FACTORS INFLUENCING ROAD PROJECTS PERFORMANCE IN KENYA: A CASE OF ROAD CONTRACTORS IN MACHAKOS COUNTY

EZEKIEL FUKWO WAFULA

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DECLARATION

This research project report is my original work and has not been presented in any other university for examination.

Signature……..…… Date…….……..

Ezekiel Fukwo Wafula

L50/84212/2012

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

Signature……..…… Date…….……..

Dr. Juliana Munialo Mutoro

Lecturer,

Department of Extra Mural Studies

University Of Nairobi

DEDICATION

This research project is dedicated to my family, my wife, Mrs. Faith Fukwo and children: Shantelle, Manuel and Anaya for their unconditional love, moral support and sacrifice when I was out to undertake my studies.

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LIST OF ABBREVIATIONS AND ACRONYMS

AEC	Architectural, Engineering and Construction
FIDC	Federation Internationale Des Ingenieurs Conseils
GOK	Government of Kenya
ISO	International Organization for Standardization
KeNHA	Kenya National Highway Authority
KeRRA	Kenya Rural Roads Authority
KRB	Kenya Roads Board
KRBF	Kenya Roads Board Fund
KTSSP	Kenya Transport Sector Support Project
KURA	Kenya Urban Roads Authority
MDGS	Millennium Development Goals
MOLG	Ministry of Local Government
MOR	Ministry of Roads
MTF	Mechanical and Transport Fund
NEMA	National Environmental Management Authority
PMP	Project Management Performance
RE	Resident Engineer
RMLF	Road Maintenance Levy Fund
SPSS	Statistical Package for Social Sciences
TOC	Theory of Constraints
TQM	Total Quality Management
TT	Transit Tolls

ABSTRACT

The environments where firms and businesses operate keep evolving and this has forced them to align themselves in a manner that accommodates these changes. This study was set out to establish the factors influencing road project performance in Kenya. A case of road contractors in Machakos County. The objectives of the study were to assess how the availability of capital influences project performance, to examine how management skills enhance project performance, to assess the influence of organisational culture on project performance and to establish how technical skills influence project performance among road contractors in Machakos County. The study was guided by Theory of Constraints to show the factors that influence performance of road projects. To achieve these objectives, a descriptive survey design was adopted and the sample size was 105 (90 contractors and 15 supervising engineers). A stratified random sampling was applied in selecting the respondents. Raw data was gathered by administering questionnaires. Data was analyzed using Statistical Package for Social Sciences. In chapter four, data was analyzed, was presented and interpreted. Descriptive and inferential statistics were applied in analyzing quantitative data. Descriptive statistics was utilized in summarizing the data. These included mean and standard deviation. Tables were utilized in presenting the data that was collated for ease of understanding and analysis. Inferential statistics (Pearson's Product Moment Correlation Coefficient Analysis) was used to explore the nexus between the dependent variable (road project performance) and the independent variables. In chapter four data analysis, presentation and interpretation of findings was carried out. The key findings showed that capital availability, managerial skills, organisational culture and technical skills influenced performance of road projects. Technical skills, organisational culture and funds availability had the greatest influence on road projects performance. The key challenges that faced implementation of road projects were inclement weather conditions, inadequate skilled labourers, inadequate equipments, delayed payments, unforeseen ground conditions and political interference. The study recommends that county government should hire experienced and competent road contractors to implement road projects. Road contractors should plan for unforeseen weather changes that might impact negatively on road projects implementation. The study can be helpful in assisting contractors to improve performance leading to the growth of the construction industry. The government should strengthen capacity and capability to boost professionalism and performance of road contractors. Future researchers should do an assessment of how planning impact on road projects performance so as to compare findings and provide room for a more comprehensive conclusion on the subject.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The business environment within which construction firms operate keeps on changing. Firms that are reluctant to respond and cope with environmental dynamism hardly survive (Lee, Cooper & Aouad, 2011). According to Samson & Lema (2015) the immense competition and pressure in the construction sector has led to an increase in the user requirement, environmental awareness and limitation of resources and increased competition for construction business. This means that contractors are expected to cope with these changes and continuously improve the quality of their services and overall performance (Dissanayaka & Kumaraswamy, 2009).

In Europe, the construction industry mainly relies on financially focused performance at the project level which leads to creation of philosophies; For example concurrent construction and lean production. Others non-financial indicators considered include: Just in Time (JIT), Total Quality Management (TQM), and Total Productive Maintenance (TPM) (Yu, Kim, Jung, & Chin, 2007). Ghalayini & Noble (2011) argues that financial metrics are historical in nature and do not reflect the current status of performance of a project. Scholars such as Kagioglou et al. (2011) contend that financial measures do not have a strategic focus and are unable to provide quality data; they lack responsiveness and flexibility. Therefore, to realize optimal project performance, construction firms need to be measured, evaluated and managed. Kagioglou et al. (2001) note that project performance is a way of accomplishing cost and time objectives while adhering to the product specifications.

Yu et al. (2011) puts more emphasis that project performance can be assessed using various performance indicators that could be linked to the following dimensions, that include time, cost, quality, client satisfaction and health and safety. The critical performance measures applied by firms to examine performance of road projects include quality, cost and time. Another approach of examining performance of projects is through adoption of a similar set of indicators. The first set of these indicators are connected to the owners, stakeholders and the end-users including any other group of people that might view performance from a macro dimension. The second set consists of the contractors and developers. These groups of individuals view project performance from a micro dimension. Performance measures can have a single or several indicators, and this could be influenced by a variety of project features. For instance, Ezeldin & Sharara (2012) showed that contract period and cost factors highly depended on the nature of the project, procurement processes, coordination of the implementation team, contractor-client relationship, traits of the designing team and external conditions.

Lee, Diekmann, Songer & Brown (2012) found that a lean and competent staff, uses of modern technologies, stable and experienced contractors were some of the lean strategies used by American construction firms to minimize wastage and inefficiencies in construction activities. Karim & Marosszeky (2011) studied the factors that affect road construction projects in Sydney Australia. The results found that technical skills and delayed funding were the major factors that affected performance of road projects. Sambasivan & Soon (2011) assessed the root cause of delay by Malaysian construction firms; The findings depicted that the main causes of delays were improper planning, limited contractor experience and finances. This contributed negatively to performance of projects.

A survey involving 450 respondents was executed with the help of a random selection of residential private projects by Koushki et al (2015); it was unearthed that financial limitation and insufficient technical knowhow were the leading causes for delay in Kuwait. Faridi & Elsayegh (2012) examined the cause of delay in development projects in the United Arab Emirates, 50 percent of these projects had delayed completion. This emanated from bureaucracies in approval for drawings, failure to plan earlier and complicated processes of making decision.

Ling, Low, Wang & Lim (2011) pointed out that cost overrun and financial constraints were the main factors that affected road construction projects in Singapore. Obelle (2012) surveyed the factors that affected road construction projects in Lagos, Nigeria. It was concluded that inadequate planning, delays and government approvals and regulations delayed construction of road projects. Karim (2011) found that financial constraints and cost overruns were the key factors that affected road construction projects in Dar es Salaam.

In Kenya, Wambui, Ombui &. Kagiri (2015) showed that completion of road projects was greatly enhanced by use of modern equipments, technical skills by project managers, project finances and project technology. The road infrastructure accounts for an estimated 93% of all freight and passenger traffic in Kenya (Ministry of Roads, 2012). Kenya has had a tremendous growth in traffic of 8.2% annually. Kenya is experiencing traffic growth of 8.2% a year, population growth of 4.1% a year and economic growth of 6% a year; has not been matched with development of road network resulting into persistent traffic jams and conflict of different modes of transport costing the economy about 0.9% of the GNP annually (World Bank, 2013).

The Government of Kenya worked out an investment programme to recover the economy through creating employment and wealth in March 2004, and listed the development of road infrastructure as a key pillar for economic growth (Ministry of Planning and National Development, 2003). Furthermore, as the succeeding plan of IP-ERS, Kenya Vision 2030 was developed in 2008; and as the first period mid-term plan, the developments of all transport related infrastructure, including the road sector was stipulated in the First Medium Term Plan in 2008-2012 (Ministry of Planning and Natural Development, 2007). Kenya's vision 2030 set Improvement of Road Network, Efficiency and Safety as the development results. But despite of this, the road network has not been completed by now. The contribution of road infrastructure in economic growth of a country can easily be contributed by successful implementation of development projects.

The institutional framework that governs road networks locally includes Ministry of Transport and Infrastructure (MOTI) which formulates policies and facilitates coordination; Kenya Roads Board (KRB), mandated to collect, disburse and monitor road Maintenance Levy Fund (RMLF); Road Agencies-Kenya National Highways Authority (KeNHA), Kenya Urban Roads Authority (KURA), Kenya Rural Roads Authority (KeRRA) and Kenya Wildlife Service (KWS) which manages, develops, rehabilitates and maintains national roads, urban roads, rural roads and roads in National Parks and National Reserves correspondingly and, the National Construction Authority (NCA) whose function is registration and regulating road construction companies (Ministry of Roads, Kenya, 2012).

In light of performance improvement, the research examined road contractors in Machakos County which are integrated in Kenya and registered with the National Construction Authority (NCA) as contractors for Roads and Civil works which were executed in Machakos County. In line with the provisions of NCA, these road contractors are needed to provide evidence that financial, personnel capacity and equipments as a base of grouping that range from NCA 1 to NCA 8 as per the reducing order of values of work (Attorney-General, Government of Kenya, 2011). Mulwa (2015) assessed the factors that influence water projects sustainability in Machakos District, Central Division. The study revealed that project planning and implementation, community management, cooperation of stakeholders and financial management influence sustainability of water supply projects.

