

**SOCIO-ECONOMIC DETERMINANTS IN SUSTAINABILITY OF URBAN
INFRASTRUCTURE PROJECTS, A CASE OF KURA ROADS PROJECTS IN
LAIKIPIA COUNTY, KENYA**

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**A RESEARCH PROJECT REPORT SUBMITTED IN PARTIAL FULFILLMENT FOR
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DECLARATION

I declare that this is my original work and has not been submitted for the award of any degree of this university or any other institutions of higher learning.

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DEDICATION

I dedicate this work to my wife Ackisah and sons Alvin, Ansley and Austin and to be an inspiration in their lives.

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ABBREVIATIONS AND ACRONYMS

AfDB	-	Africa Development Bank
ASAL	-	Arid and Semi-arid areas
CIDP	-	County Integrated Development Plan
CVI	-	Content Value Index
DG	-	Director General
GDP	-	Gross Domestic Product
IFAD	-	International Fund for Agricultural Development.
IT	-	Information Technology
KIPPRA	-	Kenya Institute Public Policy Research and Analysis
KPLC	-	Kenya Power and Lighting Company
KPMG	-	Klynveid Peat Marwick Goerdefer
KRB	-	Kenya Roads Board
NACOSTI	-	National Commission for Science and Technology
PPOA	-	Public Procurement Oversight Authority
PRA	-	Participatory Rapid Assessment
RBV	-	Resource Based View
RoK	-	Republic of Kenya
RRA	-	Rapid Results Assessment
SPSS	-	Statistical Package for Social Science
WHO	-	World Health Organization

ABSTRACT

The road transport system in Kenya is used to move people and goods and it is vital in interconnection of other modes of transport as well as acting a vital linkage in access to basic social services. Roads networks worldwide are pillars for economic, social and political progress (KRB, 2017). The purpose of this study was to investigate the socio-economic determinants in sustainability of Roads Projects in urban areas, a case of KURA projects in Laikipia County. The study had the following objectives; to determine how availability of resources, procurement practices, project management implementation team competency and stakeholders' participation influences the sustainability of Roads Projects in urban areas. The study focused on projects implemented in Laikipia County. The study assumed that each and every respondent was ready and available to answer the questions and was cooperative and questionnaires issued was returned on time and well completed in order to get valid data. There was also an assumption that respondents were to answer truthfully. The study's theoretical framework was based on Resource Based View Theory and Stakeholders Theory. The study adopted a descriptive survey research design. The target population was 103 drawn from Project engineers, Road supervisors, Procurement officers, Project accountants, Project implementation team, Contractors and Stakeholders. This study employed a sampling formula for determining sample size advanced by Saunders to select a sample size of 82 respondents. Stratified sampling method was then applied to proportionately draw respondents from 7 categories of parties to KURA funded road construction in Laikipia County. The study data was collected by use of questionnaires and data collected was analyzed by use of descriptive statistics and inferential statistics. The specific descriptive statistics included frequencies, means, and was presented in the form of frequency distribution tables while the inferential statistics was in a multiple linear regression model and Pearson correlation output. The findings were presented descriptively with supporting statistical techniques such as frequency distribution tables, regression and correlation analysis. The study findings implied that 86.10% of the variation in the implementation of KURA roads projects (the dependent variable) was explained by variability in the independent variables i.e. procurement practices, project management implementation team competency, availability of resources and stakeholders' participation and only 13.90% of the variation in the sustainability of KURA roads projects was explained by other variables not included in the model. There also existed a significant positive relationship between procurement practices, project management implementation team competency, availability of resources and stakeholders' participation and sustainability of roads projects as evidenced by the Pearson Correlation Output. The study recommends that policy makers and implementers in the KURA, need to consider the factor of availing resources to ensure timely implementation of roads projects. The study recommends also that policy makers and implementers in the KURA and other government agencies implementing projects to ensure that the project management implementation teams are let to gain experience considered in their assignments to ensure more quality services. The study further recommends that stakeholders should be actively involved in the implementation of the projects.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Human societies have used different types of projects to bring about changes or benefits to societies since time immemorial Chikati (2009). The ventures include the Egyptian Great Pyramids, ancient roads Roman Empire, the Chinese Grand Canal and the Dykes of Holland. These ancient projects have known to have marked society and made a positive contribution to benefit society as a whole.

The history of building projects can be traced back to the early Greek Mediterranean settlement, Egyptian Pyramids, Roman Empire temples and medieval structures (Lewis 2008). The architecture and industrial revolution began during the Renaissance in the 18th century. In addition, the construction industry, especially rail and buildings, has undergone great improvements in the 19th century. Marasini and Dawood (2006) indicated that the Suez Canal was built between 1959-1969 to be a major international undertaking and that businessmen were experienced in constructing large buildings, roads, petrochemicals, dams, reservoirs. Lewis (2008) points out that Great Britain first became a multinational corporation for building of railways and Pearson in Great Britain founded the first large foreign construction firm at the turn of the century. Now the nation's economy is powered by huge programs across the globe. Reschke and Schelle (2010) listed the world's largest manufacturing sectors to be largest infrastructure ventures such as airports, transportation, energy, oil and gas.

Kenny (2007) says the economic development position of the construction sector is undeniable as it is the backbone for economic growth of the construction industry. Given its importance, governments around the world have made major investments for many years. Building methods and procedures have evolved over the years because of its status as the world's largest architecture branch. The importance of building has also been emphasized in Leesard (2011), not only as the physical world is changed and the quality of life and passages in which new forms of communication are created, but as important as large-scale engineering projects. In most countries, the construction industry has sustained Vandevoorde and Vanhoucke (2006) that the global \$3.5

trillion industry is between 6% and 8% of GDP. Physical infrastructure development and maintenance is said to be essential to rapid economic growth and reducing poverty (Wasike, 2001).

In Europe, Martin and David (2008) proposed improved technologies and methodologies for road construction would lead to project execution more effectively and in less time. Building technologies such as manufactured and modular construction and advanced building materials also included implementation of low-resource road projects in China (Leng 2014). The KPMG-PMI analysis (2014) found that 25 percent of ongoing projects in India were delayed due to insufficient preparation and lack of effective use of technology. For certain cases, project delays have been recorded more than project progress around the globe. Standish Group (2009) has published that only 32 percent of projects are successful in the USA, 44 percent have been questioned and 24 percent have failed. Furthermore, Stewart (2003) reported that only 25 percent of projects remain productive. KPMG Study (2014) noted that on an average, that is 39.4 percent of road infrastructure projects constructed by local companies are completed in Kenya as per budget and planned schedule. The study also indicated that the projects of local companies that complied with the required standards of quality were only 35%. In Sunderland (2012) the majority of large road projects in South Africa were undertaken by foreign construction companies, but while road infrastructure projects in South Africa are fairly decent. Sunderland (2012) also argued that local construction companies in South Africa face many obstacles to complete infrastructure projects with expenditure and time schedules. In order to deliver effective infrastructure projects, management involvement, adequate knowledge and communication networks and qualified personnel were also necessary. Lavasseur (2010) noted that construction firms were not educated, cost management ineffective and the construction shrinking area in Tanzania.

Transport infrastructure and services are important to social and economic growth, as they provide access to jobs, markets, schools and hospitals for goods and services, as well as for community and country initiatives (Ebinger & Vandycke, 2015). They provide access to services and services to communities and the countries. Transport also plays a vital role for competitiveness of countries, by creating employment and income, balanced and sustainable spatial development, access to water and energy, food security, and is critical for social inclusion and improved quality of life (Friedrich & Timol, 2011; Chen & Cruz, 2012; Vilana, 2014; United

Nations, 2015). Lack of or underdeveloped transport infrastructure has been recognized as one of the world's greatest barriers to economic growth and social growth (Hagerman, 2012). The World Bank (2017) stipulates that road transport is Africa's most commonly used transport tool. The paved infrastructure covers less than 50 percent of Africa's road network with the exception of Mauritius and the northern African States of Algeria, Egypt, Morocco and Tunisia. In 1996, there were fewer than 17 percent of paved roads in Sub-Saharan Africa, with many countries dipping below average. Approximately 57% of highways in North Africa and 25% in South Africa were paved and 10.2% in Central Asia. Road density is typically slightly smaller per square kilometer than in Asia and Latin America. The road network in Kenya is calculated to be 196,091 miles, 63,291 kilometers from which the remaining 133,800 kilometres, are graded. Just 14,100 kilometers are paved with the gravel or Earth standard balance network (ADfB 1999).

It has been established that for economic growth and poverty reduction, adequate and well maintained road infrastructure is a necessary condition (Kemp, 2005). The availability of quality road infrastructure has long been recognized as a critical input to productivity and competitiveness (World Economic Forum, 2010). Nderitu (2013) states that one of the biggest drawbacks on Kenya 's development is the absence of sufficient road infrastructure. Ward et al (2008) states that the success or failure of construction projects is related to the pillars of costs , time, technology , economic capital and efficiency. Development of infrastructure was a key principle of Kenya's growth agenda. It is an important pillar for the attainment of 2030 vision, which provides for the establishment of the middle income economy status of the nation by that time, and a facilitator of the Big Four Plan for stimulating the economy and improving the lives of Kenyans. The infrastructure sector's contribution to GDP in 2012 in Kenya was 19.1 percent (Kenya Economic Report, 2014). The Kenyan road industry face the following challenges: enormous costs of road construction, insufficient road repair facilities, weak compliance on axle weight guidelines and regulations, huge road reconstruction backlogs, insufficient decentralized county road standards and resources, weak regulatory and procurement efficiency, Breach of road reserves, heavy traffic congestion and overpopulation in metropolitan areas; overloads; insufficient work into other available roadbuilding materials; insufficient cross-border transport and operating rules (RoK 2008) & (RoK 2013).

The Kenya Urban Roads Authority (KURA) is a state-owned agency responsible for operating, constructing, rehabilitating and maintaining all public roads in cities and municipalities

measuring about 12,549 kilometres. It has 47 local branches, as provided by the current constitution, distributed throughout the 47 counties. Each office has a Regional Manager (RM), who represents the general director (DG), in each county. KURA has succeeded and the condition of improved roads in cities and municipalities in the country can prove it, but still faces challenges in the implementation of projects ranging from politics to global implementation (William, 2014).

If completed within the time, cost and quality required, a road project is considered to have been achieved. The evaluation and evaluation of project performance usually uses performance metrics such as time, expense, efficiency, customer satisfaction, changes to the client, corporate outcomes, health and security (Leng, 2014). Therefore, this study focuses on socio-economic factors that determine sustainability of urban roads projects.

1.2 Statement of the Problem

The road transport system in Kenya is an essential component in the development of a country since it forms part of the key drivers of economic growth and an important pillar in realization of the big four development agenda. Worldwide road networks are cornerstones of economic, social and political change (KRB, 2017).

Kenya has a functioning functional road network, according to the World Bank 2010 report, however, most roads are pathetic and few roads have been tarred. In recent times, the government has continuously expanded the allocated budgets to its road sector given the role played by roads in the socio-economic growth of the country. Roads expenditure constitutes about 15 % of the total public expenditure annually making it one of the largest single element of public expenditure in Kenya. Despite the funding, Kenya's road projects faced numerous obstacles, including delays in implementation, cost overruns, demolition of residential and business houses and termination works (Maina, 2013).

