INSTITUTIONAL FACTORS INFLUENCING PERFORMANCE OF RURAL ROADS MAINTENANCE PROJECTS IN MACHAKOS COUNTY, KENYA

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A Research Project Report Submitted in Partial Fulfilment of the Requirements for the Award of the Degree of Master of Arts in Project Planning and Management of the University of Nairobi

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DECLARATION

This Research Project Report is my original work and has not been submitted for a degree in any other university or college for examination or academic purposes.

Signature: ……. Date……

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L50/89304/2016

This research project report has been submitted for examination with my approval as the University Supervisor.

Signed…… Date ……

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DEDICATION

This research project report is dedicated to my mother Magdalene, daughter Gertrude, wife Victoria and classmates.

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I wish to appreciate my supervisor Dr. Dorothy Kyalo and the entire university academic fraternity that took time to assist in this research proposal. I wish to thank my fellow students and my respondents for their continued support and team work that has facilitated the progress so far. This work would not have been possible without the guidance, objectivity and teamwork. I offer thanks to my classmates who shared their insight on coursework and encouraged me through their positive criticism. I appreciate you all.

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ABBREVIATIONS AND ACRONYMS

AIDS:	Acquired Immune Deficiency Syndrome
CARE:	International Humanitarian Agency Delivering Emergency Relief
CSR:	Corporate social responsibility
GoK:	Government of Kenya
GTZ:	German Technical Cooperation Agency
IFAD:	International Fund for Agricultural Development
IFRC:	International Federation of Red Cross
KeNHA:	Kenya National Highways Authority
KeRRA:	Kenya Rural Roads Authority
KURA:	Kenya Urban Roads Authority
M&E:	Monitoring and Evaluation
MDP:	Management Development Programmes
NGOs:	Non-Governmental Organizations
PM&E	Project Monitoring and Evaluation
PPOA:	Public Procurement Oversight Authority's
SPSS:	Statistical Package for Social Sciences
UK:	United Kingdom
UNAIDS:	United Nations Programme on HIV and AIDS
UNDP:	United Nations Development Programme
UN-HABITAT:	United Nations Human Settlements Programme
ToR	Terms of Reference
NACOSTI	National Commission for Science, Technology and Innovation

ABSTRACT

One of the primary challenges confronting Kenya today is the performance of government projects. Legitimate project administration has been fundamental for fruitful project conveyance. Worldwide, interest for qualified project managers has been developing. However, there are not an extensive number of project administrators who have the applicable abilities nor does the important project administration rehearse for attractive project conveyance. The purpose of this study is to establish the institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya. The study was guided by the following objectives; to establish the influence of project team competence, funding adequacy, management support and monitoring and evaluation on performance of rural roads maintenance projects in Machakos County, Kenya. The study was grounded on system theory, stakeholder theory, co-evolutionary theory and the eco systemic theory. The study adopted a descriptive research design. The target population for this study composed contractors, road users, Machakos County Government Transport & Roads department officials, KeRRA, KURA and KeNHA officials. A sample population of 216 respondents was arrived at by calculating the target population of 495 with a 95% confidence level. The study selected the respondents using stratified proportionate random sampling technique. Primary data was obtained using self-administered questionnaires. The questionnaire was made up of both open ended and closed ended questions. The researcher personally administered the research instruments to the respondents. After data cleaning which entailed checking for errors in entry, descriptive statistics such as frequencies, percentages, mean score and standard deviation was estimated for all the quantitative variables and information presented inform of tables. The qualitative data from the open-ended questions was analyzed using conceptual content analysis and presented in prose. Inferential data analysis was done using multiple regression analysis. In testing the significance of the model, the coefficient of determination (R^2) was used to measure the extent to which the variation in performance of rural roads maintenance projects is explained by the variations of the institutional factors. The study found that project team competence, monitoring and evaluation, funding adequacy and management support influence performance of rural roads maintenance projects in Machakos County greatly. The study concluded that project team competence had the greatest influence on performance of rural road maintenance projects in Machakos County, Kenya followed by monitoring and evaluation, then funding adequacy while management support had the least influence on the performance of rural roads maintenance projects in Machakos County in Kenya. The study recommended that management should allocate adequate financial resources, promote timely disbursement and enhance procurement to ensure all resources required for project implementation are provided in time.

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

The ultimate importance of project performance is achieved through avoiding the project's failure to keep within cost budget, failure to keep within time stipulated for approvals, design, occupancy and failure to meet the required technical standards for quality, functionality, fitness for purpose, safety and environment protection (Flanagan & Norman, 2013). Project performance ensures that enterprises maximize on profitability, minimize the consequences of risky and uncertain events in terms of achieving the project's objectives and seizes the chances of the risky events from arising (Kululanga & Kuotcha, 2010).

The criteria of project performance for the project will be cost, time and quality which are basic elements of project success (Lim & Mohammed, 2012). Quality is all about the entirety of features requisite by a product to meet the desired need and fit for purpose. To ensure the effectiveness and conformity of quality performance, the specification of quality requirements should be clearly and explicitly stated in design and contract documents. Project performance measure for this is defined in terms of cost, time, quality and profitability, as small and medium enterprises focus on earning returns over project investment.

1.1.1 Performance of Rural Roads Maintenance Projects

Globally, studies conducted by researchers indicate that most projects fail to achieve their mission within cost and time constraints. United Kingdom (UK) in 2010 statistics showed that 52% of projects had cost overruns in excess of 10% while 45% of projects had time overruns of over 25% (Burrow, 2011). Same research indicated that similar studies carried out in India showed that 56% of projects had cost overruns in excess of 20% while 49% had time overruns in excess of between 1 and 160 months. Projects were initiated by kings and other leaders to undertake monumental projects to build a name for themselves and their generations to come (Mbatha, 2011). Ancient structures did not have time limitation or cost limitation. However, causes of delays have been identified in various parts of the world recently such as Malaysia, Saudi Arabia, Jordan, Kuwait, Hong Kong and Thailand (Flanagan & Norman, 2013). The results reveal that there are differences and similarities as to the causes of delays. Thus, the consultants work out a project to fit within the said amount, and not beyond. This limits creativity and innovation, unlike in the past as stated (The Quantity Surveyor, 2011).

The cost and time overruns in Australia in traditional and new systems accounts for 13-19% of cost overruns and 10 to 69% of time overruns. New systems give 11% and 13 to 25% respectively (Love *et al*, 2015). Many contractors are unfamiliar with these institutional factors and do not have experience and knowledge to manage them effectively and efficiently (Baloi & Price, 2016). There need to be foresight of improving knowledge of the links between risk perception, attitude towards risk objects and actual behavior (Flanagan & Norman, 2013). Consultants use skills, knowledge and experience with care to ensure clients' interests are protected. Improved effective management of change and clarify project issues from start. Decisions supported through analysis, define and structure of projects continually monitored, clearer understanding of specific risks associated with projects (Schwalbe, 2015).

In Tanzania, Uganda, Nigeria, South Africa and Mozambique causes and effects of institutional factors to project time and cost overruns to project completion by various causes of delays and disruptions as; design changes, delays in payment to contractors, information delays, funding problems, poor project management, compensation issues and disagreement on the valuation of work done. Conversely, time overrun, cost overrun, negative social impact, idling of resources and disputes are the main effects of delays and disruptions. There still exists a number of causes of delays and disruptions and their influences put construction projects at great risk that have an influence on their performance (Kikwasi, 2012). The studies recommended that adequate budget, timely issuing of information, finalization of design and project management skills should be the main focus of the parties in project procurement process. Public Procurement Oversight Authority's (PPOA, 2015)

Conditions of government projects have provisions for variations, extension of time within reasonable limits and loss and expense clauses. The document also limits the extent to which the architect/project manager can vary the contract, but with express authorization of the tender/project committee and approval. Waihenya (2011) conducted research works on both cost and time implications on construction projects. This research was therefore geared towards identifying the factors influencing completion of projects in Government Tertiary Institutions in Nairobi County in Kenya, but from a contractor's point of view. The project managers are allowed to vary the extent of works, but with limitation of about 15%. At the same time, variations that have cost implication may also have time impact, thus contractors are allowed to apply for extension of contract period, but based on facts.

Thus, successful management of processes employed in acquisition of these assets are to a large extent, determined by the amount of resources expended, time taken and quality when

compared to similar projects. Infrastructure includes the capital required to produce economic services from utilities (like electricity, telecommunication, and water) and transport (roads, bridges, seaport, and airports) and are central to promoting economic activities (Kimani, 2014). Most of the studies carried out show the project manager as the sole cause of cost and time overruns in project, managerial mishaps as well as tainting the environment. This has been done with the hope that the contractors reap massive proceeds from the project. This could be true to some extent but cannot be substantiated as parties privy to contract have specified and clearly spelt out roles to play for successful implementation of projects. It is the responsibility of the client to pay for all costs of the project. Consultants are tasked with the duty to plan, design and ensure proper implementation and supervision of the project. The contractors are tasked with actualizing the client's desire to tangible product that meets set criterion and within certain set out parameters (The Quantity Surveyor, 2011).

In Kenya, project performance has been measured through project cost, quality, customer or stakeholder's satisfaction, timeliness and achieving of project objective as effective indicator to measure of project performance (Nyikal, 2011). The institutions that used a stakeholder participatory approach while involving the youth had greater chances of success than others that did not consider such an approach as established by Lekunze, Antwi and Oladele (2011). Atiibo (2012) on the other hand examined stakeholder management challenges and their impact on project management in the case of advocacy and empowerment in the upper east region of Ghana. The study found that the interests and roles of the key stakeholders were very critical to the operations, however stakeholder management was found to be characterized by casual and ad-hoc actions and predominantly not institutionalized.

Bal (2014) carried out a study on stakeholder involvement and sustainability-related project performance in construction. The study focused on stakeholder involvement with the aim to improve the construction project performance through achieving construction sustainability. O'Halloran (2014) investigated the awareness of stakeholder management amongst project managers in the Ireland. The outcome of the primary research showed project managers in the Irish industry considered the vast majority of stakeholder analysis and involvement methods as effective.

1.1.2 Rural Roads Maintenance Projects in Machakos County

Machakos County with a population of 1,084,129 million people has seen an un-preceded upsurge in construction projects occasioned by the need to create enough office space as well

as improvement of existing infrastructure to cater for the new devolved governments. This has seen the county commit up to 30% of its budget to development, a big percentage of which is going to new buildings. According to the governor of Machakos the county government has an ambitious master-plan that will see the face of the county lifted by the envisioned planned Machakos City that will be provided at attractive lease terms to develop housing to cater for Nairobi city and Konza techno city which is 15 Km from Machakos. Machakos is set to become the dormitory for those two cities and therefore there is certainly a high upsurge in rural road maintenance activities (Machakos County report, 2013).

However, like any other part of the world Machakos County has had its own share of challenges in meeting the time deadlines of its rural road maintenance projects. Projects currently ongoing have not been performing to expectations in terms of timeliness. Indeed, most of the projects started in the last two years are way behind the set time schedules they were meant to be completed (Ministry of Transport, Roads, Public Works and Housing, 2014). In most projects are eventually completed more or less to specification, although they are seldom on time as argued by Mue (2010). Chai and Yusuf (2013), while stressing the importance of completing rural road maintenance projects on time and within budget argue that "time is essence" and time is "revenue". This means that any delay in meeting project completion time undoubtedly interprets to loss of revenue. It is against this background that this study investigated the institutional characteristics and performance of government projects in reference to construction projects in Machakos County.