1.2 Statement of the Problem

Road construction projects are essential components in the development of a country since they form part of the key drivers of economic growth and an important pillar towards achieving Vision 2030. It is important that the contractors accomplish projects timely, within cost and as per required quality. However, most road projects locally are not completed within the initial set targets of time due to a number of factors that impact negatively on the performance of these road projects for example availability of capital, management skills, organizational culture and technical skills among other factors (Brown and Adams, 2011). Road projects are complex in nature since they involve many parties. These include the Government which is a regular customer, road contractors, stakeholders, shareholders and regulators. Development projects in Machakos County face several challenges that hinder their implementation.

Example in the financial year 2010-2011, out of fifty six CDF projects, only twenty five projects were completed. Ten projects were sub-standard, Fourteen were incomplete, Five were abandoned and Two were delayed in implementation (NTA, 2012). Financial year 2011/2012 Machakos Town constituency was mentioned the third biggest loser of public finances. A claim of Twenty Five wastes was recorded as allocation for ineffective projects. Lack of technical skills and poor management skills were cited as the main causes. Karimi (2012) examined the challenges facing CDF projects performance in Machakos County. The study found that political interference and poor leadership were the main factors that affected performance of CDF projects. Mbaabu (2012) revealed that contract documents played a huge role in the road projects implementation followed by mobilization of resources and politics. Leadership and management practices had a limited effect of road project implementation. Land owners were paid in advance prior project commencement to counter conflicts relating to land problem. Njenga (2014) studied the factors influencing effective and efficient delivery of road construction projects in Nairobi County. It was found that management skills and failure to invest in IT and unavailability of fund hindered efficient delivery of road construction projects. Recent reviews of road construction projects in Machakos County found that a few road construction projects were behind schedule. These include Machakos-Kenol-Ngoleni-Kaani-Mutituni-Kaseve Road, Machakos-Lukenya-Kenani-Athi River Road and Mathathani-Kathiani-Kaloleni Road (NTA, 2016).

Although studies (Karimi, 2012; Mbaabu, 2012; Njenga, 2014) have been done on factors that affect implementation of road projects, a narrow focus has been given to factors affecting road projects implementation specifically in Machakos County.

1.3 Purpose of the Study

The purpose of the study was to assess the factors influencing road projects performance in Kenya, a case of Road Contractors in Machakos County.

1.4 Objectives of the Study

The objectives of this study were to:

1. Investigate how the availability of capital influences on project performance of Road Contractors Machakos County.

2. Examine the influence of management skills on project performance of Road Contractors Machakos County.

3. Assess the influence of organizational culture on project performance of road Contractors Machakos County.

4. Establish the influence of technical skills on project performance of road contractors Machakos County.

1.5 Research Questions

The research questions for the study were to:

1. How does the availability of capital influence project performance of road contractors in Machakos County?

2. How do management skills influence project performance of road contractors in Machakos County?

3. To what extent does organizational culture influence project performance of road contractors in Machakos County?

4. How does technical skills influence project performance of road contractors in Machakos County?

1.6 Significance of the Study

The recommendations from the findings may be useful to the contractors on the challenges they face in the construction industry and how to deal with these challenges.

The findings of this study might be useful to the Ministry of Transport and Infrastructure in setting policies that ensure an enabling environment for road contractors which will ultimately aid in attainment of vision 2030.

Researchers having an interest in this field of study may utilize the findings of this study as a reference point for further research in this and other related topics.

1.7 Delimitations of the Study

The research was be carried out in Machakos County and it focused on the factors that influenced road projects performance in Kenya. Case of road contractors Machakos County. The study delimited itself to a population of 90 contractors and 15 supervising engineers in Machakos County. Machakos County was an ideal location for the researcher since it had been actively involved in road construction projects for the last few years and thus the chosen category of the respondents in this place better understood the factors influencing project performance in road construction projects. This enabled the collection of accurate and reliable information.

1.8 Limitations of the Study

In course of this study, the researcher faced many challenges that hindered access to information and thus affected validity and reliability of information that was collected by the researcher. The target respondents were reluctant to give information due to fear that the information could be used against them or their competitors.

The researcher overcame these challenges by first explaining the objective of the study to the respondents before starting to collect data. A letter for data collection was obtained from University of Nairobi as proof that the information to be collected was purely for academic purposes.

1.9 Definition of Significant Terms Used in the Study

Road Projects are transport infrastructure undertakings financed by Government of Kenya (GoK) together with development partners to ease interconnectivity between various places enhancing economic development.

Performance is the achievement of the overall objective of a project within a given time and cost.

Road Contractors are organizations which contracts with other organizations or individuals for construction of roads. These organizations might be privately or publicly owned.

Availability of Capital is having adequate access to financial resources to support construction of road projects.

Management skills refer to personality and traits that are utilized by the top management to execute a specific task.

Organizational Culture are behaviours and values that define a unique social and psychological environment of an organisation.

Technical Skills are skills which are needed to achieve a specific task.

1.10 Basic Assumptions of the Study

This study was based on the following assumptions:

i. That the respondents in the sampled road contractors were aware about the factors that influence project performance in road construction projects in Machakos County.

ii. That the targeted population was reasonable enough to provide valid and accurate information in relation to the factors that influenced project performance in road construction projects in Machakos County in Kenya.

1.11 Organization of the Study

This study was organized in five chapters. Chapter One discussed the background of the study, the purpose of the study which was to assess the factors that influences project performance in Kenya, a case of Road Contractors Machakos County, the statement of the problem, research questions, significance of the study, assumption of the study, limitation of the study, delimitations of the study, definition of terms and the organization of the study.

Chapter Two covered the literature review and the specific objectives which were to assess how the availability of capital influenced project performance, to examine how management skills influenced project performance, to assess the influence of organizational culture on project performance and to establish how technical skills influenced project performance among road contractors and the theoretical framework. It has also described the conceptual framework and the knowledge gaps.

Chapter Three consisted of the research methodology that was used for the study. It consisted of the research design, the target population, the sample size and sampling procedures, research instruments, data collection procedures and data analysis methods.

Chapter Four covered data analysis, presentation and interpretation.

Chapter Five comprised of the summary of findings, discussion, conclusion and recommendations and suggestions for further research.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The chapter gives detailed review of the road construction projects, road sector and its activities locally, the study variables and constructs have been discussed extensively to show how they relate to the objectives of this research. Empirical studies have also been discussed to enrich the reviewed literature and depict gaps in the research.

2.2 Empirical Review of Road Construction Projects

Zulu and Chileshe (2010) argue that to enhance project performance, the project implementers, project sponsors and other stakeholders should agree on the project goals. They should be guided by clear guidelines to ensure that projects cater the needs of the end-users and implementation is executed on-time. The project implementers should have a clearly defined plan having assigned responsibilities on how the deliverables ought to be defined including the required tasks that should be carried out and the risks involved. Project implementers should manage the scope of the project effectively; this involves defining goal setting and planning project stages. The project implementer must be prepared for any changes to the scope and find ways to effectively cope with the changes.

This can be achieved through cultivating a culture of communication between the stakeholders of the project. This assists to improve on efficiency since the project facilitators are aware of what they are expected to do (Samson & Lema, 2011). The management and project sponsors might want to know the status of the project, many projects fail as a result of poor communication approaches.

Top management aligns project's resources and implementers in working towards implementation this highly motivates them to commit their resources and support to ensure that the project is implemented. Failure of top management support is a major reason why many development projects fail. Samson & Lema (2011) posit that efficient project implementation contributes to reduction of costs. In developed economies, most road construction projects are well implemented due to a number of reasons for example top management support, availability of funds and effective communication and coordination of activities by all the stakeholders involved in road construction projects. Road projects performance is achieved when the projects get completed on time to the satisfaction of the stakeholders who are contracting firms, the customer and the end-users. Performance of road construction projects is attributable to cost reduction and on-time project completion.

Performance can be defined as observing time and cost and adhering to the products specifications. Recent studies have however proved that project implementation is multidimensional; it broadens the focus of performance to incorporate characteristics such as project management performance.

Wongrassamee et al. (2013) contend that different kinds of people measure project performance in different ways at different times. Zulu & Chileshe (2008) explain that achieving the satisfaction of the main project stakeholders including the customer is one of the fundamental goals of project performance. Project stakeholders are satisfied when the project is completed in good time and quality criteria are met. This minimizes cost overruns and hence saves the cost of the project. The commonly utilized tool for measuring performance is referred to as the Balanced Score Card (BSC) while the indicators include; Key Performance Indicators.

The Balanced Scorecard (BSC) was devised by Norton & Kaplan (1992). It is a measurement system that applies four key measurement categories that includes Financial, customer, internal business processes and learning and growth; each of which has a wide range of potential sub-measures. BSC applies financial and non-financial indicators in measuring performance. Financial measures depict the results of actions taken while non-financial indicators are driven by future performance. Kaplan and Norton (2001) contend that a firm can be viewed from the following perspectives; financial, growth and learning, internal business process and customer perspectives. When measuring organization performance, the management should develop its standards through collecting data and analyzing it as per the four perspectives.

According to Ling et al (2011) key performance indicators (KPI) are performance measures that depict progress towards expected outcome. Strategic Key performance indicators monitor the effectiveness of the organization's strength as well as determining the gap between the actual and targeted outcome and hence determine the firm's effectiveness and operational efficiency (Oyewobi et al., 2013). Chiang & Lin (2010) notes that performance measurement involves management and systems control which are intended to produce information which can be disseminated by the users. It constitutes a variety of business cycles. This model has processed streamlining and deploying performance direction (Amaratunga, Baldry, & Sarshar, 2001).

Bassioni (2011) indicates that performance measurement model is derived from a cybernetic view where performance measurement is constituted by financial indicators in which planning and control cycles to a holistic view is based on several non-financial measures where performance measurement acts as an autonomous process coupled with a wide scope of activities (Stone & Banks, 2011).

Performance measurement is a constituent of planning and control cycle that utilizes performance data and allowing controlled feedback while monitoring implementation of a strategy (Wu, 2010). Kaplan (2008) note that performance measurement is underpinned by a financial perspective. In a holistic view, performance measurement is a vital component while developing strategic plans and performance evaluation when aiming to achieve organisational goals.