Laikipia County is in the Arid and Semi-arid (ASAL) lands of Kenya which covers 80 per cent of the country and are home to ten million Kenyans, 70 per cent of whom live under the poverty line. 60% of livestock and 65% of wildlife are protected in these areas. The people living in ASAL regions have remained outside the country's mainstream economy despite their huge economic potential. These areas have highly under-developed infrastructural networks and facilities in general and lag behind economically despite being home 30 per cent of the Kenyan

population ((Maina, 2013))

A series of studies was carried out to explore deciding factors for the implementation of projects, Chan and Kumaraswamy, (2011) identified a failure to manage projects effectively as overwhelming the expense and time incurred. Frimpong et al. (2003) have shown that tools and techniques for project management play an important role in the effective management. A case study of Ministry of Roads Projects was done by Nyamwaro (2011) to analysis project challenges. The study showed that the main challenges faced by the project are poor communication and lack of awareness. In their paper entitled factors influencing successful completion of roads projects in Kenya, Ondari and Gekara (2013) found that the successful completion of roads projects in Kenya is influenced by management support, design specifications, supervision capacity and contractors' capacity. The study identified design specifications as the most important link to successful completion of projects.

Arising from the foregoing, the study sought to identify socio-economic factors that determine sustainability of road projects by focusing on procurement practices, availability of funds, project implementation team competency and stakeholders' participation.

1.3 Purpose of the Study

The purpose of this study was to establish the socio-economic determinants of Kenya Urban Roads Authority (KURA) roads projects sustainability in Laikipia County, Kenya

1.4 Objective of the Study

This study is guided on the following four objectives

- i. To establish how procurement practices influences the sustainability of roads infrastructure projects in Laikipia County, Kenya
- ii. To find out how availability of funds influences the sustainability of roads infrastructure projects in Laikipia County, Kenya
- iii. To establish how project management implementation team competency influences the sustainability of roads infrastructure projects in Laikipia County, Kenya
- iv. To examine how stakeholders' participation influences the sustainability of roads infrastructure projects in Laikipia County, Kenya

1.5 Research Questions

1. How do procurement practices influence the sustainability of roads infrastructure projects in Laikipia County, Kenya?
2. How does availability of funds influence the sustainability of roads infrastructure projects in Laikipia County, Kenya?
3. How does project management implementation team competency influence the sustainability of roads infrastructure projects in Laikipia County, Kenya?
4. How does stakeholders' participation influence the sustainability of roads infrastructure projects in Laikipia County, Kenya?

1.6 Significance of the Study

The study's findings and recommendations enriches project practioners' understanding of the various dimensions of projects implementation success. The study's results sheds light on the deficiencies and impediments affecting project execution not only at the Kenya Urban Road Authority but also in the broader Kenyan public sector. It also adds to the already existing knowledge and findings on the sustainability of public sector projects developed by other researchers. The findings also bring new knowledge to the public 's attention which policy makers and scholars can utilize in accelerating the success of implementation of public projects. The study also provides Project Planning and Management scholars with a repertoire of knowledge on how socio-economic factors play a role in the sustainability of projects.

1.7 Delimitation of the Study

The study focused on the socio-economic determinants in sustainability of roads projects by KURA in Laikipia County, Kenya. The study was interested in investigating four socio-economic determinants: procurement practices, availability of funds, project implementation team competency and stakeholders' participation. The study targeted parties in urban roads construction comprising: Project engineers, Road supervisors, Procurement officers, Project accountants, Project implementation team, Contractors and Stakeholders implementing roads projects in Laikipia County. The researcher delimited to Laikipia County because of its inadequate physical infrastructure including transport infrastructure which is one of the binding

constraints to the ASAL economy. The study was a descriptive research survey and was conducted between May and July, 2020

1.8 Limitation of the Study

It was not possible to study the whole population, and therefore the study was limited to projects that had been implemented in Laikipia County, KURA project staff, contractors and project committees. While performing the analysis, the researcher faced various draw backs. Given the fact that the study was to follow a survey design, it was exceedingly challenging to undertake the data collection exercise due to the large number of respondents. To combat this, the researcher employed the aid of research assistants. Appointing the chosen respondents also proved troublesome. The researcher had to book appointments early enough to solve this problem and also did a follow-up.

1.9 Study Assumptions

The study was of assumptions that the respondents were ready and available to answer the questions therefore the researcher had notified the chairpersons of Project Implementation Committees to inform other members about the study. The researcher, further assumed that the respondents were to be cooperative and questionnaires issued were to be returned on time and well completed in order to get valid data. There was also an assumption that respondents were to answer truthfully.

1.10 Definitions of Significant Terms

Availability of funds having access to adequate financial resources to undertake construction of road projects

Implementation team competency Ability of an individual to provide a service or resource with the expected standards.

Procurement practices Rules guiding and governing the acquisition of goods and services

Roads projects Are transport infrastructure financed by government and development partners to ease connectivity and enhance economic development.

Stakeholder participation Involvement of persons who are either positively or negatively influenced by the project

1.11 Organization of the study

The study was organized into five chapters. In chapter one, the researcher outlined the background to the study, statement of the problem, purpose of the study and also looked at the research objectives and research questions. The researcher also covered the significance, delimitation, limitations and assumptions of the study and ended up looking at the definitions of significant terms. In chapter two, the researcher reviewed related literature to procurement practices, availability of resources, project implementation team competency and stakeholders' participation. In chapter three, the researcher outlined the study's research design, population targeted, sample and sampling techniques, research instruments, pilot study, research instruments validity and reliability, data collection procedures and analysis and presentation of the collected data. Chapter four presented how the collected data is analyzed, presented and interpreted. Chapter five contained the summary of findings, discussion, conclusions drawn and recommendations made.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, the researcher reviewed literature related to procurement practices, availability of funds, project management implementation team competency and stakeholders' participation.

2.2 Project Sustainability

Project implementation should be set up and tracked. The range must be clearly defined and limited. It covers the number of technologies implemented as well as the number of reengineering programs. In addition, applications for the scope expansion have to be assessed in relation to additional time and cost of amendments proposed (Sumner, 1999). The project must officially be identified by its milestones and Holland et al. (1999) must decide the essential paths of the project. It should also encourage the project to be timely and prompt decision making (Rosario, 2000). Deadlines for support should be met and integrity retained within scheduling and budget (Wee, 2000). Planned well defined tasks and exact assessment of the effort needed should also be made.

According to Wee, (2000), project implementation progress delivery focuses on performance and continuous monitoring of plans and budgets against goals. Commitment of project sponsors is also important in building cohesion and managing the whole project life cycle (Rosario, 2000). Sumner (1999), notes that a projects leader should be in charge and actively aim for dispute resolution and resistance management. According to Nyamwaro, (2011) poor communication and lack of awareness was found out as the main challenges that face project sustainability.

The most important stage of project development is often the execution of proposals (Wayne and Wittig, (2007). Jiang & Klien et al (2002) notes that, if organizations in principle and project teams take on project effectiveness, there are ten ways to boost project efficiency: bypassing obstructed situations, allowing people to reach out, not to break apart, focusing and following systemic processes. In his report on IT projects he believes it can achieve or break IT projects, Murray(2001) describes the IT project success factors: appropriate levels of project engagement;

suitable project funding; carefully constructed project requirements and specifications; proper management and preparation of a full plan with sufficient time and flexibility to anticipate and respond to unforeseen challenges. It also requires a critical overview of the risks involved in a project, the potential risk damage and the project team's capacity to deal with these risks. Develop appropriate contingency plans to be used when there are problems in the project; determine honestly how well the company will proceed along the road. The use of accurate, frequent and diverse media will encourage positive and creative actions. To understand the risk implications, a clear identification of project-wide risk allocation is important. In a comparative review, a good perception of risks, recognition of tasks and commitments, shared goals and resources of each project are important to project success in order to deal with unexpected problems (Nijkamp et al., 2002).

2.3 Procurement Practices and Sustainability of Roads Projects

The contract shall be purchased at the right time for immediate gain or utilization by States, enterprises or persons in the right amount and price, usually by contract, and shall normally cost ownership as much as possible at the right time (Ganuza, 2007). The whole cycle of buying products, assets and services required for a project is the purchase, as per Kariungi (2014). The cycle starts with defining criteria and then agreeing on procurement specifications. This cycle is performed by risk management, identifying and evaluating potential approaches, contract award, property or service distribution and payment.

The WHO study (2012) states that a successful procurement process provides materials to be available at the right amount and at the correct price and value to the right client at the right time. According to the report of the WHO, procurement is a significant factor, because if it is not well handled, project funding can be refused, disbursements can be postponed, contracts can be canceled because contractors are much worse off from doing business with development partners that can be expensive. Ombaka (2009) also emphasized that it does not include simply buying, but a wide range of businesses, businesses, IT, legal structures, security, and risk management, all of which have been undertaken to meet the requirements of an enterprise. The ability to meet required requirements varies depending on the time the goods are delivered; otherwise the end users have a negative externality.

In Kenya, the PPOA Act 2005 provided for the establishment of the Public Procurement Oversight Authority (PPOA) which has the mandate, among others, to ensure compliance with procurement procedures laid down in the Act, implementing public procurement policies, monitoring and evaluating the procurement system and reporting on the overall functioning of the system. According to Kagiri and Wainaina (2009), the national treasury requires the user departments (i.e. procurement guidelines) in compliance with clear rules for deciding the contractor building a road and developing special financial management systems to monitor the usage of taxpayers' funds as envisaged in the PPOA Act. According to Akintoye et al. (2005), openness in procurement, competition procurement procedures, Good governance, well-defined public authorities, social support, and a rational assessment of cost and benefits are crucial success factors for successful procurement.

Even though contracting approaches need to be modified to increase the achievement of various project goals, customers continue to prefer the procurement processes they are familiar with, irrespective of project differences (Cox & Thompson, 1997). A clearer understanding of how different procurement activities affect various aspects of projects' success is critical for enhancing progress. Previous research activities in this field were restricted to research on how one or a number of different procurement options impact one or two project goals. A comprehensive and systematic approach to procurement processes is important for the effective governance of construction projects. Considering that the literature on construction management lacks a systematic view of the effect of procurement procedure on various aspects of project success, this research initiative aims at addressing this research gap that can have important practical implications (Wardani and Horman ,2006).

Murray et al. (2002) found out that stringent conditions for pre-qualification and awards, the absence of transparency for public works and the absence of effective policies to encourage local contractors contribute to the failure of donor-supported projects even to lead to unfair competition and corruption. Procurements management is critical if projects financed from donors are to be completed promptly for the construction industry which is normally focused in infrastructure development and maintenance. During the project creation process, lengthy and tedious processes frequently lead to delays, leading to many years of projects. Consequently, projects were often outdated at the beginning of the project – project goals were irrelevant or

appropriate; the technology suggested in project design was obsolete – but it did not allow those involved to make the required adjustment to the process that was so lengthy and complicated.