Influence of institutional factors on performance of rural road maintenance projects can broadly be grouped under broad themes namely; project team competence, funding adequacy, management support and monitoring and evaluation arrangements. These factors contribute to performance of rural road maintenance projects (Abdulsalam, 2013). In order to properly utilize knowledge of workers, greater employee autonomy is required, and is facilitated through employee participation in decision making and teamwork rather than centralized controlled and planning. Bureaucracies in large forms are apparently causes of reduction of creativity among employees. Because when every specific action has been previously designed to happen in just few allowed area and forms, it follows that there would be no room to have a creative way of doing routine tasks. To mention that why this is a kind of disadvantage it is useful to consider the growing sense of dissatisfaction among the employees of mechanistic organization. It is also important to note that the mechanical thinking about business organizations comes from the idea of bureaucracy and leads to the

thinking mechanistically not only about the organization but also about people who work in such an organization (Abas et al., 2015).

From previous studies, disbursement problem has been known to contribute to delayed rural road maintenance project completion (Leurs, 2010). Complaints have been raised that donors are generally very slow at delivering what they promised. Both the preparation and implementation stages were consequently seriously affected. Borrowers feel that donors are quick to make funding pledges, but as soon as one gets to the details of the intervention and the conditions for delivering the funds, serious delays built up (Rifat & Mohammad, 2014). The study will establish the institutional factors influencing performance of rural road maintenance projects in Machakos County, Kenya.

1.2 Statement of the Problem

Government projects in Kenya are facing challenges of qualified project chiefs and lack of an extensive number of project administrators who have the applicable abilities required for project administration rehearse for effective project conveyance (Leurs, 2010). More than Kshs 100 billion is lost because of absence of project administration aptitudes and related innovations. One path in which poor project administration aptitudes as a rule shows itself is fizzled projects or delays in project execution (Githenya & Ngugi, 2014). The disappointment of rural roads maintenance projects improvement tasks is an issue in Kenya if administrative difficulties are not tended to.

Despite so many projects having been initiated so as to transform the living standards of the constituents, little has been achieved (Rifat & Mohammad, 2014). Many projects have been initiated but never completed. Other projects have been stopped due to various challenges such as repeated accusation of abuse of funds, patronage due to excessive powers, incomplete projects, lack of technical capacity, poor planning and a litany of other weaknesses which threaten to undermine the very success of rural roads maintenance projects (Abdulsalam, 2013). Through these linkages and digitization, the government will curb fraud, create openness in terms of tendering and enhance responsibility and accountability of government officers (Shair, 2012).

Hence, a number of studies have been done to determine the factors that affect customer satisfaction in both sectors, especially with regard to service delivery. In this respect, studies have been done in this area conducted by (Panda & Das, 2014; Afande, 2015; Kagiri, 2015; Wambugu, 2012; Mutunga, 2010). However, none of these studies focused on institutional

factors and performance in reference to rural roads maintenance projects in Machakos County. Therefore, this study sought to fill this gap by establishing the institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya.

1.3 Purpose of the Study

The purpose of this study was to establish the institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya.

1.4 Objectives of the Study

The study was guided by the following objectives:

i. To establish how project team competence influence performance of rural roads maintenance projects in Machakos County, Kenya.
ii. To assess how funding adequacy influence performance of rural roads maintenance projects in Machakos County, Kenya.
iii. To establish how management support influence performance of rural roads maintenance projects in Machakos County, Kenya.
iv. To determine how monitoring and evaluation influence performance of rural roads maintenance projects in Machakos County, Kenya.

1.5 Research Questions

The study sought answers to the following research questions:

i. How does project team competence influence performance of rural roads maintenance projects in Machakos County, Kenya?
ii. How does funding adequacy influence performance of rural roads maintenance projects in Machakos County, Kenya?
iii. How does management support influence performance of rural roads maintenance projects in Machakos County, Kenya?
iv. How does monitoring and evaluation influence performance of rural roads maintenance projects in Machakos County, Kenya?

1.6 Significance of the Study

It is hoped that the findings of the study would offer valuable contributions from both a theoretical and practical standpoint. From a theoretical standpoint, the findings of this study would broaden the understanding of institutional factors influencing performance of rural roads maintenance projects. The findings might further be used as a pilot project by other government corporations hence promoting project ownership and encouraging inclusivity by

tapping on indigenous knowledge therefore improving chances and status of road maintenance projects.

The study findings would also be used by the government and particularly policy makers, planners and program implementers to formulate policies and strategies on effective maintenance of developmental projects in the Country more so in rural areas. The research findings would lay some foundations for further research on the institutional factors influencing performance of rural road maintenance projects.

1.7 Delimitation of the Study

This study was on the institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya. The study mainly focused on the influence of project team competence, funding adequacy, management support and monitoring and evaluation on performance of rural roads maintenance projects in Machakos County, Kenya. The respondents comprised of Contractors, Machakos County government officials in Transport and Roads, National government officials in Roads sector and rural residents in Machakos Sub County. The study was carried out in a period of three months.

1.8 Limitations of the Study

The study anticipated encountering some limitations that could hinder access to information that the study sought. The respondents targeted in this study could be reluctant in giving information fearing that the information being sought would be used to intimidate them or print a negative image about them. The researcher handled this by carrying an introduction letter from the University to assure them that the information they give would be treated with confidentiality and used purely for academic purposes.

The other limitation is that though the study was based in Machakos County, it could not include all projects around the County owing to the amount of time and resources available. This study may therefore suffer from generalizability of the results if the nature of projects undertaken is significantly different from those in Machakos Sub-County. In addition, the findings of this study were limited to the extent to which the respondents were willing to provide accurate and reliable information. The researcher checked for consistency and tested the reliability of the data collected.

1.9 Basic Assumptions of the Study

The study assumed that there were no serious changes in the composition of the target population that would influence the effectiveness of the study sample. This study also assumed that the respondents were honest, cooperative and objective in their response to the research instruments and would be available to respond to the research instruments in time. Finally, the study assumed that the authorities in the various offices would grant the required permission to collect data from various stakeholders.

1.10 Definition of Significant Terms Used in the Study

The following are the definitions of terms that were used throughout this study:

Funding Adequacy: Refers to sufficiency of an economic or productive factor required in accomplishing an activity, or as means to undertake an enterprise and achieve desired outcome.

Institutional factors: These are internal aspects in an organization that have a direct influence in the implementation of the various functions. This study will focus on project team competence, funding adequacy, management support and monitoring and evaluation.

Maintenance projects are projects carried out in order to preserve the condition or situation or the state of the existing road. It is common to carry out small upgrades of roads such as widening or shoulder sealing together with rehabilitations.

Management support: This is when high level managers in a corporation seek to help lower-level employees to develop a certain behavior or assist them perform their duties.

Monitoring and evaluation is the observation and checking the progress or quality of project over a period of time; keeping under systematic review and then making of a judgement about the assessment.

Performance of rural roads maintenance projects is the accomplishment of roads projects execution measured against preset known standards of quality, completeness, cost, functionality and speed.

Project team competence - Staff competency is the possession of appropriate mix of skills, knowledge and expertise, the motivation and will to act, experience in carrying out monitoring and evaluation programs, accurateness in conducting

monitoring and evaluation and the time taken to complete a particular monitoring and evaluation assignment.

1.11 Organization of the Study

This study is organized into five chapters. Chapter one contains the introduction to the study. It presents background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the Study, delimitations of the study, limitations of the Study and the definition of significant terms. On the other hand, chapter two reviews the literature based on the objectives of the study. It further looks into the conceptual framework and finally the summary. Chapter three covers the research methodology of the study. The chapter describes the research design, target population, sampling procedure, tools and techniques of data collection, pre-testing, data analysis, ethical considerations and finally the operational definition of variables. Chapter four presents analysis and findings of the study as set out in the research methodology. The study closes with chapter five which presents the summary of findings, discussions, conclusions, and recommendations for action and further research.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter provides an extensive literature and research related to institutional factors influencing performance of rural roads maintenance projects. This literature review summarizes a diverse spectrum of views about institutional factors. The chapter is thus structured into theoretical, conceptual and empirical review. The chapter also presents the knowledge gap the study seeks to fulfill.

2.2 Performance of Rural Roads Maintenance Projects

The criteria of project performance for the project will be cost, time and quality which are basic elements of project success (Lim & Mohammed, 2012). Quality is all about the entirety of features requisite by a product to meet the desired need and fit for purpose. To ensure the effectiveness and conformity of quality performance, the specification of quality requirements should be clearly and explicitly stated in design and contract documents. Project performance measure for this is defined in terms of cost, time, quality and profitability, as small and medium enterprises focus on earning returns over project investment.

Rural road assets are often under-maintained, either because maintenance is poorly planned or because planned maintenance is deferred. Political consideration or pursuit of personal gain often biases infrastructure expenditure towards new assets over maintenance. Inadequate maintenance increases lifetime costs while also decreasing benefits. Regular maintenance is usually the lower-cost way to keep infrastructure assets at serviceable standards, compared to the alternative of allowing quality to degrade until major rehabilitation work is needed. (Foster & Briceño-Garmendia 2010a) estimates that preventative maintenance for the roads sector in Africa could save $2.6 billion a year in capital expenditures rehabilitation. In South Africa, a review of road maintenance by the South African National Roads Agency that delaying road maintenance for three years leads to increased costs of six times the original costs of preventative maintenance. If road maintenance is delayed for five years, costs rise to 18 times the preventive cost.

The poor performance of under-maintained infrastructure can be costly for users. For example, a U.S. Engineers' Association report estimates that poor road conditions cost motorists $67 billion a year in repairs and increased operating costs, while leaking pipes lose an estimated seven billion gallons of clean drinking water a day. Criteria regarding

infrastructure quality: level of maintenance, capacity, physical condition, funding, public safety, resilience, and innovation. It recommends that all projects greater than $5 million use life cycle cost analysis and develop a plan for funding the project, including its maintenance and operation, until the end of its service life (ASCE 2009).

There need to be foresight of improving knowledge of the links between risk perception, attitude towards risk objects and actual behavior. Consultants use skills, knowledge and experience with care to ensure clients' interests are protected. Effective management of a project is important to enhance performance from the very start of the project. Decisions supported through analysis, define and structure of projects continually monitored, clearer understanding of specific risks associated with projects (Flanagan & Norman, 2013).

2.3 Project Team Competence and Performance of Rural Roads Maintenance Projects

Project team competence is a standardized requirement for an individual to properly perform a specific job. Berardi (2013) observed that there are many ways to define and measure the adequacy of staff competency, capacity and the effectiveness of agencies tasked with the construction projects. The effectiveness of the project team tasked with construction project administration depends to a large extent on the project staff capacity relative to the demands placed upon them. To be effective, rural road maintenance projects need to have sufficient and capable staff with the appropriate mix of skills and expertise, the motivation and will to act, and the incentives and resources necessary to achieve their mandate.