Performance measurement also acts as a signaling and learning device whereby the organization is able to learn and improve on its weak areas (Beatham, 20013). Performance can effectively be evaluated when there is a means of getting performance feedback. Feedback involves communicating the outcome of work to staff members, work group, or company (Andersen, Lawrie, & Shulver, 2011). In an organizational setting, performance measurement is the link between decisions and set goals.

It is important to realize that before the organization improves on something, it should be able to measure and qualify it; this implies that what needs to be improved should be quantifiable (Kaplan and Norton, 2002).

2.2.1 A Review of the Road Sector

In Kenya, road transport account for 93% of passenger traffic and freight in Kenya. However, the costs are high (Kenya Anti-Corruption Commission KACC Report (2007). This sector is wide having a total of classified road network constituting 160,886 km of which 11,197 km is pavement and 149, 689 km is the earth and over 60,000 km meaning this constitutes community road and corridors less than 9 meters wide. This network of road covers the densely populated areas of the country. The obstacle that faces Kenya is bringing the network that is in poor condition 56 % to an improved state currently just 11%, and ensuring that proper maintenance to other roads (World Bank, 2010).

Road transport in Kenya involves is a competitive, highly defined by the market and the industry is receptive to various changes such as regulations and condition of the road. A weak legal framework impacts on the reliability, quality services and safety of road users (Kenya Transport Sector Support Project (KTSSP) Project Appraisal Document PAD, (2011). In addition, the KACC report highlighted the failed state of classified roads and identifies contributing factors to lack of routine and periodic maintenance, rampart corruption in road construction projects, conspiracy between contractors and government officials which results into approvals of sub-standard work, increased traffic volume and overloading.

The sector has continued to experience challenges which included: a weak organisational framework which is cumbersome for the efficient and effective delivery of road works, Poor axle road enforcement and failure of rail transport in Kenya, shortage of technical personnel and engineers at the Ministry of Roads and Encroachment on road reserves.

The government seeks to address these obstacles through adopting several reforms which entails establishment of a secure road maintenance funding arrangement (road maintenance levy fund). Separation of funding from policy formulation and implementation functions; creation of Kenya Roads Board (KRB), clarification of the institutional arrangements in the management and ownership of the entire road network leading to the creation of Kenya National Highways Authority (KeNHA), Kenya Rural Roads Authority (KeRRA) and Kenya Urban Roads Authority (KURA). World Bank is committed in this sector and continues to fund road construction projects since 1960s and some of these projects have faced delays in their completion.

In the road sub-sector, the extent of cost and time overruns in the overall portfolio is high. As at February 2007, 35 on-going projects out a total of 207 showed cost overrun, translating into a cost overrun of Kshs. 7 billion. With regard to time overruns 184 projects exceeded their original completion time agreed at the tendering stage. On average, the actual time for completion was more than two times that at the tender stage (World Bank, 2010).

In the past decade, Kenya has stepped up investment in infrastructure with the recognition that no economy has ever taken off with a tattered infrastructure. Undoubtedly, the Kenya government incurs billions of shillings which results into a rise in national debt of KSHS. 1.5, trillion. The construction industry in Kenya most of the so-called "cowboy contractors" are locked out of the business through lack of political connections, natural attrition or through dominance by Chinese contractors that penetrate the Kenya market with financial support from the government. As a result, the standards and speed in construction has improved significantly.

2.2.2. The Road Construction Business Regulation in Kenya

Construction industry in Kenya is regulated by the National Construction Authority (NCA) whose mandate is to streamline, overhaul and regulate the construction industry in Kenya. There exists about 19,822 road construction companies registered by NCA between year 2010 and 2015 (NCA), 2015). The construction industry is highly competitive since barriers to entry are low, companies are similar and information about companies is freely available.

Consequently, most firms have been unable to attain the desired profits other than the minimum needed to cater for their survival. Today, competition mainly focuses on price since many firms cannot finance key innovations. Kenya has a devolved County government system which is divided into fourty seven counties. Kenya Constitution is enshrined on national values provided in Article 10. The self-governing spirit is with the people of Kenya and shall be applied as per the constitution. Bill of rights assures Kenyans freedom of movement and warrants them a right to own a home, access to quality education, healthcare services, a secure environment, water and social security (Republic of Kenya, 2010).

The road network is means of transporting people and goods; it interconnects to other modes of transport and provides access to social and basic services. Roads account for an estimated 93 percent freight and passenger services locally. Road transport networks provide a platform for social, political and economic development of a country. This creates a supportive environment to do business and trade within and outside the country. It is therefore essential to manage and maintain road and infrastructure which is one of the fundamental pillars in achieving Vision 2030.

The roles of the National government and the counties are stipulated in the fourth Schedule of the new constitution. These constitutes the road traffic services, construction and operation of national trunk roads, observing construction standards and maintenance of other roads by the counties, technical aid and capacity building to the counties, public investments and managing disaster.

The functions of the county governments include transportation within the county, installation of street lights, traffic and parking management, ferries and harbors for counties near seas and oceans. Before the new constitution was adopted, roads were managed by the Roads Ministry through several statutory organs. Other players that were in involved in managing roads in Kenya include the Local authorities, Ministry of Nairobi Metropolitan Development, Ministry of Youth Affairs including Sports and Constituency Roads Committees.

The Act provided by the County Government in 2012 is aimed at giving effect to Chapter eleven (11) of the Constitution. Following the transition of devolved county government Act, and the inter-governmental relations Act, this was enacted to enable for the transfer of functions from National to County governments and to provide cooperation and consultation between the two levels of government. Ministry of Transport and Infrastructure is instructed to perform the following functions;

National Transport and Infrastructure Development and Policy Management, Registration of Engineers and Registration of Roads Construction firms' among others. Several road management agencies employ inefficient operational procedures in the bureaucratic civil service protocols and lack of transparency in the legal, operational and structural connections among them (Ministry of Transport and Infrastructure, 2015).

The Kenya Roads Board (KRB) was set out by the Act of KBR in 1999 with an overall goal of coordinating, developing, rehabilitating and maintaining roads in Kenya as well as managing the Kenya Roads Board Fund account which consists of the proceeds of the Road maintenance Levy Fund and other funds that accrue into it. The roads sub-sector, as an element of the physical infrastructural sector, is expected to make significant contributions towards achieving Vision 2030. This is so because an estimated 93% of the Kenya's freight and passenger traffic is reconvened by the road network.

2.3 Availability of Capital and Road Project Performance

Funds play a crucial role in implementation and financing of projects, adequately funded road projects are completed on time and limited costs are involved. On the other hand, poorly funded road projects are more likely to delay in completion time; this exposes them to huge costs which might eventually lead to project performance. Zulu (2014) concluded that availability of adequate funds a factor which affect performance of road development projects in developing economies since most of them cannot be able to finance road projects on their own due to lack of adequate finances (Lussier, 2011).

Kamau (2014) explains that in Kenya some of the most successful road construction projects were funded by a group of financiers like the Thika Road Construction Project which started back in 2009 and was completed in 2013. This road construction project was funded by African Development Bank, the Chinese Government and the Kenya Government among other financiers (World Bank, 2010).

Other sources of funds for road construction projects include loans, donations, grants among others. Kamau (2013) further emphasizes that one of the main factors that affect road construction projects is lack of adequate finances to ensure successful implementation this causes delays of project completion which attracts more costs and thus impact negatively on project performance.

Le Brasseur & Zinger (2015) indicate that the most successful projects are adequately funded. He argues that with enough finances it is easier to come up with a strategic plan which acts as a guide on how the activities of the projects will be implemented and the cost that will be involved. This also includes a time frame that dictates the time that each activity will take and the project implementers. These activities however cannot be successfully deliberated without an adequate allocation of finances (Gundry & Welsch, 2011).

Funds act as essential drivers in project performance, implementers of road construction projects that have access to adequate finances can easily deliberate on project functions and activities within the specified time and cost. This highly contributes to project success because the parties involved can execute all their operations as per the set strategic plans (Carter & Allen, 2011). Funds play an essential role in supporting and facilitating other activities in road construction projects for example especially sub-contracting and outsourcing which requires professionalism and technical skills to ensure that the road construction activities comply with international standards and regulations (Carter & Shaw, 2012).

2.4 Managerial Skills and Road Project Performance

Mashud (2010) defines management as the act or skill of controlling and directing the affairs of a business. Managerial skills are personality and traits that are utilized by the management to execute a task. The manner in which the management utilizes their skills and knowledge is critical in the implementation of projects. The management team in charge of making decisions and implementation policies for the implementation of road projects. Management is challenging tasks that require skills to accomplish. According to Money (2010) there are three sets of managerial skills that are needed to perform managerial roles; conceptual skills, human relations skills and technical skills. Conceptual skill can be described as the capability of the management to visualize the organisation as a whole.

This skill enables the management to identify the causes of the problems and devise ways of solving such kind of problems. They are needed by the management team since they spend most of their time in planning, organizing and solving problems in the organization. Human relations skills are also called interpersonal skills. It is described as the capability to work with individuals. It aids the managers in understanding, communicating and working with employees. This enables them to lead, inspire and encourage the employees in project implementation. Technical skills is the capability to accomplish a task. These skills aid the management team to use various procedures and techniques in project execution (Rwigema, 2014).

The top management plays an essential role in facilitating implementation of road construction projects. Deakins (2013) argues that management of projects is not an easy task. It requires a competent and professional team of top management who have a relevant experience in management. A competent management team is able to communicate effectively, plan and facilitate projects implementation.

Mashud (2010) emphasizes that top management should be able to manage their time effectively, through training, planning, delegating, aligning management strategies, organizing meetings and making maximum use of available time.

2.5 Influence of Organizational Culture and Road Project Performance

According to Parker & Bradley (2011) organizational culture involves norms, values and beliefs that translate into behaviour that guide social and psychological setting of an environment. Culture is characterized by sharing values, and principles between employees in the organisation. It is a product of so many factors that entail strategy, employee productivity and management styles.