The literature currently available is primarily concerned with critical delay factors. The detailed literature on deciding whether the Kenya Urban Road Authority has been implementing projects funded in Kenya on a timely basis is not available. The few comparative studies are incomplete in their perspective. An evaluation of the structural factors affecting the timely completion of Rwandan road projects supported by non-governmental funding focused on the global bank and AfDB funds, was carried out, for example by Nduko et al., (2016). Similarly, the consumers or stakeholders just have control of structural variables. In the same way Wambui, Ombui and Kagiri (2015) have conducted a report on the factors that influence the completion of the Nairobi City County road construction projects: the Kenya Urban Roads Authority case study only deals with structural, not external, factors. Therefore, the research process needs to be conceptualized and systematized in the few successful schemes and the many others which do not produce the anticipated results, to evaluate the timely completion and interaction of road construction projects in Kenya. Such inductive research in a variety of contexts may lead to information useful to decision-makers and road governance and to sustainability of Kenya's infrastructure projects such as roads.

2.4 Availability of Resources and Sustainability of Roads Projects

According to Peterson (2003), prudent allocation of resources is difficult in developing countries due to their scarcity, competition and being politicized. Therefore, this determines how the cash is distributed to ensure that an organization is able to achieve the key functions that it was supposed to achieve and deliver its functions within specified time. Memon (2013) associated prolonged payment delays with consequences such as high industrial dispute risk, property damage and low returns; while Raj and Kothai (2014) noted that timely employee payment is required to retain motivation, ability, confidence, discipline as well as cheerful results. Relating late payment to causal factors like poor business and financial management of clients, financial misconceptions, political interference, inaccurate valuation of works completed and inadequate documentation and valuation data were linked to Abdur-Rahman (2010). Memon (2013), reflects on the effects on the execution of infrastructure programs through overdue payments to contractors. The financial constraints during their implementation hamper most of the projects

financed by the government. As the budgets are based on the operating departments, key non-dollar factors are important for the timing of strategic programs to surpass (Holland, 2009).

Delays and overruns in building are highly regarded as being carried out with public funds in the public sector. Creating infrastructure helps to control the economy in many countries. While building continues to grow, planning and budgeting issues are also increasing. Projects that are not finalised on schedule and in the original budget are now normal (AlinaitWe, 2008). The overrun (cost and time) rate of both economic and social infrastructure projects in most developing countries is, however, a top concern (Omoregie and Radford, 2006). Hussin and Omra (2012) suggested that the financial difficulties of developers, contractor firms, local and national governments and stakeholders, including donors, have caused 70% of projects abandoned in Malaysian transportation constructions. The company would then evaluate the finance resources for a project to be delivered on time.

Wang, Tang and Li (2013) conducted a survey of the relationship between ownership and project performance in hydropower development projects in China, which revealed strong ties between financial support and project performance for strategic planning, confirmation of owners' ability to achieve limited, valued financial resources, and inter-organizational connections, informing The report on financial support for multiple ventures using socio-metric approaches for assignment of financial resources published by Ballesteros-Péres, Gonzales-Cruz and Fernandez diego (2012). The results show that engagement of the developers and users' commitment to the project as well as regular upgrades and releases of the software affect the ability of the project to take competitively advantage by effectively redefining d'Analysis of Open Source Projects (Ghapanchi, Wohlin & Aurnum, 2014). Abdullah, Aftab, Rahman and Azis (2010) submitted the most significant factors to the Committee: price fluctuations in goods, cash flows and financial challenges to contractors, lack of site work, coordination between the parties, inaccurate planning and timing by contractors. The increase in material costs was found by Baloyí and Bekker (2011) in large part to overrun stadium costs and international projects. Kamotho (2014) study aimed to establish how each of these factors influences project completion. The results of the study showed a poor 35 percent link between the real cost and costs of implementing property development projects. This means that the actual cost was higher than that estimated. The study findings showed also a weak link between target execution time and the actual implementation time of property development projects at 26 percent at 95 percent confidence

interval. This implies that majority of projects in the property development industry were implemented later in time after expiry of their targeted implementation timelines. The factors that influence timely completion of power projects in the Thika region are described by Muriithi (2014). The key factors affecting the timely completion of KPLC projects in the study area were identified as procurement delays, timely availability of funds and climatic factors. In the analysis by Wanjau (2015), the factors affecting building projects in Kenya have been investigated. This work was conceived as a descriptive analysis. The study found a positive link between completion building project completion and business related factors, project procedures, project management factors and human related factors.

2.5 Project Management Implementation Team Competency and Sustainability of Roads Projects

Computing and feedback systems, efficiency, security and risk management system, monitoring capacity, experience, coordinating and leadership skills, communication skills, organizational structure, mechanisms of control of sub-contractors and general management activities can be the skills required for managing projects (Lam & Chan 2009). Lam (2009) says that management needs to engage in initial interactions, control structures, management processes and organizational culture strategies and program success. The study of the important factors that delay building projects in Malaysia. Three research group, namely contractor, consultant and founders, are Alaghbari, Kadir, Salim and Ernawati (2007). In terms of the factors associated with contractor conduct, financial problems, supply shortages and inadequate site management were among the top three. The cause of ownership included missed payments, poor decision-making and adjustments of the contract scope. The top three consultants were bad management, slowness and lack of expertise.

The core around which success revolves is professional qualifications. Even brighter plans and strategies can fail without well-motivated, capable and trained staff. A motivated team whose members work together and for one another will succeed even though they are more skilled by a team of less motivated people. It is important that the roles to be played, the standards to be achieved and how projects are evaluated are understood in order to increase project performance and implementation. The success of a project depends not just on the project manager, but also on the whole team. Team participation, technical experience, roles of team leaders, team

dynamics, success or failure factors of the project, team involvement in the strategy and design of the project and the project monitoring level.

The project manager's know-how can also affect a project's prompt completion. The best favorable criteria for project quality compliance at project sites were project managers and participants (Kenig, M.A., et al, 2012). The authors showed that the project manager has some of the most important qualities. Examples include efficient project monitoring and feedback management, technical expertise for project managers, project management standard, effective project team monitoring and feedback. The authority also examines the project managers' team at the site to take every day decisions. Furthermore, project success depends on how productive is the project team in process management (Olatunji, 2010). This indicates the appropriate capacity both of the project manager and the project team to make sure that work is inspected and investigated properly on site.

The poor correlation, such as a lack of expertise in project management, may have detrimental implications for the timely implementation of projects, as per McMiniminee et al (2010). If the inspection / supervision is not adequate, quality assurance is seriously jeopardized. Chism (2010) acknowledges that quality is very important to inspection and workmanship requirements. Fapohunda, (2010) says the site manager has a considerable effect on the cost, time, complexity and quality to achieve the pre-determined project aims. This would make it necessary for the manager to maintain a professional and absolute control.

The lack of monitoring and inspection of building projects contributed to the rework of defective designs, leading to a delay in the timely completion of the project, in a report by Wambugu (2013). This can also contribute to high project costs and can discontinue the project. A failure to inspect the site is one of the reasons why the project is delayed. Appropriate site identification, inspections and monitoring are successful in continuous monitoring, monitoring and assessment; almost 42 per cent of Kenya and Nigeria construction projects are not under-supervised (EC, 2012).

A study by Omran, Abdalrahman and Pakir (2012) found that, as a result of lack of experience leading to poor supervision, 211 road projects in Kenya, South Sudan and Malawi were mainly attributable to incompetent craftsmen because of insufficient job skills and drawing abilities and incompetent supervisors. The studies emphasized the impact of management and supervision on the overall performance of the building project. When there is no adequate supervision,

employees continue to stop whenever they want and work tends to stall. Timely inspection is essential in order to ensure successful activity, material quality and timely project planning. Post-building operation may not be undertaken until the appropriate review on previous activities is performed. As reasons for delays in construction, Chai and Yusof (2013) regard the inadequate site management and monitoring as high.

Studies from Kenya have shown that other elements, such as missing supervisors and managers, have eaten up in the future, including corruption, favors and nepotism, for many of the tenders' projects in Kenya. For example, in the North-East, up to 18% of the roads maintained by the government in the country were monitored by quarks on this field; mostly the building industry is not very well-known. In Kiambu, for example, between 2000 and 2010 the contractor's differences from the original plans caused 20 roads to be delayed because of a poor monitoring of rural and inaccessible projects (Republic of Kenya, 2013). For example, 20 highways were delayed in 2000 to 2011. On the coast, up to 45.01% no adequate control and reporting of progress is made on roads designated as A, B and C. With regard to road terminals between Likoni and Kwale, Likoni and Lungalunga, Taita-Taveta, Mariakani and Voi and many more, for a long time, some people have been canceled because the key supervisors are staff members of various organizations working with the Infrastructure Ministry that are few in number, and to some extent corrupt; this also makes it impossible for them to provide monitoring work and to send members instead (GOK, 2013).

2.6 Stakeholders Participation and Sustainability of Roads Projects

Stakeholders directly or indirectly involve themselves, are involved in and /or are likely to affect the results of a project positively or negatively (African Development Bank 2015). Local communities or individuals, government and central administrations, policy makers, civil society organizations and special interest groups can be involved (Purvis, 2014). A stakeholder is a person, group or organisation, which can monitor or influence the decision, operation or outcome of a project or feel it affects (PMBOK , 2013). Stakeholder Management is an organized and principles driven mechanism and control. They define, assess, organize and implement measures to engage stakeholders on a regular basis. Practically, involvement of stakeholders enables project leaders to set the conditions for successful engagement of the project partners and thus allow leaders to benefit stakeholder involvement in the acquisition and use of resources (Purvis,

2014). It is important to recognize parties whose purpose and interests are essential for the environment of projects in order to have the greatest possible interplay to make mutual gain in implementation of stakeholder management.

Participation by stakeholders is an understanding of stakeholder behaviours, to implement measures that meet their expectations during the project cycle (Beringer 2013). Stakeholder recognition is important and its impact on the project can be more easily understood by mapping the degree of its power and influence. If participants in the project do not share a similar culture, the project must adapt its members and work processes to overcome cultural differences. The project must adapt. Three key components of a project's cultural differences include: interactions, meetings and decision-making. In language, meaning, and conduct, project managers experience cultural variations. A project can not slow down without sharing the same language.

Beringer (2013) suggests that it is not practical to change the organizational culture once assigned a project. It is not easy for a project manager to challenge work practice and habits of other stakeholders. He suggests communicating and managing the relevant stakeholders about all stumbling blocks, issues and risks with clear indication of the actions required by the stakeholders to help mitigate the issues. Communication should clearly demonstrate the impact the issues encountered have on the project. Jang (2014) stated that involving stakeholders increases the amount and transparency of initiatives to develop them. They will allow the project manager to be vigilant as project activities may affect certain areas. Stakeholders can also support a project by engaging and engaging other stakeholders. Kloosterman (2014), if a systematic process is followed for stakeholder mapping and management, then key steps have been taken towards managing a project successfully.

Community participation in construction has an impact on the success of development projects from the first stage to the project management. Vision 2030 The first medium plan 2008-2012 states that the participation of local communities in donor funded projects has resulted in the restoration of catchment areas and water sources in Kenya by establishing executive committees. Kenya Rain Water Harvesting study from Wanyoni (1998) showed that infrastructure evaluations demonstrated that communities did not fully participate in the planning and technological selection of rainwater harvesting in both rural and urban areas of Kenya (1978). The project implementation guidelines for commissioning of the project were not fully understood or provided to the community.

