertain, 21 agreed, while the remaining 24 strongly agreed with the factor.

Chism and Armstrong (2010) agree by stating that inspection and workmanship standards are quite important to achieve quality. Fapohunda and Stephenson, (2010) state that to achieve the pre-determined project objectives, the construction site manager should have a significant influence over cost, time, scope and quality which make it paramount for the manager to have ability of exercising authoritative and absolute control. Wambugu (2013) concluded in a study that inadequate supervision and inspection of work in construction project led to rework in instances of poor workmanship and this led to delay in project timely completion. This also leads to project cost overrun and may result to project abandonment. Inadequate site inspection is one of the factors identified as causing project delays in timely completions. Proper site identification, inspection and continuous monitoring becomes effective when it is carried out by the present, continuous monitoring, supervision and evaluation but not absentee monitoring and supervisors as witnessed by almost 42% of construction projects in Kenya and Nigeria (EU, 2012).

## 5.4 Recommendations

Based on the findings of the study that has come from the respondents in the field and the literature review, the researcher recommends that the national government should increase the budgetary allocation to KeNHA, make it uniform across the country and should review the budget regularly in relation to the inflation rates.

The study also recommends that KeNHA should undergo proper and checked planning at all levels including the EIA planning so as to achieve timely deliveries. The planning can be done by both national engineers and the county roads board so as to have the process of implementing these projects being fastened.

Another recommendation is that, the experience of the contractors should be scrutinized, their track records be well understood and proper procedures of testing these contractor's experience be checked. This can be done by experts from other parts that have had success in the rate at which projects success has been in these regions. The contracting of experienced contactors also should be intertwined with the fact of the technology they integrate.

Finally, the researcher recommends that supervision should be continuous and in fact it should be made a daily activity to the roads sites. Absentee supervisors shouldn't be even allowed to take part in any road construction in the country. Continuous monitoring and evaluation should be done in order to ensure that all the steps of the project cycle are achieved.

### 5.5 Suggestions for Further Research

i. This study was carried out in Kenya's coast region only. Therefore, a similar study can be done in other parts of the country.

ii. The research was carried out with a focus on KeNHA led roads, meaning that a similar study can be done on roads led by KURA, KeRRA and County maintained by county governments.

iii. A research can be done to access the influence of KeNHA road projects to the welfare of the locals in the whole country.

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# APPENDIX 1

## Letter of transmittal

**Eng. James Gacheru Kimemia**

**P.O Box 49712-00100**

**Nairobi.**

**Tel: 0721815974**

**Email: james.gacheru12@gmail.com**


Dear participant,

My name is Eng. James Gacheru Kimemia and I am a student undertaking a Master of Arts Degree in Project Planning and Management at the University of Nairobi, Mombasa Campus. To fulfill the completion of this course, I am carrying out a study on the determinants of delays in projects implementation in the construction industry while looking at the case of roads construction projects implemented by KeNHA in Coast region. I am inviting you to participate in this research study by completing the attached questionnaire.

If you choose to participate in this research, please answer all questions as honestly as possible. Participation is strictly voluntary and you may decline to participate at any time. In order to ensure that all the information will remain confidential, you do not have to include your name. The data collected will be for academic purposes only.


**Thank you.**

**Registration Number: L50/71026/2011**

## Research Questionnaire

### A. General Information

1. Gender:        Male ( )                Female ( )

2. Age:  18-30yrs ( ) 31-40yrs ( ) 41-50yrs ( ) 51-60yrs ( ) 61-70yrs ( ) Over 70yrs

3. Type of occupation_____

4. Level of education:

Secondary ( )     Vocational Training ( ) Diploma ( )  Degree ( )   Masters  ( )      Others ( )

### B. Items as per the Objectives

### Item on the Role of Financial Resources

5. Cleary state how you agree with the following as it regards to the implementation of roads projects by KeNHA: Do you think the management of the roads is doing enough in allocating resources equitably?     Yes    ( )              No     ( )    Not Sure  (   )

6. Give   a   reason   for   your   answer   in   5   above   with   supportive examples……………………………………………………………………………………..

7. Using a scale of 1to 5, rate the extent to which the following factors have influenced the delay of roads construction projects in coast region? 1=very great extent, 2= great extent, 3=fair extent, 4=little extent 5= very little extent

| Factor | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Limited Finances | | | | | |
| Financial management | | | | | |
| Project Finances Diversions | | | | | |

8. Give a supporting reason for 7 above_____

### Item on the Project Planning

10. Do you think that lack of proper planning has influenced the rate at which projects are completed in the region?     Yes ( )        No ( )          Not Sure ( )

11. Give a reason for your answer above_____

12.   Indicate your position on the factors below appropriately:  **1= Strongly Disagree 2= Disagree**

**3= Weakly Agree 4= Agree 5= Strongly Agree**

| Factor | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Pre-Planning of the roads projects in very poor. | | | | | |
| Project Schedule planning has not been achieved due to poor coordination. | | | | | |
| KeNHA has compromised plans due to external interferences | | | | | |

**Item on Contractors Experience**

13. Indicate the extent to what do you agree that the following statements in relation to roads construction projects in the coast region. Use a scale of: **SA-Strongly agree, A- Agree, U-Uncertain, D-Disagree, SD- strongly disagree**

| Factor | SA | A | U | D | SD |
|---|---|---|---|---|---|
| Contractor's planning experience influences the rate of projects completion | | | | | |
| Authorization experience and channels used by the contractor influence completion | | | | | |
| Evaluation procedures experience held by the contractor influence projects completion | | | | | |

**Item on Supervision**

14. Do you think that the presence of supervisors in the sites influence the rate of roads project completion?

Yes          ( )          No     ( )          Not sure     ( )

15. Indicate the degree to which you agree or disagree with the following statements.

**SA-Strongly agree, A- Agree, U- Uncertain, D-Disagree, SD- strongly disagree**

| Factor | SA | A | U | D | SD |
|---|---|---|---|---|---|
| Projects in the region have been delayed due to ineffective monitoring | | | | | |
| Proper feedback is missing in supervisors leading to delays | | | | | |
| Poor decisions making from the supervisors has led to delayed projects | | | | | |