

**INSTITUTIONAL FACTORS INFLUENCING COMPLETION
OF KENYA RURAL ROADS AUTHORITY PROJECTS IN
RUIRU SUB COUNTY, KENYA**

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of Master of Arts in Project Planning and Management of the University of
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DECLARATION

This Research Project report is my original work and has not been presented for a degree in this university or any other institution of higher learning for examination

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DEDICATION

This project is dedicated to my wife Julian Nzonzo who encouraged and supported me both morally and financially throughout my period of study.

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ABBREVIATIONS AND ACRONYMS

ADB	African Development Bank
ARICS	Annual Road Inventory and Condition Survey
ATCC	Automatic Traffic Counters & Classifiers
DBM	Dense Bituminous Macadam
EAC	East African Community
EACC	Ethics and Anti-Corruption Commission
EATTFP	East African Trade and Transport Facilitation Project
EDF	European Development Fund
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EU	European Union
GDP	Gross Domestic Product
GoK	Government of Kenya
GVW	Gross Vehicle Weight
ICT	Information and Communication Technology
KEBS	Kenya National Bureau of Standards
KeNHA	Kenya National Highways Authority
KeRRA	Kenya Rural Roads Authority
KRB	Kenya Roads Board
KTSSP	Kenya Transport Sector Support Project
KURA	Kenya Urban Roads Authority
NEMA	National Environment Management Authority
PPP	Public Private Partnership
RMLF	Road Maintenance Levy Fund
SPR	Special Purpose Roads

ABSTRACT

Infrastructure is an important factor in development of any given nation. The Kenya Government has invested heavily and continues to invest in infrastructure. The purpose of the study was to establish the institutional factors influencing completion of KERRA (Kenya Rural Road Authority) projects in Ruiru Sub County, Kenya. Despite the importance of infrastructure and the billions of dollars committed to it, projects are never completed on time. Unfortunately this has a negative effect because delayed completion of projects results in time overrun, cost overrun, disputes, litigations and sometimes complete abandonment of important projects. The objectives of the study was to establish how management structure, resource availability, technological advancement and bureaucracy influence the completion of KERRA projects. The study used the descriptive survey design using both qualitative and quantitative approaches. The study used census survey since the population was small and less than 200. The study utilized both primary and secondary data collection methods. The primary data was collected using questionnaires. Secondary data was derived from the organization's records. Statistical methods of analysis such as frequency distribution, percentages, mean, were used to analyze quantitative data. Qualitative data generated from questions were organized into themes, categories and patterns pertinent to the study and was then analyzed by descriptive methods. SPSS version 20.0 was used for data analysis. The results from the data analysis were presented using tables and charts. From the findings, the management skills, resource availability, technological advancement and bureaucracy influence the completion of KeRRA projects to a very great extent. The study concluded that the above institutional factors have a significant influence on project timelines, budget and quality. Institution management structure effects on Completion of Rural Road Projects. The results established that resources human, technical, materials and financial resources can have a major influence on project schedules, the research established that engaging project team members is the foundation to project success. Setting key performance/productivity indicators for the performing team as a whole. The study established that in road engineering there is adoption of road safety, environmental and socio-economic technological designs. The study revealed that delays in releasing of funds due to long approval procedure affected the completion of rural road projects. The study established that bureaucracy in administrative procedures affects institutional efficiency. Based on the objective of the study, the study concludes that management structure influences the completion of rural road projects. The study concluded that resource availability can have a major influence on project schedules. Efficient and effective use of resources can often make or break a project. Based on the objective of the study, the study concludes that management structure influences the completion of rural road projects. The institutional resource availability at Ruiru Sub County has a significant impact on completion of rural road projects in the area. The study concluded that institutional technological advancement at Ruiru Sub County on completion of rural road projects in Ruiru Sub County influencing timely completion of Ruiru Sub County rural road projects in rural areas. The study concluded that bureaucracy in administrative procedures, approvals, financial disbursement, procurement procedures and project supervisory hindered completion of rural road projects in Ruiru.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The productivity, welfare, and security of both rural and urban people are greatly influenced by the level of road infrastructural development in their communities and its links to market, health center, schools and other Centre's of Administration and Commerce. Infrastructural services are social overhead capital facilities and activities that share techno economic features which enhance productive capacities of firms and households. This is because they interacts with nearly all fields of human endeavor.

Road construction is an important part of the economical backbone in many countries (Ngai, Drew & Skitmore, 2013). However all over the world, road construction has attracted criticism for inefficiencies in outcomes such as time and cost overruns, low productivity, poor quality and inadequate customer satisfaction (Chua, Chan & Ho, 2013). A road construction project is completed as a result of a combination of many events and interactions, planned or unplanned, over the life of a facility with changing participants and processes in a constantly changing environment.

Road infrastructure has been the responsibility of National governments as well as County governments in Kenya. Road construction and maintenance is funded by the government from fuel levies, government allocation raised from taxes, loans and grants. the governments have also considered adopting the public private partnership system of giving the construction work to private concessionaires who build the roads and later

recover their invested funds and profit through a tolling system. They run the tolling system for a number of years until they recover the agreed value of money invested (Austin, 2012). However, this have not been experienced in kenya as motorist says they will be taxed twice through fuel levies and at toll stations. Major roads in Africa had been funded through loans and grant from multinational banks like the world bank, African development bank, Chinese development bank amongst others. They have funded road projects in Countries such as Kenya, Ethiopia, South Sudan, Sudan, and South Africa among other Countries. These African Countries have formed regional blocks which marks the international routes that every Country must complete the construction work (ADB, 2012). Some Countries have been progressing with regard to road infrastructure development. These countries include Uganda, South Africa, Ghana, Nigeria, Egypt, and Tanzania.

In Kenya it is the responsibility of the National government to develop and maintain all national marked trunk roads. The government of Kenya constructs this roads through its various bodies such as the Kenya urban roads authority (KURA), the Kenya rural roads authority (KeRRA), the Kenya national highways authority (KeNHA). Each authority has its network of roads which it must maintain and or rehabilitate the rest are under the County government. Our country Kenya, still lags behind schedule. Some of the roads that have been earmarked for development are yet to be made passable while most of the road network especially in the rural areas is still of temporary nature. Despite increased funding in construction, repair and maintenance of road infrastructure project, implementation timeline end up being extended leading to increase in cost, time and

resources. this has been attributed to both internal and external factors on project identification, funding, resource mobilization, management, environmental factors, process systems and technology among others. A lot of resources have to be pooled to undertake road construction in Kenya if the Country is truly to achieve the much anticipated vision 2030 (Muhu, 2012).

Rural roads which are categorized as Class D, E & SPR (Kenya Roads Act 2007) are under the Kenya rural roads authority (KERRA) a state corporation whose mandate is to offer guidance in the construction, maintenance and management of the rural road network in the country. They are responsible for the management, development, rehabilitation and maintenance of rural roads. Their vision is to be a provider of an adequate, quality, safe and efficient rural road network and their mission statement is to construct, maintain and manage the rural road network for sustainable socio-economic development with core values as a public sector institution, dedicated to excellence and provision of high quality professional services to their customers. Their role is the development, rehabilitation, maintenance and management of rural roads in the country. This is properly stated in the Kenya Roads Act 2007 and will comprise the following functions and duties; Constructing, upgrading, rehabilitating and maintaining rural roads. Controlling reserves for rural roads and access to roadside developments. Implementing road policies in relation to rural roads. Ensuring adherence by motorists to the rules and guidelines on axle load control prescribed under the Traffic Act or any other existing regulations. Ensuring that the quality of road works is in accordance with such standards as may be defined by the Minister. In collaboration with the Ministry responsible for

Transport and the Police Department, overseeing the management of traffic on rural roads and issues related to road safety. Collecting and collating all such data related to the use of rural roads as may be necessary for efficient forward planning. Monitoring and evaluating the use of rural roads. Planning, development and maintenance of rural roads. Liaising and coordinating with other Authorities in planning and operations in respect of roads. Preparing road work programmes for all rural roads. Advising the Minister on all issues relating to rural roads; and performing such other functions related to rural roads as may be directed by the Minister.

Infrastructure has been given the second highest priority in Kiambu County to ensure that the main road projects under the economic pillar are implemented (Kiambu county investor guide second edition, 2015) There has been a need for improvement of roads to a motorable condition because the road transport (mode of transport) carries about 80% of all cargoes and passengers in the County. Due to the importance of roads in socio-economic development of the rural areas. The Government has been aggressive in fulfilling its infrastructural development promises and economic empowerment to its residence through identification and funding of various rural roads projects and is keen on creating an enabling infrastructural system that links various pillars of development to enable timely access of services and market at minimal cost (Kiambu County investor guide second edition, 2015) As a result of these initiatives, there has been a need to study various determinants which affect the implementation and completion of rural road projects with a view to sharing knowledge, skills and experiences which will enable an

efficient implementation process. This study seeks to analyze institutional factors influencing completion of KeRRA funded rural road projects in Ruiru Sub County.

1.1.1 Overview of the Road Sector

In the United States of America the federal government funds roads classified as national trunk roads while the rest of the roads are the responsibility of the County Governments.

It has been agreed that Countries that achieve steady economic growth must have sizeable investments in infrastructure. Examples of such Countries include Japan, U.S.A, United Kingdom, Germany, china, South Africa among others (Raissudin et al, 2013

In Uganda Magidu *et al* (2010) argue that the economic backlog in most rural countries is owed to the poor state of roads that no one regulates their construction and implementation. Most of these roads are chaired by unqualified personnel as engineers are concentrated in urban areas. In kenya however, despite many rural roads being at a deplorable condition, Kenya Rural Road Authority is mandated to regulate their construction, repair and maintenance and the government has invested heavily to ensure it has competent staff qualified in their area of operations.

In Kenya, road is the predominant mode of transport accounting for 93 percent of all freight and passenger traffic in Kenya, but costs are high (Kenya Anti-Corruption Commission KACC Report (2007). The road sub-sector is relatively large, with a total classified network of 160,886 km (of which 11,197 km are paved and 149,689 km are gravel or earth) and over 60,000 km of unclassified community roads (with corridors typically less than nine meters wide). This provides a reasonable network of roads in the densely populated parts of the Country and some access throughout the rest. Unlike the

neighbors, which have major areas without all-weather roads, the key challenge for Kenya is to bring the network in poor condition (56 percent) to good condition (currently just 11 percent), while ensuring that adequate maintenance is carried out on the rest.

The Government has focused on securing road construction and maintenance arrangement by separating funding from policy formulation and implementation functions. This was achieved through the creation of Kenya Roads Board (KRB) and clarification of the institutional arrangements in the management and ownership of the entire road network. This led to the creation of Kenya National Highways Authority (KeNHA), Kenya Rural Roads Authority (KeRRA) and Kenya Urban Roads Authority (KURA). The World Bank has been committed in this sector and has continued to fund road construction projects since 1960s and some of these projects have also experienced delays in their completion.