The project preparation and execution needs to be supported by stakeholders in particular, to improve the possibility to support the projects according to Adhiambo, (2007). In this study the project managers and IFAD supervisors have been found to be flexible in their approach, allowing modifications to the design and an extension period to ensure sustainability. It was especially important for community members that the new businesses should remain sustainable and grow and that the projects offer them further opportunities. These views were shared by project staff and partners and the importance of empowering beneficiaries for future sustainability, particularly women, was noted. Despite certain gaps, sustainability was high. By considering and recognizing stakeholders, no company can be sustainable and can adapt to its needs, desires, goals and needs.

A further critical factor is that attempts to achieve sustainable development are compatible with the desires of stakeholders. Organizations need to recognize that their stakeholders' needs are subject to change, and change must be adopted in accordance with priorities and interests. In general, donor-led and top-down programs are ineffective because they do not contribute to stakeholder participation and interaction (Australian Government Overseas Aid, 2000). Some of the sustainable development considerations include project designs and planning for all possible activities.

Sustainability and control are essential considerations. Designs with as much feedback as possible from participating organisations will be created. It includes anyone who can play a part in the development and operations of the project. Beneficiary and user input is particularly important, but due to time and effort it is unfortunately too often limited. Relations between communities and the respective ministries and institutions would be important to make the target area productive and sustainable. It provides consistency by linking local service providers. Following project execution, the group is typically required to support the project (IFAD, 2012). Maduagwu (2009) points out in Nigeria that the government does not believe they know better than the poor themselves what is to their benefit. Maduagwu (2009) also points to projects that people need because contractors are not pushing them. Citizens need to clarify their own priorities and needs. The presence of Jang (2014) is regarded as important to the stability of the group. It helps members to work together and share shared interests, beliefs, concerns and challenges, and it adopted the concept of cooperation with the process of change and growth that brings about democracy and personal empowerment. Mulwa (2008) argues that the lack of

shared interests and visions in an organization is suspected of challenging achievement of the goal while limited awareness affects the quality of project awareness. Failure to understand ideas like the participation of communities and social capital can obscure differences that are essential to results.

Multiple sources can produce such differences. They are motivated by political power, authority and gender structures, social distinctions based on caste, race or ethnicity, differential interests in the provision of public goods or services or segregated economic inequity resources (Mansuri and Rao, 2011). Mosse (2011) explores many participatory projects and shows that, even in projects that were strongly involved, what has sometimes been referred to as 'local information' was a planning context building and secret underlying information creation and use policies RRA and PRA approaches to community development and research have been popularised as approaches to participation, which Chambers (2010) calls a family of approaches and methods for enabling farmers to exchange, enhance, and analyze their understanding of life and conditions and to plan and act. Cleaver (2009) discusses participatory strategies as means of establishing cooperation, control and sustainable growth. This has been criticized as a participatory approach that no single studies (to establish) have any causal connection between any project outcome and its participatory elements (Mansuri and Rao, 2011). The definition of practice and the depolarisation of control was often unable to individualise. They note that the person or group or groups of people like women, those who are poverty-stricken or socially excluded could not be elaborated on (Cleaver, 2009.).

Participation of stakeholders is essential to the success of any project at the community level. Community members are addressing issues through projects that directly affect them in order to reduce situations of interest to them. If the group is ultimately not interested in the different levels of the project, the operating ability may be unattainable because it does not own the project.

2.7 Theoretical Framework

This section discusses the different hypotheses used to inform this analysis. This research is guided by the following theories: Resource Based Theory and Stakeholders Theory. Cooper (2011) describes a theory as a collection of related principles which can be applied in the analysis, descriptions, and prepositions to explain or forecast the scenario. The relationship

shown in these theories is thus reflected in the literature sections concerning the available resources and the involvement of stakeholders as socio-economic determiners for urban road projects in Kenya.

2.7.1 Resource Based View Theory

Penrose (1959), who argued that superior performance is attained when the resources are controlled by company, was the first to give a Resource Based View. The performance of a firm is determined by how its key resources are managed (Wernerfelt, 2011). RBV relies on capital and capability attributes of the source it obtains to clarify heterogeneity, performance and sustainability of an organization (Barney 2011). Montgomery (2003) states that resources are approaching substances because dominating the aggressive marketplace depends on firm's capacity to carefully recognize, build up, position and safe guard resources, which distinguish it from its competitors. Barney, Wright and Ketchen (2001) observed that each organization possesses a range of concrete and immaterial resources. Barney is one RBV late contributors who has been studying and establishing key business resources for superior performance.

The theory of RBV assumes that individuals are inspired to make maximum use of economic resources available and rational choices that a firm makes which are shaped by economic framework (Barney, 2007). Resource Based View theory in this study plays a role of evaluating and explaining resources and capability of a firm that have the capability to create and maintain a firm's advantage and thus the capacity in implementation of roads infrastructure projects in Kenya (Sheehan & Toss, 2007). Barney (2011) advanced that resources in general include the following key constructs: resources, capabilities and competences. Competencies are the firm's strengths that enable it to better differentiate its products or service quality by building technological system to respond to customers' needs, hence allowing the firm to compete more efficiently and successfully than other firms (Barney, 2007). Complex packages of skills, obtained knowledge, ability and experience that facilitate the company to manage activities of the firm and make use of resources to create performance through coordinating and putting resources into proper production use is what defines capability (Amit & Shoemaker 1993; Barney, 2007, & Mckelvie & Davidsson, 2009).

RBV theory presupposes that individual can use economic resources to a maximum extent and rational choices made by the company under the economic framework are made available

(Barney, 2007). In this study, RBV theory is intended to evaluate and explain the resources and capacity of the firm that is capable of creating and maintaining the business benefit and thus capable of implementing road infrastructure projects in Kenya (Sheehan & Toss, 2007).

Barney (2011), suggested that resources generally include; resources, capacity and competences. The strength of the company is competence, allowing it to distinguish more efficiently and easily its goods or service, quality by developing a technical structure that responds to customers' needs Barney (2007), specific abilities, expertise, skills and experience packages that allow the organization to handle its operations and leverage the resources to produce success by team work and resources to be properly used in production are described (Amit & Shoemaker 1993; Barney, 2007, & Mckelvie & Davidsson, 2009).

The RBV theory thus helps companies to determine whether or not superior performance factors exist. This helps them to leverage the imperfections of the market to improve their success. This helps the administrators to put capital to sustain their performance gains. RBV theory gives the client the benefit of unique conditions that generate superior efficiency for an organization (Locket, Thompson & Morgenstern, 2009). Resource Based perspective allows company managers to pick the key strategic factors to invest in the mobile industry out of a variety of possible strategic factors. To ensure a company has a competitive advantage and superior performance, resources and capabilities must be described as extremely valuable. Valuable services contribute to the success of the business (Barney, 2011). The above theory will facilitate the second study objective; to find out how availability of funds determines the sustainability of roads infrastructure projects in Laikipia County, Kenya.

2.7.2 Stakeholders Theory

The approach of stakeholders was identified as a powerful way to view the business in its context (Oakley, 2013). The aim of this strategy is to broaden the view of the management in terms of its roles and responsibilities beyond maximizing revenue and the requirements of non-stock classes as defined in the income output model of the Company (Mansuri & Rao, 2004). Patton (2008) points out that the definition as regards stakeholders assumes that anyone or organization with a legitimate interest in an organization gets benefits and that there is not a prior preference for one set of preferences and benefits over other. It must be taken into consideration related businesses, future staff, prospective clients and the general public.

In general, a core and original goal of stakeholder theory is to help managers to consider and handle stakeholders strategically (Patton, 2008). In multiple studies (Ramabodu & Verster, 2010) the managerial importance of stakeholder control has been stressed, demonstrating that the organization's long term sustainability is correlated with equal representation of stakeholders (McManus, 2004). Whereas strategic strategy has its roots, stakeholder analysis has been extended to a variety of areas and has been interpreted and extended in many respects, including very similar methodologies, principles, proof forms and measurement criteria. The abundance of viewpoints on the topic is as increasing interest in the definition of stakeholders (Oakley, 2013). This theory stresses the importance of the interaction between senior managers and stakeholders. Furthermore, the involvement of different partners will significantly affect managers' perception of the performance of the ventures. Such participants will interact with the management and not young people on the basis of their interactions. The foregoing theory will encourage the fourth study objective; how the availability of funds affects the sustainability in Laikipia County, Kenya of highway infrastructure projects.

2.8 Conceptual Framework

This is a model that indicates the interrelationships between dependent and independent variables. In the study, sustainability of roads infrastructure projects is conceptualized as dependent variable, while procurement practices, availability of funds, project implementation team competency and stakeholders' participation as independent variables.

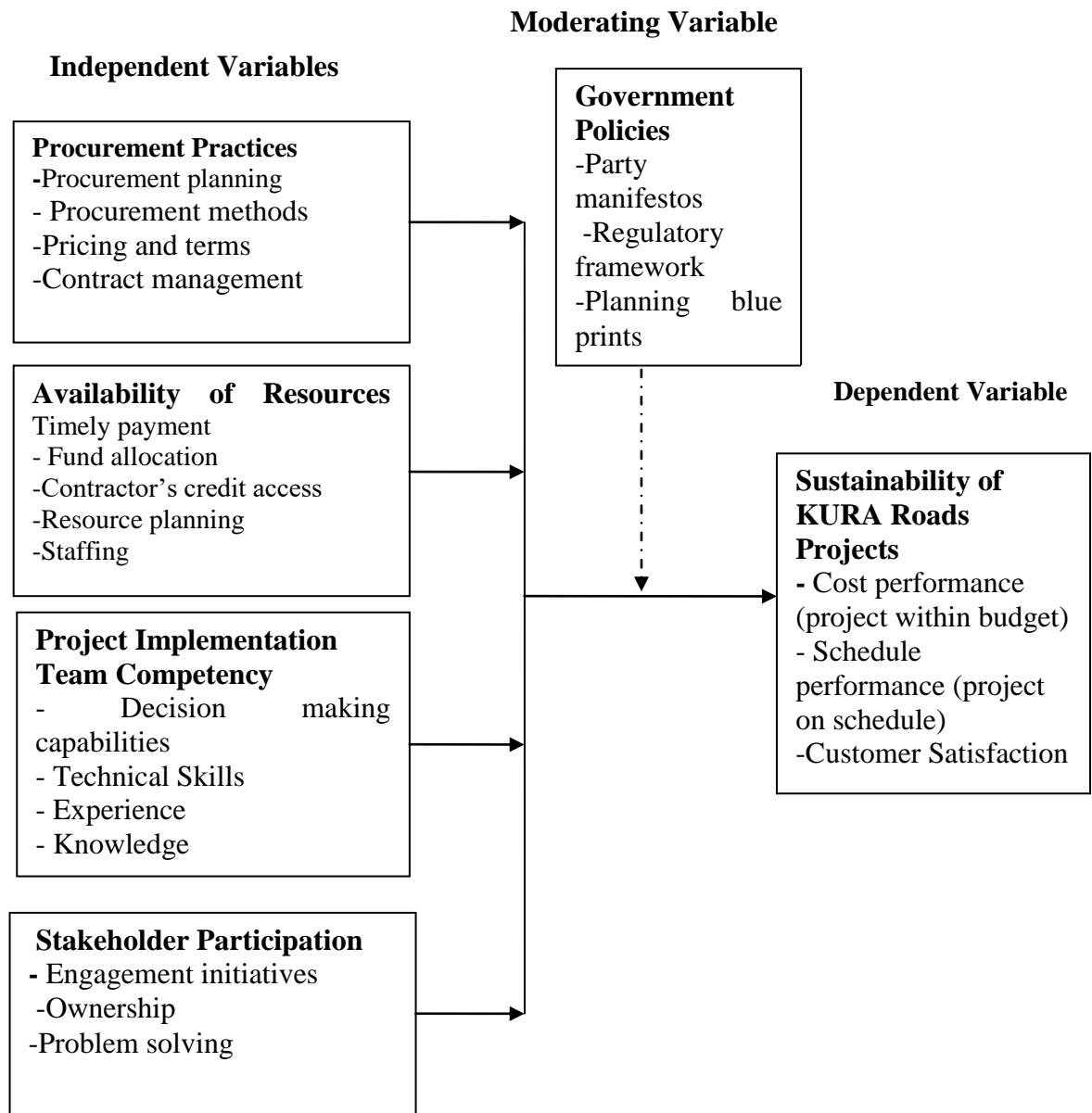


Figure 1: Conceptual Framework

2.9 Research Gaps

There has been limited research conducted in Kenya regarding the critical success factors in project sustainability in road construction sector in Kenya. A prior Wasike (2001) study for KIPPRA only addressed road infrastructure and historical developments in Kenya and did not include challenges to implement. A study on road networks was also carried out by the Kenya Road Board. The study did not, however, address the key success factors in the sustainability of road projects in semi-arid and arid areas of Kenya. Therefore, a study is needed to identify the socio-economic factors determining the sustainability of road infrastructure projects focusing on KURA road infrastructure projects in Kenya.