It also includes organizational vision, values, norms, symbols, systems, language, assumptions, beliefs and habits. Culture is considered as an important factor during projects implementation. It defines appropriate behaviour on how the employees and the project implementers relate and interact during project implementation. The cultural setting of an organization may influence the employees' performance. A supportive culture unites and encourages the employees to work towards similar goals (Ahadzie, 2011).

According to Bloisi (2012), an organizational culture plays an important role in organizing and aligning organizational activities and employees towards achieving set goals and objectives. Deakins (2013) posits that successful implementation of road construction projects is characterized by effective communication between the top management and the employees. Participative decision making is part of effective communication which is deemed as an important part of sharing information and decision making by the parties involved.

Bloisi (2012) highlights the supportive role of the organizational culture in cultivating the norms and values that motivate and encourage employees to work in the same direction. This contributes positively to organizational goals and objectives (Parker & Bradley, 2010). Rwigema (2014) maintains that project implementers should ensure that project construction activities are in line with the employees' functions and responsibilities. The top management should ensure that road construction needs are addressed by providing facilities and resources to support the process of implementation. Project implementers and the employees should have an open communication on project activities. This should include an integrated system of information sharing that allows sharing of information between project implementers and the employees.

This helps to mitigate communication costs and coordination of activities. The top management should also show allow flexibility through establishing and maintaining a good working relationship with the employees in order to create a platform that accommodates new ideas and delegation of authority. Also, the top management should match employees' knowledge and skills with their duties and responsibilities to ensure that they realize their full potential to contribute to successful project implementation (Moore & Buttner, 2011).

2.6 Technical Skills and Road Project Performance

Technical skills can be defined as knowledge and abilities that is needed to execute a task. Sambasivan et al. (2016) define technical skills are the ability to perform role with the help of certain tools and equipments. Such tools may be tangible or intangible. Employees having technical skills perform their roles more efficiently because they possess practical aspects and expertise which in most cases is acquired through specialized training and development programmes.

An organisation seeking to achieve project performance should develop and maintain employees with technical skills and expertise to accomplish their tasks efficiently. This can save the project huge costs and contribute towards efficient flow of activities. Iyer and Jha (2015) contend that projects that perform have been associated with presence of a technical team and a lean and competent team of employees. Project implementers lead the organisation in project implementation; this is an important role that requires the implementers to have technical skills to effectively guide employees towards implementation of projects. Organisations that exploit its employees' technical skills perform its functions efficiently, this helps to streamline coordination of activities and work towards set goals and targets. Karim and Marosszeky (2011) posit that through continuous training and development programmes, employees are able to sharpen their technical skills and expertise. These skills assist employees to easily solve technical problems and save the organisation costs of hiring expertise. In so doing, this creates a platform to employees to exploit their innovation in providing products and services that add value to customers. In projects implementation, employees should be engaged in trainings to improve their skills in implementation and practical aspects of use of tools and equipments that support project implementation (Zulu and Chileshe, 2010).

To effectively harness their technical skills in implementation of projects, top management should ensure that employees' duties and responsibilities match their technical skills and knowledge. Bygrave (2014) observes that employees that possess knowledge and technical skills are motivated and have the right attitude which enables them to cope with project implementation challenges.

2.7 Theory of Constraints

This section covers a review of the theory of constraints that anchors this study; it discusses the assumptions of the theory and its relevance to this study. This study will be guided by Goldratts' (Goldratt, 1984) Theory of Constraints (ToC). This theory holds that a system is faced by constraints that limit it from achieving its objectives. Some of these limiting factors emanate from production, planning, production control, managing a project, logistics, accounting, performance measurement and other lines of business which might impact on performance. In this theory, constraints define the output of a system whether acknowledged or not. The aim of the top management is findings appropriate ways to minimize the constraints of a system in the organisation.

This way the organisation can effectively be able to realize its goals and maximize profits. This theory describes the causes of the system constraints and also sheds light on the best ways to deal with these constraints (Goldratt, 2006). An organisation operates with the help of systems. A system can be described as a collection of independent and interrelated process which works together in turning inputs into outputs in the pursuit of certain goals. The limitation for this system is a constraint which prevents the system from its efforts of achieving organisational goals (Noreen, Smith & Mackey, 2008).

Theory of constraints is applicable in this study since, capital, management skills, leadership styles and culture are constrains that face road contractors when implementing road projects. The best way to handle such kind of a problem is to find ways of countering these challenges to remove barriers in implementing road projects. Stakeholders are an important part of road projects and they should participate in effectively managing road projects to enhance their performance (Ruhl, 2011).

Some of the impediments that affect performance of projects are inadequate finances, poor leadership and inadequate technical skills. These limitations highly contribute to failure of project completion resulting into inefficiencies and delay which might lead to an increase in costs of the project. However, the supporters of this theory; Noreen et al. (2012) put more emphasis on the significance of project teams identifying the limitations and establishing effective ways to deal with these limitations at early stages to reduce their impact on road projects.

2.8 Gaps in the Literature Review

Although most studies had been done in relation to factors that affected road construction projects, little focus was laid on the key factors that influenced road construction projects especially availability of funds and organizational culture. Most studies that have been reviewed limited themselves on labour shortages, unworkable deadlines, unexpected ground conditions, failure to plan and project scheduling, ambiguities in specifications, and drawings; bureaucracy in decisions, unqualified engineers and consultants. Secondly, a shallow focus was given to the factors that influenced road projects performance in Kenya laying more concentration on road Contractors in Machakos County. This triggered the need to investigate the factors that influenced project performance of road Contractors in Machakos County.

2.9 Conceptual Framework

A conceptual framework can be defined as an analytical device that consists of variations and contexts. It is applied to make conceptual differences and organize ideas. It captures real issues in a simple way that is easy to remember and apply. The conceptual framework helps in clarifying concepts and proposing relationships among the study concepts (Hobbs & Norton, 2010). It provides a context to interpret the findings of the study and enhance theory development which is essential for practice.

Independent Variables

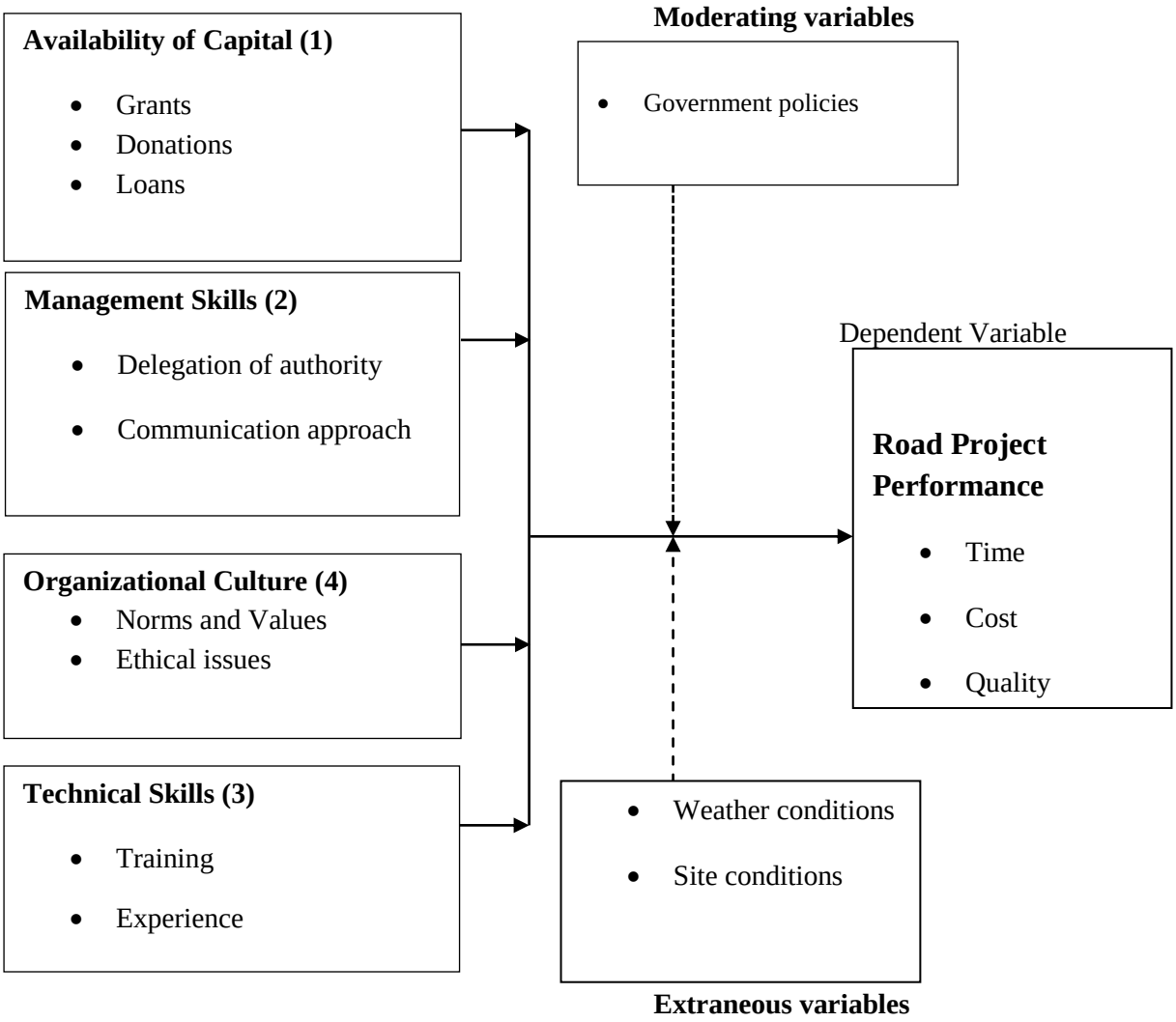

Figure 2.1: Conceptual Framework

The conceptual framework depicted the hypothesized relationships between the study variables. The independent variables were assumed to influence the changes in the dependent variable. Dependent variable is referred to as the criterion variable. It explained the result of the impact of the independent variables. In this study, the independent variables were the factors that influenced the performance of road projects performance in Machakos County. These included availability of funds, managerial skills, organisational culture and technical skills. The dependent variable was road project performance.