Further it was postulated that the ability of a project's staff to meet demands for its services depends on both its numbers and the skills and expertise staff members bring to the job (Kent, 2011). A project team needs to have at least the minimum necessary mix of skills and expertise and a sufficient number of staff with appropriate skills relative to the scale of its responsibility. Rural road maintenance projects do not implement themselves. They require people to carry out laid down work, there is need to understand who will work on the systems, what skills and knowledge they have and the overall level of human resources available – both within the team and externally – to support your project execution plan. The minimum required mix of skills and expertise, and the required number of staff per unit managed or administered by the agency can be established through estimates provided by knowledgeable informants (Economic Stimulus Programme Handbook, 2009).

These informants could include current and past managers of the stimulus rural road maintenance project analysts, researchers, tracking the stimulus project operations and

functioning (Yıldız & Arsan, 2011). Based on their informed contractors or consultancy firms' opinions, a range of estimates for the minimum required skill mix and the number of required staff with requisite skills per unit can be established as points of reference. The relative attractiveness of the agency's compensation package and prospects for professional growth and promotion can motivate staff and serve as incentives for good performance. Norms of professional behavior set standards and expectations on how staff members ought to conduct themselves in the course of their work. The degree to which these standards are adhered to also provides some indication of quality of staff performance and of how effectively an agency is managed (Kent, 2011).

It was argued that skilled personnel staff entrusted with rural road maintenance project execution should have required technical expertise in the area (Kalsaas, 2012). Where necessary, skill levels should be augmented to meet the needs and with ongoing investments in developing such capacity within the office as necessary. Specific considerations for budgeting and financing for effective construction endeavors of the project should estimate and indicate financial requirements and financing means for each evaluation in the evaluation plan. The effective project team consists of a group of people who understand the project objective, have expertise in their field as it relates to the rural road maintenance project, and understand each person's role and responsibility. Project team members need to be willing to cooperate and collaborate, trust and respect other team members, and focus on results.

The Global Alliance for Project Performance Standards identifies six major units for project manager competency: manage stakeholder relationships, manage development of the plan for the project, manage project progress, manage product acceptance, Manage Project Transitions and Evaluate and Improve Project Performance. In addition, coordination problems will contribute to delay. Ali et al. (2008) stated that lack of coordination between contractors and subcontractors will lead to delay, for example in the situation that newly revised construction drawings of a project may be issued later by the contractors to the subcontractors. This leads to construction mistakes and the work requiring to be redone. Reconstruction work takes additional time, therefore impacting upon the completion time of the rural road maintenance project (Kerzner, 2013)

Most of the unskilled labourers used in the Malaysian rural road maintenance construction industry are foreign labourers. These foreign labourers have little formal education (Kalsaas, 2012). Thus, coordination is very important to guide and instruct these labourers to perform their work correctly. Without coordination, the project will be delayed due to rectifying

defective works and low productivity of labourers. Poor Site Management Effective and efficient site management by contractors is very important to ensure projects are completed on time. Poor coordination contributes to delay from estimated completion time. Poor site management may occur when contractors do not have enough experience and suffer from a lack of knowledge in managing the project team (Wan, Kumaraswamy & Liu, 2013).

Globally from a resource-based point of view, superior performance of rural road maintenance projects is linked to the resources and capabilities possessed by a particular project staff. Even though conceptualizing and or measuring these capabilities is not straight-forward, an in-depth analysis of employees' competences and their development is inevitable because they form a key source for competitive advantage in construction projects. This holds particularly true for construction projects branches facing so-called hyper competition which de-notes a competitive situation where the key success factor is the ability to constantly develop new products, completed in stated timelines providing the customer with increased functionality and performance. From an economic modeling point of view, allocating available resources amongst a set of project opportunities poses a decision-making problem of intriguing complexity (Kalsaas, 2012).

2.4 Funding Adequacy and Performance of Rural Roads Maintenance Projects

Adequate resources ensure effective performance of rural roads maintenance projects. It is critical to set aside adequate financial and human resources at the planning stage (Seith & Philippines, 2012). The required financial and human resources for rural roads maintenance projects should be considered within the overall costs of delivering the agreed results and not as additional costs. Dedicated staff time for effective rural roads maintenance projects, staff should be dedicated for the function. The practices of deployment of personnel for monitoring vary among organizations. While rural roads maintenance projects can often compensate for a lack of technical capacity through training and/or outsourcing, they cannot compensate for the lack of money. Carrying out rural roads maintenance costs money and, depending on how ambitious project implementers are about their maintenance system, it can cost a lot of money.

National rural roads maintenance systems in resource-limited settings tend to be chronically challenged, with persistently incomplete reporting and inaccurate data posing a major threat to their utility (Kawonga, 2012; IFAD, 2012). Conducting rural roads maintenance activities requires that an organization invest valuable resources, including money and peoples' time.

At the earliest stage of designing a rural roads maintenance activity, key stakeholders must decide on whether the activity is worth pursuing given the expected use and costs. At least a rough budget for the activity is therefore needed as part of up-front planning. This may be done initially as part of an overall rural roads maintenance plan and again as a first draft of ToR is developed (Estrella, 2010). The project budget should provide a clear and adequate provision for monitoring and evaluation activities. A key function of planning for rural roads maintenance is to estimate the costs, staff, and other resources that are needed for M&E work. It is important for rural roads maintenance specialists to weigh in on rural road maintenance budget needs at the Project Team Competence stage so that funds are allocated.

Financial resources for rural roads maintenance projects should be estimated realistically at the time of planning for implementation of monitoring and evaluation (UNDP, Handbook on planning, monitoring and evaluating for development results, 2009). The availability of finances will determine what can be achieved as far as implementation, strengthening and sustainability of system is concerned (UNAIDS, 2008a). Quite often money to undertake rural roads maintenance is not factored in implementation of many projects. One in four countries with a national M&E plan has not calculated the budgetary requirements (Report on the Global AIDS Epidemic, 2008). Rural roads maintenance activities tend to be pushed to the periphery in the allocation of funds for project activities (Report on the Global AIDS Epidemic 2008).

In addition, it is important to allocate required funds annually for each outcome on the basis of planned costs of monitoring and evaluation from overall programme budget to the facility or fund (Nisar, 2013). It is important that partners consider the resources needed for monitoring and evaluation and agree on a practical arrangement to finance the associated activities. Such arrangements should be documented at the beginning of the programme to enable partners to transfer necessary funds in accordance with their procedures, which could take considerable time and effort Human resources are critical for effective rural road maintenance, even after securing adequate financial resources.

Many organizations fail to decentralize and allocate resources as they consider rural roads maintenance as just an activity. In essence, rural roads maintenance has assumed a major biasness compared to Evaluation that receive little or no attention if any. According to Rubin and Rubin (2008), organizations cite lack of funds to conduct. Financial availability is the stronghold of implementing strong and effective rural roads maintenance (Global fund,

2013). IFAD (2012), in its report noted that most developing countries are being faced with the challenge of implementing sound rural roads maintenance due to lack of control on their funding. Therefore, donors need to put more emphasis on the establishment of sound systems through factoring this in the funding (World Bank, 2012). This is the only way to ensure that most of these projects realize their goals and leave a sustainable impact on the society.

2.5 Management Support and Performance of Rural Roads Maintenance Projects

Project management as earlier noted is the discipline of planning, organizing, motivating, and controlling resources to achieve specific goals. The project management is the backbone of the project, through their actions and moves they determine the direction of the project. They have the right and responsibility to know what is happening in the program or project, which aspects need corrective action, what the results are expected, and which lessons can be learned and shared with one another, but they should not simply be recipients of rural road maintenance projects reports (Langi, 2008). One effective way for management to contribute to the achievement of program or project's objectives is to be directly involved in the rural road maintenance projects process - in the formulation of critical questions and in the collection and analysis of data. This enables them to participate directly in the assessment of the relevance, performance, and success of the program or project and in recommending how to improve the quality of current and future interventions.

Project management is the team in charge of the project and it includes: project manager, project staff, PM&E staff and implementing partners (CARE, 2012). To ensure the success of the rural road maintenance projects system, the management needs to support it (World Bank, 2011). The project management is responsible for making decisions and strategic planning of the project. It also manages the system by tracking indicators, producing quarterly project reports and annual strategic reports (IFRC, 2011). The project manager ensures that the project staffs carry out their jobs effectively (Guijt, 2009). The project staff does the implementation role where they collect monitoring data and present it in weekly and quarterly reports (IFRC, 2011).

Managers with the needed information for day-to-day decisions; key stakeholders with guidance information on the project strategy; project early warnings signs; empowerment to beneficiaries; capacity building as well as assess progress and build accountability (Welsh et al., 2011). Rural roads maintenance is therefore a learning process that centers on efficiency,

effectiveness and impact of the project. However, for management to deliver proper planning has to be in place, by which progress and achievements are measured against (Shapiro, 2011).

At times irrelevant and poor-quality information is produced through evaluation as it focuses only on the physical and financial aspects and ignores factors such as project's outreach, influence and impact (Khan, 2013). According to (McLaughlin and Jordan, 2009), choosing what to measure, collecting and analyzing the data necessary for improvement measurement is new to many managers. However, establishing relevant evaluation indicators will set the standard to measure their achievement. Indicators for use in monitoring and evaluation should be selected during the formulation stage of a program or project when the objectives are being established (UN-HABITAT, 2013).

Research managers have to decide on how to gather and analyze the information as well as document a plan for a rural roads maintenance projects process (Goyder, 2009). Setting-up a system is desirable because it helps to build stakeholders' understanding of the project and creates a learning environment by sharing understanding of terminology and action, develop a framework, approach or system that is designed within the institutional context, standardize data collection to ensure that results are valid and comparable (Khan, 2013).

Management participation in implementation can produce effective communication for various other objectives. These include facilitating communication of 'early wins' to increase support and enlist engagement of those who are not yet engaged, ensure access of early products and services of initiatives for intended beneficiaries, mobilize additional resources to fill resource gaps, and ensure effective use of lessons learned in future decision-making (Chaplowe, 2008). Management participation throughout the programming cycle ensures ownership, learning, and sustainability of results. Specific measures have to be built into program and project management processes to ensure continued and effective involvement of stakeholders (UNDP, 2012).

Management involvement enhances the credibility of the evaluation process and ensures increased acceptance of the findings. A strong results-management process aims to engage other stakeholders in thinking as openly and creatively as possible about what they want to achieve and encourage them to organize them to achieve what they have agreed on, including putting in place a process to monitor and evaluate progress and use the information to improve performance (UNDP, 2009).

2.6 Monitoring and Evaluation and Performance of Rural Roads Maintenance Projects

Project monitoring is a continuous and periodic review and overseeing of the project to ensure that input deliveries, work schedules, target outputs and other required action proceed according to plan (UNFPA, 1990).

Evaluation, on the other hand, is the systematic and objective assessment of an on-going or completed project, program, or policy, including its design, implementation and results. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, impact, and sustainability. An evaluation should provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process of both recipients and donors (Görgens & Kusek, 2009). From the above two definitions, it is immediately evident that monitoring and evaluation are distinct yet complementary.

Monitoring gives information on where a policy, program or project is at any given time (and over time) relative to respective targets and outcomes. It is descriptive in intent.

World Bank (2011) asserts that M&E creates a good environment for interaction between stakeholders and bring on board resources available, use and monitor and evaluate impact brought by the resources. In this case, all stakeholders are able to improve on mitigation factors by engaging in development matters with the government, resource audit, identification of gaps and suggesting the way forward. According to Chikati (2010), monitoring encourages continuity of projects with an aim of collecting, analyzing and communicating information in-order to put measures on where things are not working as per the plan. Monitoring and Evaluation is aimed at drawing lessons that can be used in future projects. Monitoring and evaluation is a process of self-assessment, knowledge generation, and collective action in which stakeholders in a program or intervention collaboratively define the evaluation issues, collect and analyze data, and take action as a result of what they learn through this process (Rossman, 2012).