In Pinto and Sliven's literature review, procurement is not identified as a factor for successful implementation and this study therefore aims to find out how acquisition practices play a significant role in implementation as a mechanism to identify, evaluate, and develop contractors and suppliers.

The review of literature reveals that there was limited research on sustainability of roads project in semi and arid areas in Kenya. Most research studies focus on National Government Constituency Development Fund and County Government funded roads infrastructure and most of the researches were conducted in agricultural based counties. Conditions in these counties vary from climate, economic and security differences to semi-arid and arid regions in Kenya. Conduct ownership and engagement of stakeholders. In Ondari and Gekara's literature review (2013) on factors impacting the progress of road work in Kenya. The primary priority was on road projects and their research did not include KURA financed road projects that were covered by this study. In Kenya Power and Lighting Company, Macharia et Ngugi (2014) studied determinants for successful completion of power projects. The research focused on energy projects in Kenya that vary from the projects under review for road construction. Many research studies in Sub-Saharan Africa, including Sambasivan and Soon (2007), have focused on critical construction lag factors. Holland (2009) study advances that project budgets are based on the operating departments but key non-dollar factors are also important for the timing of strategic project implementation. As reasons for delays in construction, Chai and Yusof (2013) regard the inadequate site management and monitoring as high. Beringer (2013) suggests that it is not practical to change the organizational culture once assigned a project. It is not easy for a project manager to challenge work practice and habits of other stakeholders.

The researcher therefore plans to fill these research gaps. In this respect, the researcher asks how the procurement practice, the availability of financing, the experience of the team in the implementation of projects and the participation of stakeholders decide the realization of road infrastructure projects in the Laikipia County.

Table 2.1: Research Gaps

Variable	Author &Year	Findings	Knowledge Gap	Researcher's Independent Opinion
Procurement Practices	(Pinto &Silven,1987)	Procurement is not identified as a factor for successful implementation	The study is out to find out how procurement practices influences project sustainability	Competitive procurement process influences sustainability of road projects
Availability of Resources	(Holland,2009)	Influence of key non-dollar factors besides budget in project implementation	This study is out to find out how resource planning and application influence sustainability of projects	Difficulties in accessing credit led to project delays
Project Implementation Team Competency	(Chai&Yusof,2013)	Inadequate site management and monitoring as cause of delays in project implementation	The study will focus on project management experience and decision making of the implementation team	Projects delayed due to ineffective monitoring
Stakeholders' Participation	(Beringer,2013)	It is not practical to change the organizational culture through stakeholders	The study looks into how participation of stakeholders in a project determines its sustainability	Stakeholders' involvement enhances transparency and accountability

2.10 Summary

In this chapter, the researcher reviewed literature on the four independent variables namely; procurement practices, availability of funds, project implementation team competency and stakeholders' participation. The researcher has also explained the relationship between the independent, moderating and dependent variables using the conceptual framework.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the researcher describes the research methodology that the study adopted. It outlines the research design, target population, sampling procedure, research instruments, data collection procedures, data analysis techniques as well as ethical matters in research.

3.2 Research Design

The study adopted a descriptive survey research design. This allowed the researcher to gather, summarize, present and interpret information for the purpose of clarification. According to Orodho (2002), it is appropriate where the study seeks to describe the characteristics of certain groups, estimate the proportion of people who have certain characteristics and make predictions. The study aimed at collecting information from respondents in order to establish the how socio-economic determinants influence road construction project sustainability, a case of Kenya Urban Roads Authority (KURA) road projects in Laikipia County, Kenya.

3.3 Target Population

The population is described in Cooper and Schindler (2011) as the overall collection of elements to be found. The target population is a precisely identified or collection of persons, programs, elements and activities, group of subjects or households under investigation. The population may be isolated and mutually exclusive in pairs, groups or stratus. The target group was stratified into the project engineers, contractors, procurement officials and members of the contract implementation committee for the purpose of this analysis. The target population for this study was 103 respondents; 11 project engineers, 6 road supervisors, 8 procurement officers, 4 project accountants, 26 project implementation team, 18 road contractors and 30 stakeholders (National Government Administrators, Faith Based leaders, Local Chamber of Commerce, Matatu Cooperatives leaders, Members of County Assembly, Local project implementation leaders) as was derived from Laikipia County KURA roads registry as of December, 2019, as shown in Table 3.1.

Table 3. 1: Target Population

Sections	Male	Female	Total	Percentage (%)
Project engineers	7	3	11	11
Road Supervisors	4	2	6	6
Procurement officers	5	3	8	8
Project Accountants	2	2	4	4
Project Implementation Team	17	9	26	25
Contractors	14	3	18	17
Stakeholders	19	11	30	29
Totals	71	32	103	100

Source: Laikipia County KURA roads registry, December, 2019

3.4 Sample Size and Sampling techniques

This section describes the sample size and techniques for sampling by describing how the researcher determined the sample size and the technique that was used to draw the sample.

3.4.1 Sample Size

A sample is a model of the population or a subset of the population that is used to gain information about the entire population. It can also be defined as a set of respondents (people) selected from a larger population for the purpose of a survey. It is a small set of units from a much wider community that are studied to allow the researcher to generalize the larger group more precisely (Mugenda & Mugenda, 2003). The sample size in the study comprised of; project engineers, procurement officers, project committee members and prequalified road contractors.

In estimation of the sample size for the analysis a formula was used. The researcher employed the formula as advanced by Saunders, et al., (2007), as per the formula 95 percent confidence level and 0.05 significance level (p), the sample size is; $n = N / 1 + N (e)^2$

Whereby;

n = represented the size of the sample

n = represented the population's size

e = the error of 5% points

When the formula was used, a sample size of 82 was yielded as shown below;

$$n = 103/1+103(0.0025)$$

$$n = 82$$

3.4.2 Sampling Procedure

Sampling means choosing from a defined population a specific number of subjects' representative of that population. Any declarations made on the sample should also apply to the population (Mugenda & Mugenda 2008). To generate the research sample, a stratified sampling method was applied. The method recognized the existence in the target population of strata with separate characteristics. The stratified method of sample selection ensured, by the compilation of details from all strata, that the sample reflected the population (Kothari, 2004). The technique provided more reliable estimates of total population parameters, according to Kerry and Bland (1998), and ensured that a more representative sample came from a relatively homogenous population.

The researcher drew a proportional sample from each of the 7 categories of the target population. In order to increase efficiency in the sampling procedure, the researcher treated each one of the 7 category as a homogenous part of the population. The randomization was done by assigning each member of the targeted sections a number and writing the numbers on small pieces of paper. Members drawn from each section formed an appropriate number of respondents per each section.

Table 3. 2: Sampling Frame

Sections	Target Population(N)	Sample(n)	Male	Female	Percentage
Project engineers	11	9	7	2	11
Road Supervisors	6	5	3	2	6
Procurement officers	8	6	4	2	8
Project Accountants	4	3	2	1	4
Project I. Team	26	21	15	6	25

Contractors	18	14	13	1	17
Stakeholders	30	24	18	6	29
Totals	103	82	62	20	100

3.5 Research Instruments

Data was collected by use of administered questionnaires. The survey was built on the study goals and had questions that were both open and closed. The data collection method was best selected because questionnaires were availed within short periods and was cost effective to a large group of respondents who answered the questionnaires at the same time, thus enabling them to be anonymous and honest in their responses (Kasomo, 2006). The questionnaire consisted of both open and close-ended questions. The closed questions offered more organized answers that made concrete feedback simpler and also measured the ranking of various attributes, thereby helping in minimizing the number of similar responses in comparison of different responses. The open questions contained extra information that could not have been included in the closed questions.

3.5.1 Pilot Testing of Questionnaires

A pilot study was conducted to test the reliability of the data collection tools and five questionnaires were administered in Nyeri County which neighbours Laikipia County. Mugenda and Mugenda (2003) estimate that 1 to 10 % of the research sample is adequate to run a test. At least a week before the main study, the respondents were picked randomly. The respondents were asked if each question measured what it was intended to measure, how long it took to interview the respondent, and if the responses were correct, whether or not the tool collected the necessary information. Questions interpreted differently during the pre-testing were rephrased in order to have the same meaning to all respondents during the process of data collection. The

researcher had obtained prior authorisation from KURA Resident Engineer in the county to facilitate this.

3.5.2 Validity of the Instruments

The validity of data collection methods can be defined as measuring what they are intend to measure accurately (Saunders et al., 2003). The validity of the data was tested by using the Content Valid Index (CVI) which is the most commonly used index in quantitative research. The Content Valid Index (CVI) demonstrates the degree to which an instrument has an appropriate sample of items for the construct being measured. According to Fisher (2004), for a research instrument to be valid, the CVI should be more than or equal to 0.7. This was done by distributing a copy of the questionnaire to the supervisors and peers to rate the relevant items/questions in relation to the research objectives. Validity was then tested as follows: $VI = \text{Relevant Items} / \text{Total Number of Items}$. The questionnaires' CVI value of 0.78 was acceptable and therefore the researcher used the instruments as they were.

3.5.3 Reliability of the Instruments

Reliability of the research instrument is its level of internal consistency over time. According to Cooper & Schindler (2006) reliability of measurement concerns the degree to which a particular measuring procedure gives similar results over a number of repeated trials. Therefore, a reliable tool is the one that produces the expected results constantly when more than once used to collect data from the same population. A pilot test using a split-half method will improve the reliability of the instrument. The split-half method was preferred because it was straight forward and easy to use. The method was also time and cost effective because it made it possible to create two tests using a single test eliminating the need for multiple administrations. The Cronbach Alpha coefficient was computed and it indicated how well the items in a set were positively correlated with another. Cronbach Alpha was computed in terms of the average inter-correlations among the items measuring the concept. The closer the Cronbach's Alpha is to 1, the higher the internal consistency. A higher value shows a more reliable generated scale. Cooper and Schindler (2008) have indicated 0.7 to be an acceptable reliability coefficient. The Alpha test was then run using SPSS software and realized a score of 0.84 confirming that the instrument was consistent and reliable.