A road condition survey was carried out on a sample of KeNHA's network (class A, B, C); rural roads (Class D, E & SPR) and urban roads in the Eastern and Western regions of the country to determine budget requirement and it was identified that the Authority had a funding resource requirement of Ksh. 31.9 Billion in the year under review. However, the total funds availed for construction and maintenance of the rural road network in the financial year was Kshs 27.5 Billion comprising of Roads Maintenance Funds of Kshs 9.7 Billion, Exchequer Funds of Kshs 16.6 Billion, and Development partners of Kshs 1.1 Billion. The setting of performance targets was based on the Medium Term Expenditure Framework, the Kenya Vision 2030 and the Sector Performance Standards as guided by the 11th Cycle Performance Contracting Guidelines. The Authority submitted the Annual

Performance Contract report for the Financial Year 2014/15 to the parent Ministry of Transport and Infrastructure and the Performance Contracting Department. The evaluation of the performance was conducted by Ad-Hoc External Consultants in conjunction with the Performance Contracting Department. The Authority scored a composite score of 2.8524 (Very Good) which was an improvement from the previous year's score of 2.9445 (Very Good). (Kenya Rural Roads Authority Annual Report, 2014–2015)

Construction industry in Kenya suffers from many problems and complex issues in performance. For example, construction of 10 link roads in Nairobi Area suffered from poor performance because of delay for about 3 months which was occasioned by reasons such as closures, amendment of drawings, amendment of the design and delayed release of fund. The completion of road projects in Kenya such as the Thika Super highway, Eastern bypass and the Southern bypass delayed due to internal and external institutional factors that affected fund disbursement for land owners compensation, environmental factors, design amendment and approvals amongst others which saw the projects running behind schedule and having high cost overruns (GoK, 2013).

1.2 Problem of the Statement

Many of the major road infrastructure projects in developing countries are so large and costly that they can only be accomplished by direct government involvement. The government generally set the rules for the development of contractual relationships,

thereby influencing the public construction sector. Due to the importance of this sector to a nation, the following researchers have studied this sector and their findings have indicated that most projects are never completed on time due to management operational delays. According to Faridi et al. (2006), delay is considered one of the most frequent problems in the construction industry and they have an adverse impact on project completion in terms of time, cost, quality and safety. Factors contributing to these delays have been identified as inadequate readiness for implementation, delays in procurement of contractors, loan conditionality and disbursement affecting late release of funds, poor performance of contractors, low capacity of the implementing agencies, poor supervision of works and contract management response speed in resolving contractual issues when they arise. In addition, failure by government to release counterpart funds in good time, delays in payment to contractors and the resulting cash problems during construction, design changes, conflicts in work schedules of sub-contractors, slow decision making and executive bureaucracy in owner's institutions, design errors, labor shortage and inadequate labor skills among others. The private sector also feels this influence through policies and legislation (World Bank, 1984). Road investments have been characterized by low rates of budget execution, cost overruns of as much as 80 percent over engineering estimates, and lengthy delays that tend to double the completion period. Furthermore, inadequacies in the management structure for supervising construction contracts have cut quality and shortened the life of public works. Innovative programmes, such as the Roads 2010 Programme have not yet had a correspondingly large impact on improving the condition of the road network. This is due to a lack of: appropriate

resources, Organizational top management support, proper institutional management structure and properly crafted technology that support monitoring and evaluation programmes amongst other institutional factors.

Rural roads are of vital importance in order to bring development of areas they serve and make a nation grow and develop (Ikiara *et al.*, 2013). Especially in the third world, good completed and maintained roads also will enhance poverty reduction by improving access between regional and rural communities and ultimately enhancing socio-economic growth and development (Asif, 2012). Road networks form vital links between production centers and markets. In addition its multiple function of providing access to employment, social, health and education services makes road network crucial in fighting against poverty by opening up more areas and stimulating economic and social development. There is a problem, however, which is common throughout the world, the neglect in construction, completion and maintenance of rural roads. Building new roads cost money but without proper completion, they get worn out very quickly. If nothing is done, roads with a design life of decades can need replacing or major repair work after just a few years.

Studies have been done on rural roads projects completion. Musa (2012) did a study on effects of total quality management on performance of rural roads projects in Kenya. He found that human resource management and resource management affects performance of the rural roads projects to a great extent. Bundi (2013) did a survey on challenges in the management of road construction resources 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 (2012) did a study on analysis of challenges facing rural road project completion a case study of Ministry of Roads Projects. The study deduced that poor communication and lack of awareness were the main challenges facing rural road project implementation. Despite immense study focusing on rural roads, most of the studies have focused on challenges of rural road completion rather than the institutional challenges in implementation and completion of rural roads. This has created a research gap in literature concerning rural roads projects. Therefore this study attempts to fill this knowledgeable gap by evaluating the institutional factors influencing completion of KERRA funded road projects in Ruiru Sub County, Kenya.

1.3 Purpose of the study

The purpose of the study was to establish the institutional factors influencing completion of KERRA projects in Ruiru Sub County, Kenya.

1.4 Objectives of the Study

The study was guided by the following specific objectives:

- i. To establish how management structure influence the completion of KERRA projects in Ruiru Sub County, Kenya.
- ii. To examine how resource availability influences the completion of KERRA projects in Ruiru Sub County, Kenya.
- iii. To assess how technological advancements influence the completion of KERRA projects in Ruiru Sub County, Kenya.

- iv. To establish the extent to which bureaucracy influences the completion of KERRA projects in Ruiru Sub County, Kenya.

1.5 Research Questions

The following research questions guided the study:

- i. How does management structure influence the completion of KERRA projects in Ruiru Sub County, Kenya?
- ii. How does resource availability influences the completion of KERRA projects in Ruiru Sub County, Kenya?
- iii. How does technological advancement influences the completion of KERRA projects in Ruiru Sub County, Kenya?
- iv. How does bureaucracy influence the completion of KERRA projects in Ruiru Sub County, Kenya?

1.6 Significance of the study

The findings of this study may be relevant to the Kenya rural roads authority and road construction contractors in Ruiru Sub-County when making decisions in the midst of competitive market. The finding would be helpful for decision making by policy makers and enhance the awareness of the institutional factors that could influence successful delivery of road construction projects. The findings and recommendations of this study would be used by the researchers to inquire more on rural road construction projects in

Kenya, as well as the academicians to understand more on institutional factors influencing implementation and completion of road projects in Kenya.

1.7 Delimitation of the study

The study was conducted in Ruiru Sub-County, Kiambu County; Kenya. The participants included the Kiambu County KeRRA officers involved in road construction in Ruiru Sub County.

1.8 Limitations of the Study

This study will rely on information given by the respondents. Professional secrecy and confidentiality of government information by the respondents could affect the accuracy of the information. The researcher was also handicapped to the questionnaires interpretations. To mitigate the above challenges, The researcher had to show research permit approval and reaffirm that the data was for academic purpose only and that the questionnaire will be anonymous. The researcher also found a research assistant to assist in data interpretation and tabulation.

1.9 Assumptions of the Study

The study assumed that the respondents will understand and answer all the question honestly. It also assumed that the four independent variables of the study would remain relevant in the course of the research period as this would influence the acceptability of the findings and that the findings will be adequate to help in drawing valid conclusions.

1.10 Definitions of Significant Terms

Institution factors – formal practice, process or culture within an institution that must be abided by in service delivery and project implementation. An institution is an organization founded and mandated to offer guidance in the construction, maintenance and management of the rural road network in the country

Management Structure - Management structure refers to the system of an organization and how they divide labor and assign roles and responsibilities to individuals or groups in the organization as well as the organization of the hierarchy of authority, which defines accountability and communication channels within and out of organization environment. It also defines who is responsible for each role in an organization.

Resource Availability - this refers to a characteristic of a resource that is committable, operable, or usable upon demand to perform its designated or required function. It is the aggregate of the resource's accessibility, reliability, maintainability, serviceability, and security.

Technological Advancement - This refers to the substantial growth concerned with each and every field in road construction from hiring of experts, innovative use of modern machines and process that raise quality standard and lower timelines and cost.

Rural road – a road that links locally important social centers to each other or to a more important market centre or a higher class road classified as class D Road or any road that link to a minor centre, market or local center classified as Class E Road under the Kenya Road Board.

1.11 Organization of the Study

The study is organized in five chapters; chapter one deals with the background of the study, problem statement, objectives, research questions, significance of the study, delimitations and limitations, and assumptions of the study. Chapter two deals with the literature on institutional factors influencing completion of KERRA funded road projects. The literature review presents the overview of Kenya Road Sector, Factors Influencing Completion of Rural Road which includes management structure, resource availability technological advancement and bureaucracy, Theoretical Framework of the study, conceptual framework and the relationship between the variables and concludes by a summary of literature reviewed, and the knowledge gap in the literature. Chapter three deals with the procedures to be used in conducting the study, focusing on research design, target population, sample and sampling procedures, research instruments, and data collection and analysis procedures. Chapter four deals with the analysis, presentation, and discussion of findings and Chapter five has the summary, conclusion and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This Chapter discusses institutional factors influencing completion of KeRRA funded rural road projects. The literature review discusses factors influencing Completion of Rural Road which includes management structures, resource availability, technological advancement, and bureaucracy. Theoretical Framework of the study, the conceptual framework and the relationship between the variables and conclude by a summary of literature reviewed, and the knowledge gap in the literature.

2.2 Institutional Factors Influencing Completion of Rural Road

The institutional factors influencing completion of infrastructure projects can be grouped under four broad themes namely management structure, resource availability, technological advancement and bureaucracy. These factors contribute to delays in completion of KeRRA funded rural road projects.

2.2.1 Management Structure and Completion of Rural Road Projects

The management structure of an organization clearly outlines the roles of the top management, which consists of the CEO and the board, the middle management, which is made up of the department heads and heads of divisions, and the lower management, which is comprised of the line managers, team leaders and supervisors. This is the basic management structure used by most institutions. The typically hierarchical arrangement of lines of authority, communications, rights and duties of an organization determines

how the roles, power and responsibilities are assigned, controlled, and coordinated, and how information flows between the different levels of management. Management structure depends on the organization's objectives and strategy. In a centralized structure, the top layer of management has most of the decision making power and has tight control over departments and divisions. In a decentralized structure, the decision making power is distributed and the departments and divisions may have different degrees of independence. A manager job is to maintain control over the way an organization does things, and at the same time to lead, inspire and direct the people under them. The type of managers appointed will depend on the structure of the company and will set the strategy of an organization by coordinating the efforts of its employees or volunteers to accomplish its objectives through the application of available resources, such as financial, natural, technological, and human resources.