An evaluation from start to finish can give stakeholders a sense of ownership over the results; provide timely, reliable, and valid information for management decision-making, increase cost-effectiveness of monitoring and evaluation information. The purpose of evaluation is to help the stakeholders of a project to better understand whether their hard work is having the impact they desire. In addition, evaluation aims to analyze the past to understand the future of the project (Gaventa & Blauert, 2007). Monitoring and Evaluation offers development

organizations a host of opportunities for improving the performance of the projects undertaken in quality of building construction.

Further it is argued that the need for good governance, sustained and rapid development in Africa led to recognition of Monitoring and Evaluation as a profession and as a result the first African Monitoring and Evaluation association was formed in 1998 (World Bank, 2009). According to the World Bank, "Putting up an effective M&E system is of enormous value for it makes processes more transparent as well as providing clear regulatory framework to achieving high quality of building construction projects (World Bank, 2012).

South Africa being one of the African countries that are practicing monitoring and evaluation in improving quality of building construction projects which has borrowed best practices from developed countries like Canada, United Kingdom and United States among others. This was done by the department of Monitoring and Evaluation in full support of the government. During the monitoring, the teams interview users and staff as well for their view on system performance and a score card is produced for each facility, as well as an improvement plan in quality of building construction projects (World Bank, 2012). In this case, the people are fully involved in Monitoring and Evaluation process hence enabling the stakeholders to analyse, reflect, develop strategies and draw common conclusion on corrective measures to be taken in future projects (Nuguti, 2009).

Borrowing a leaf from South African Government, the Kenya government has also started contracting method to improve quality of building construction projects where they outline what they would want to do, indicators and expected outcomes (GoK, 2008). The Monitoring and Evaluation approach has been very effective in many social economic development projects in Africa and the world at large. Bayer and Bayer (2012) in their study in West Africa and Kenya reveal the importance of M&E in enhancing quality of building construction projects. According to the authors a project run by GTZ in development project (MDP), the need for M&E was highly emphasized so as to promote self-help capacity.

2.7 Theoretical Framework

This section discusses the theoretical foundation on which the study was anchored. The study was grounded on system theory, stakeholder theory, co-evolutionary theory and the eco systemic theory.

2.7.1 System Theory

The term system theory originates from Bertallanfys general system theory. Margaret Mead was an influential figure in systems theory. Organizations are social systems. Real systems are open to and interact with their environments (Kinaro, 2015). The different parts/elements within and around the organization intermingle to influence the way organization operate and therefore strategy implementation. It can be argued from a systems approach to strategic management that many of the reasons for strategies failure may be attributed to the successive dominance of different reductionism approaches to strategic management (Gregory & Parsa, 2013). Such partial approaches to project management ignore the complex, embedded and dynamic nature of today's organization.

Taking the system approach in project implementation helps managers of organizations to have to understand the customer, better predict environmental reaction and coordinate strategic project activities, obtain management commitment, estimate time requirements, ability to follow the plan, manage the strategic change and ensure effective communication (Rowlinson & Cheung, 2008). Therefore, this theory is relevant to this study as it postulates how an organization functions and through this a better understanding of institutional factors in regard to institutional factors influencing performance of rural road maintenance projects.

2.7.2 Stakeholder Theory

Stakeholder theory is primarily a management instrument. The attributes power, urgency and legitimacy of claims define organizations stakeholders. Power and urgency must be attended to if managers are to serve the legal and moral interests of legitimate stakeholders (Hwang & Ng, 2013). Stakeholder theory thus contains methods for identifying and managing stakeholders. In addition, a substantial amount of work has been done on identifying the relative influence of different stakeholders. In order to be able to identify stakeholders, it is important to have a clear notion of what a stakeholder is.

From the presented theory, it can be argued that construction sector can be characterized as being a complex setting with multiple stakeholders that often have multiple, vague and diverging goals. However, no significant evidence has been found that categorically prevents the transfer of functioning ideas, techniques and theories from the private sector to the public sector. Still, the likelihood of successful outcomes of such transfers is assumed to be related to the degree of adjustment to fit the characteristics of the target setting (Getz & Page, 2016).

Key tenets of the theory include acknowledging that any organization or project is surrounded by a variety of stakeholders and that these stakeholders can influence the organization or project. It is therefore important to understand the interests of key stakeholders in order to maneuver an organization or a project with a minimum of conflict. Stakeholder analysis is particularly useful in mapping key stakeholders of a project and identifying their respective interests in the project. The stakeholder analysis thus seems like an appropriate candidate remedy for the complexity related challenges of the balanced scorecard as a strategic management tool. The emergence of CSR was attributed to stakeholder theory, which suggests that an organizations survival and success is recognized by the achievement of its economic (profit maximization) and non-economic (corporate social performance) objectives in the interest of their stakeholders (Mohamed, 2013).

The stakeholder in an organization was defined as "any group or individual who can influence or is affected by the achievement of the organizations objectives." (Rifat & Mohammad, 2014). Primarily, a stakeholder group comprises of shareholders and investors, employees, customers, suppliers, public entities (e.g. government), and trade associations and environmental groups (Gupta & Maltz, 2015). They suggested that stakeholder theory inclines the companies to undertake CSR activities and then consider the impact on all of its constituents, viz. various stakeholder groups. The theory argues that a firm's financial success is dependent on its ability to formulate and execute a corporate strategy, which manages its relationships with stakeholders effectively.

Management of rural roads maintenance projects considers each stakeholder group in any of the three different ways, namely; normative, instrumental, and descriptive. The normative viewpoint proposes that the firm considers the interests of the entire stakeholder group equally and not only of the customers or stockholders. As per this viewpoint, a firm must lay the framework of a comprehensive CSR initiative in a way that appeals uniformly to the entire stakeholder group. The instrumental viewpoint favours a firm's focus on improving economic performance arguing that the economic success is the key objective for companies. To achieve this it is suggested that firm must lay emphasis on only those CSR attributes that directly improve the economic performance (Gupta, & Maltz, 2015).

Stakeholder theory specifies the extent to which a corporation treats its stakeholders appropriately, and thus is linked to corporate social responsibility (Öberseder, Schlegelmilch & Murphy, 2013). Therefore, this theory helps in understanding of project team competence in relation to performance of rural road maintenance projects.

2.7.3 Co-evolutionary Theory

Co-evolutionary theory, according to Tabishl and Jha (2011), indicates that as firms grow and evolve from small to larger and multidivisional organizations, the strategy implementation methods also evolve simultaneously. The various project implementation models are meant to meet the changing needs of firms as they evolve through various stages of the organizational life cycle. In contrast to the earlier descriptive models, this model is more prescriptive with an, albeit limited, empirical basis. The research highlights three of Akintoye (2009) classifications of project implementation styles: change, collaborative, and cultural.

Not all firms implement their projects in the same manner; nevertheless, research investigating the differing styles of implementation is scarce. Mohamed (2013) utilizes Jungian theory for his framework of implementation style; however, this is very much an analysis of the psychological style of individuals within the firm. The majority of existing classification models in project implementation tend to be normative in nature. Alternatively, they are developed from organizational observation, and as such, become context specific and frequently lack any broader theoretical grounding.

In contrast, Ayudhya (2011) model is comprehensive and based on specific theoretical assumptions and has been used by authors such as Akintoye (2009). Tabishl and Jha (2011) refute the traditional approach to project implementation as simply an addition to the strategy formulation phase of the strategy process. Rather, they contend that project implementation evolves either from a process of winning group commitment through a coalitional form of decision-making, or as a result of complete coalitional involvement of implementation staff through a strong corporate culture. This theory helps in understanding how management support results to performance of rural road maintenance projects.

2.7.4 The Eco Systemic Theory

The Eco systemic theory of Bronfenbrenner (1979) is the most commonly used theory in monitoring and evaluation. Implicit in the systems approach is the understanding that there are layers in the systems that interact with each other to produce certain outcomes. It suggests that effective implementation of inclusion requires the collaboration or interaction of multiple participants. With regard to Eco systemic theory, several researchers argue that monitoring and evaluation are badly implemented because they may be based upon an inadequate understanding of the problem, its causes and the possible solutions (Sabatier, 2005).

If the theory underpinning the policy is fundamentally incorrect, the policy implementation will fail. One of the key proponents of this approach is Elmore (2010). He argues that a more realistic understanding of implementation can be gained by looking at the policy from the view of the target implementers and the service providers. This theorist argues that successful implementation depends more on the skills of local implementers than upon efforts of central government officials. Ashworth and Perera (2015) notes: At the macro implementation level, centrally located actors devise a government programme, at the micro implementation level; local organizations react to the macro- level plans, develop their own programs and implement them. Therefore, this theory is relevant in explaining how monitoring and evaluation affect performance of rural road maintenance projects.

2.7.5 Theory of Change

The theory of change, first published by Carol Weiss in 1995, is defined quite simply and elegantly as a theory of how and why an initiative works. It focuses not just on generating knowledge about whether a project is effective, but also on explaining how and what methods it uses to be effective (Cox, 2009). The theory of change provides a model of how a project is supposed to work. In other words, it provides a road map of where the project is trying to reach. Monitoring and evaluation tests and refines the road map while communications helps in reaching the destination by helping to bring about change. Further, the theory of change provides the basis for arguing that the intervention is making a difference (Msila & Setlhako, 2013). This theory suggests that by understanding, what the project is trying to achieve, how and why, project staff and evaluators will be able to monitor and measure the desired results and compare them against the original theory of change (Alcock, 2009).

Experience has shown that blindly copying or scaling an intervention hardly ever works (Mackay, 2007). An important aim for project managers is to gather enough knowledge and understanding in order to predict – with some degree of confidence – how a project and set of activities might work in a different situation, or how it needs to be adjusted to get similar or better results, hence influencing project performance (Jones, 2011). Therefore, this theory is important in addressing project performance because it helps understand success beyond just knowing what works.

2.8 Conceptual Framework

A conceptual framework is a figure that shows the relationship between the dependent variable and the independent variable. In this study the dependent variable is performance of

rural road maintenance projects while the independent variables include; project team competence, funding adequacy, management support and monitoring and evaluation.