3.6 Data Collection Procedure

All respondents to the analysis were assessed by the researcher individually. Complete care and monitoring was employed in order to ensure that all questionnaires issued to interviewees were received via a questionnaire register that clearly stated which questionnaires were sent and received. A drop and later pick method was used to administer the questionnaires.

3.7 Data Processing and Analysis

For accuracy, usefulness and completeness, the data collected was edited. A descriptive statistics methodology was used to analyze quantitative data with the aid of Statistical Package for Social Sciences (SPSS) version 23 data analysis tool. Descriptive statistics and inferential statistics were the statistics produced. The specific descriptive statistics included frequencies, means, and standard deviations, and was presented in the form of frequency tables and a multiple linear regression model was therefore provided as inferential statistics. The multiple linear regression model was used to calculate the relationship between the independent variables and the dependent variable. The regression model helped in explaining the extent and direction of relationship between study variables, using coefficients such as correlation, coefficient of determination and significance level. The multi- linear regression model used is as shown;

$$Y = \alpha_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where,

Y=Project Sustainability (Dependent variable)

α_0 = Constant

B= Regression coefficient

X1=Procurement Practices

X2=Availability of Resources

X3= Project Implementation Team Competency

X4= Stakeholders Participation

e= margin of error

The qualitative data collected was analyzed through content analysis where a thematic framework was developed.

3.8 Ethical Considerations

After a letter from the University of Nairobi, the researcher sought permission to conduct the study by the National Commission for Science, Technology and Innovation (NACOSTI) as shown in attached permit (Appendix 2). The researcher had also to explain the study and ensured that all obtained information was confidential for the purposes of the report. It was also made clear that participation was voluntary and that during the course of research the respondents were to decline or retire at any time. Also, respondents were not obliged to take part in the study. The researcher maintained objectivity in order to limit influencing the research findings with policies of his organization. All material references in the study were acknowledged.

3.9 Operational Definition of Variables

An operational definition specifies precisely how a concept will be measured and therefore the purpose of operationalizing or operationally defining a concept is to make it measurable.

Table 3.3 describes the variables that were used as indicators in the study and the corresponding measurement scales.

Table 3. 1: Operationalization of Variables

Objective	Indicators	Measurement Scale	Data Analysis Tools
1.To establish how procurement practices determine sustainability of roads infrastructure projects in Laikipia County, Kenya	-Procurement planning -Procurement methods -Pricing and terms -Contract management	Interval	-Frequency -Mean -Standard Deviation -Spearman Correlation
2.To find out how availability of resources determine sustainability of roads infrastructure projects in Laikipia County, Kenya	-Timely payment - Fund allocation -Contractor's credit access -Resource planning -Staffing	Ordinal	-Mode -Median
3. To establish how project management team competency determine sustainability of roads infrastructure projects in	-Decision making capabilities -Technical Skills - Experience	Interval	- Frequency -Mean -Standard Deviation -Spearman

Laikipia County, Kenya	- Knowledge - Frequency of training		Correlation
4. To examine how stakeholders participation determine sustainability of roads infrastructure projects in Laikipia County, Kenya Kenya	-Engagement initiatives -Ownership -Problem solving	Interval	Frequency -Mean -Standard Deviation -Spearman Correlation

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter covers response rate, summary of respondents’ profile as well as descriptive and inferential statistics. Findings are also compared and contrasted with previous findings in order to arrive at worthy conclusions and help answer the research questions.

4.2 Response Rate

From the targeted 82 respondents ,76 questionnaires were properly filled and returned. This represented 92.65% response rate. The 92.65 percent response rate was attributed to the use of self-administered questionnaire. Respondents were also assured of confidentiality of the information provided. Babbie (1990) suggested that a response rate of 60% is good, 70% very good and 50% adequate for analysis. Mugenda & Mugenda (2003) also asserts that a response rate of 50% is considered adequate, 60% good and above 70% very good. In addition, Bell and Costa (2006) argued that the larger the response rate, the smaller the non-response error. Therefore, the response rate in this case was acceptable.

4.3 Demographic Information of the Respondents

The researcher found it crucial to ascertain the broad information of the respondents since it provides basis under which the study can fairly produce relevant information. The analysis relied on this information so as to classify the different results according to their knowledge and

responses. This section looked at the respondents' gender, education level and length of service in KURA Projects.

4.3.1 Gender of the Respondents

In this section the respondents were asked to indicate their gender. The findings showed that 76.32% of the respondents were males while the rest 23.68% of the respondents were females. As such, a conclusion can be made that the roads project team in the KURA, Laikipia county was male dominated. Their responses are shown in Table 4.1.

Table 4.1: Gender of the Respondents

Category	Frequency	Percentage
Male	58	76.32
Female	18	23.68
Total	76	100

4.3.2 Education Level of the Respondents

In this section the respondents were asked to indicate their education levels. Their responses show that majority of the respondents representing 57.90% had degree level academic qualifications. A further 21.10% had master's degree qualifications. 18.40% and 2.60% of respondents had diploma level and certificate level academic qualifications respectively. Hence, the roads project team in Laikipia County had rich academic background and qualifications. The findings support prescriptions by Alzeban and Gwilliam (2012) for rich academic orientation for project team members. Their responses are shown in Table 4.2.

Table 4.2: Education Level of the Respondents

Level of Education	Frequency	Percentage
Vocational Training	2	2.6
Diploma	14	18.4
Degree	44	57.9

Masters	16	21.1
Total	76	100

4.3.3 Length of Service in Kura Projects

The respondents were asked to indicate their years of service in performance of KURA projects. Majority of the respondents representing 86.87% of the respondents had served in KURA Projects for over three years. 10.53% of respondents had served for less than one year and finally, 2.60% of the respondents indicated that they had served for 2 to 3 years in KURA Projects. As such, majority of the respondents had substantial experience working in KURA Projects in region. Their responses are shown in the Table 4.3.

Table 4.3: Length of Service in KURA Projects

Length of Service	Frequency	Percent
0 - 1 year	8	10.53
2 - 3 years	2	2.6
Over three years	66	86.87
Total	76	100.0

4.4 Procurement Practices and Sustainability of Road Projects

The study sought to establish the influence of procurement practices on sustainability of road projects in Laikipia County, Kenya. The output is depicted in Table 4.4.

Table 4.4: Procurement Practices on Sustainability of Road Projects

Statement	N	Mean	SD
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Competitive procurement process influences sustainability of road projects	76	4.19	.904
Choice of procurement method is dictated by the estimated cost	76	2.97	1.523
Procurement entity engaged in procurement by means of restricted tendering	76	3.67	1.342
Procurement entity only engaged in procurement after works and services to be procured were authorized	76	4.19	.904
Total	76	3.755	1.168

The results showed that the respondents were in agreement with the propositions that competitive procurement process influences sustainability of road projects, choice of procurement method is dictated by the estimated cost, procurement entity engaged in procurement by means of restricted tendering and procurement entity only engaged in procurement after works and services to be procured were authorized. The mean values were as follows; 4.19 ,2.97 ,3.67 and 4.19 respectively. The grand mean was 3.755 with a standard deviation of 1.168. This implied that procurement practices influenced sustainability of road projects.

4.5 Availability of Resources and Sustainability of Road Projects

The study sought to establish the influence of availability of resources on sustainability of road projects in Laikipia County, Kenya. The output is depicted in Table 4.5.

Table 4.5: Availability of Resources on Sustainability of Road Projects

Statement	N	Mean	Standard Deviation
The project managers ensure the quantities and the schedule of the resources is directly linked to the budget	76	4.78	.890

The project management team does the realistic planning of the project funds	76	4.91	0.331
Difficulties in accessing credit (contractor and sub-contractor) has led to project delays	76	4.99	0.169
Client's untimely payments lead to project delays	76	3.18	1.293
Total	76	4.465	0.670

The results showed that the respondents were in agreement with the propositions that the project managers ensured the quantities and the schedule of the resources is directly linked to the budget, project management team does the realistic planning of the project funds, difficulties in accessing credit (contractor and sub-contractor) has led to project delays and client's untimely payments lead to project delays. The mean values were as follows; 4.78,4.91 ,4.99 and 3.18 respectively. The grand mean was 4.465 with a standard deviation of 0.670. This implied that availability of resources influenced sustainability of road projects.

4.6 Project Management Implementation Team competency

The researcher asked questions that sought to establish how Project Management Implementation Team competency influences sustainability of KURA roads projects in Laikipia county, Kenya. This section looked at the experience of the implementation team, project monitoring and communication between project implementation team and other relevant stakeholders. The output is depicted in Table 4.6.

Table 4.6: Influence of Project Implementation Team Competency on Sustainability of Road Projects

Statement	N	Mean	Standard Deviation
Implementation team have relevant experience in the implementation of projects	76	4.08	.508

Projects in the region have been delayed due to ineffective monitoring	76	4.08	.890
Implementation team communicate effectively with other stakeholders	76	4.95	.233
Total	76	4.37	.544

The results showed that the respondents were in agreement with the propositions that implementation team have relevant experience in the projects implementation, projects in the region have been delayed due to ineffective monitoring and implementation team communicate effectively with other stakeholders. The mean values were as follows; 4.08,4.08 and 4.95 respectively.

The grand mean was 4.37 with a standard deviation of .544. This implied that Project Management Implementation Team competency influences sustainability of KURA roads projects.

4.7 Stakeholders Participation and Sustainability of Roads Projects

The researcher asked questions that sought to establish how stakeholders’ participation influenced sustainability of KURA roads projects in Laikipia county, Kenya. This section looked at how KURA embraces stakeholders’ opinion, contract monitoring and evaluation, relevance of stakeholders and how compensation and resettlement disputes influenced sustainability of roads projects. The output is depicted in Table 4.7.

Table 4.7: Stakeholders Participation on Sustainability of Road Projects

Statement	N	Mean	Standard Deviation
Our interaction with KURA is often engaging and collaborative	76	4.15	.335
Contract monitoring and evaluation system ensure that the objectives of a contract are accomplished in KURA	76	4.25	.102
Users involvement enhances transparency and accountability in KURA projects	76	4.15	.057

Compensation and resettlement disputes (Legal disputes) has led to project delay and increase in delays in road construction implementation	76	4.25	.102
Total	76	4.2	.149

The results showed that the respondents were in agreement with the propositions that interactions with KURA is often engaging and collaborative, contract monitoring and evaluation system ensure that the objectives of a contract are accomplished in KURA, stakeholders' involvement enhances transparency and accountability in KURA projects and compensation and resettlement disputes (Legal disputes) has led to project delay and increase in delays in road construction implementation. The mean values were as follows; 4.15 ,4.25 ,4.15 and 4.25 respectively. The grand mean was 4.2 with a standard deviation of .149. This implied that stakeholders' participation influenced sustainability of KURA roads projects.