Management structure dictates hierarchical arrangement of lines of authority, communications, rights and duties of an organization determines how the roles, power and responsibilities are assigned, controlled, and coordinated, and how information flows between the different levels of management. The more the Lines of authority the longer the decision making will take for approvals to be granted. Letter has to pass through several people at different levels which delays project initiation. In a government setting different department has different roles and authority. A project may be requested by administrations, budget approved by finance, tendering done by procurement leading to increased project timeframes. Communication in government structure is top down

limiting employee creativity and innovation. The longer the information takes to reach the intended recipient the longer the delay of project completion

The type of Management structures towards any project is important in its completion and success (Munns & Bjeirmi, 2014). An organization management structure demonstrates visibly how strong the commitment to the project is. For example, project members usually do not see project Top Management as something to help them but rather something which is mandatory, serving little useful purpose. The project manager is key and his competence is a critical factor influencing project planning, scheduling, and communication. Variables under this factor consist of the skills requirement and characteristics of project managers, their commitment, competence, experience, and authority.

A road construction and completion projects requires team spirit; therefore team building is important among different parties. Team effort by all parties to a contract owner, architect, construction manager, contractor, and subcontractors is a crucial ingredient for the successful completion of a project (Hassan, 2012). As such, motivation is prerequisite to ensure comfortable working environment within and around project sites. On road construction projects in developing countries, it is extremely difficult to assemble adequate and capable professionals to direct projects to success. Thus, it is not surprising that these factors are perceived as having high impact on project success. The involvement of many parties is a dominant characteristic of road construction projects (Eriksson, 2013). If one of the parties is not capable to act within his/her role, the project is likely to fail. It is, therefore, essential to ensure that the bidding process can help single

out the right designers, contractors and other parties to effectively transform project ideas into reality without delays

Ogunlana et al (2012) recommended the need for focused effort by economy managers and road construction associations to provide the infrastructure needed for efficient project organizational top management and performance. Dissanayaka and Kumaraswamy (2014) stated that the knowledge that would influence potential performance enables project managers to pay special attention to control performance more effectively. Chan and Kumaraswamy (2012) remarked that effective communication and fast information transfer between managers and participants help to accelerate the building construction process and performance. Kuprenas (2013) studied the impact of the use of a project organizational top management based organizational structure, project manager training, frequency of design meetings, and frequency of design reports on design phase cost performance. The process of a design team meeting frequency and the process of written reporting of design phase progress were found to be of significant in reducing design phase costs.

The variables influencing an organization's successful delivery of services such as implementation and completion of road construction projects are dynamic and are likely to be moderated by situational aspects such as nature and type of organizational structure. Luthaus (2011) defines organizational structure as the ability of an organization to divide labor and assign roles and responsibilities to individuals or groups in the organization as well as the process by which the organization attempts to coordinate its labor and groups. Public organizations such as Ministry of Roads, where the idea of ownership is not as

clearly defined as in the private sector, the problem of governance continues to become increasingly important in that public managers are frequently subjected to less rigid controls and likely to have greater incentives to satisfy their own interests at the expenses of the organizational goals. Ineffective and lax institutional framework and enforcement mechanisms characterize developing nations and acts as a perfect recipe for mass public sector miss-organizational top management.

Chan and Kumaraswamy (2012) remarked that effective communication and fast information transfer between managers and participants help to accelerate the building construction process and performance. Kuprenas (2013) studied the impact of the use of a project organizational top management based organizational structure, project manager training, frequency of design meetings, and frequency of design reports on design phase cost performance. The process of a design team meeting frequency and the process of written reporting of design phase progress were found to be statistically significant in reducing design phase costs.

2.2.2 Resource Availability and Completion of Rural Road Projects

Resources required to carry out the project tasks can be classified as people, equipment, facilities, funding, or anything else capable of definition required for the completion of a project activity. Unavailability of all resources will therefore be a constraint on the completion of the project within the timelines. Resource scheduling, availability and optimization are considered key to successful project management. Allocation of limited

resources is based on the priority given to each of the project activities. Their priority is calculated using the Critical path method and heuristic analysis.

For a case with a constraint on the number of resources required, the objective is to create the most efficient schedule possible - minimizing project duration and maximizing the use of the resources available (Meredith *et al*, 2013). Efficient and effective use of resources can often make or break a project. This is because resources are limited, some hard to obtain, expensive or both. Resource availability can have a major influence on project schedules. Delays in their supply would extend the period of the projects which in turn increases project cost. When planning a project, managers first decide on the deliverables of the project and the activities needed to produce them. Then resources needed are estimated. Combination of resource needs and availability, help to determine the time needed for entire project. Resources are estimated in term of activities so that they can be deployed in the most effective manner.

The Government has the ultimate responsibility to provide access to services and to ensure that public private partnership does not alter the basic responsibility of government. It therefore has to provide guidelines on funding, sourcing of material, technology and manpower engagement to caution the public against cartel and other interested parties that supplies resources to the project against overpricing, supplying sub standard materials and workmanship remuneration and compensation. All these will ensure quality delivery of resources at the appropriate cost and time. According to Kelechi (2004), policy making requires a strong legitimate institutional structure for decision making and policy enforcement. Kelechi further observes that policy

formulation, among other things, requires a strong representative government which is seen as legitimate and relevant to the masses which will result in a strategy for domestic revenue mobilization through acceptable taxation policies that the citizen will be willing to comply with because they appreciate and relate to it. It also requires that policies be made on the basis of strategic options and choices be rooted in the states realistic efforts at internal resource mobilization.

All this have either direct or indirect influence on the timely delivery of road construction projects. Gupta (2011) stated that infrastructure projects are complex, capital intensive, having long gestation period and involve multiple risks to the project participants. Due to this, the task of providing infrastructure is traditionally that of the government as the government is able to utilize its planning and administrative capabilities in undertaking infrastructure development. According to Bonnafous and Jensen (2004) public authorities were generally in charge of financing and building new infrastructures. However, infrastructure development is also financially taxing to the government. That is why even when infrastructure development has a positive effect on the economy, no government can afford to concentrate all its resources towards the provision of infrastructure. Any government in the world will have to balance between the need for developing infrastructure such as road and highways with other requirement such as providing healthcare and education since the economic rule of resource scarcity will limit its capability to do so. A lot of progress has been made in repairing vital road links in the country despite critical challenge in funding. Though the World Bank and the IMF has already given their seal of approval to progress made, the institutions are yet to unlock

the funding required to complement Government efforts. The country's economic ranking has improved to 3.7 points, qualifying the country for more funding from the donor agencies. Available figures indicate that the Government's expenditure on road construction has increased from the allocated Sh10 billion budgeted for the 2006/07 financial years to Sh17 billion for the 2007/08 financial years. Funding for the road sector is from the exchequer, loans, donors and fuel levy.

2.2.3 Technological Advancement and Completion of Rural Road Projects

Road engineering has become a complex discipline where road safety, environmental and socio-economic issues are important in technical designs and implementation stage. Currently technological advancement is vital for any form of development (Mohapatra & Chandrasekhar, 2012). Unlike urban roads most rural roads are believed not to experience heavy traffic hence do not require complex designs and are characterized by a shallow foundation and a reduced width as compared to the highways. Argawal and Singh (2013) had observed that use of local technology in maintaining rural roads has led to their deterioration. Most of the rural roads in developing countries do not employ any modern technology at all. You may find bridges that connect important villages being wooden and are expected to lift heavier loads. Failure to embrace modern technology has seen rural road lifespan reducing. Contrarily to the belief, there is a lot of heavy truck that ferries agricultural produce from rural area to the market and also in consideration of the erratic weather changes leading to erosion with storm water eroding the roads.

According to Ipingbemi (2012) there is a great challenge when it comes to technology used in maintaining rural roads. He observes that in Nigeria majority of the contractors do not have heavy machinery for their job even in areas where they are required. On the other hand those with the machinery lack qualified personnel to operate them and thus they do not employ the standard technology for their job. A similar observation was also made by Faiz (2012). In their report they noted that most of the technologies used in maintaining rural roads in India, Sub-Saharan Africa and Some South American Countries were not standard. These are mostly attributed to lack of machinery or skilled power to carry out operations.

Furthermore, they argue that the education system teaches engineers to build sophisticated design roads a technology they cannot employ in rural areas as they won't make economic sense. A similar concern is also brought forth by the Ministry of Roads and Public Works (2012) in Kenya. According to the annual report it is high time the government consider allocating more engineers and put emphasis on technology to be used in developing rural roads and not urban roads only.

The technologies currently being taught in universities need to accommodate those that can be used in designing cheaper rural roads. All the studies support use of technological advancement in rural road implementation projects. Nevertheless, these studies do not consider which technology to employ where and why. Although technology increases speed and efficiency there is need to ensure that using sophisticated technology on a less economical road is not cost effective. On the other hand using inappropriate technology will also lead to loss of revenue as the roads will not last even in cases of traffic. On the

other hand some rural roads also carry heavier traffic especially in agricultural areas that require the use of heavier machinery during construction.

2.2.4 Bureaucracy and completion of KERRA funded road projects

Bureaucracy is found in both the government offices and the donor organizations. Studies by Bartholomew and Lister (2002) indicate that donors' lengthy and cumbersome procedures at the project preparation stage often cause delays and have resulted in projects taking longer to come to fruition. Also government processes in developing countries are generally bureaucratic in nature which leads to challenges like weak information flow and reporting overload, weak Monitoring and Evaluation (M&E) in the Project Implementation Units (PIUs), weak implementation autonomy for PIUs; and high staff turnover. The characteristics of bureaucratic institution reflect Weber's legal-relational model, which describes bureaucracy as hierarchical, rule enforcing, impersonal in the application of laws, and constituted by members with specialized technical knowledge of rules and procedures. Despite the pressure to be accountable on the tax payer's funds for a public project there is need for a corrupt free decentralized and flexible professional decision making in all the activities of the projects. This flexibility is essential to drive institutions to develop the capacity to respond to rapidly changing markets and consumer preferences by establishing decentralized organizational structures and processes.

In order to properly utilize knowledge of workers, greater employee autonomy is required, and is facilitated through employee participation in decision making and

teamwork rather than centralized controlled and planning (Merton and Dwyer, 2005). There has been increased interest in management approaches that are regarded as more suited to the increasingly competitive global economic environment. There is also a recognized need for public sector institution like KERRA to be more flexible and responsive in their dealings with the public and to be more sensitive to the diverse needs of the citizens that they service. One of the well-known criticisms over the idea of bureaucracy says that this idea reduces the flexibility and active efficiency of organizations. This means that growing of the corpus of bureaucracy (its laws and rule) may affect the efficiency of a system and reduce the flexibility of it by getting larger and larger (Merton and Dwyer, 2005). Bureaucracies' cause reduction of creativity among employees as specific action has previously been designed to follow a certain process. It follows that there would be no room to have a creative way of doing routine tasks. It is also important to note that the mechanical thinking from the idea of bureaucracy leads to the thinking mechanistically not only about the organization but also about peoples who work in such an organization. This according to Morgan (1995) leads to employees spending many hours on work they neither value nor enjoy.