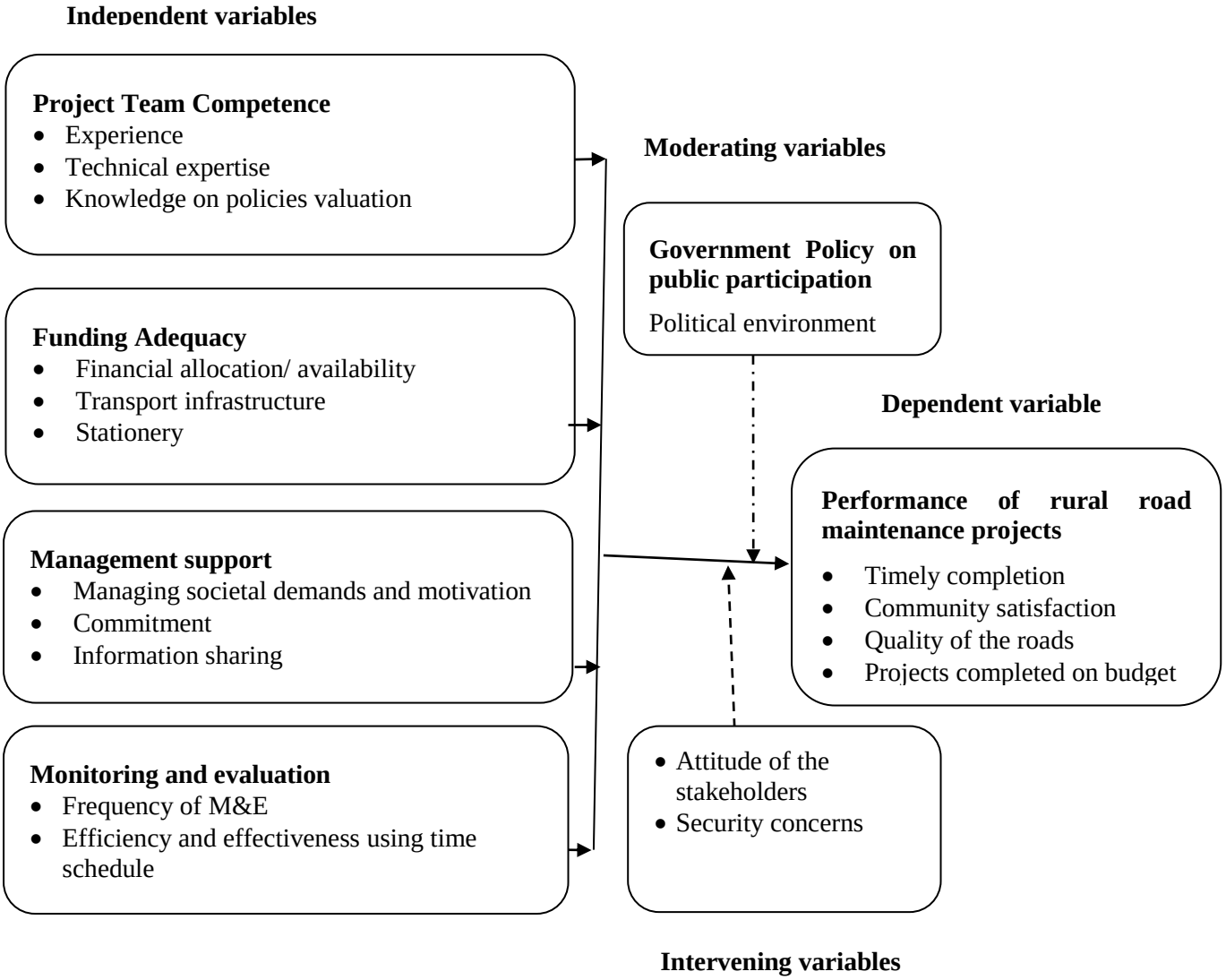

Figure 1: Conceptual framework

2.9 Research Gaps

Most of the reviewed studies in this chapter have been conducted in developed countries whose approach to institutional factors influencing performance of rural roads maintenance projects could be different from that of Kenya. The study has been grounded on system theory, stakeholder theory, co-evolutionary theory and the eco systemic theory. Further, the studies have been conducted on other types of projects other than the rural roads maintenance projects in Machakos County. Again, most of the studies have focused on generally the

factors affecting the maintenance projects focusing on both the internal and external factors while this study narrows down to the institutional factors.

Hence, a number of studies have been done to determine the institutional factors influencing performance of rural roads maintenance projects, especially with regard to service delivery. In this respect, studies done in this area were conducted by (Panda & Satyabrat, 2014; Afande, 2015; Kagiri, 2015; Wambugu, 2012; Mutunga, 2010). However, none of these studies focused on institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya. Therefore, this study sought to fill this gap by establishing the institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya.

2.10 Summary of Literature Review

The study was grounded on system theory, stakeholder theory, co-evolutionary theory and the eco systemic theory. From the literature reviewed rural road assets are often under-maintained, either because maintenance is poorly planned or because planned maintenance is deferred. Project team competence is a standardized requirement for an individual to properly perform a specific job. Specific considerations for budgeting and financing for effective construction endeavors of the project should estimate and indicate financial requirements and financing means for each evaluation in the evaluation plan.

Globally from a resource-based point of view, superior performance of rural roads maintenance projects is linked to the resources and capabilities possessed by a particular project staff. Even though conceptualizing and or measuring these capabilities is not straight-forward, an in-depth analysis of employees' competences and their development is inevitable because they form a key source for competitive advantage in construction projects. Financial resources for rural roads maintenance projects should be estimated realistically at the time of planning for implementation of monitoring and evaluation. In addition, it is important to allocate required funds annually for each outcome on the basis of planned costs of monitoring and evaluation from overall programme budget to the facility or fund. Many organizations fail to decentralize and allocate resources as they consider rural roads maintenance as just an activity.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the procedures and techniques that were used in the collection, processing and analysis of data. Specifically, the following subsections are included; research design, target population and sampling, data collection instruments, data collection procedures and finally data analysis.

3.2 Research Design

Research design stands for advance planning of the methods to be adopted for collecting the relevant data and the techniques to be used in their analysis, keeping in view the objective of the research and the availability of resources (Tashakkori & Teddlie, 2012). Orodho (2009) describes a descriptive research design as a systematic empirical inquiry in which the study does not have direct control of independent variables because their manifestation has already occurred or they are inherently not manipulatable.

The research adopted descriptive research design whereby the study describes a group of individuals on a set of variables or characteristics thus enabling classification and understanding. Thus, this approach was suitable for this study, since the study intended to collect comprehensive information through descriptions which was helpful for identifying variables. The advantage of this design over others is that data can be collected less expensively and within a short time. This is important because the characteristics of variables do not change much in the short period of data collection. (Bryman & Bell, 2011) assert that a descriptive design seeks to get information that describes existing phenomena by asking questions relating to individual perceptions and attitudes. Mixed research has as the main objective, the accurate portrayal of the characteristics of persons, situations, or groups, and/or the frequency with which certain phenomena occur according to Polit and Beck (2003).

3.3 Target population

The target population for this study comprised contractors, road users, Machakos county government transport and roads department officials, KeRRA, KURA and KeNHA officials that were associated with road projects in Machakos County as shown in Table 3.1.

Table 3.1: Target Population

Categories	Population	Percentage (%)
Contractors	100	20.2
Road users	200	40.4
Road maintenance officer county transport	150	30.3
KeRRA	15	3.0
KURA	15	3.0
KeNHA	15	3.0
Total	**495**	**100.0**

3.4 Sample Size and Sampling Procedure

The study sample size and sampling procedure are discussed as follows.

3.4.1 Sample Size

The sampling plan describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample was selected (Blumberg, Cooper & Schindler, 2014). Sampling involves selecting a given number of subjects from a defined population so as to represent the entire population according to Orodho (2003). Stratified and simple random sampling technique was used in this study. Stratified sampling was used to group the target population into categories or strata such as contractors, Machakos county government transport and roads department officials, national government officials in transport and roads and road users. From each category, representative samples were drawn through simple random methods. This method ensures that all the individuals in the target population have an equal chance of being included in the sample. This help to eliminate biasness.

A sample size of 216 respondents was arrived at by calculating the target population of 495 with a 95% confidence level and an error of 0.05 using the below formula taken from Kothari (2004).

$$n = \frac{z^2.N.\partial_p^2}{(N-1)e^2 + z^2\partial_p^2}$$

Where; n = Size of the sample,

N = Size of the population and given as 495,

e = Acceptable error and given as 0.05,

∂p = The standard deviation of the population and given as 0.5 where not known,

Z = Standard variate at a confidence level given as 1.96 at 95% confidence level.

Table 3.2: The Sampling Matrix

Categories	Target population	Sampling Ratio	Sample size
Contractors	100	0.44	44
Road users	200	0.44	88
Road maintenance officers county transport	150	0.44	66
KeRRA	15	0.44	6
KURA	15	0.44	6
KeNHA	15	0.44	6
Total	**495**		**216**

3.4.2 Sampling Procedures

The study selected the respondents using stratified proportionate random sampling technique. Stratified random sampling is unbiased sampling method of grouping heterogeneous population into homogenous subsets then selecting within the individual subset to ensure representativeness. The goal of stratified random sampling is to achieve the desired representation from various sub-groups in the population. In stratified random sampling, subjects are selected in such a way that the existing sub-groups in the population are more or less represented in the sample (Kothari, 2004). The study used simple random sampling to pick the respondents in each stratum where the Kothari (2004) formula was used to get the sample size from the target population.

3.5 Research Instruments

Primary data was obtained using self-administered questionnaires. The questionnaire was made up of both open ended and closed ended questions. The open-ended questions were used so as to encourage the respondent to give an in-depth and felt response without feeling held back in illuminating any information and the closed ended questions allowed respondent to respond from limited options that were stated. The open ended or unstructured questions allow profound response from the respondents while the closed or structured questions are generally easier to evaluate according to Saunders (2011). The questionnaires were used in an effort to conserve time and money as well as to facilitate an easier analysis as they are in immediate usable form.

3.6 Pilot Testing

Pilot testing refers to putting of the research questions into test to a different study population but with similar characteristics as the study population to be studied (Kumar, 2005). Pilot testing of the research instruments were conducted using stakeholders of rural road maintenance projects in Machakos. 17 questionnaires were administered to the pilot survey

respondents who were chosen at random. After one day the same participants were requested to respond to the same questionnaires but without prior notification in order to ascertain any variation in responses of the first and the second test. This is very important in the research process because it assists in identification and correction of vague questions and unclear instructions. It is also a great opportunity to capture the important comments and suggestions from the participants. This helps to improve on the efficiency of the instrument. This process was repeated until the researcher was satisfied that the instrument did not have variations or vagueness.

3.7 Validity and Reliability of Research Instruments

This section focused on how validity and reliability of research instrument was carried out in the pilot testing.

3.7.1 Validity of Research Instruments

Validity is the accuracy and meaningfulness of inferences, based on the research results (Golafshani, 2012). One of the main reasons for conducting the pilot study is to ascertain the validity of the questionnaire. The study used content validity which draws an inference from test scores to a large domain of items similar to those on the test. Content validity is concerned with sample-population representativeness. It was stated that the knowledge and skills covered by the test items should be representative to the larger domain of knowledge and skills (Gillham, 2011). Expert opinion was requested to comment on the representativeness and suitability of questions and give suggestions of corrections to be made to the structure of the research tools. This helped to improve the content validity of the data that was collected. Content validity was obtained by asking for the opinion of the supervisor, lecturers and other professionals on whether the questionnaire was adequate.

3.7.2 Reliability of Research Instruments

Instrument reliability on the other hand is the extent to which a research instrument produces similar results on different occasions under similar conditions. The questionnaire was administered to a pilot group of 17 randomly selected respondents from the target population and their responses used to check the reliability of the tool. This was 8% of the sample size. A construct composite reliability co-efficient (Cronbach alpha) of 0.7 or above, for all the constructs, is considered to be adequate for this study (Rousson, Gasser & Seifer, 2012).