4.8 Inferential Statistics Analysis

This section presents a discussion of the results of inferential statistics. The study employed multiple regression analysis so as to assess the factors influencing sustainability of KURA roads projects in Laikipia county, Kenya. The study applied the statistical package SPSS to code, enter and compute the measurements of the multiple regressions for the study.

Before the main analysis, data was subjected to a thorough screening procedure where key diagnostic tests were conducted in order to assure that the data sets met the general assumptions for conducting the regression analysis, a key analytical model that the study sought to develop. The diagnostic tests included the test for normality using Shapiro-Wilk test of normality, test for multi collinearity using regression diagnostics on SPSS, Durbin Watson test for auto correlation and Test Glejser for heteroskedacity.

4.8.1 Test of Normality

Owing to the fact that the total responses attained were only 76, the Shapiro-Wilk test of normality was applied since the value is less than 2000. Were the respondents more than 2000, the Kolmogorov-Smirnov test would have been used. The study developed key hypothesis for the normality test as follows.

H₀: The observed distribution fits normal distribution.

H_a: The observed distribution does not fit the normal distribution.

Therefore, by failing to reject H₀, the study would be accepting or assuming normality.

The P value of the Shapiro-wilk test for sustainability of KURA roads projects is 0.776 which is greater than 0.05 and as such the researcher failed to reject H₀. To that effect, a conclusion was made that the data set follows a normal distribution. That is to say that the data does not significantly deviate from a normal distribution. The interpretation for the normality test was guided by conventional wisdom presented by Shapiro & Wilk (1965) and Razali & Wah (2011) as illustrated in Table 4.8 of Shapiro-Wilk test of normality.

Table 4.8: Shapiro Wilk Test of Normality

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Performance of Internal Project management function	.097	76	.200*	.982	76	.776

a. Lilliefors Significance Correction

4.8.2 Test for Multi-Collinearity

‘Tolerance’ represents the proportion of change in the predictor variable which cannot be accounted for by the other predictors included in the model. Liu, Kuang, Gong, & Hou, (2003) indicate that very small values would render a predictor redundant. On the other hand, values that are less than 0.10 may merit further investigation. Tolerance values for the predictor variables in this case stood at 0.515, 0.353, 0.435 and 0.370 for Procurement practices, Availability of resources, Project Management Implementation Team

competency and Stakeholder participation respectively which all surpass the minimum threshold of 0.10. The VIF which abbreviates the Variance of Inflation Factors is essentially the reciprocal of tolerance; ($1 / \text{tolerance}$). As a rule of thumb, the authors assert that a variable whose VIF values is greater than 10 may merit further investigation and as such may be associated with multi collinearity problems. The collinearity statistics VIF output for our predictor variables stand at 1.942, 2.835, 2.301 and 2.703 for Procurement practices, Availability of resources, Project Management Implementation Team competency and Stakeholder participation respectively which were all below the maximum or cut off point of 10. Therefore, a conclusion was made on the absence of multi-collinearity problems in the data set as shown in Table 4.9.

Table 4.9: Test for Multi-Collinearity using SPSS Collinearity Diagnostics

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
Procurement Practices	.515	1.942
Availability of Resources	.353	2.835
Project Management Implementation Team competency	.435	2.301
Stakeholder Participation	.370	2.703

Dependent Variable: Sustainability of KURA roads projects

4.8.3 Test for Heteroskedacity using Test Glejser.

Long & Ervin (2000) posit that Heteroskedacity test evaluates the possibility of there being differences in the residual variance of the observations over time.

A decision rule was developed for interpreting Heteroskedasticity Test with Test Glejser;

If the value Sig. > 0.05, then a conclusion would be made on absence of

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.079	.062			1.263.215

heteroscedasticity problem.

If the value Sig. <0.05, then it would be concluded that the data set has the problem of heteroscedasticity (Glejser, 1969).

Based on Output Coefficients, the obtained P values of 0.063, 0.128, 0.147 and 0.103 for Procurement practices, Availability of resources, Project Management Implementation Team competency and Stakeholders participation respectively are all greater than 0.05 (> 0.05). As such, a conclusion was made on the absence of heteroscedasticity problem in the data set as shown in Table 4.10.

Table 4.10: Test Glejser for Heteroscedasticity

Procurement Practices	.197	.103	.433	1.922.063
Availability of Resources	.165	.106	.425	1.561.128
Project Management Implementation Team competency	.158	.107	.364	1.484.147
Stakeholder Participation	.133	.080	.445	1.676.103

a. Dependent Variable: Sustainability of KURA Roads Projects

4.8.4 Regression Analysis

The study aimed at answering the following questions: How do procurement practices influence sustainability of KURA roads projects in Laikipia County, Kenya? To what extent does availability of resources influence sustainability of KURA roads projects in Laikipia County, Kenya? How does Project Management Implementation Team competency influence the sustainability of KURA roads projects in Laikipia County, Kenya? How does stakeholder participation influence sustainability of KURA roads projects in Laikipia County, Kenya? To effectively provide evidence based answers and conclusions to these questions, the regression analysis was utilized as a key analytical tool. On that point, the significance level was set at $\alpha = 0.05$. The study then defined the critical values and the rejection region where a conclusion for existence of significant influence would be made if the p value ≤ 0.05 . I.e. if the P Values are less than 5%.

For the Test Statistic, the F Test on ANOVA was preferred and output is as presented in

Table 4.11.

Table 4.11: F Test on ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.551	4	.138	13.056	.000 ^a

Residual	.348	33	.011		
Total	.898	37			

a. Predictors: (Constant): Procurement practices, Availability of resources Project Management Implementation Team competency, Stakeholder Participation

b. Dependent Variable: Sustainability of KURA roads projects

As evidenced in the Analysis of Variance (ANOVA) output, at the 0.05 level of significance, there was indeed enough evidence to support a conclusion that the slope of the regression line was not zero. The implication was that the independent variables; procurement practices, availability of resources, Project Management Implementation Team competency and stakeholder participation were all useful predictors of sustainability of roads projects. This conclusion was made since the p value < 0.05. The P Value from the ANOVA table is 0.000 which is less than 0.05 level of significance.

Table 4.12 presents the regression model summary.

Table 4.12: Regression Model Summary

Model	R	R Square	Adjusted Square	R Std. Error of the Estimate	Durbin-Watson
1	.928 ^a	.861	.766	.1026780	2.285

a. Predictors: (Constant), Procurement practices, Availability of resources Project Management Implementation Team competency, Stakeholder Participation

b. Dependent Variable: Sustainability of KURA roads projects

R Square, also called the Coefficient of Determination stands at 0.861. This implies that 86.10% of the variation in the sustainability of KURA roads projects (the dependent variable) is explained by variability in the independent variables i.e. procurement practices, availability of resources, Project Management Implementation Team competency, and stakeholders' participation. To this effect, only 13.90% of the variation in the sustainability of KURA roads projects is explained by other variables not included in the model. Therefore, guided by Draper, Smith, & Pownell (1966) and Seber & Lee (2012), it was concluded that at least one of the variables under assessment were useful predictors of sustainability of KURA roads projects.

Table 4.13 presents the Regression Model Coefficients as derived using SPSS software.

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.
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The Model is important in explaining the magnitude of influence, if any between the predictor variables under assessment and sustainability of KURA roads projects as the dependent variable.

Table 4.13: Regression Model Coefficients

	B	Std. Error	Beta		
1 (Constant)	.037	.110		.339	.007
Procurement Practices	.021	.182	.018	.118	.009
Availability of Resources	.112	.187	.109	.597	.006
Project Management Implementation Team competency	.622	.189	.542	3.296	.002
Stakeholder Participation	.182	.141	.231	1.296	.002

As evidenced by the regression analysis output, all the independent variables, procurement practices, availability of resources, project management implementation team competency and stakeholder participation are statistically significantly different from 0 (zero). This is because their P Values are less than 0.05. The coefficient for procurement practices (0.021) is significantly different from 0 because its p-value of 0.009, is smaller than 0.05 level of significance. Therefore, procurement practices significantly influences the sustainability of roads projects. The findings are consistent with Njeru (2013) and Gtaishet, *al.* (2014) who established that procurement practices were an indispensable determinant of the sustainability of road projects.

The coefficient for availability of resources (0.112) is statistically significant because its p-value of 0.006 is less than 0.05 level of significance. As such, availability of resources would be expected to yield influence that is a statistically significant on sustainability of roads projects. The findings agree with prescriptions by Calota (2008), for availability of resources as a precondition for sustainability of roads projects. The study further agreed with past studies by Mugwe (2012) who established that the sustainability of roads projects had a significant predictor of availability of resources.

The coefficient for project management implementation team competency (0.622) is statistically significant because its p-value of 0.002 is less than 0.05 level of significance. Project management implementation team competency therefore determine the level of

sustainability of roads projects. The findings agree with past studies by Mutchler, et al. (2001) who assert that project management implementation team competency was a key predictor of sustainability of roads projects.

Finally, the coefficient for stakeholder participation (0.182) is statistically significant because its P –Value of 0.002 is less than 0.05 level of significance. Therefore, stakeholder participation, going by the results influence the sustainability of roads projects in the Laikipia County, Kenya. The results agree with past observations by Pickets (2010) on the contribution stakeholders’ participation to sustainability of road projects. The findings further agree with Alzeban and Gwilliam (2012) who also associated the stakeholders’ participation to sustainability of road projects.

The regression model was therefore developed as follows;

Sustainability of KURA roads projects = 0.037 + 0.21 (Procurement practices) + 0.112 (Availability of resources of the Project managers) + 0.622 (Project Management Implementation Team Competency) + 0.182 (Stakeholders Participation).

4.8.5 Correlation analysis

The study further utilized the Pearson Correlation analysis to understand the strength and direction of relationship, if any, between each independent variables and sustainability of KURA roads projects in the Laikipia County, Kenya.

There exists a relationship that is significant positive between procurement practices and sustainability of roads projects as evidenced by the Pearson Correlation Output. The strength of association is moderate since the Pearson Correlation Co-efficient stands at 0.442 and statistically significant since the Sig. (2-tailed) value of 0.005 is less than 0.05 level of significance. The findings are consistent with Njeru (2013) and Gtaishet, al. (2014) who established that a significant positive relationship between procurement practices and sustainability of roads projects.

Going by the results of the Pearson Correlation analysis, there exists a positive relationship between availability of resources and sustainability of roads projects. The association between the two variables is moderate since the Pearson Correlation

Coefficient is 0.590 and statistically significant since the Sig. (2-tailed) value of 0.000 is less than 0.05 level of significance. The findings agree with prescriptions by Calota (2008), for availability of resources as a precondition for sustainability of roads projects. The study further agreed with past studies by Mugwe (2012) who established a positive association between availability of resources and sustainability of roads projects.

The Pearson Correlation coefficient for project management implementation team competency stands at 0.748. This indicates a strong level of positive association between project management implementation team competency and sustainability of roads projects. The relationship is statistically significant since the Sig. (2-tailed) value of 0.00 is less than 0.05 level of significance. The findings agree with Mutchler, et al. (2001) who found worthy evidence relating project management implementation team competency and sustainability of roads projects.