2.10 Knowledge Gap in Literature Review

Author(s)	Research Focus	Major findings	Knowledge gaps
Kagiri & Wainaina (2008)	Time and cost related factors that affect power projects locally.	The main delays causes involved time overruns, delays contractor payments, employer cash-flow challenges, delayed disbursement of funds by sponsors, delayed access to the site and bureaucracies by government agencies and delayed access to sites.	This study limited itself to power projects only.
Andi, Susandi & Wijaya (2010)	Factors that lead to delay in structural and finishing works in Indonesia.	Major delay causes include delayed payment by the contractor, changes in design in the process of construction, bad weather and delayed delivery of materials.	The study was done in a global setting which is different from our ways of doing things.
Kholif et al. (2013)	Time and cost overruns in the education sector construction projects in Egypt.	The key causes of time overruns were found to be political instability, financial challenges by the contractor, inflation, high labour costs and hindrances in accessing work permits from the governments.	This study limited itself to building projects.
Shanmugapriya & Subramanian (2013)	Challenges of time and cost overruns facing construction projects in India.	The main factors causing time overruns are modification of the contract, market rate of the material, reworking low quality performance and vague specifications.	The study was done in a global setting which is diverse from our ways of doing things.
Sweis (2013)	Critical factors that affect time overrun in state construction projects in Jordan.	The results showed that the main causes of delays entailed numerous changes orders from the owners, improper planning and project scheduling by the contractor, mistakes and ambiguities in drawing and specification, sluggish decision making by the owners, lack of qualified consultants, engineers and employees accorded to the project.	The study limited itself to construction projects.
Ravisankar, Anandakumar and Krishnamoorthy (2014)	Cause of delays by construction firms	It was revealed that there were limitations of skilled and unskilled labourers, changes in design, prolonged waiting time for work team availability.	The study limited itself to construction projects.

2.11 Summary and Research Gaps

From the literature review, much had been done in relation to the factors that affect performance of road projects in most parts of Europe, Australia and Asia. However, the key factors that seemed to affect road construction projects were delayed funding, high costs of labour and bureaucracy from government agencies. In Africa, studies demonstrated that the main factors that influenced development projects were inadequate finances, poor technical skills and lack of expertise. This was also supported by the Theory of Constraints that discussed about the limiting factors such as inadequate finances and poor leadership that affected performance of projects. Further, the study discussed how availability of capital, management skills, organisational culture and technical skills influenced road projects performance; this were some of the key factors that this study sought to investigate laying a special focus to road Contractors in Machakos County.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the researcher described the research methodology adopted for this research under the following sub-heading: a research design, target population, sample size and sampling techniques, research instrument, data collection procedures, analysis techniques and ethical matters in research.

3.2 Research Design

According to Morgan (2007) a research design is a process which allows the researcher to understand the significance of the research and the steps that are involved. This study adopted a descriptive research design. According to Cooper & Schindler, (2008) a descriptive survey design involves describing the population with respect to key variables laying a major emphasis towards establishing the nexus between study variables.

This research design was appropriate because the population was large comprising of homogenous characteristics that made it possible for the researcher to collect information. The researcher was in a position to gather the same information from similar demographic groups then interpreted it relatively. This design emphasized on determining the frequency with which something occurs or the extent to which two variables co-vary. This research design enabled the researcher to determine the extent to which availability of funds, management skills; organizational culture and technical skills influenced the performance of road contractors in Machakos County.

3.3 Target Population

Kothari (2005) defines a population as the number of units or objects that possess similar traits. The target population of the respondents involved the road contractors and the supervising engineers at Machakos County. The total population for the road contractors and the supervising engineers in Machakos County was 350.

3.4 Sample Size and Sampling Procedures

3.4.1 Sample Size

According to Kothari (2005) a sample is a small section of the population representing an entire population. Sampling means choosing several units from a population as a representative. The sample size for this study is 105.

3.4.2 Sampling Procedure

A stratified random sampling approach was applied to classify all the road contractors in Machakos County. This was guided by the traffic volume to achieve a reasonable representation of a sample. Kothari (2005) defines stratification as a process of dividing the population members into homogenous subgroups before sampling. The strata was mutually exclusive and each element in the population was assigned to a single stratum. The study used a sample of 30% of the target population. Mugenda and Mugenda (2003) suggested that at least 10 percent of the whole population is enough to represent a population. Thus, 30% of the accessible population was enough for the sample size. The target population and the sample size were illustrated in Table 3.2 below.

Table 3.1 Target Population and Sample Size

Distribution	Population	Sample
Road Contractors	300	90
Supervising engineers	50	15
Total	**350**	**105**

Source: Machakos County

3.5 Data Collection Instruments

Data collection involves gathering of information that is required for analysis in a study (Cooper et al, 2008). The approach of data collection highly depends on the research design adopted. Primary data sources were used in this study. Data was collected by administering a semi-structured questionnaire. These questionnaires utilized both open-ended and closed questions.

Closed-ended questions consisted of predetermined answers; these questions collected quantitative data. Likert scale a psychometric scale that is applied to assess attitudes and opinions of the respondents (Morgan, 2007). These responses to these questions were rated using a five-points Likert Scale as follows: 1-Strongly disagree 2- Disagree 3- Neutral 4- Agree 5- Strongly agree. The advantage of using questionnaires is that the responses were obtained in a uniform way. This implied that the questionnaires were objective and certainly more accurate than interviews. It was an easier and faster way to collate data as compared to interviews. Secondary sources of data were obtained from books, journals, dissertations, magazines and internet sources.

3.6 Validity and Reliability of Research Instruments

This section describes the reliability and validity of research instruments. Validity was utilized to make sure that the tools applied measure what they were meant to measure. Reliability of research tools was tested to ensure that research instruments give similar results.

3.6.1 Validity of the Research Instruments

Cooper and Schindler (2008) posit that validity is degree to which an instrument measures the constructs under investigation. Validity tests include content, criterion and related construct validity. Content validity is the estimate of how much a measure represents every single element of a construct. This research applied content validity since it was utilized in measuring the degree to which a sample of the items represented the content which the test was designed to measure. At the same time, the validity of the instruments was subjected to scrutiny by the research supervisor.

The piloting exercise was carried out on five contractors in one of the sub-counties in Machakos County. The main reason of conducting the pilot study was to predict the warnings and risks about the research project especially when the proposed methods or instruments were inappropriate or too complex. The findings of this pilot study were validated in consultation with the supervision by randomly selecting the target population and conducting a pilot study. The respondents in the pilot study were not involved in the actual study.

3.6.2 Reliability of the Research Instruments

Kothari (2011) defines instrument reliability as ability of a research instrument to give consistent outcome. Cronbach's alpha is utilized in measuring the level of consistency of the scores got, and the level of consistency of these scores to each individual from one administration of the instrument to another. It is also referred to as a measure of internal consistency of the items in the questionnaire.

A pilot group was selected involving a few individuals from the target population for testing the reliability of the research instruments. Eisinga and Pelzer (2012) indicated that split-half is a measure of consistency in which a test is divided in two and the score for each half of the tests are compared with one another. The study adopted the split-half approach to establish the level of reliability of the research tools. Similar questionnaires were administered to a sample of 5 respondents through dividing the sample randomly into halves. Cronbach's Alpha was advanced by Mohsen and Reg (2011), the study revealed that the alpha coefficient of the five items was 0.754; this implied that the factors influencing performance of road projects attained a high level of internal consistency.

3.7 Data Collection Procedures

Primary data was used. The questionnaires were administered by dropping and picking them later through agreeing on a certain time with the researcher. The semi-structured questionnaire was used for both open-ended and closed questions.

A five-point (1-5) Likert scale was utilized to measure the strength of these responses. This kind of scale was useful for closed questions only. Some of the respondents that might be difficult to reach due to time constraints were sent questionnaires through emails. Follow-up was made using phone calls. A cover letter was obtained from the University of Nairobi as a proof of permission to collect data for academic purposes only. A letter of authority to collect data in Machakos County was obtained from National Commission for Science, Technology and Innovation.

3.8 Data Analysis Techniques

Descriptive statistics was used to summarize the quantitative data so as to allow a meaningful description of a distribution of the scores. The collected data was compiled, edited and coded into categories using numeric values after assessing its consistency and relevance to the study. Analysis of quantitative data was achieved using Statistical Package for Social Sciences, SPSS version 22. Presentation of analyzed data was done using percentages, mean and standard deviation by use of frequency tables.

Inferences from analyzed data were made and this assisted the researcher to answer the research questions relating to the factors influencing project performance of road projects in Machakos County. These results were compared to previous research findings from various scholars to establish the degree of relationship or accuracy of the research.

3.9 Ethical Considerations

Kidder (2009) defines ethics as moral principles that govern an individual behaviour in conducting an activity. The researcher conducted this research with utmost care considering the nature of the information obtained. Firstly, consent was obtained by engaging and interacting with the resident engineer in the respective project areas, this was helpful in commission the course, to win their trust, support and permission to investigate road projects. The researcher took his time to explain to the respondents the significance of this research and the set goals that he intended to achieve.

The nature of this research was also acknowledged to them including the questions, privacy was achieved by assuring the respondents that their identities and all the information that they gave would be kept confidential. This highly motivated them to participate in taking part in this research.

Then, questionnaire administration was done to all the respondents that the researcher had communicated to prior the administration of questionnaires. This aided in improving their willingness to take part in the research by giving accurate and reliable information and thus improved the quality of the research findings.

3.10 Operational Definition of Terms

Table 3.1 below depicted the independent and the dependent variables; it captured the study objective, the type of variables, the indicators, measures used, measuring scale and the type of analysis.