Reliability coefficient of the research instrument was assessed using Cronbach's alpha (α) which is computed as follows:

$\alpha = k/k\text{-}1 \times [1 - \sum (S^2)/\sum S^2 sum]$

Where:

α= Cronbach's alpha

k = Number of responses

$\sum (S^2)$ = Variance of individual items summed up

$\sum S^2 sum$ = Variance of summed up scores

Reliability Analysis

Reliability analysis was subsequently done using Cronbach's Alpha which measures the internal consistency by establishing if certain items within a scale measure the same construct. The Cronbach Alpha was established for every objective which formed a scale. Table 3.3 shows the reliability analysis results.

Table 3.3: Reliability Analysis

	Alpha value	**Comments**
Project Team Competence	0.741	Reliable
Funding Adequacy	0.843	Reliable
Management support	0.719	Reliable
Monitoring and evaluation	0.762	Reliable

The findings in Table 3.3 illustrates that all the four variables were reliable as their reliability values exceeded the prescribed threshold of 0.7, Kothari (2004). This, therefore, depicts that the research instrument was reliable and therefore required no amendments.

3.8 Data Collection Procedures

The researcher obtained an introduction letter from the university which was presented to each stakeholder so as to be allowed to collect the necessary data from the respondents. The researcher also obtained a research permit from National Commission for Science, Technology and Innovation (NACOSTI). The drop and pick method were preferred for questionnaire administration so as to give respondents enough time to give well thought out responses. The researcher booked appointment with respondent organizations at least two days before visiting to administer questionnaires. The researcher personally administered the research instruments to the respondents. This enables the researcher to establish rapport, explain the purpose of the study and the meaning of items that may not be clear as observed by Best and Khan (2003).

3.9 Data Analysis Techniques

Data was analyzed using Statistical Package for Social Sciences (SPSS Version 21.0). All the questionnaires received were referenced and items in the questionnaire coded to facilitate data entry. After data cleaning which entailed checking for errors in entry, descriptive statistics such as frequencies, percentages, mean score and standard deviation were estimated for all the quantitative variables and information presented in form of tables. The qualitative data from the open-ended questions was analyzed using conceptual content analysis and presented in prose.

Inferential data analysis was done using multiple regression analysis. Multiple regression analysis was used to establish the relations between the independent and dependent variables. Multiple regression was used because it is the procedure that uses two or more independent variables to predict a dependent variable. Since there are four independent variables in this study the multiple regression model generally assumed the following equation;

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

Where: -

Y= performance of rural roads maintenance projects

β_0=constant

β_1, β_2, β_3 and β_4 = regression coefficients

X_1= Project team competence

X_2= Funding adequacy

X_3= Management support

X_4= monitoring and evaluation

ε=Error Term

Analysis of Variance (ANOVA) was also done to establish whether the whole model was significant fit of the data and therefore formed the tests of significance. ANOVA is a data analysis procedure that was used to determine whether there are significant differences between two or more groups of samples at a selected probability level (Mugenda & Mugenda, 2003).

3.10 Ethical Considerations

The researcher observed the following standards of behaviour in relation to the rights of those who became subject of the study or were affected by it: First, in dealing with the participants, they were informed of the objective of the study and the confidentiality of obtained

information, through a letter to enable them give informed consent. Once consent was granted, the participants maintained their right, which entailed but was not limited to withdrawal or decline to take part in some aspect of the research including rights not to answer any question or set of questions and/or not to provide any data requested; and possibly to withdraw data they provided. Caution was observed to ensure that no participant was coerced into taking part in the study and, the researcher sought to use minimum time and resources in acquiring the information required. Secondly, the study adopted quantitative research methods for reliability, objectivity and independence of the researcher. While conducting the study, the researcher ensured that research ethics were observed. Participation in the study was voluntary. Privacy and confidentiality was also observed. The objectives of the study were explained to the respondents with an assurance that the data provided was to be used for academic purpose only.

3.11 Operationalization of Variables

The operationalization of variables is shown in Table 3.4.

Table 3.4: Operationalization of variables

Objectives	Type of Variable	Indicator	Measuring of Indicators	Tools of analysis	Type of analysis
To establish the influence of project team competence on performance of rural roads maintenance projects in Machakos County, Kenya.	Independent	Project Team Competence	• Experience • Technical expertise • Knowledge on policies valuation	Percentages Mean score	Descriptive statistics Regression analysis
To assess the influence of funding adequacy on performance of rural roads maintenance projects in Machakos County, Kenya.	Independent	Funding Adequacy	• Financial allocation/ availability • Transport infrastructure • Stationery	Percentages Mean score	Descriptive statistics Regression analysis
To evaluate the influence of management support on performance of rural roads maintenance projects in Machakos County, Kenya.	Independent	Management support	• Managing societal demands and motivation • Commitment • Information sharing	Percentages Mean score	Descriptive statistics Regression analysis
To determine the influence of monitoring and evaluation on performance of rural roads maintenance projects in Machakos County, Kenya.	Independent	Monitoring and evaluation	• Frequency • Efficiency and effectiveness using time schedule	Percentages Mean score	Descriptive statistics Regression analysis
	Dependent	performance of rural roads maintenance projects	• Timely completion • Community satisfaction • Quality of the roads • Projects completed on budget	Mean score	Descriptive statistics Regression analysis

CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the findings obtained from the data collected using questionnaires. It presents the characteristics of the respondents and their opinion on the institutional factors influencing performance of rural roads based on maintenance projects in Machakos County, Kenya. The researcher summarized the collective reactions of the respondents and presented them in tables with their interpretations presented in prose.

4.2 Response Rate

The researcher administered questionnaires to 216 respondents but only 163 were able to return fully filled questionnaires. This gave a response rate of 75.5% which was within what Saunders (2011) prescribed as a significant response rate for statistical analysis and established it at a minimal value of 50%.

Table 4.1: Response Rate

	Respondents	**Response Rate (%)**
Response	163	75.5
Non-response	53	24.5
Total	**216**	**100**

4.3 Background Information

This section required the respondents to indicate their general information including their relationship with the project, highest level of education and how long they had been in the industry. This general information is presented in form of tables.

4.3.1 Relationship with the Project

The respondents were requested to indicate their relationship with the project. Their responses were as shown in Table 4.2.

Table 4.2: Relationship with the Project

	Frequency	**Percent (%)**
Contractor	31	19.0
Road user	63	38.7
KERRA	6	3.7
KURA	3	1.8
KENHA	4	2.5
Road maintenance officers from Machakos county transport	56	34.4
Total	**163**	**100**

The respondents indicated that they were road users 63 (38.7%), road maintenance officers from Machakos county transport 56 (34.4%), Contractors 31 (19.0%), KURA officials 3 (1.8%), KeRRA officials 6 (3.7%) and KeNHA officials 4 (2.5%). This shows that the researcher considered the respondents with an ability to respond to the questions concerning the subject under study since they were in one way or the other connected to the project.

4.3.2 Highest Level of Education

The respondents were asked to indicate their highest level of education. Their responses were presented in Table 4.3.

Table 4.3: Highest Level of Education

	Frequency	Percent (%)
Certificate	23	14.3
College diploma	56	34.5
Degree	70	42.9
Masters	14	8.3
Total	**163**	**100**

From the results in Table 4.3, 42.9% of the respondents showed that they were graduates, 34.5% had diploma, 14.3% had a certificate while 8.3% of the respondents indicated that they were postgraduates. This implies that majority of the respondents were learnt enough to understand the subject under study and give reliable information.

4.3.3 Period in the Industry

The respondents were requested to indicate the period they have been in the industry. Their responses were as shown in Table 4.4.

Table 4.4: Period in the Industry

	Frequency	Percent (%)
Less than 1 year	18	11.2
1-2 years	17	10.8
3-4 years	67	41.1
Above 5 years	61	36.9
Total	**163**	**100**

From the results in Table 4.4, 41.1% of the respondents indicated that they had been in the industry for 3-4 years, 36.9% indicated above 5 years, 11.2% indicated less than 1 year while 10.8% of the respondents indicated that had been in the industry for 1-2 years. This implies that majority of the respondents had had been in the industry for long enough to comprehend the subject under study and give credible information.

4.4 Institutional Factors

The researcher sought to establish the institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya.

4.4.1 Project Team Competence Influence on Performance of Rural Roads Maintenance Projects in Machakos County, Kenya

The researcher asked the respondents using a Likert scale of 1-5 to indicate the extent to which project team competence influence performance of rural roads maintenance projects in Machakos County, Kenya. Their responses were as presented in Table 4.5.

Table 4.5: Extent of Project Team Competence Influence on Performance of Rural Roads Maintenance Projects

	Frequency	Percent (%)
Low extent	12	7.1
Moderate extent	43	26.2
Great extent	69	42.9
Very great extent	39	23.8
Total	**163**	**100**

From the results in Table 4.5, the study found that project team competence influence performance of rural road maintenance projects in Machakos County greatly as shown by 42.9%, moderately as shown by 26.2%, very greatly as shown by 23.8% and lowly as shown by 7.1%. This clearly implies that Project Team Competence influence performance of rural roads maintenance projects in Machakos County greatly.

Moreover, the researcher further requested the respondents to use a Likert scale of 1-5 and indicate the extent to which aspects of project team competence influence performance of rural roads maintenance projects in Machakos County. Their responses were presented in Table 4.6.

Table 4.6: Extent of Project Team Competence Aspects' Influence on Performance of Rural Roads Maintenance Projects

	Mean	Std. Dev.
Experience	2.571	1.272
Technical expertise	3.976	0.811
Knowledge on policies valuation	4.333	0.687

From the results in Table 4.6, the respondents indicated that knowledge on policies valuation as expressed by a mean of 4.333 and technical expertise as shown by a mean of 3.976 greatly influence performance of rural road maintenance projects in Machakos County. Furthermore, the respondents indicated that experience as shown by a mean of 2.571 moderately influence performance of rural roads maintenance projects in Machakos County.

4.4.2 Funding Adequacy Influence on Performance of Rural Roads Maintenance Projects in Machakos County, Kenya

The respondents were requested by the researcher to indicate the extent to which funding adequacy influence performance of rural road maintenance projects in Machakos County using a Likert scale of 1-5. Their responses were as illustrated in Table 4.7.

Table 4.7: Extent of Funding Adequacy Influence on Performance of Rural Roads Maintenance Projects

	Frequency	Percent (%)
Low extent	27	16.7
Moderate extent	31	19
Great extent	86	52.4
Very great extent	19	11.9
Total	**163**	**100**

From the results in Table 4.7, the respondents indicated that funding adequacy influence performance of rural roads maintenance projects in Machakos County to a great extent as shown by 52.4%, to a moderate extent as shown by 19%, to a Low extent as shown by 16.7% and to a very great extent as shown by 11.9%. This reveals that funding adequacy influence performance of rural roads maintenance projects in Machakos County greatly.

The researcher also asked the respondents to indicate the extent to which aspects of funding adequacy influence performance of rural roads maintenance projects in Machakos County using a Likert scale of 1-5. Their responses were as shown in Table 4.8.

Table 4.8: Extent of Funding Adequacy Aspects' Influence on Performance of Rural Roads Maintenance Projects

	Mean	Std. Dev.
Financial allocation or availability	2.857	0.647
Transport infrastructure	3.310	0.975
Stationery	4.167	0.621

From the outcomes in Table 4.8, the respondents indicated that stationery as expressed by a mean score of 4.167 influence performance of rural roads maintenance projects in Machakos County, Kenya to a great extent. However, the respondents indicated that transport infrastructure as illustrated by a mean score of 3.310 and financial allocation or availability as indicated by an average of 2.857 influence performance of rural roads maintenance projects in Machakos County to a moderate extent.