Finally, the Pearson Correlation Coefficient for stakeholder participation stand at 0.656 which indicates a moderate level of positive association between stakeholder participation and sustainability of roads projects. The relationship is statistically significant since the Sig. (2-tailed) value of 0.00 is less than 0.05 level of significance. The results agree with past observations by Pickets (2010) who associated stakeholders' participation and sustainability of road projects. The findings further agree with Alzeban and Gwilliam (2012) who also found a positive association between the stakeholders' participation and sustainability of roads projects. Table 4.14 presents the Correlation Output as derived from SPSS.

Table 4.14: Pearson Correlation Analysis

		Sustainability of KURA roads projects
Procurement Practices	Pearson Correlation	.442**
	Sig. (2-tailed)	.005
	N	76
Availability of resources	Pearson Correlation	.590**
	Sig. (2-tailed)	.000
	N	76
Project Management Implementation Team Competency	Pearson Correlation	.748**
	Sig. (2-tailed)	.000
	N	76
Stakeholders Participation	Pearson Correlation	.656**
	Sig. (2-tailed)	.000
	N	76

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

* . Correlation is significant at the 0.05 level (2-tailed).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the findings on each of the independent variables, conclusions that have been arrived at pertinent to each objective and recommendations on the sustainability of KURA roads projects in Laikipia county, Kenya.

5.2 Summary of Findings

This section is concerned with reporting the findings of the study pertaining to each independent variable, that is procurement practices, availability of resources, PMI team competency and stakeholder participation, influence the dependent variable that is sustainability of roads projects.

5.2.1 Procurement Practices and Sustainability of KURA Roads Projects

Majority of the respondents were in agreement with the propositions that competitive procurement process influences sustainability of road projects, choice of procurement method is dictated by the estimated cost, procurement entity engaged in procurement by means of restricted tendering and procurement entity only engaged in procurement after works and services to be procured were authorized. The mean values were as follows; 4.19 ,2.97 ,3.67 and 4.19 respectively. The grand mean was 3.755 with a standard deviation of 1.168. From the regression analysis results, procurement practices influence the sustainability of KURA roads projects. The study established the existence of a moderate, statistically significant positive relationship between procurement practices and sustainability of roads projects as evidenced by the Pearson correlation output.

5.2.2 Availability of Resources and Sustainability of KURA Roads Projects

Majority of the respondents were in agreement with the propositions that the project managers ensured the quantities and the schedule of the resources is directly linked to the

budget, project management team does the realistic planning of the project funds, difficulties in accessing credit (contractor and sub-contractor) has led to project delays and client's untimely payments lead to project delays. The mean values were as follows; 4.78,4.91 ,4.99 and 3.18 respectively. The grand mean was 4.465 with a standard deviation of 0. 670.The study established, through the regression analysis that the sustainability of roads projects in the Laikipia County, Kenya is influenced by availability of resources. It was also established through the Pearson Correlation analysis that there exists a moderate statistically significant positive relationship between availability of resources and sustainability of roads under KURA in Laikipia County, Kenya.

5.2.3 Project Management Implementation Team Competency and Sustainability of Roads

Projects

Majority of the respondents were in agreement with the propositions that implementation team have relevant experience in the projects implementation, projects in the region have been delayed due to ineffective monitoring and implementation team communicate effectively with other stakeholders. The mean values were as follows; 4.08,4.08 and 4.95 respectively. The grand mean was 4.37 with a standard deviation of .544.

The regression analysis results indicated that the factor did influence the sustainability of roads projects. The Pearson Correlation Analysis results for project management implementation team competency indicated a strong, statistically significant level of positive association between project management implementation team competency and sustainability of roads projects.

5.2.4 Stakeholder Participation and Sustainability of Roads Projects

Majority of the respondents were in agreement with the propositions that interactions with KURA is often engaging and collaborative, contract monitoring and evaluation system ensure that the objectives of a contract are accomplished in KURA, stakeholders' involvement enhances transparency and accountability in KURA projects and compensation and resettlement disputes (Legal disputes) has led to project delay and

increase in delays in road construction implementation. The mean values were as follows; 4.15 ,4.25 ,4.15 and 4.25 respectively. The grand mean was 4.2 with a standard deviation of. 149.

Regression Analysis results indicated that stakeholder participation influenced the sustainability of roads projects. Results of the Pearson Correlation Analysis for stakeholder participation indicated a statistically significant moderate level of positive association between stakeholder participation and sustainability of roads projects.

5.2.5 Sustainability of KURA Roads Projects in Laikipia County, Kenya

On sustainability of roads projects, the study established that the project managers ensured that the road project work plan were fully implemented. It was also noted that the period taken to complete the road projects was as per the project work plan. The study further established that the project managers engaged in procurement by means of restricted tendering and that the project managers ensured action was taken on audit findings and recommendations.

5.3 Conclusion

In the conclusion, it was evident that the sustainability of roads projects in the Laikipia County, Kenya was generally good. It was further concluded that all the procurement practices variables contributed significantly to the sustainability of roads projects. A conclusion was reached that the procurement practices yields a moderate positive influence on sustainability of roads projects. On Availability of resources, the variable again yields a moderate positive influence on sustainability of roads projects. Project Management Implementation Team competency, it was concluded, yields a strong positive influence on sustainability of roads projects. Finally, on stakeholder participation, the variable yields a moderate level of positive influence on sustainability of roads projects.

5.4 Recommendations

Based on the study results the following recommendations were made. Procurements management is critical if projects financed from donors are to be completed promptly for the construction industry and there is need for the government agencies to ensure that the project managers are motivated so that they keep on following the procurement rules. Further, policy makers and implementers in the KURA, need to consider the factor of availing resources to ensure timely implementation of roads projects. Going by the study findings, the study recommends that policy makers and implementers in the KURA and other government agencies implementing projects to ensure that the project management implementation teams are let to gain experience considered in their assignments to ensure more quality services. Lastly the study recommends that stakeholders should be actively involved in the implementation of the projects.

5.5 Suggestions for Further Research

This study was limited to project management ideal in the road projects in KURA, Laikipia County. To address contextual, empirical, methodological and conceptual gaps that remain unaddressed, the researcher recommends further studies in the following areas; find out the role of gender in sustainability of infrastructure projects. Such study would be ideal since this study was in a male dominated field; To find out the relationship between the ethical practices of project managers and perception of organizations. Such a study would help in filling empirical gaps and provide a closer understanding of how the conduct of the project management function affects how stakeholders perceive those organizations.

Writers, theorists and practitioners worldwide have underlined the important role played by project management function to corporate growth and success. However, the studies on this area are still scarce and therefore the researcher recommends a study on: An

examination the ethical practices of project managers influence on growth of firms. This will help validate the propositions to this effect.

The study further recommends studies to focus on the different ethical practices in isolation for closer understanding and thorough examination. To this effect the researcher recommends further research on; the relationship between stakeholders' participation and ethical practices adherence. Research on the role of procurement practices of project managers on performance of the internal audit can also be considered.

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APPENDICES

Appendix I : Letter of Introduction

I am Alex Kiai Reg. No. L50/22173/2019 a student of University of Nairobi undertaking a Master of Arts in Project Planning and Management. I am carrying out a research study on socio-economic factors that influence implementation of roads projects in urban areas. I humbly request that you kindly participate in this study by filling in the attached Questionnaire appropriately. The information obtained will be purely for the research study.

Kindly answer all the questions as instructed and do not indicate your name on the questionnaire.

Yours Sincerely.

Alex Kiai

Appendix I11: Questionnaire

Instructions: Please give your honest opinion. Your contribution towards this study will highly be appreciated. All your responses will be handled in confidence.

Please tick (√) in the space provided and fill in the blank spaces appropriately.

A. General Information

- 1. Gender: Male () Female ()
- 2. Length of Service in Kura Projects: 0 - 1yr () 1 – 2 yrs () 2 – 3 yrs () Over 3yrs ()
- 3. Type of occupation_____
- 4. Level of education:
Secondary () Vocational Training () Diploma () Degree () Masters () Others ()

SECTION B: Project Implementation

5. In this section please tic (√) indicating your level of agreement with the following statements relating to project implementation. Key Use a scale of 1-5, where (1= strongly disagree, 2= disagree, 3=Uncertain ,4= Agree, and 5= strongly Agree) In your opinion, how would you rank the following factors as relating to the project?

Statement	SD=1	D=2	U=3	A=4	SA=5
The Project duration and planning determines the success of implementation in KURA					
The amount of money used in a project determines the success of project implementation in KURA					
Customers are satisfied by properly implemented projects					
Strategy monitoring in KURA creates success of project implementation					
Accountability of project resources in KURA ensures success of implementation					

SECTION C: Procurement Practices

6.To what extent does procurement planning determine road construction project implementation in Laikipia County, Kenya?

Very great extent ()

Great extent ()

Moderate extent ()

No extent ()

7.In this section please tick (✓) indicating your level of agreement with the following statements relating to procurement planning. Key Use a scale of 1-5, where (1= strongly disagree, 2= disagree, 3=Uncertain ,4= Agree, and 5= strongly Agree) In your opinion, how would you rank the following factors as relating to the project?

Statement	SD=1	D=2	U=3	A=4	SA=5
Competitive procurement process (enough potential bidders in process) in KURA					
The choice of a procurement method is dictated by the estimated cost in KURA					
A procuring entity is engaged in procurement by means of restricted tendering in KURA					
A procuring entity is engaged in procurement in KURA if works or services to be procured are satisfied					

8. In what other ways does choice of procurement procedure determine road construction project implementation in Laikipia County, Kenya?

.....

SECTION D: Availability of Resources

9. Indicate the extent to which do you agree with the following statements in relation to availability of resources in the Laikipia County. Use a scale of: SD-Strongly Disagree, D-Disagree, U- Uncertain, A-Agree, SA- Strongly Agree

Statement	SD=1	D=2	U=3	A=4	SA=5
The project managers ensure the quantities and the schedule of the resources is directly linked to the budget					
The project management team does the realistic planning of the project funds					
Difficulties in accessing credit (contractor and sub-contractor) has led to project delays					
Client’s delay in honoring timely payments certificates has led to project delays					

SECTION E: Project Management Implementation Team Competency

10. Indicate the extent to which do you agree with the following statements in relation to Project Management Implementation Team Competency in the Laikipia County. Use a scale of: SD-Strongly Disagree, D- Disagree, U- Uncertain, A-Agree, SA- Strongly Agree

Statement	SD=1	D=2	U=3	A=4	SA=5
Implementation team have relevant experience in the implementation of projects					
Poor decisions making from the implementation team has led to delayed projects					
Implementation team communicate effectively with other stakeholders					

SECTION F: Stakeholder’s Participation

11. In the coming sections, you have been given statements with regard to your level of participation in the projects implemented by Plan. Kindly pick a response that truly reflects on your opinion. 1= strongly disagree, 2= disagree, 3=Uncertain, 4= Agree, and 5= strongly Agree)

Statement	SD=1	D=2	U=3	A=4	SA=5
KURA do not give us an opportunity to give our opinion on projects implementation					
Contract monitoring and evaluation system ensure that the objectives of a contract are accomplished in KURA					
Users involvement enhances transparency and accountability in KURA projects					
Compensation and resettlement disputes (Legal disputes) has led to project delay and increase in delays in road construction implementation					

NOTE: THE INFORMATION PROVIDED WILL BE TREATED WITH OUTMOST CONFIDENTIALITY.

THANK YOU

Laikipia County