KeRRa gets its funding from government exchequer and it is generally claimed that public institutions are more bureaucratic than the private due to the ownership, funding and control. In the Government of Vietnam the decision making process on Official Development Assistance (ODA) is lengthy as approvals go through many government departments. This also applies to signing of loan agreements and subsidiary agreements with the project implementing units. Boyne (2002) showed that the internal

characteristics of public agencies can be viewed more bureaucratic because of the government inherent sovereign state, political authority and breath of mission. According to Crozier (1964) there is a vicious circle of bureaucracy dysfunctions, and its effects include inflexibility, red tape, indifference, insensitivity, officiousness and blockage of information flow. Further Assaf, et al. (1995) while studying the causes of delays in large building construction projects in Saudi Arabia concluded among other factors slow decision making and executive bureaucracy in organizations impacted on the completion of projects. In India, the execution of infrastructure projects requires active cooperation of several departments within as well as among various ministries. An article in the Business Daily Newspaper of April 16, 2012 reported that government bureaucracy might delay development of the infrastructural project in the country. In addition, the World Bank report ICR (2005) indicates that the Ministry of Finance countersigns contracts and this is reported to contribute to delays in commencement of contracts. It is evident from the discussion above that due to the hierarchical nature of government departments; there is inherent weakness in inducing the desired efforts from the people involved. Hence, infrastructure projects face the consequences of organizational failures within the sponsoring ministry itself. As these projects need joint efforts of several other organizations, they face both intra-organizational and inter-organization failures. Several reports, including the official ones, corroborate these claims (Bolton & Dewatripont,2005).

2.3 Theoretical Framework

The theory of constraints (TOC) is a management paradigm that views any manageable system as being limited in achieving more of its goals by a very small number of constraints. TOC uses a focusing process to identify the constraint and restructure the rest of the organization around it. TOC adopts the common idiom a chain is no stronger than its weakest link (Eriksson, 2013). This means that processes, organizations and other aspects are vulnerable because the weakest person or part can always damage or break them or at least adversely affect the outcome. The underlying premise of the theory of constraints is that rural road projects completion can be measured and controlled by variations on the following four parameter: management structure, resource availability, technological advancement and bureaucracy. Decentralization of management structure and toiler making it to suit the project will increase its effectiveness, timely availability of the needed resources (funding and materials) will decrease delays, use of appropriate technology and experts will enhance more quality work at reduced cost and time while reduced bureaucracy will make processes more efficiency, promote creativity and improve communication. If any of the above is weak the whole system will not be able to deliver quality project on time. This theory is relevant to the current study in that it will help the researcher to identify the constraints that limit the completion of KeRRA funded road projects. It will enable the researcher to understand how the stakeholders in the road sector make sound financial decisions based on management structure, resource availability. technological advancement and bureaucracy.

2.4 Conceptual Framework

In this study, the conceptual framework looks at the institutional factors influencing completion of rural roads project in Ruiru sub County. As argued in the earlier discussions, institutional factors influencing are the independent variable while the completion of KeRRA funded road projects is the dependent variable in this study. The factors influencing completion include management structure, resource availability, technological advancement and bureaucracy. The relationship is shown diagrammatically in the following figure:

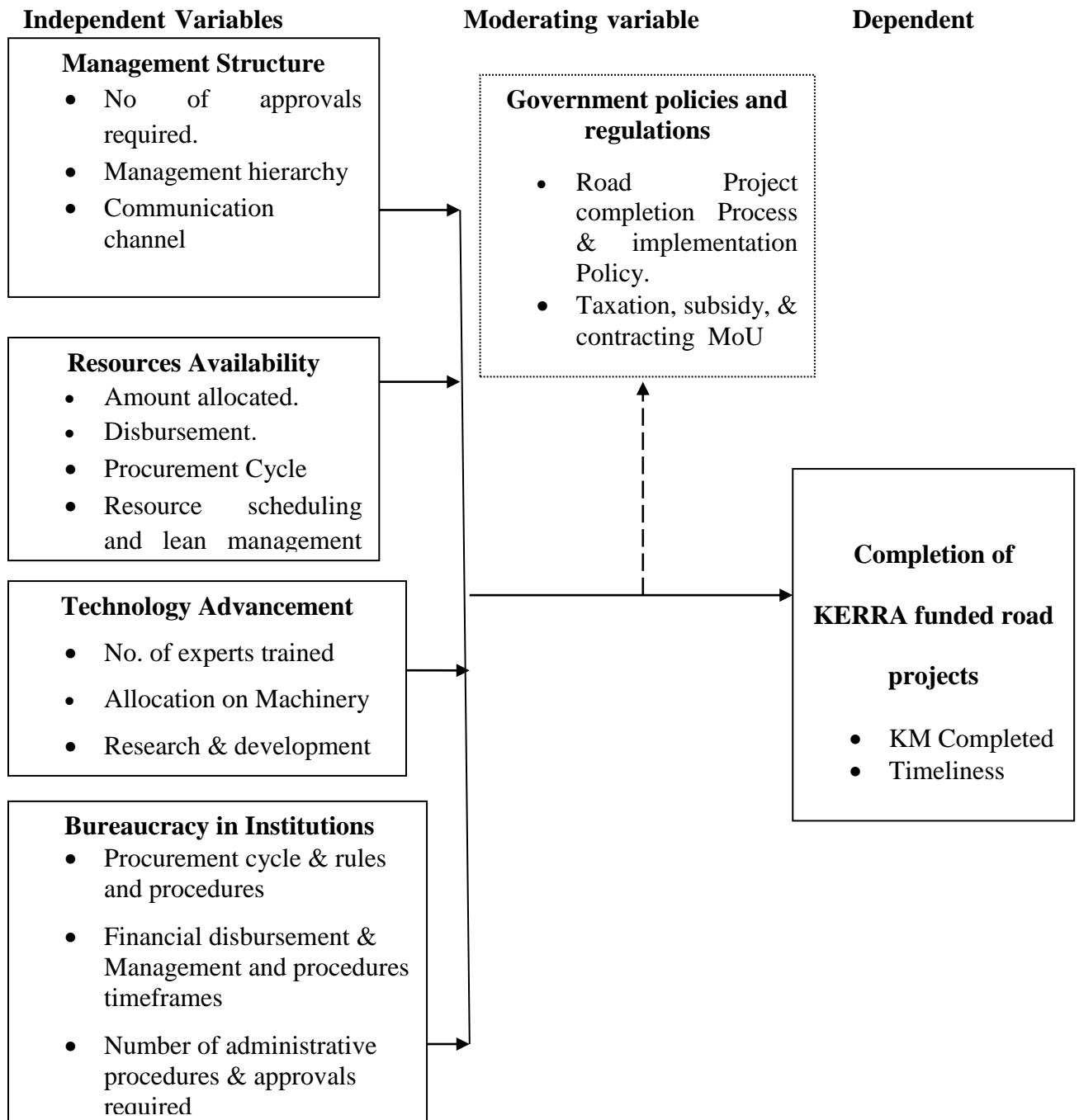


Figure 2. Conceptual Framework

Management structure determines how internal and external relationship are enhanced. the institution practice and process are defined with the type of management structure in place, centralized or decentralized it dictates hierarchical arrangement of lines of authority, communications, rights and duties of an organization and determines how the roles, power and responsibilities are assigned, controlled, and coordinated, and how information flows between the different levels of management to influencing completion of road construction projects.

Resources are required to carry out the project tasks. Resource scheduling, availability and optimization are considered key to successful road construction project management and completion time.

Currently technological advancement is vital for any form of development. Road engineering has become a complex discipline where road safety, environmental and socio-economic issues are important in technical designs. Organization machinery, operating experts, process engineering, research and development is a competitive factor in project implementation. Although technology increases speed and efficiency there is need to ensure that using sophisticated technology on a less economical road is not cost effective.

2.6 Knowledge Gap

Various studies have been conducted on implementation, maintenance and completion or KeRRA funded projects. Ogunlana et al, (2012) recommended the need for focused effort by economy managers and road construction associations to provide the infrastructure

needed for efficient project organizational top management and performance. Argawal and Singh (2013) had observed that use of local technology in maintaining rural roads has led to their deterioration. Most of the rural roads in developing countries according to them do not employ any technology at all. According to Ipingbemi (2012) there is a great challenge when it comes to technology used in maintaining rural roads. He observes that in Nigeria majority of the contractors do not have heavy machinery for their job even in areas where they are required.

Although literature has been reviewed on factors influencing completion of KERRA funded road projects, most of these studies have been done in other countries whose strategic approach and financial footing is different from that of Kenya. None of them therefore focused on how these apply in the Kenyan case. It is evident therefore that a literature gap exists on the factors influencing completion of KeRRA funded road projects in Kenya. This study therefore seeks to fill this gap by focusing on the Completion of KERRA funded road projects in Ruiru Sub County; Kenya.

2.7 Summary of Literature

Transport infrastructural projects have significant impacts on the development of regional economies and has often been used to justify allocating resources to transport infrastructure investment. An enormous gap exists between available resources and increasing demand for access to interventions. Due to this, the task of providing infrastructure is traditionally that of the government as the government is able to utilize its planning and administrative capabilities in undertaking infrastructure development by

raising the funds needed. The type of management structure in an organizational determine the speed at which decision are made. Collaboration between departments is important and its commitment and support is a crucial requirement for project success. A road construction project requires team spirit; therefore team building is important among different parties.

On road construction projects in developing Countries, it is extremely difficult to assemble adequate and capable professionals to direct projects to success without the support of organizational top management since the variables influencing an organization's successful delivery of services are dynamic and are likely to be moderated by situational aspects such as nature and type of organizational structure. Government has the ultimate responsibility to provide access to services and to ensure that public-private partnership does not alter the basic responsibility of government. Many of the road construction projects in developing countries are so large and costly that they can only be accomplished by direct government involvement. The government generally set the rules for the development of contractual relationships, thereby influencing the public construction sector. Construction, especially with respect to the contracting and bidding for civil works, requires the effective evaluation and supervision of contractors and their bids. The most widely used measures of construction success are time achieved, quality of product and cost at the completion of the project.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the procedures to be used in conducting the study, focusing on research design, target population, sample and sampling procedures, research instruments, data collection and analysis procedures.