Table 3.2 Operational Definition of Variables

Research Objectives	Type of Variable	Indicators	Indicators	Measuring Scale	Method of analysis	Tool of analysis
To assess how the availability of capital influences project performance of Road Contractors in Machakos County.	Independent variable: availability of capital	• The level of accessibility of bank loans • The level of availability of Savings • The level of accessibility of government loans	• The amount of funds accessed from the bank • The amount of savings for road projects	Ratio Ratio	• Descriptive Statistic • Pearson's correlation analysis	Mean and standard deviation
To examine how management skills influence project performance of Road Contractors in Machakos County	Independent variable: management skills	• The level of efficiency in execution of responsibilities and tasks • The level of coordination of employees	• Tasks and responsibilities are executed on time. • The extent of employee coordination	Nominal Nominal	• Descriptive Statistics • Pearson's correlation analysis	Mean and standard deviation
To assess the influence of organizational culture on project performance of road Contractors in Machakos County.	Independent variable: organizational culture	• Level of unity in execution of tasks • The level in which organizational culture supports strategic objectives	• Extent of unity in execution of tasks. • The extent to which organisational cultures supports strategic objectives	Nominal Nominal	• Descriptive Statistics • Pearson's correlation analysis	Mean and standard deviation
To explore how technical skills influence project performance among road contractors in Machakos County.	Independent variable: technical skills	• The level of frequency of employee training and development programmes. • The level of employees' experience in road projects implementation.	• The extent of employee training and development programmes • The extent of employee involvement in key decisions regarding implementation of road projects	Nominal Nominal	• Descriptive Statistics • Pearson's correlation analysis	Mean and standard deviation
	Dependent variable: Road Project Performance	• Time • Cost • Quality	• The time spent in road projects implementation. • The amount of costs incurred in road projects implementation. • The extent of stakeholder satisfaction	Ratio Ratio Nominal	• Descriptive statistics • Pearson's correlation analysis	Mean and standard deviation

CHAPTER FOUR

DATA ANALAYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

The chapter discusses major findings as per the research objectives. The researcher utilized a quantitative approach to analyze data. The output was presented in Tables form summarized in percentages, frequencies, descriptive statistics and Pearson correlation coefficient.

4.2 Questionnaires' Return Rate

Out of 105 questionnaires that were distributed for the study; 80 were successfully filled and taken back. This represents a response rate of 76.2%. Nachmias (2009) observed that a response rate exceeding 50% was believed to be sufficient for analysis and thus, 76.2% return rate, was considered to be very good.

4.3 Demographic Characteristics of the Respondents

The demographic traits of the respondents have been discussed in this section of the research. This involves social traits such as gender and age that potentially influence performance of road construction projects.

4.3.1 Gender of the Respondents

The participants were requested to state their gender. The outcome is presented in Table 4.1

Table 4.1 Gender of the Respondents

Gender	Frequency	Percentage
Male	57	71
Female	23	29
Total	80	100.0

In Table 4.1, majority (71%) of the respondents were male while the rest (29%) were female. This implied that majority of the road Contractors who took part in construction of road projects were male may be because of the gender bias.

4.3.2 Age Bracket

The researcher inquired from the participants about their age brackets. The output is captured in Table 4.2

Table 4.2 Age brackets of the Respondents

Age	Frequency	Percentage
Below 25 years	00	00
26-35 years	10	12.5
36-45 years	30	37.5
46-55 years	32	40
56 years and above	08	10
Total	80	100.0

In Table 4.2, most of the respondents (40%) were aged between 46 to 55 years, 37.5% of the respondents were aged between 36 to 55 years and 12.5% of the respondents were aged between 26-35 years. None of the target population fell in the age bracket of below 25 years. This implies that the road contractors and supervising engineers had adequate experience and are mature.

4.3.3 Availability of Capital

The participants were asked if they were aware of the sources finance that was used to finance road projects. The outcome is provided in Table 4.3.

Table 4.3 Availability of Capital

	Frequency	Percentage
Yes	70	88
No	10	12
Total	80	100.0

Majority of the respondents (88%) knew the sources of finances used to finance road projects. Only, 12% respondents were not sure. This means that funding for the road construction had reliable sources.

4.3.4 Sources of Finance

The respondents were requested to indicate the sources of finance for road projects. The outcome is provided in Table 4.4.

Table 4.4 Sources of Finance

Sources of Finance	Frequency	Percentage
Bank loans	54	68
Donations	14	17
Grants	12	15
Total	80	100.0

From Table 4.4, 68% of the respondents noted that bank loans were the main sources of finance, 17% of the respondents indicated donations and 15% of the indicated grants. It was concluded that most road projects were financed using bank loans in Machakos County but also supplemented with donations and grants.

4.3.5 Influence of Availability of Capital on Road Project Performance

The study sought to establish the influence of capital availability on road project performance. The output is depicted in Table 4.5.

Table 4.5 Influence of Availability of Capital on Road Project Performance

	N	Mean	Std. Deviation
Road contractors have access to capital sources and loans	80	3.821	0.978
Road contractors have capacity to access funding for road projects	80	3.778	0.856
Road contractors practice financial management prudence	80	3.574	0.777
There are bureaucracies from the steps involved in funding disbursement	80	3.811	0.907
Road contractors ensure adequate communication on the utilization of fund.	80	3.654	0.645
Total	80	3.728	0.833

The results showed that road contractors; had access to capital sources, had capacity to get funds and they practiced financial management prudence. There were bureaucracies in disbursement of funds and adequate communication on fund utilization. The mean values were as follows: 3.821, 3.778, 3.574, 3.811 and 3.654 respectively. The grand mean was 3.728 with a standard deviation of 0.833. This implied that capital availability influenced road project performance.

4.3.6 Management Skills

The respondents were asked questions in relation to several aspects of management skills: delegation of authority and communication approach and their contribution to road project performance.

4.3.6.1 Delegation of Authority

The respondents were requested to indicate whether the management delegated authority to the right people. The results are provided in Table 4.6.

Table 4.6 Delegation of Authority

	Frequency	Percentage
Yes	77	96.3
No	03	03.7
Total	80	100.0

Most of the respondents (96.3%) indicated that road contractor's delegated authority to the right employees while only, 3.7% of the respondents indicated that they did not delegate authority to the right employees. This implies that road contractors delegated their responsibilities to the rightful people.

4.3.6.2 Communication Approach

The respondents were requested to indicate the form of communication approach that was adopted by road contractors and supervising engineers during implementation of road projects. The results are provided in Table 4.7.

Table 4.7 Communication Approach

	Frequency	Percentage
One-way approach	78	98
Two-way approach	02	02
Total	80	100.0

Majority (98%) of the respondents agreed that road contractors adopted a two-way communication approach. Only, 2% of the respondents indicated that contractors used a one-way communication approach. This implies that road contractors adopted a two-way communication approach that allowed feedback mechanism by all the employees.

4.3.6.3 Duration of Involvement in Road Projects

The researcher asked the participants to indicate the duration that they had been involved in road projects. The outcome is provided in Table 4.8.

Table 4.8 Duration of Involvement in Road Projects

Length of Service	Frequency	Percentage
0-5 years	00	00
05-10 years	20	25
10-15 years	30	37.5
More than 15 years	30	37.5
Total	80	100.0

In Table 4.8, a tie of 37.5 of the respondents agreed that road contractors had been involved in road projects for a period of 10-15 years, and over 15 years. Only, 25% of the respondents noted that road contractors had been involved in road projects in a period between 05-10 years while none (0%) of the respondents indicated that road contractors had been involved in road projects between 0-5 years. This was an indication that most of the road contractors had been involved in road projects for a period of more than ten years and had adequate knowledge and experience about road construction.

4.3.6.4 Influence of Managerial Skills on Road Project Performance

This research sought to establish the influence of managerial skills on road project performance. The outcome is outlined in Table 4.9.

Table 4.9 Influence of Managerial Skills on Road Project Performance

	N	Mean	Std. Deviation
Road contractors have expertise and skills	80	3.781	0.872
Road contractors have a relevant work experience in road construction projects	80	3.814	0.772
Road contractors are creative and innovative in the use of modern technology	80	3.661	0.657
Road contractors have a high-level of problem solving skills and techniques	80	3.752	0.715
Total	80	3.752	0.754

The results showed that road contractors had; a relevant work experience, expertise and skills, problem solving skills, creativity and innovation in use of modern technology. The mean scores were: 3.814, 3.781, 3.752 and 3.661 respectively. The grand mean was 3.752 with a standard deviation of 0.754. This signified that managerial skills influenced the performance of road projects in Machakos County.

4.3.7 Organisational Culture

The researcher determined the influence that organisational culture had on road projects performance.

4.3.7.1 Influence of Organisational Culture on Road Project Performance

The study sought to establish the impact that organisational culture had on road projects performance. The results are illustrated in Table 4.10.

Table 4.10 Influence of Organisational Culture on Road Project Performance

	N	Mean	Std. Deviation
Road contractors value the mission for the project	80	3.881	0.792
Road contractors maintain core values in the execution of road projects	80	3.561	0.997
Employees have a positive attitude in the work	80	3.911	0.873
Organizational culture unites road contractors and the employees in the same goals.	80	3.920	0.717
Organizational culture adopted by road contractors supports strategic objectives	80	3.654	0.844
Total	80	3.7854	0.8446

The results found that organisational culture united road contractors and employees in similar goals, employees had a positive attitude in their work, road contractors' valued project mission, organisational culture adopted by road contractors supported strategic goals and that road contractors observed core values in road project implementation. The mean values were as follows: 3.920, 3.911, 3.881, 3.654 and 3.561 respectively. Grand mean was 3.7854 with a standard deviation of 0.8446. This meant that organisational culture enhanced performance of road projects.

4.3.8 Technical Skills

The study determined the various aspects of technical skills and their contribution to road project performance.

4.3.8.1 Experience

The participants were requested to indicate the duration that road contractors had served in road projects. The outcome is presented in Table 4.11.