4.4.3 Management Support Influence on Performance of Rural Roads Maintenance Projects in Machakos County, Kenya

The researcher also requested the respondents to give their response on the extent to which Management support influence performance of rural roads maintenance projects in Machakos County. Their responses were as shown in Table 4.9.

Table 4.9: Extent of Management Support Influence on Performance of Rural Roads Maintenance Projects

	Frequency	Percent
Low extent	23	14.1
Moderate extent	36	22
Great extent	74	45.2
Very great extent	30	18.7
Total	**163**	**100**

The respondents indicated that management support greatly influence performance of rural roads maintenance projects in Machakos County as illustrated by 45.2%, moderately as illustrated by 22%, very greatly as illustrated by 18.7% and lowly as shown by 14.1%. This implied that management support influence performance of rural roads maintenance projects in Machakos County greatly.

The researcher also requested the respondents to give their response on the extent to which aspects of management support influences performance of rural roads maintenance projects in Machakos County. Their responses were as shown in Table 4.10.

Table 4.10: Extent of Management Support Aspects' Influence on Performance of Rural Roads Maintenance Projects

	Mean	Std. Dev.
Managing societal demands and motivation	3.976	0.811
Commitment	4.333	0.687
Information sharing or communication	2.810	1.065

The respondents indicated that commitment as illustrated by an average of 4.333 influence performance of rural roads maintenance projects in Machakos County greatly. The respondents also revealed that managing societal demands and motivation as illustrated by an average of 3.976 also influence performance of rural roads maintenance projects in Machakos County greatly while information sharing or communication as illustrated by an average of 2.810 moderately influence performance of rural roads maintenance projects in Machakos County.

4.4.4 Monitoring and Evaluation Influence on Performance of Rural Roads Maintenance Projects in Machakos County, Kenya

The researcher asked the respondents to give their response on the extent to which monitoring and evaluation influence performance of rural roads maintenance projects in Machakos County. Their responses were as shown in Table 4.11.

Table 4. 11: Extent of Monitoring and Evaluation Influence on Performance of Rural Roads Maintenance Projects

	Frequency	Percent (%)
Very low extent	8	4.9
Low extent	15	9.2
Moderate extent	60	36.8
Great extent	62	38.0
Very great extent	18	11.0
Total	**163**	**100**

As per the results in Table 4.11, the respondents revealed that the influence of monitoring and evaluation on performance of rural roads maintenance projects in Machakos County, Kenya was to a great extent as shown by 38%, to a moderate extent as shown by 36.8%, to a low extent as shown by 9.2% and to a very great extent as shown by 11% and to a very low extent as shown by 4.9%. This clearly reveals that monitoring and evaluation influence performance of rural roads maintenance projects in Machakos County to a great extent.

The researcher further asked the respondents to give their response on the extent to which aspects of monitoring and evaluation influences performance of rural roads maintenance projects in Machakos County. Their responses were as shown in Table 4.12.

Table 4. 22: Extent of Monitoring and Evaluation Aspects' Influence on Performance of Rural Roads Maintenance Projects

	Mean	Std. Dev.
Frequency	2.786	0.750
Efficiency and effectiveness using time schedule	3.643	1.032

From the findings, the respondents indicated that efficiency and effectiveness using time schedule as shown by a mean of 3.643 greatly affect the performance of rural roads maintenance projects in Machakos County. The respondents further revealed that frequency as shown by a mean of 2.786 moderately influences performance of rural roads maintenance projects in Machakos County.

4.4.5 Performance of Rural Roads Maintenance Projects in Machakos County, Kenya

The researcher requested the respondents to indicate the trend of the various aspects of performance of rural roads maintenance projects in Machakos County for the last five years. Their collective responses were presented in Table 4.13.

Table 4.13: Trend of Rural Roads Maintenance Projects Performance

	Mean	Std. Dev.
Timely completion of projects	3.619	0.962
Community satisfaction	3.833	1.034
Quality of the roads	3.071	0.712
Projects completed on budget	4.167	0.794

According to Likert scale, a mean between 2.5 and 3.4 indicates constant while a mean between 3.5 and 4.4 indicates an improvement. The study indicated that projects completed on budget as shown by a mean score of 4.167, community satisfaction as illustrated by a mean score of 3.833 and timely completion of projects as indicated by an average of 3.619 have improved for the last five years. Moreover, the respondents indicated that for the last five years, quality of the roads as expressed by a mean score of 3.071 has been constant.

4.5 Regression Analysis

The researcher conducted a multiple regression analysis to test the relationship between the variables. This showed how the dependent variable is influenced by the independent variables.

Table 4.14: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.819	0.670	0.662	0.780

From the findings, the independent variables were statistically significant predicting the dependent variable since adjusted R square was 0.662. This implied that 66.2% variations in performance of rural roads maintenance projects in Machakos County are explained by project team competence, funding adequacy, management support and monitoring and evaluation. Other institutional factors influencing performance of rural roads maintenance projects in Machakos County that were not covered in this study accounted for 33.8% which form the basis for further studies.

Table 4.15: ANOVA Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	199.121	4	49.780	80.244	.000
	Residual	98.017	158	0.620		
	Total	**297.138**	**162**			

From the ANOVA Table, p-value was 0.000 and F-calculated was 80.244. Since p-value was less than 0.05 and the F-calculated was greater than F-critical (2.4472), then the regression relationship was significant in determining how project team competence, funding adequacy, and management support and monitoring and evaluation influenced performance of rural roads maintenance projects in Machakos County.

Table 4. 16: Coefficients of Determination

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.267	0.182		6.962	.000
Project Team Competence	0.812	0.196	0.714	4.143	.000
Funding Adequacy	0.712	0.208	0.611	3.423	.001
Management support	0.568	0.208	0.462	2.731	.007
Monitoring and Evaluation	0.771	0.312	0.672	2.471	.015

The established model for the study was:

$$Y= 1.267 + 0.812X_1 + 0.712X_2 + 0.568X_3 + 0.771X_4$$

Where: -

Y= Performance of rural roads maintenance projects in Machakos County

X_1= Project Team Competence

X_2= Funding Adequacy

X_3= Management support

X_4= Monitoring and Evaluation

The regression equation above established that taking all independent variables (project team competence, funding adequacy, management support and monitoring and evaluation) constant at zero, performance of rural roads maintenance projects in Machakos County will be 1.267. The findings presented also show that an improvement in project team competence leads to 0.812 increase in the score of performance of rural roads maintenance projects in Machakos County if all other variables are held constant.

Further it was established that if funding adequacy increases, there is a 0.712 increase in performance of rural roads maintenance projects in Machakos County. The findings also show that a unit increase in the scores of managements support would lead to a 0.568 increase in the score of performance of rural roads maintenance projects in Machakos County. The study also found that a unit increase in the scores of monitoring and evaluation

would lead to a 0.771 increase in the scores of performances of rural roads maintenance projects in Machakos County.

Overall, project team competence had the greatest influence on performance of rural road maintenance projects in Machakos County, Kenya followed by monitoring and evaluation, then funding adequacy while management support had the least influence on the performance of rural roads maintenance projects in Machakos County in Kenya. All the variables were significant since their p-values were less than 0.05.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the findings, conclusions as well as the recommendations of the study. This study focused on the institutional factors influencing performance of rural roads maintenance projects in Machakos County, Kenya.

5.2 Summary of Findings

The study sought to establish the influence of project team competence on performance of rural roads maintenance projects in Machakos County. The study found that that Project Team Competence influence performance of rural roads maintenance projects in Machakos County greatly (42.9%). The study further found that knowledge on policies valuation and technical expertise greatly influence performance of rural roads maintenance projects in Machakos County. Moreover, it was revealed that experience has a moderate influence on performance of rural roads maintenance projects in Machakos County.

The study further sought to assess the influence of funding adequacy on performance of rural roads maintenance projects in Machakos County. It was clear that funding adequacy influence performance of rural roads maintenance projects in Machakos County greatly (52.4%). The study also established that stationery influence performance of rural roads maintenance projects in Machakos County, Kenya to a great extent while financial allocation or availability and transport infrastructure influence performance of rural roads maintenance projects in Machakos County to a moderate extent.

Further, the study sought to evaluate the influence of management support on performance of rural roads maintenance projects in Machakos County. The study found that management support influence performance of rural roads maintenance projects in Machakos County greatly (45.2%, moderately as illustrated by 22%, very greatly as illustrated by 18.7% and lowly as shown by 14.1%. This implied that management support influence performance of rural roads maintenance greatly. The study deduced that managing societal demands and motivation and commitment influence performance of rural roads maintenance projects in Machakos County greatly. Moreover, the study revealed that information sharing or communication moderately influence performance of rural roads maintenance projects in Machakos County.

The study finally sought to determine the influence of monitoring and evaluation on performance of rural roads maintenance projects in Machakos County. The study found that monitoring and evaluation influence performance of rural roads maintenance projects in Machakos County to a great extent as shown by 38%, to a moderate extent as shown by 36.8%, to a low extent as shown by 9.2% and to a very great extent as shown by 11% and to a very low extent as shown by 4.9%. It was established that efficiency and effectiveness in using time schedule greatly affect the performance of rural roads maintenance projects in Machakos County. The study further established that frequency moderately influences performance of rural roads maintenance projects in Machakos County.

5.3 Discussion of the Findings

The findings of the study were in accordance with each study objective and based on performance of rural roads maintenance projects in Machakos County.

5.3.1 Project Team Competence Influence on Performance of Rural Roads Maintenance Projects Machakos County

The study found that knowledge on policies valuation and technical expertise greatly influence performance of rural roads maintenance projects in Machakos County. These findings agree with Kent (2011) who postulates that the ability of a project's staff to meet demands for its services depends on both its numbers and the skills and expertise staff members bring to the job. A project team needs to have at least the minimum necessary mix of skills and expertise and a sufficient number of staff with appropriate skills relative to the scale of its responsibility.

Moreover, it was revealed that experience has a moderate influence on performance of rural roads maintenance projects in Machakos County. This is in line with Kalsaas (2012) who argued that skilled personnel staff entrusted with rural roads maintenance project execution should have required technical expertise in the area. Where necessary, skill levels should be augmented to meet the needs and with ongoing investments in developing such capacity within the office as necessary.

5.3.2 Funding Adequacy Influence on Performance of Rural Roads Maintenance Projects Machakos County

Funding adequacy influence performance of rural roads maintenance projects in Machakos County greatly. The study established that stationery influence performance of rural roads maintenance projects in Machakos County, Kenya to a great extent. These findings concur

with Estrella (2010) who argues that the project budget should provide a clear and adequate provision for monitoring and evaluation activities. A key function of planning for rural roads maintenance is to estimate the costs, staff, and other resources that are needed for M&E work. It is important for rural road maintenance specialists to weigh in on rural road maintenance budget needs at the inception stage so that funds are allocated.

Moreover, it was revealed that transport infrastructure influence performance of rural roads maintenance projects in Machakos County to a moderate extent. These findings are in line with Nisar (2013) who noted that it is important that partners consider the resources needed for monitoring and evaluation and agree on a practical arrangement to finance the associated activities. Such arrangements should be documented at the beginning of the programme to enable partners to transfer necessary funds in accordance with their procedures, which could take considerable time and effort. Human resources are critical for effective rural road maintenance, even after securing adequate financial resources.