3.2 Research Design

The study used the descriptive survey design using both qualitative and quantitative approaches. The survey design enabled the researcher to explore a wide range of factors influencing rural road implementation. The reason for this choice was based on the knowledge that descriptive design are the most appropriate for examining the effects of an independent variable on a dependent variable without any manipulation (Bell, 2007).

3.3 Target Population

A target population is that population to which a researcher wants to generalize the results of a study. This study targeted 40 staff working in KERRA office in Kiambu County who were Engineers, Architectures, Clerk of Works and Contractors from Kenya rural roads authority, Kiambu County Office and contractors implementing KeRRA funded rural road projects in Ruiru Sub County making a total of 40 respondents.

3.4 Sample Size and Sampling Procedures

The study used census survey since the population is small and less than 200.

Table 3. 1 Target Population

Population	Frequency
Engineers	15
Architectures	5
Clerk of Works	10
Contractors	10
Total	40

3.5 Data collection instrument

The study utilized both primary and secondary data collection methods. The primary data was collected using questionnaires. Secondary data was derived from the organization's records. Questionnaires were prepared for respondents to fill and availed data for the purpose of study as a qualitative approach to obtain data. All the data collected through the questionnaire was analyzed to identify any inconsistencies and institute the necessary corrective measures.

Both open and closed ended questions were used in the designing of the questionnaire. Open ended questions allow for a greater depths of response and stimulated the respondent to think about their feelings and motives while considering the best assessment of the situation. Closed ended questions were easier to analyze thus helps in arriving at proper presentation of data.

3.5 Pilot Study

Before the main research, the study did a pre-test of the instrument to enhance its validity and reliability. The pilot study was done in Gitothua ward in Ruiru Sub-County. A 10% of the population 4 respondents were chosen for pilot study. This aimed at enhancing the validity and reliability of the instruments where a necessary correction of the instrument was made before the actual research.

3.5.1 Validity

Validity is the quality attributed to proposition or measures to the degree to which they conform to established knowledge or truth. Content validity of the research instruments is established in order to make sure that they reflect the content of the concepts in question. First, the researcher went through the instruments and compared them with the set objectives and ensured that they contain all the information that answers the set questions and address the objectives. Second, experts including the supervisor were consulted to scrutinize the relevance of the questionnaire items against the set objectives of the study.

Validity refers to the accuracy or truthfulness of a measurement in terms of the likelihood that research questions was understood or misinterpreted and on whether the research instruments provided adequate coverage of research objectives. Mugenda and Mugenda, (1999), states that to enhance validity of a questionnaire, data should be collected from reliable sources, the language used in the questionnaire should be kept simple to avoid any ambiguity and misunderstanding.

The validity of data collected was ensured through collecting data from the relevant respondents having been permitted by the University and the KeRRA Kiambu County Office management. The validity of the instrument was established by being given to experts with experience in completion of KeRRA funded rural road projects who could evaluate the items in relation to the study objectives.

3.5.2 Reliability

Orodho (2005) states that reliability of a measurement concerns the degree to which a particular measuring procedure gives similar results over a number of repeated trials. To test the reliability of the instruments the study used a test-retest technique. Test-retest reliability is measured by administering a test twice at two different points in time. According to Orodho (2005) the number in the pre-test should be 10 percent of the entire sample. The study test the internal consistency of the instruments by computing Cronbach's alpha to determine the reliability of the instrument. Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalizability and an alpha coefficient of 0.70 or higher indicates that the gathered data is reliable as it has a relatively high internal consistency and can be generalized to reflect opinions of all respondents in the target population (Cronbach & Shavelson, 2004).

Table 3.2 Reliability Results

Variable	Cronbach's Alpha	No. of Item
Management Structure	0.7327	4
Resources Availability	0.8892	4
Technology Advancement	0.8149	4
Bureaucracy	0.8450	4

In this study, reliability was ensured through a piloted questionnaire that was subjected to 5 respondents which was 10% of the sample size who are involved in implementing KeRRA funded rural road projects from KeRRA Kiambu County Office and contractors not participating in the study. The results obtained are presented in Table 4.1. From the findings, correlation coefficient of Management Structure was 0.7327 making the question items reliable. The correlation coefficient of Resources Availability was 0.8892 making items concerning Resources Availability reliable. Technology Advancement had a correlation coefficient of 0.8149 while that of Bureaucracy was 0.8450. This clearly indicated that the instrument was reliable.

3.7 Data Analysis and Presentation

The study generated both qualitative and quantitative data. Information obtained from the questionnaires was processed through editing and coding and then entered into a computer for analysis using descriptive statistics with the help of Statistical Package for Social Sciences (SPSS) version 20. The software offers extensive data handling capabilities and numerous statistical analysis procedures that analyze small to very large

data statistics (Bell, 2007). Descriptive statistics data analysis method was applied to analyze both quantitative and qualitative data. Descriptive statistics helped to compute measures of central tendencies and measures of variability (Bell, 2007). Descriptive analyses are important since they provide the foundation upon which correlational and experimental studies emerge; they also provide clues regarding the issues that should be focused on leading to further studies (Mugenda & Mugenda, 2003).

The study also employed a multivariate regression model to study the influence of management skills, resource availability, technological advancement and bureaucracy factors on completion of rural road projects. The regression method is useful for its ability to test the nature of influence of independent variables on a dependent variable. Regression is able to estimate the coefficients of the linear equation, involving one or more independent variables, which best predicted the value of the dependent variable. The regression model is as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where: Y = completion of rural road projects; β_0 = Constant Term; β_1 , β_2 , and β_3 = Beta coefficients; X_1 = management structure; X_2 = resource availability; X_3 = technological advancement; X_4 = bureaucracy and ε = Error term

The analyzed findings were presented inform of frequency tables and bar charts since they are user friendly and gives a graphical representation of the different responses given by the respondents.

3.8 Ethical Issues

Ethical consideration is paramount for every study. Ethical issues apply to all research approaches and to every stage of research that is, in the identification of the research problem, data collection, data analysis and interpretation, and lastly in the writing and dissemination of the research (Creswell, 2009).

Ethical issues involve matters of access, confidentiality and anonymity of the participants, the participants' consent as well as legal issues like intellectual ownership, confidentiality, privacy, access, acceptance and deception (Johnson & Christensen, 2008). Since this study concerns sensitive issues and stakeholder involvement, the following ethical considerations were adhered to. This involved applying for research permit, informed consents, acknowledge cited sources, authenticate reporting and confidentiality and anonymity of the respondents. The respondents were assured of their confidentiality that no one would be victimized for information he or she provided since the study was only used for academic purpose.

3.9 Operational Definition of Variables

Table 3.2 present the Operationalization of the variables. This is done by presenting the research objectives, the research independent variables, measurement, the instrument of data collection and data analysis techniques

Table 3.3 Operationalization framework

Objectives	Variable	Indicators	Measure	Scale Of Measurement	Data Collection Tool	Method Of Analysis
To establish how management structure influence the completion of KERRA funded road projects in Ruiru Sub County, Kenya	<u>Independent</u> Management structure	-No of approvals required. - Management hierarchy - Communication	How does management structure influence the completion of KERRA funded road projects in Ruiru Sub County, Kenya?	Nominal	Questionnaire	Means and Percentages Frequencies, Means and Percentages
To examine how resource availability influences the completion of KERRA funded road projects in Ruiru Sub County, Kenya	<u>Independent</u> Resource Availability	-Amount allocated - Procurement cycle -Resource scheduling and lean management report	How does resource availability influences the completion of KERRA funded road projects in Ruiru Sub County, Kenya?	Ordinal	Questionnaire	Means and Percentages Frequencies, Means and Percentages

<p>To assess how technological advancements influence the completion of KERRA funded road projects in Ruiru Sub County, Kenya.</p>	<p><u>Independent</u> Technological Advancement</p>	<p>-No. of experts trained. - Allocation on Machinery -Research & development</p>	<p>How does technological advancement influences the completion of KERRA funded road projects in Ruiru Sub County, Kenya?</p>	<p>Ordinal</p>	<p>Questionnaire</p>	<p>Means and Percentages Frequencies, Means and Percentages</p>
<p>To establish the extent to which bureaucracy influences the completion of KERRA funded road projects in Ruiru Sub County, Kenya</p>	<p><u>Independent</u> Bureaucracy</p>	<p>- Procurement cycle & rules and procedures -Financial disbursement & Management approval procedures -Number of administrative procedures & approvals required</p>	<p>How does bureaucracy influence the completion of KERRA funded road projects in Ruiru Sub County, Kenya?</p>	<p>Ordinal</p>	<p>Questionnaire</p>	<p>Means and Percentages Frequencies, Means and Percentages correlation, Means and Percentages -Correlation -Regression</p>
<p>The purpose of the study was to establish the institutional factors influencing completion of</p>	<p><u>dependent</u> Completion of KERRA Funded Road Projects</p>	<p>-Time -Budget - Kilometer Covered</p>	<p>Level of Project success/performance</p>	<p>Ordinal</p>	<p>Questionnaire</p>	<p>Means, standard deviation and Percentages -Correlation -Regression</p>

KERRA funded road projects, a case of Ruiru Sub County, Kenya.						
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CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research methodology. The results are presented on the institutional factors influencing completion of KERRA projects in Ruiru Sub County, Kenya. The primary data was gathered exclusively from a questionnaire as the research instrument while secondary data was derived from the organization's project status reports.

4.1.1 Responses rate

From the study, out of 40 respondents from Kenya rural roads authority, Kiambu County Office and contractors who are implementing KeRRA projects, 37 respondents filled and returned the questionnaires. This constituted 92% response rate. Mugenda and Mugenda (2003) indicated a respondent rate of a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent hence a response rate of 92% for this study is sufficient for a study.

4.2 Biodata Information

The study sought the general information on gender, age of the respondents, level of education and Working period in KeRRA of the respondents to validate the study information.

4.2.1 Gender of the respondents

The respondents were requested to indicate their gender. From the findings, majority 75% of the respondents were male while 25% of the respondents were female. This implied that data was collected from both male and female and that the KeRRA Kiambu County Office management and contractors include more men than women in road project implementations. The findings concurred with Asif (2012) who revealed that in third world countries good completed roads eliminate poverty by improving access between regional and rural communities and improve live of both men and women.

4.2.2 Age categories

Table 4.1 Distribution of Respodants by Age

Age bracket	Frequency	Percent
20-30	2	6
31- 40	10	27
41 -50	12	32
51- 60	9	24
Above 60 years	4	11
Total	37	100

The study sought to investigate the age categories under which the respondents were in. From the findings, majority 32% of the respondents were aged between 41-50 years, 27% of the respondents showed that they were aged between 31-40 years, 24% were 51-60 years of age, 11% of the respondents were aged above 60 years while 6% of the

respondents were aged 20-30 years of age respectively. The study implied that respondents were mature in age as approximately all were aged above 20 years of age and therefore information collected from them can be treated as valid.