Table 4.11 Level of Experience

Length of Service	Frequency	Percentage
0-5 years	00	00
05-10 years	20	25
10-15 years	28	35
More than 15 years	32	40
Total	80	100.0

The outcome in Table 4.11 depict that majority (40%) of the respondents served in a period exceeding 15 years, 35% of the respondents served between 10-15 years and only, 25% of the respondents served between 05-10 years while none of the respondents served between 0-5 years. This was an indication that most road contractors had an experience of more than 10 years in their work.

4.3.8.2 Training and Development Programmes

The respondents were requested to tick the level of frequency in which road contractors participated in training and development programmes. The outcome is captured in Table 4.12.

Table 4.12 Training and Development Programmes

	Frequency	**Percentage**
Monthly	15	18
Quarterly	45	56
Semi-annually	10	13
Annually	10	13
Total	80	100

The results in Table 4.12 depict that 56% of the respondents observed that road contractors took part in training and development on a quarterly basis and 18% respondents observed that road contractors took part in training and development on a monthly basis. There was a tie of 13% of the respondents who noted that road contractors participated in training and development annually and semi-annually. This indicates continuation with update in skills and innovation.

4.3.8.3 Influence of Technical Skills on Road Project Performance

The study determined the extent to which technical skills influenced performance of road projects. The outcome is given in Table 4.13.

Table 4.13 Influence of Technical Skills on Road Project Performance

	N	Mean	Std Deviation
Road contractors have a relevant work experience	80	3.85	0.931
Road contractors are efficient in their work	80	3.67	0.871
Road contractors meet deadlines	80	2.98	0.877
Road contractors communicate effectively and coordinate efforts.	80	3.21	0.675
Total	80	3.428	0.839

The output in Table 4.13 showed that road contractors were; experienced in their work, efficient, communicated effectively and met deadlines. The mean values are 3.85, 3.67, 3.21 and 2.98 respectively. The grand mean is 3.428 and standard deviation is 0.839.

4.3.9 Performance of Road Projects

The researcher requested the respondents to indicate the extent of performance of road projects. The results are outlined in Table 4.14 as shown below.

Table 4.14 Performance of Road Projects

	N	Mean	Std Deviation
The quality of the project, both work in progress and final product	80	3.95	0.656
How the budgets are utilized effectively	80	2.75	0.773
The project deadlines are adhered to	80	2.45	0.495
The resources are appropriately utilized	80	3.15	0.675
Total	80	3.075	0.650

In Table 4.14, the respondents agreed to a large extent that the quality of the road projects was good in terms of work-in-progress and final product. The respondents agreed to a moderate extent that road project resources and budgets were effectively utilized. The respondents agreed to a small extent that project deadlines were adhered to. The mean values include 3.95, 3.15, 2.75 and 2.45 respectively. The grand mean is 3.075 and standard deviation 0.650.

4.3.10 Challenges Facing Road Contractors in Road Projects Implementation

This research sought to establish the obstacles that faced road contractors in the implementation of road projects. The results are presented in Table 4.15.

Table 4.15 Challenges that Face Road Contractors

	N	Mean	Std Deviation
1.Inclemental weather patterns	80	4.211	0.874
5.Inadequate skilled labour	80	3.951	0.775
2.Inadequate plant and equipment	80	3.842	0.673
3.Delayed payments	80	3.721	0.863
4.Unforeseen ground conditions	80	3.765	0.991
6.Political Interference	80	3.566	0.881
Total	80	3.928	0.843

The main challenges that faced road contractors in the implementation of road projects included inclemental weather condition, limited skilled labour, insufficient equipments, prolonged payments, unexpected ground conditions and interferences from politics. The mean values were: 4.211, 3.951, 3.842, 3.721, 3.765 and 3.566 respectively.

4.3.11 Solution to Challenges Facing Implementation of Road Projects

The study sought to find out the solutions on the challenges facing road contractors in road projects implementation. The results are presented in Table 4.16.

Table 4.16 Solutions to the Challenges that face Road Contractors

	N	Mean	Std Deviation
1.Well-finance work programme that is cognizant of weather pattern	80	4.122	0.794
2.Ground exploration prior to the commencement of the project	80	4.001	0.877
3.Proper budgetary allocation and interest provision on delayed payments	80	3.924	0.787
4.Compliance with the contract	80	3.821	0.852
5.Continuous training and skills transfer	80	3.772	0.891
Total	80	3.928	0.840

The solutions to the challenges facing road contracts in the implementation of road projects in Machakos County include developing well-financed work programmes that considers weather pattern, ground exploration before road projects commencement, proper budgetary allocation and provision of interest on delayed payments, contract compliance, continuous training and transfer of skills. The mean scores were 4.122, 4.001, 3.924, 3.821 and 3.772 respectively. The grand mean is 3.928 and the standard deviation is 0.840.

4.4 Pearson Correlation Coefficient

Pearson correlation coefficient is a measure of linear dependence between two variables: independent and dependent. The researcher correlated the factors influencing road projects against road projects performance. The results are provided in Table 4.17.

Table 4.17 Pearson Product Moment Correlation Coefficient

		Road projects performance	Availability of capital	Management skills	Organisational culture	Technical skills
Road projects performance	Pearson Correlation	1				
	Sig. (2 tailed)	0.000				
Availability of capital	Pearson Correlation	0.633**	1			
	Sig. (2 tailed)	0.000	0.000			
Management skills	Pearson Correlation	0.562**	0.762**	1		
	Sig. (2 tailed)	0.003	0.000			
Organisational culture	Pearson Correlation	0.656**	0.485**	0.490**	1	
	Sig. (2 tailed)	0.000	0.000	0.000		
Technical skills	Pearson Correlation	0.775**	0.097	0.151	0.091	1
	Sig. (2 tailed)	0.011	0.512	0.274	0.470	0.260

Correlation analysis results between availability of capital and performance attained a positive correlation coefficient of 0.633 with a p-value of 0.000. This was an indication that the result was significant at $\alpha = 5\%$, and if capital was sufficient, it would improve road projects performance. Management skills and performance attained a positive correlation of 0.562 and a p-value of 0.003 which is significant at 5%. Organisational culture and performance had a positive correlation of 0.656 and a p-value of 0.000. Technical skills and performance had a positive correlation of 0.775 and a p-value of 0.011. This meant that technical skills had the greatest influence on road project performance followed by organisational culture and then availability of capital while management skills has the least impact on road project performance in Machakos County.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The chapter covers the findings, discussion, conclusion drawn from analyzed data and the recommendations. The study's objective involved assessing the factors influencing performance of road contractor in Machakos County.

5.2 Summary of Findings

The study was based on the factors influencing road projects performance in Machakos County. It sought to investigate whether capital availability, management skills, organisational culture and technical skills influence road projects performance.

5.2.1 Availability of Capital

Majority (88%) of the respondents discerned the capital sources to facilitate road projects. The remainder (12%) was not certain. Bank loan (68%) was found to be a key source of capital followed by donations (17%), and grants (15%). Most road projects were financed using bank loans. Further, capital accessibility was found to enhance performance of road projects. Road contractors accessed capital sources since they had capacity. Although there was bureaucracy in disbursement of funds, road contractors demonstrated financial prudence and maintained adequate communication. This attained a grand mean of 3.28, and a standard deviation of 0.833.

5.2.2 Management Skills

Majority (96.3%) respondents indicated that road contractors delegated their respondents to the correct employees. A two-way communication approach was adopted by the contractors and supervising engineers during road projects implementation. This was pointed out by almost (98%) all the respondents. The results found that 41% of the respondents were involved in road projects for duration of more than two years; this implied that most of the road contractors had a relevant work experience. The findings pointed out that they had managerial skills to solve problems, creativity and innovation and expertise that greatly improved road project performance. This attained a grand mean of 3.752, and a standard deviation of 0.754.

5.2.3 Organisational Culture

Organisational culture united road contractors and the support staff; this created a positive attitude to work and a common vision which resulted into improved road projects performance. This attained a grand mean of 3.7854 and a standard deviation of 0.8446.

5.2.4 Technical Skills

Majority (56%) of the road contractors took part in training and development on a quarterly basis and attended trainings to boost their technical skills in implementing road projects. Road contractors were experienced, efficient and met deadlines in the implementation of road projects. This attained a grand mean value of 3.428 and a standard deviation of 0.839.

5.3 Discussion of Findings

The discussion of findings has been done as per the study objective as follows:

Bank and government loans were found to be the main sources of capital which were used to finance road projects. Access to capital, financial prudence and communication enhanced performance of road projects in Machakos County. These findings are consistent to Kamau (2013) who argued that inadequate finances were a key hindrance to successful project implementation. This led to delays in project completion resulting into increased costs and this impacted negatively on performance of projects.

Road contractors were experienced, experts, creative and innovative in road projects, this enhanced their managerial skills. These qualities played a key role in enhancing road projects performance. Mashud (2010) noted that implementers who succeeded in implementing road projects attained a high level of expertise and experience.

The results found that organisational culture brought together road contractors, support staff and the community including all other stakeholders that were involved in the implementation of road projects. These findings are consistent to Bloisi (2012) who highlighted the role of organisational culture in uniting top management and the employees to work in a similar direction towards realizing organisational goals and objectives.

To improve their technical skills, road contractors were took part in training and development regularly. This training and development programmes were useful to road contractors in sharpening their skills and expertise and contributing towards implementation of road projects. These findings are in tandem with the Bygrave (2014) who found that training and development programmes impacted positively to implementation of development projects.

5.4 Conclusion

The study found that the four main factors that influenced performance of road projects in Machakos County included capital availability, management skills, organisational culture and technical skills. Although road contractors had access to capital, it was accessed mainly from local commercial banks. A lot of bureaucracy was involved in the disbursement of funds that led to delays and inconsistencies in road projects implementation.