5.3.3 Management Support Influence on Performance of Rural Roads Maintenance Projects Machakos County

The study found that management support influence performance of rural road maintenance projects in Machakos County greatly. The study deduced that managing societal demands and motivation and commitment influence performance of rural road maintenance projects in Machakos County greatly. This correlates with Welsh *et al*. (2011). Managers with the needed information for day-to-day decisions; key stakeholders with guidance information on the project strategy; project early warnings signs; empowerment to beneficiaries; capacity building as well as assess progress and build accountability.

Moreover, the study revealed that information sharing or communication moderately influence performance of rural road maintenance projects in Machakos County. This corresponds to Khan (2013) who argues that setting-up a system is desirable because it helps to build stakeholders' understanding of the project and creates a learning environment by sharing understanding of terminology and action, develop a framework, approach or system that is designed within the institutional context, standardize data collection to ensure that results are valid and comparable.

5.3.4 Monitoring and Evaluation Influence on Performance of Rural Roads Maintenance Projects in Machakos County

The study found that monitoring and evaluation influences performance of rural road maintenance projects in Machakos County to a great extent. World Bank (2011) asserts that M&E creates a good environment for interaction between stakeholders and bring on board resources available, use and monitor and evaluate impact brought by the resources. In this case, all stakeholders are able to improve on mitigation factors by engaging in development matters with the government, resource audit, identification of gaps and suggesting the way forward.

The study established that efficiency and effectiveness in using time schedule greatly affect the performance of rural road maintenance projects in Machakos County. The study further established that frequency moderately influences performance of rural road maintenance projects in Machakos County. This agrees with Gaventa and Blauert (2007) who argues that evaluation from start to finish can give stakeholders a sense of ownership over the results; provide timely, reliable, and valid information for management decision-making, increase cost-effectiveness of monitoring and evaluation information and the purpose of evaluation is to help the stakeholders of a project to better understand whether their hard work is having the impact they desire.

5.4 Conclusions

The study concluded that project team competence had a great, positive and significant influence on performance of rural roads maintenance projects in Machakos County. This was attributed to great influence on performance of rural road maintenance projects in Machakos County by knowledge on policies valuation and technical expertise. The study also concluded that funding adequacy does influence performance of rural roads maintenance projects in Machakos County positively and significantly. The study further concluded that management support influences performance of rural road maintenance projects in Machakos County significantly as implied by managing societal demands and motivation and commitment which have great influence on performance of rural roads maintenance projects in Machakos County. The study concluded that monitoring and evaluation significantly and positively influence performance of rural roads maintenance projects in Machakos County. The study also deduced that efficiency and effectiveness of using time schedules and frequency of monitoring have an effect on performance of rural roads maintenance projects in Machakos County.

5.5 Recommendations

The study recommends that management should allocate adequate financial resources, promote timely disbursement and enhance procurement to ensure all resources required for project implementation are provided just in time.

The study recommends that management should enhance the technological advancement in order to increase speed, efficiency and promote quality in project performance. The study recommends use of efficient project-specific technologies, allocation of enough financial resources for the upgrading of systems and assigning of well-trained technical experts for specific tasks in order to influence the completion of rural roads maintenance projects.

The study also recommends that management should eliminate bureaucracy in all its processes to allow for faster decision making in approval, disbursement, procurement and supervision through decentralization of processes and resources, selection and training of qualified personnel and promotion of ethics and anti-corruption culture within the institutions.

There should be stringent monitoring and evaluation at all stages of project implementation including concept and design stages, thorough project feasibility studies, formulation of policies to minimize political interference in the project life cycle, monitoring of procurement process, adequate and proper design of projects, proper specialization of duties, tasks and responsibilities, transparency and accountability of workers, proper financial planning and capacity building for staff.

5.6 Suggestions for Further Studies

The study found that there could be more institutional factors influencing performance of rural roads maintenance projects in Machakos County that were not covered in this study accounting for 33.8% which form the basis for further studies

Since this study focused on institutional factors influencing performance of rural roads based on maintenance projects in Machakos County. The study recommends same study to be done based on roads maintenance projects in other counties.

The study also recommends that a study should be carried out to determine strategies that institutions need to adopt to improve on completion rates for rural roads maintenance projects in Kenya. A further study should be carried to determine challenges facing institutions on implementation of roads projects in Kenya.

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APPENDICES

Appendix I: Letter of Transmittal

PAUL KIMEU SAMMY

Dear Sir/ Madam,

RE: ACADEMIC RESEARCH PROJECT

I am a Master of Arts in Project Planning and Management student at University of Nairobi. I wish to conduct a research entitled Institutional Factors Influencing Performance of Rural Roads Maintenance Projects in Machakos County, Kenya. A questionnaire has been designed and will be used to gather relevant information to address the research objective of the study. The purpose of writing to you is to kindly request you to grant me permission to collect information on this important subject from your organization.

Please note that the study will be conducted as an academic research and the information provided will be treated in strict confidence. Strict ethical principles will be observed to ensure confidentiality and the study outcomes and reports will not include reference to any individuals.

Your acceptance will be highly appreciated.

Yours faithfully,

Paul Kimeu Sammy
University of Nairobi
Reg. No. L50/89304/2016

Appendix II: Research Questionnaire

Kindly answer the following questions by writing a brief answer or ticking in the boxes provided.

PART A: BACKGROUND INFORMATION

1. What is your relationship with the project?

   Contractor [ ] Road user [ ] KeRRA [ ] KURA [ ] KeNHA [ ]

   Machakos County Government Transport & Roads [ ]

2. Which is your highest level of education?

   Post Graduate [ ] Undergraduate [ ]

   Diploma [ ] Certificate [ ]

   Any other (specify)……

3. How long have you been in this industry?

   Less than 1 years [ ] 1-2 years [ ]

   3-4 years [ ] Above 5 years [ ]

PART B: Project Team Competence

5) To what extent do you think project team competence influence performance of rural roads maintenance projects in Machakos County, Kenya?

   Very great extent [5] Great extent [4] Moderate extent [3]

   Low extent [2] Very low extent [1]

4. In your opinion, are the managers involved in rural roads maintenance projects in Machakos County, Kenya competent? Explain?

……

…….

5. To what extent do the following aspects of project team competence influence performance of rural roads maintenance projects in Machakos County, Kenya?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Experience					
Technical expertise					
Knowledge on policies valuation					

6. In your opinion, how do the above aspects of project team competence influence performance of rural roads maintenance projects in Machakos County, Kenya?

……
…….

PART C: Funding Adequacy

7) To what extent does funding adequacy influence performance of rural roads maintenance projects in Machakos County, Kenya?

Very great extent [5] Moderate extent [3] Very low extent [1]
Great extent [4] Low extent [2]

8) In your own opinion, are there adequate funds to be used in rural roads maintenance projects in Machakos County, Kenya? Explain?

……
…….

9) To what extent do the following aspects of funding adequacy influence performance of rural roads maintenance projects in Machakos County, Kenya?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Financial allocation/ availability					
Transport infrastructure					
Stationery					

10) In your own opinion, how do the above aspects of funding adequacy influence performance of rural roads maintenance projects in Machakos County, Kenya?

……
……
……

PART D: Management support

11) To what extent does management support influence performance of rural roads maintenance projects in Machakos County, Kenya?

Very great extent [5] Moderate extent [3] Very low extent [1]

Great extent [4] Low extent [2]

12) In your own opinion, are there management support offered in rural roads maintenance projects in Machakos County, Kenya? Explain?

……
…….

13) To what extent do the following aspects of management support influence performance of rural roads maintenance projects in Machakos County, Kenya?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Managing societal demands and motivation					
Commitment					
Information sharing					

14) In your own opinion, how do the above aspects of management support influence performance of rural roads maintenance projects in Machakos County, Kenya?

……
……
……

PART E: Monitoring and Evaluation

15) To what extent do monitoring and evaluation influence performance of rural roads maintenance projects in Machakos County, Kenya?

Very great extent [5] Moderate extent [3] Very low extent [1]

Great extent [4] Low extent [2]

16) In your own opinion, how is monitoring and evaluation carried out in rural roads maintenance projects in Machakos County, Kenya? Explain?

……
…….

17) To what extent do the following aspects of monitoring and evaluation affect performance of rural roads maintenance projects in Machakos County, Kenya?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Frequency					
Efficiency and effectiveness using time schedule					

18) In your own opinion, how do the above aspects of monitoring and evaluation affect performance of rural roads maintenance projects in Machakos County, Kenya?

……

……

PART F: Performance of Rural Road Maintenance Projects in Machakos County

19) What is the trend of the following aspects of performance of rural roads maintenance projects in Machakos County, Kenya for the last five years?

	Greatly Decreased	Decreased	Constant	Improved	Greatly Improved
Timely completion					
Community satisfaction					
Quality of the roads					
Projects completed on budget					

20) In your own opinion, what are your recommendation that could be adopted to enhance performance of rural roads maintenance projects in Machakos County, Kenya?

……

……

Thank You for Your Participation

Appendix III: Introduction Letter from the University of Nairobi

UNIVERSITY OF NAIROBI
OPEN, DISTANCE & e-LEARNING CAMPUS
SCHOOL OF OPEN & DISTANCE LEARNING
DEPARTMENT OF OPEN LEARNING
KITUI LEARNING CENTRE

Telegram: ''VARSITY'' NAIROBI
Telephone: 245-020-318262
Telex: 28520Varsity KE

P.O Box 30197 NAIROBI
NAIROBI, KENYA
e-mail: acadreg@uonbi.ac.ke

RE: SAMMY PAUL KIMEUREG/NO: L50/89304/2016

The above named is a student at University of Nairobi, Open, Distance and e-Learning Campus, School of Open and Distance Learning, Department of Open Learning. He is undertaking his Degree Master of Arts in Project Planning and Management. We authorize him to carry out his research on (***Institutional Factors Influencing Performance of Rural Roads Maintenance Projects in Machakos County, Kenya***).

Any assistance accorded to him is highly appreciated by this Department to enable him compile his final document.

UNIVERSITY OF NAIROBI
MACHAKOS EMC
Date: 26/06/2018
P. O. Box 30197, NAIROBI
MACHAKOS LEARNING CENTRE

Thanks.

MR. MUMO MUEKE
Centre Cordinator Kitui /Machakos Learning Centre
mumomueke@yahoo.com 0722621411

Appendix IV: Research Permit from NACOSTI

THIS IS TO CERTIFY THAT:
MR. PAUL KIMEU SAMMY
of UNIVERSITY OF NAIROBI, 3075-90100 MACHAKOS,has been permitted to conduct research in *Machakos County*

on the topic: *INSTITUTIONAL FACTORS INFLUENCING PERFORMANCE OF RURAL ROADS MAINTENANCE PROJECTS IN MACHAKOS COUNTY, KENYA*

for the period ending:
30th July,2019

.....
Applicant's Signature

Permit No : NACOSTI/P/18/41834/23838
Date Of Issue : 1st August,2018
Fee Recieved :Ksh 1000

.....
Director General
National Commission for Science, Technology & Innovation

CONDITIONS

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National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No.A 19834

CONDITIONS: see back page