Highest academic qualification

Table 4.2 Distribution of Respodants by level of Education

	Frequency	Percentages
Bachelor Degree	16	42
Diploma	13	34
Certificate	7	19
Postgraduate	2	5
Total	37	100

This study sought to investigate the highest academic qualification attained by the respondents. From the findings, majority 42% of the respondents indicated that they had attained Bachelor Degree academic qualification. 34% of the respondents had attained diploma academic qualification 19% of the respondents had attained certificate academic qualification while 5% of the respondents had attained post graduate academic qualification. This implied that KeRRA funded projects mostly employed qualified personnel who had better understand of the institutional factors influencing completion of KERRA funded road projects, a case of Ruiru Sub County, Kenya. The findings concurred with Chan and Kumaraswamy (2012) that educated personnel are able to effectively communicate and share ideas. This enhances fast information transfer

between managers and participants influencing successful implementation and completion of the projects.

4.2.3 Working period in KeRRA

Table 4. 1 Distribution of Respodants by Working Period

	Frequency	Percent
Over 4 years	25	67
3 years 4 years	5	14
2 years to 3 years	4	11
1 year to 2 years	3	8
Total	37	100

The study requested the respondents to indicate the working period in years that they had been working in KeRRA as indicated in the Table 4.3. From the findings, 67% of the respondents indicated that they had been working in KeRRA for over 4 years, 14% indicated that they had been working for 3 to 4 years, 11% indicated that they had been working for 2-3 years while 8% indicated that they had been working in KeRRA for 1 to 2 years. This implied that the majority of the respondents had worked in KeRRA for over 4 years and had experience on institutional factors influencing completion of KERRA projects

4.3 Management Structure

4.3.1 Extent to which institution management structure affect the completion of KeRRA funded rural road projects

The study sought the extent to which institution management structure affect the completion of KeRRA funded rural road projects.

Table 4. 2: Institution management structure effects on Completion of Rural Road Projects

	Frequency	Percent
Very great extent	19	53
Great Extent	13	36
Moderate Extent	8	11
Total	37	100

From the findings in Table 4.4, majority 53% of the respondents indicated that institution management structure affect the completion of KeRRA projects to a very great extent. 36% of the respondents indicated that institution management structure affect the completion of KeRRA projects to a great extent. While 11% of the respondents indicated that institution management structure affect the completion of KeRRA projects to a moderate extent. This implies that management structure influences the completion of KeRRA project. The findings concurred with Assaf, *et al.* (2005) who observed that slow decision making and executive bureaucracy in organizations impacted on the timely completion of projects and that bureaucratic nature in project managements and implementation causes delays in large road construction projects in Saudi Arabia .

4.3.3 Management structure and completion of rural road projects in Ruiru Sub County

The study investigated the extent to which aspects of management structure influences completion of rural road infrastructure projects in Ruiru as indicated in Table 4.4.

Table 4. 3 Aspects of management structure influences completion of rural road infrastructure projects in Ruiru sub county

Statement	Disagree	Agree	Strongly agree	Mean	Standard Deviation
Number of signatory/ approvals	4	5	28	4.66	0.58
Communication systems	11	6	20	4.48	0.46
Upfront planning efforts	10	6	21	4.43	0.42
Institution hierarchy	3	2	32	4.76	0.61
Coordination effectiveness	8	14	15	4.20	0.38
Decision making effectiveness	5	11	21	4.56	0.52
Developing standard procedures	4	9	24	4.42	0.41
Risk identification and allocation	0	2	35	4.86	0.71
Technical capability	7	14	16	4.26	0.39

From the findings in Table 4.4, majority of the respondents strongly agreed that risk identification and allocation, institution hierarchy, number of signatory/ approvals and decision making effectiveness influences completion of rural road projects in Ruiru M=4.86, 4.76, 4.66 and 4.56. Most of the respondents agreed that communication systems, upfront planning efforts and developing standard procedures influences completion of rural road infrastructure projects in Ruiru M=4.48, 4.43 and 4.42. Most of the respondents agreed that technical capability and coordination effectiveness influences

completion of rural road infrastructure projects in Ruiru M=4.26 and 4.20. Regression results in in Table 4.10 revealed that management structure aspects has a significant positive influence on completion of rural road projects as indicated by $r= 0.679$, $p = 0.04 < 0.05$, $t=6.304$. This implied that management structure would significantly enhance the completion of rural road projects. This is in line with Munns and Bjeirmi (2014) who stated that management structure dictates hierarchical arrangement of lines of authority, communications, rights and duties of an organization and determines how roles, power and responsibilities are assigned, controlled, coordinated, and how information flows between the different levels of management. For a project to be successful there must be an improved appreciation of the project managers and their roles must be placed within the context of the project alongside other outside criteria and long-term expectations.

4.4 Resource availability and Completion of Rural Road Projects

The study sought to determine the influence of resource availability on completion of rural road projects in Ruiru Sub County.

4.4.1 Resources influence on project schedule

The respondents were requested to give the resources that can have a major influence on project schedules. From the findings, respondents indicated that human, technical and financial resources can have a major influence on project schedules. This implies that resource availability can have a major influence on project schedules and that constraint on resources would hinder project completion within the stipulated schedule. This is in

line with Meredith et al, (2013) who stated that efficient and effective use of resources can often make or break a project completion schedule.

4.4.2 Resource availability and completion of rural roads projects in Ruiru Sub County

The respondents were requested to indicate the extent to which they agreed on the given variables regarding resource availability and completion of rural roads projects as indicated in Table 4.6.

Table 4. 4 Resource availability and completion of rural road projects

	Moderate extent	Great extent	Very great extent	Mean	Standard deviation
Budget allocation and disbursement process impact on project timeliness	4	3	30	4.70	0.65
Resource scheduling, availability and optimization are considered key to successful project completion	6	11	20	4.47	0.35
Red tape in Procurement cycle has a negative impact on project timeline	2	4	31	4.60	0.51
Efficient and effective use of resources can often make or break a project	3	2	32	4.61	0.60
Delays in the supply of resources would extend the period of the projects implementation which in turn increases project cost	11	14	12	4.11	0.24

From the findings in Table 4.6, majority of the respondents strongly agreed that budget allocation and disbursement process impact on project timeliness, efficient and effective use of resources can often make or break a project and red tape in procurement cycle has a negative impact on project timeline and influences completion of rural roads projects M=4.70, 4.61 and 4.60. Most of the respondents agreed that resource scheduling, availability and optimization are considered key to successful project completion and that resources are estimated in term of activities so that they can be deployed in the most effective manner M=4.47 and 4.37 respectively. Most of the respondents were neutral on whether delays in the supply of resources would extend the period of the project's completion rate which in turn increases project cost M=4.11. The results in Table 4.10 revealed that resource availability has a significance positive influence on completion of rural road projects as indicated by $r = 0.433$, $p = 0.01 < 0.05$, $t = 7.882$. This implied that resource availability has a significant impact on completion of rural road projects. This implies that efficient and effective use of resources can often make or break a project. The findings concurred with Ngesa (2012) who observed that inadequate financial resources affected timely completion of road projects funded by World Bank in Rwanda. The findings are also supported by Kelechi (2004) who argue that combination of resources needed and availability helps to determine the time needed for the completion of the entire project.

4.5 Technological Advancement and Completion of Rural Road Projects

The study sought to determine the influence of technological advancement on completion of rural road projects in Ruiru Sub County.

4.5.1 New Technologies Organization Adopted

The study requested the respondents to indicate any new technologies that their organization has adopted. From the findings, respondents anonymously indicated that there is adoption of road safety, environmental and socio-economic technology during the project design and implementation stages. The respondent reported that technology increases speed and efficiency in project implementation and their organization use new and efficient technology during project implementation, equip project management and technical teams with relevant skills and technology in all projects. This implies that use of efficient project-specific technologies influence the completion of rural roads projects.

4.5.2 Technological Advancement And Rural Road Completion

The study sought the extent to which the respondents agreed on the given statements regarding technological advancement and rural road completion Ruiru Sub County.

Table 4. 5 Technological Advancement And Rural Road Completion

Statements	Moderate extent	Great extent	Very great extent	Mean	Standard deviation
Technology increases speed and efficiency in the implementation of the rural road projects	8	5	20	4.43	0.53
Inappropriate technology leads to loss of revenue as the roads cannot last even in cases of traffic	11	6	20	4.11	0.36
Technological advancement in the implementation of projects requires qualified personnel	10	7	20	4.78	0.63

Technological advancement is vital for any form of development especially in the rural areas	3	2	32	4.86	0.77
Technological advancement has facilitated the construction and implementation of modern roads which are efficient	8	24	5	3.83	0.39

From the findings in Table 4.7, majority of the respondents strongly agreed that technological advancement is vital for any form of development especially in the rural areas $M=4.86$, that technological advancement in the implementation of projects requires qualified personnel $M=4.78$. Most of the respondents agreed that technology increases speed and efficiency in the implementation of the rural road projects and that inappropriate technology leads to loss of revenue as the roads cannot last even in cases of traffic $M=4.43$ and 4.11 . Most of the respondents were neutral on whether the Technological advancement has facilitated the construction and implementation of modern roads which are efficient $M=3.83$. This implies that use of efficient project-specific technology, allocation of enough financial resources, assigning well trained staff for specific tasks influence the completion of rural road projects. This is in line with Mohapatra and Chandrasekhar (2012) who stated that currently technological advancement is vital for any form of development.

From the regression findings in Table 4.10, the study revealed that there existed a significant positive relationship between technological advancement and completion of rural road projects as indicated by $r=0.500$, $p=0.02 < 0.05$, $t=8.347$. This implied that technological advancement would impact positively on completion of rural road projects. The findings further concurred with Ngesa (2012) who also found that integrating

technology into project management process could be one of the best ways that contribute to timely completion of road projects.

4.5.3 Organization Culture and Project Implementation

The respondents were requested to suggest ways through which organization culture can be improved to facilitate faster project completion rate. From the findings, respondents anonymously indicated that recruitment, selection and training of personnel are ways through which organization culture can be improved to facilitate faster project completion rate. Their knowledge, skills, personal aims and traits should be considered not only as a vital component of the overall organizational culture but also as an essential factor that promotes integrity, multi-functionality and enhances conflict resolution during project implementation phase.

4.6 Bureaucracy in institution

Respondents were requested to indicate the effects of bureaucracy on rural road projects under the given parameters. From the findings, respondents stated that bureaucracy leads to delays in project implementation and has a negative impact on projects completion schedule.

Table 4. 6 Institutional Bureaucracy and Rural Road Project Completion

Statements	Moderate extent	Great extent	Very great extent	Mean	Standard deviation
Long Procurement Procedures and efficiency	4	5	28	4.72	0.75

influences completion of the rural road projects					
Long Financial Management Procedures leads to delays in road project implementation and completion.	11	6	20	4.67	0.75
Steps involved in disbursements form contract signing to the actual disbursement impact negatively to project timelines.	10	6	21	4.63	0.51
Lengthy approval of rural road project fund.	3	2	32	4.65	0.63
Slow decision making and executive bureaucracy delay project completion.	8	14	15	4.51	0.44
Number of administrative procedures required in approvals, disbursement, and procurement and supervisory influences rural road completion.	5	11	21	4.71	0.83

Respondents were requested to indicate the extent to which they agreed on the given statements regarding institutional bureaucracy and rural road project completion. From the findings, majority of the respondents strongly agreed that procurement procedures and efficiency influences completion of the rural road projects $M=4.72$, number of administrative procedures required in approvals, disbursement, procurement and supervisory influences rural road completion $M=4.71$. Most of the respondents strongly agreed that Financial Management Procedures leads to delays in road project implementation and completion $M=4.67$, steps involved in disbursements from contract signing to the actual disbursement impact negatively to project timelines $M=4.63$, lengthy communication on the fund flow process, slow decision making and executive

bureaucracy influence project completion $M=4.65$. From the regression findings in Table 4.10, the study revealed that there existed a significant negative relationship between bureaucracy and completion of rural road projects as indicated by $r=-.635$, $p=0.03<0.05$, $t=8.347$. This implied that bureaucracy would impact negatively on completion of rural road projects.

The findings concurred with Bolton and Dewatripont (2005) who indicated that road projects completion time was affected by intra-organizational and inter-organization Bureaucracies leading to failures which hinder project staff creativity.

Respondents were requested to suggest ways through which institutional bureaucracy can be improved to facilitate faster project completion rate. From the findings, respondents indicated that the approval process and decision making be decentralized. This was supported by Bartholomew and Lister (2002) who indicate that donors' lengthy and cumbersome procedures at the project preparation stage often cause delays and have resulted in projects taking longer to complete.

4.7 Regression

The study employed a multivariate regression model to study the influence of management structures, resource availability, technological advancement and bureaucracy on Completion of rural road projects in Ruiru Sub County. The regression model was; $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$

Table 4. 7 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	.688 ^a	.474	.461	.80424	.000

a. Predictors: (Constant) management structure, resource availability, technological advancement and Bureaucracy factors

b. Dependent Variable: Completion of rural road projects

R-Squared is the proportion of the variance in the dependent variable R-Squared indicates the correlation between the observed and predicted values of implementation of rural road projects implying that there existed a significant correlation between institutional factors and timely completion of rural road projects in Ruiru Sub County in Kenya with a correlation factor = 0.474 at significant level of 0.000.

Adjusted R^2 is called the coefficient of determination and indicates variation in institutional factors influencing completion of rural road projects in Ruiru Sub County in Kenya. The value of adjusted R^2 is 0.461. This implies that, there was a variation of 46.1% of institutional factors influencing completion of rural road projects in Ruiru Sub County.

Table 4. 8 ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.120	3		9.763	.000 ^a

Residual	92.872	33
Total	104.992	36

- a. Predictors: (Constant management structure, resource availability, technological advancement and Bureaucracy)
- b. Dependent Variable: Completion of rural road projects

The Total variance (104.992) was the difference into the variance which can be explained by the independent variables (Model) and the variance which was not explained by the independent variables (Error). The study established that there existed a significant goodness of fit of the model $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$. Based on the findings, in Table 4.9 the results indicate the $F_{cal} = 9.763 > F_{cri} = 7.662$ at confidence level 95 % and sig is $0.000 < 0.05$. This implies that there was a goodness of fit and the model fitted for this study: $Y = 6.429 + 0.679X_1 + 0.433X_2 + 0.500X_3 + e$.

Table 4. 9 Coefficient Analysis

Coefficients ^a					
Model	Unstandardized		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	6.429	.972		2.522	.015
Management structure	.679	.205	.512	6.304	.04
Resource availability	.433	.111	.363	7.882	.01
Technological advancement	.500	.136	.488	8.347	.02
Beauracratc factors	.635	.143	.369	6.585	.03

- a. Predictors: (Constant) management structure, resource availability, technological advancement and Bureaucratic factors
- b. Dependent Variable: Completion of rural road projects

4.7 Discussion of Findings

The study sought to establish the extent to which management structure influence completion of rural road projects . The results revealed that institution management structure affected the completion of KeRRA projects to a very great extent as indicated by majority (53%) of the respondents. The findings were in line with Munns & Bjeirmi, (2014) who found that an organization management structure demonstrates visibly how strong their commitment impacted on the timely completion of projects and that bureaucratic nature in project managements and implementation causes delays in large road construction projects in Saudi Arabia . The findings showed that risk identification and allocation, institution hierarchy, number of signatory/ approvals and decision making effectiveness affected completion of rural road projects in Ruiru to a very great extent as indicated by the mean, M=4.86, 4.76, 4.66 and 4.56. Other management structure that affected completion of the rural road project easily were inadequate communication systems, upfront planning efforts and development standard procedures affected completion of rural road infrastructure projects in Ruiru M=4.48, 4.43 and 4.42. Other management structures that affected completion of the project included lack of technical capability and poor coordination. Descriptives results were further supported by regression findings that revealed that management structure aspects has a significant

positive influence on completion of rural road projects as indicated by $r= 0.679$, $p = 0.04 < 0.05$, $t=6.304$. An increase in effectiveness of management structure would significantly enhance the completion of rural road projects. The findings were supported by Hassan (2012) who indicated that management structure dictated hierarchical arrangement of lines of authority, communications framework, rights and responsibilities of an organization and determines how roles, power and responsibilities are assigned, controlled, coordinated, and how information flows between the different levels of management. He further noted that project success is registered by improved motivation and appreciation of the project teams. Project resource availability affects completion of rural road projects in Ruiru Sub County. The findings revealed that human, technical and financial resources plays a major role on project scheduling and performance. The findings were supported by Meredith *et al*, (2013) who found that efficient and effective use of resources can often make or break a project completion schedule.

The study established that resource availability has a significant impact on completion of rural road projects. Budget allocation and disbursement process impacted on project timeliness, efficient and effective use of resources can often make or break a project and red tape in procurement cycle hindered timely completion of rural roads projects $M=4.70$, 4.61 and 4.60 . The results further indicated that resource scheduling, availability and optimization are considered key to successful project completion and ineffective resources deployed affected completion of project to a very great extent. Regression findings indicated that resource availability has a significant positive influence on completion of rural road projects ($r= 0.433$, $p = 0.01 < 0.05$, $t=7.882$). The results from

Ngesa (2012) study indicated that inadequate financial resources affected timely completion of road projects funded by World Bank in Rwanda. The findings are also supported by Kelechi (2004) who argue that combination of resources needed and availability helps to determine the time needed for the completion of the entire project.

The study sought to determine the influence of technological advancement on completion of rural road projects in Ruiru Sub County. The results indicated that technological advancement influence timely completion of road projects in rural areas as indicated by mean of $M=4.86$, that technological advancement in the implementation of projects requires qualified personnel $M=4.78$, that technology increases speed and efficiency in the implementation of the rural road projects and that inappropriate technology leads to loss of revenue as the roads cannot last even in cases of traffic $M=4.43$ and 4.11 . The findings also revealed that Technological advancement has facilitated the construction and implementation of modern roads which are efficient . The findings was supported by Mohapatra and Chandrasekhar (2012) who stated that currently technological advancement is vital for any form of development. The regression findings revealed that there existed a significant positive relationship between technological advancement and completion of rural road projects, $r=0.500$, $p=0.02<0.05$, $t=8.347$. The findings concurred with technological advancement would impact positively on completion of rural road projects. The findings further concurred with Ngesa (2012) who also found that integrating technology into project management process could be one of the best ways that contribute to timely completion of road projects.

The results revealed that recruitment, selection and training of personnel influence faster project completion rate. Increase in knowledge advancement, skills development and promotion of integrity, multi-functionality and enhances conflict resolution during project implementation phase. The findings indicated that bureaucracy leads to delays in project implementation and has a negative impact on projects completion schedule. Procurement procedures and efficiency, administrative procedures required in approvals, disbursement, procurement and supervisory influences timely rural road completion. Other institution factors such as financial management procedures, disbursements from contract signing to the actual disbursement, lengthy communication on the fund flow process, slow decision making and executive bureaucracy affected rural road project timely completion. From the regression findings, the study revealed that there existed a significant negative relationship between bureaucracy and completion of rural road projects as indicated by $r=-.635$, $p=0.03<0.05$, $t=8.347$. The findings concurred with Bolton and Dewatripont (2005) who indicated that road projects completion time was affected by intra-organizational and inter-organization Bureaucracies leading to failures which hinder project staff creativity. This was supported by Bartholomew and Lister (2002) who indicate that donors' lengthy and cumbersome procedures at the project preparation stage often cause delays and have resulted in projects taking longer to complete.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter describes the summary of the study, conclusions and recommendations of the study based on the purpose of the study which was to establish the institutional factors influencing completion of KERRA funded road projects, a case of Ruiru Sub County, Kenya.

5.2 Summary of the Findings

The summary of the findings are based on the study's specific objectives which were to establish how management structure influence the completion of KERRA projects in Ruiru Sub County, Kenya and to examine how resource availability influences the completion of KERRA projects in Ruiru Sub County, Kenya. The other objective was to assess how technological advancements influence the completion of KERRA projects in Ruiru Sub County, Kenya and to establish the extent to which bureaucracy influences the completion of KERRA projects in Ruiru Sub County, Kenya

5.2.1 Management structure Influence the Completion of KERRA Funded road Projects in Ruiru Sub County

The study established that institution management structure affect the completion of KeRRA funded rural roads projects to a very great extent. The findings in Table 4.4 revealed that risk identification and allocation, institution hierarchy, number of signatory/

approvals and decision making effectiveness influences completion of major road infrastructure projects in Ruiru. It was revealed that communication systems, upfront planning efforts, developing standard procedures, technical capability and coordination effectiveness influences completion of rural road projects in Ruiru.

5.2.2 Resource Availability and Completion of KERRA projects in Ruiru Sub County

The results in Table 4.5 established that resources human, technical, materials and financial resources can have a major influence on project schedules, the research established that engaging project team members is the foundation to project success. Setting key performance/productivity indicators for the performing team as a whole.

From the findings, institutions budget allocation and institutional disbursement process impact on project timeliness, efficient and effective use of resources can often make or break a project and red tape in procurement cycle has a negative impact on project timeline delays the completion of rural roads projects. Institutions resource scheduling, availability and optimization are considered key to successful project completion and that institutions resources are estimated in term of activities so that they can be deployed in the most effective manner.

5.2.3 Technological Advancements and Completion of KERRA projects in Ruiru Sub County

The study established that in road engineering there is adoption of road safety, environmental and socio-economic technological designs. Organization use new and

efficient technology for the project implementation, assign a project team and equipped them with relevant skills and adequate personnel.

The study revealed that institutional technological advancement is vital for any form of development especially in the rural areas and that technological advancement in the implementation of projects requires qualified personnel. Institution adequate in technology advancement , technological speed and efficiency in the implementation of the rural road projects and that inappropriate technology leads to loss of revenue, increased project timelines and reduces the lifespan of the roads.

5.2.4 Bureaucracy and Completion of KERRA funded road projects in Ruiru Sub County

The study revealed that delays in releasing of funds due to long approval procedure affected the completion of rural road projects. The study established that bureaucracy in administrative procedures affects institutional efficiency. The number of approvals required and the time taken in disbursement, procurement and other financial management procedures influences completion of rural road infrastructure projects in Kenya. Regression results revealed that there existed a significant negative relationship between bureaucracy and completion of rural road projects ($r=-.635$, $p=0.03<0.05$, $t=8.347$)

5.3 Conclusions

The study made the following conclusion based on the study objectives

5.3.1 Management Structure and Completion of KERRA funded road projects

Based on the objective of the study, the study concludes that management structure influences the completion of rural road projects. Hierarchical arrangement of lines of authority, communications, rights and duties of various head of division in an institution determines how the roles and responsibility are implemented. KeRRa management structure which is vertical like any other government institution affect the completion of rural roads projects in Ruiru.

The study concludes that there are various institution management structure that influence the completion of rural road projects. Institution Management structure in Ruiru Sub County dictates hierarchical arrangement of lines of authority, communications, rights and responsibility of the institution managers. It also determines how management roles at Ruiru Sub County, power and duties are assigned, controlled and coordinated and effective information flows between the different levels of management at Ruiru Sub County.

5.3.2 Resource Availability and Completion of KERRA Funded Road Projects

The study concluded that resource availability can have a major influence on project schedules. Efficient and effective use of resources can often make or break a project. The study concludes that combination of resource needs and availability, help to determine the time needed for entire project.

The institutional resource availability at Ruiru Sub County has a significant impact on completion of rural road projects in the area. Budget allocation and disbursement process at Ruiru Sub County impacted on rural road project timeliness, efficient and effective use of financial and other resources can often make or break a project and red tape in procurement cycle hindered timely completion of rural roads projects at Ruiru Sub County. The study also concluded that resource scheduling, availability and optimization are considered key institutional success factors influencing rural road project completion at Ruiru Sub County.

5.3.4 Technological Advancements and Completion of KERRA Funded Road Projects

Technological advancement is vital for any form of development. The study concludes that technology increases speed and efficiency in project implementation. The use of efficient project-specific technologies, investment on training of technical experts, use of modern machines and systems and assigning of well trained workers to specific tasks influence the completion of rural road projects.

The study concluded that institutional technological advancement influencing timely completion of road projects in rural areas .Qualified personnel and technology implementation increases speed and efficiency in the implementation of the rural road projects.

5.2.4 Bureaucracy influence and completion of KERRA funded road projects

The study concluded that bureaucracy in administrative procedures, approvals, financial disbursement, procurement procedures and project supervisory hindered completion of rural road projects in Ruiru.

The findings concluded that bureaucracy leads to delays in project implementation and has a negative impact on projects completion schedule. Procurement procedures and efficiency, administrative procedures required in approvals, disbursement, procurement and supervisory influences timely rural road completion.

The study concluded that financial management procedures, disbursements from contract signing to the actual disbursement, lengthy communication on the fund flow process, slow decision making and executive bureaacy affected rural road project completion.

5.4 Recommendations

1. The study recommends that the management structure of KeRRA be independent and decentralized to the county levels in order to have a minimal hierarchical arrangement of lines of authority, ease communications, promote creativity and enable faster provision of services.
2. The study recommends that management should allocate adequate financial resources, promote timely disbursement and enhance procurement to ensure all resources required for project implementation are provided just in time.

3. The study recommends that the management should enhance the technological advancement in order to increase speed, efficiency and promote quality in project performance. The study recommends use of efficient project-specific technologies, allocation of enough financial resources for the upgrading of machines and systems and assigning of well trained technical experts for specific tasks in order to influence the completion of rural road projects.
4. The study also recommends that the management should eliminate bureaucracy in all its processes to allow for faster decision making in approval, disbursement, procurement and supervision through decentralization of processes and resources, selection and training of qualified personnel and promotion of ethics and anti corruption culture within the institution.

5.5 Recommendation for further studies

1. This study focus was to establish the institutional factors influencing completion of KERRA funded road projects in Ruiru Sub County, Kenya.
2. The study recommends that a study should be carried out to determine strategies that promote institutions factors to improve on completion rates of rural road projects in Kenya.
3. A further study should be carried to determine challenges facing institutions on implementation of road projects in Kenya.

4. The study also recommends a further study to be carried out to determine other social cultural factors influencing completion of KERRA funded road projects in rural areas.

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APPENDIX I: INTRODUCTORY LETTER

KIRAGU NDUATI
P.O BOX 2383-00100
Nairobi.

DIRECTOR KERRA,
Kiambu County,
Kenya.

Dear Sir,

REF: REQUEST FOR USE OF INFORMATION

I am pursuing a Master of arts in project planning and management at the University of Nairobi and in the partial fulfillment of the requirements of the degree; I wish to undertake a research study on the institutional factors influencing completion of KeRRA funded rural road project in Ruiru Sub-County, Kenya.

The purpose of this letter is to request your permission to collect data through a questionnaire to be presented to the staff in Kiambu Office and Contractors under your office implementing rural road project in Ruiru Sub County. Your support and responses will be helpful in the study as I will be able to summarize, conclude the findings and come up with the right recommendations.

I take this opportunity to ensure that the data obtained will be kept highly confidential and will only be used for academic purposes. A copy of the final research report will be availed to your office on request.

Your cooperation will be highly appreciated.

Yours Faithfully,

Kiragu Nduati.

APPENDIX II: QUESTIONNAIRE FOR KeRRA RESPONDENTS

This questionnaire aims at collecting information and data for academic use by the researcher. Your kind participation will go a long way in providing useful information required to complete this research. The information provided will be treated in confidence. You need not indicate your name. Please answer the questions precisely and objectively; the information will be treated confidentially. I understand that by completing and returning this questionnaire, I consent for the data I have provided to be included in the study.

SECTION A: GENERAL INFORMATION

1. Please indicate your gender

Male

Female

2. Please indicate your age from the categories below

20-30 years

31-40 years

41-50 years

51-60 years

Above 60 years

3. Kindly indicate your highest academic qualification.

Certificate

Diploma

Degree

Postgraduate []

Others (Specify).....

4. How long have you worked in KeRRA in Ruiru Sub County, Kiambu County?

Less than 1 year []

1 year to 2 years []

2 years to 3 years []

3 years 4 years []

Over 4 years []

SECTION B: MANAGEMENT STRUCTURE

5. To what extent do institution management structure affect the completion of KeRRA funded rural roads projects?

Very great extent [] great extent [] moderate extent [] low extent []

Very low extent []

6. To what extent do you agree on how the following aspects of management structure influences completion of major road infrastructure projects in Ruiru Sub County? (Use a scale of 1 to 5 where; 5 – strongly agree, 4- Agree, 3 –Not sure, 2 – Disagree, 1 – Strongly disagree)

Statement	1	2	3	4	5
Number of signatory/ approvals					
Communication systems					
Upfront planning efforts					
Institution hierarchy					
Coordination effectiveness					

Decision making effectiveness					
Developing standard procedures					
Risk identification and allocation					
Technical capability					

SECTION C: RESOURCE AVAILABILITY

7. What resources can have a major influence on rural road project schedules in Ruiru Sub County?

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8. To what extent do you agree with the following statements regarding resource availability and completion of rural roads projects in Ruiru Sub County? (Use a scale of 1 to 5 where; 5 – strongly agree, 4- Agree, 3 –Not sure, 2 – Disagree, 1 – Strongly disagree

Statement	1	2	3	4	5
Budget allocation and disbursement process impact on project timeliness.					
Resource scheduling, availability and optimization are considered key to successful project completion					
Red tape in Procurement cycle has a negative impact on project timeline					
Efficient and effective use of resources can often make or break a project					

Delays in the supply of resources would extend the period of the projects implementation which in turn increases project cost					
Resources are estimated in term of activities so that they can be deployed in the most effective manner					

SECTION D: TECHNOLOGICAL ADVANCEMENT

9. What new technologies has your organization adopted in road construction and maintenance in Ruiru Sub County?

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10. To what extent do you agree with the following statements regarding technological advancement and rural road completion (Use a scale of 1 to 5 where; 5 – strongly agree, 4- Agree, 3 –Not sure, 2 – Disagree, 1 – Strongly disagree)

Statements	1	2	3	4	5
Technology increases speed and efficiency in the implementation of the rural road projects					
Inappropriate technology leads to loss of revenue as the roads cannot last even in cases of traffic					
Technological advancement in the implementation of projects requires qualified					

personnel					
Technological advancement is vital for any form of development especially in the rural areas					
Technological advancement has facilitated the construction and implementation of modern roads which are efficient					

11. Suggest ways through which organization culture can be improved to enhance completion rate of the rural road project in Ruiru Sub County.

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SECTION E: BUREAUCRACY IN INSTITUTION

12. What are the major causes of delay in fund disbursement, procurement and other road project requirements influencing project completion in Ruiru Sub County?

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13. To what extent do you agree with the following statements regarding institutional bureaucracy and rural road completion (Use a scale of 1 to 5 where; 5 – strongly agree, 4- Agree, 3 –Not sure, 2 – Disagree, 1 – Strongly disagree)

Statements	1	2	3	4	5
Procurement Procedures and efficiency influences completion of the rural road projects					
Financial Management Procedures leads to delays in road project implementation and completion.					
Steps involved in disbursements form contract signing to the actual disbursement impact negatively to project timelines.					
Lengthy Communication on the fund flow process influence project completion.					
Slow decision making and executive bureaucracy delay project completion.					
Number of administrative procedures required in approvals, disbursement, procurement and supervisory influences rural road completion.					

14. Suggest ways through which institutional bureaucracy can be improved to facilitate faster completion of rural road projects in Ruiru Sub County.

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What solutions would you propose for addressing the various institutional factors identified to enable timely completion of rural road projects in Ruiru Sub County, Kenya?

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THANK YOU FOR YOUR COOPERATION