The main challenges facing implementation of road projects were inclemental weather conditions, inadequate skilled laborers, inadequate equipments, delayed payments and unforeseen ground conditions and political interference. However, it was revealed that well-finance programmes, ground exploration, adequate allocation of budgets, complying with the contracts and continuous training and transfer of knowledge would help counter these challenges.

5.5 Recommendations of the Study

1. Highly qualified and experienced road contractors with a relevant experience and technical skills should be hired to implement road projects. This will enable Counties to get value for their money, achieve on-time projects completion and save huge costs.

2. Road contractors should plan for any unexpected weather changes that might affect implementation of road projects. They should have a plan on the steps to take whenever their activities are affected by weather conditions. This will assist them to effectively manage road projects and minimize chances of unsuccessful implementation.

3. The county should ensure budgetary allocation with a 100% absorption rate and enhance adequate utilization of funds set aside for implementation of road projects. Thus, the county can facilitate road project activities and contribute towards their successful implementation.

4. Road contractors should team up with all the stakeholders involved in road projects so that they can take over the management and aid in running the projects. Effective communication between the stakeholders is essential in enhancing their participation.

5. Machakos County should consider adopting a flexible organisational structure whereby decisions and functions of the county can be decentralized to enhance flexibility and efficiency in decision making processes and procedures. This will boost efficiency in the implementation of road projects.

6. Road contractors should engage their employees in regular training and development programmes to improve their technical competencies in road projects implementation. This will help in enhancing efficiency and cutting costs.

7. Government agencies in charge of road should develop blueprints to guide road contractors in road project activities. Hence establish a favourable environment for implementation of road projects and industry growth and impact positively towards the realization of Vision 2030.

5.5.1 Recommendations for Policy

Recommendations for policy are provided below:

The Ministry of Transport, Infrastructure, Housing and Urban Development should set up policies and standards to ensure that qualified and licensed road contractors are awarded contracts to implement road projects.

The National government should increase its budgetary allocation to support implementation of road projects at the grass roots.

5.6 Recommendations for Further Research

Recommendations for further research are as follows:

i. To establish the effectiveness of adequate plant and equipment on performance of road projects.

ii. To assess the influence of planning on road projects performance.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

Dear Sir/Madam

RE: DATA COLLECTION

I am a master's student at the University of Nairobi taking Master of Arts in Project Planning and Management which is part of my course. I am required to do a research project on factors influencing road projects implementation in Kenya. You are selected as part of the study and are kindly requested to assist me in data collection by responding to this questionnaire. I hereby confirm that the information obtained shall be utilized solely for academic purposes. Your help will be highly appreciated.

Yours faithfully

Ezekiel Fukwo Wafula

APPENDIX II: QUESTIONNAIRE FOR ROAD CONTRACTORS

Instructions

The questionnaire is specifically designed to collected data on the factors influencing road projects performance in Kenya, a case of Road Contractors in Machakos County. Data collated will be treated with a high degree of confidentiality, it is meant for academic use only. Kindly respond by ticking or giving comments where appropriate.

SECTION A: DEMOGRAPHIC INFORMATION

County in reference ……..

1. **State your Gender**
   - i. Male [ ]
   - ii. Female [ ]

2. **State your age**
   - i. Below 25 years [ ]
   - ii. 30 to 35 years [ ]
   - iii. 36 to 45 years [ ]
   - iv. 46 to 55 years [ ]
   - v. 55 years and above [ ]

SECTION B: AVAILABILITY OF CAPITAL

3. Are you aware of any source of capital that has been utilized by the road contractors to capital road projects?

   Yes [ ] No [ ]

4. If yes, which one (s)?

   Bank loans [ ]
   Donations [ ]
   Grants [ ]

   If others, specify

……
……
……
……

5. Do you know any other strategies used by the road contractors to raise capitals for financing road projects?

   Yes [ ] No [ ]

6. If yes, specify.

   ……
   ……
   ……
   ……

7. Indicate your level of agreement with the following statements that relate to the influence of availability of capital on road project performance by road contractors. Tick appropriately. 1-Not at all 2- Little extent 3- Moderate extent 4- Large extent 5-Very large extent

	Statement	**Not at all**	**Little extent**	**Moderate extent**	**Large extent**	**Very large extent**
i	Road contractors have access to capital sources and loans					
ii	Road contractors have capacity to access funding for road projects					
iii	Road contractors practice financial management prudence					
iv	There are bureaucracies from the steps involved in funding disbursement					
v	Road contractors ensure adequate communication on the utilization of fund.					
vi.	In what other way – apart from the ones indicated above – does availability of funds influence performance of road projects?	…… …… …… …… …… ……				

SECTION C: MANAGEMENT SKILLS

8. Does the management delegate authority to the right people?

   i. Yes

   ii. No

9. What kind of communication approach do you use?

   i. One way communication approach

   ii. Two-way communication approach

10. How long have you been involved in road projects?

   i. 3-10 months

   ii. 11-18 months

   iii. 19-26 months

   iv. More than 27 months

11. Indicate your level of agreement with the following statements that relate to the influence of managerial skills on road project performance by road contractors. Tick appropriately. 1-Not at all 2- Little extent 3- Moderate extent 4- Large extent 5-Very large extent.

	Statement	**Not at all**	**Little extent**	**Moderate extent**	**Large extent**	**Very large extent**
i	Road contractors have expertise and skills					
ii	Road contractors have a relevant work experience in road construction projects					
iii.	Road contractors are creative and innovative in the use of modern technology					
v	Road contractors have a high-level of problem solving skills and techniques					
vi.	In what other way – apart from the ones indicated above – do managerial traits influence performance of road projects?	…… …… …… …… ……				

SECTION D: ORGANIZATIONAL CULTURE

10. Indicate your level of agreement with the following statements that relate to the influence of organizational culture on road project performance by road contractors. Tick appropriately. 1-Not at all 2- Little extent 3- Moderate extent 4- Large extent 5- Very large extent

	Statement	**Not at all**	**Little extent**	**Moderate extent**	**Large extent**	**Very large extent**
i	Road contractors value the mission for the project					
ii	Road contractors maintain core values in the execution of road projects					
iii.	Employees have a positive attitude in the work					
v	Organizational culture unites road contractors and the employees in the same goals.					
vi.	Organizational culture adopted by road contractors supports strategic objectives					
vi.	In what other way – apart from the ones indicated above – does organizational culture influence performance of road projects?	…… …… …… …… …… ……				

11. In what areas do you think your culture does not support implementation of road projects?

……
……
……
……

SECTION E: TECHNICAL SKILLS

12. How long have you worked as a road contractor?

i. Less than three years [ ]

ii. Between 4-6 years [ ]

iii. Between 7-9 years [ ]

iv. Over 10 years [ ]

13. How often do you attend training and development programmes?

i. Monthly [ ]

ii. Quarterly [ ]

iii. Semi-annually [ ]

iv. Annually [ ]

14. Indicate your level of agreement with the following statements that relate to the influence of technical skills on road project performance by road contractors. Tick appropriately. 1-Not at all 2- Little extent 3- Moderate extent 4- Large extent 5-Very large extent

	Statement	**Not at all**	**Little extent**	**Moderate extent**	**Large extent**	**Very large extent**
i.	Road contractors have a relevant work experience					
ii.	Road contractors are efficient in their work					
iii.	Road contractors meet deadlines.					
iv.	Road contractors communicate effectively with other employees and coordinate efforts.					
v.	In what other way – apart from the ones indicated above – do technical skills influence performance of road projects?					

SECTION F. ROAD PROJECT PERFORMANCE

15. Please indicate your level of agreement in relation to road project performance by road contractors in Machakos County. Tick appropriately. 1-Not at all 2- Little extent 3- Moderate extent 4- Large extent 5-Very large extent

Parameter	1	2	3	4	5
The quality of the project, both work in progress and final product					
How the budgets are utilized effectively					
The project deadlines are adhered to					
The resources are appropriately utilized					

SECTION F: CHALLENGES

16. Indicate your level of agreement with the following statements that relate to the challenges that face road contractors in the implementation of road projects. Tick appropriately. 1-Not at all 2- Little extent 3- Moderate extent 4- Large extent 5-Very large extent

	Statement	**Not at all**	**Little extent**	**Moderate extent**	**Large extent**	**Very large extent**
i	Inclement weather patterns					
ii	Unforeseen ground conditions					
iii	Delayed payments					
iv	Political interference					
v	Inadequate skilled labour					
vi	Inadequate plant and equipment					
vii	What other challenges apart from the ones mentioned above do you face in the implementation of road projects	…… …… …… …… ……				

17. How do the above challenges affect implementation of road projects? Please explain in details.

……

……

SECTION G: SOLUTIONS TO THE CHALLENGES

17. Indicate your level of agreement with the following statements that relate to the solutions to the challenges that face road contractors in the implementation of road projects. Tick appropriately. 1-Not at all 2- Little extent 3- Moderate extent 4- Large extent 5-Very large extent

	Statement	**Not at all**	**Little extent**	**Moderate extent**	**Large extent**	**Very large extent**
i	Well-finance work programme that is cognizant of weather pattern					
ii	Ground exploration prior to the commencement of the project					
iii	Proper budgetary allocation and interest provision on delayed payments					
iv	Compliance with the contract					
v	Continuous training and skills transfer					
vii	What other solution to the challenges of road project implementation apart from the ones mentioned above	…… …… …… …… ……				

17. Any other? Please explain in details.

……

……

THANK YOU FOR PARTICIPATING

APPENDIX III: RESEARCH AUTHORIZATION

NATIONAL COMMISSION FOR SCIENCE,
TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email:dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. NACOSTI/P/17/83688/15460

Date: 9th February, 2017

Ezekiel Fukwo Wafula
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Factors influencing roads project performance in Kenya: A case of road contractors in Machakos County,"*** I am pleased to inform you that you have been authorized to undertake research in **Machakos County** for the period ending **9th February, 2018.**

You are advised to report to **the County Commissioner and the County Director of Education, Machakos County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf**of the research report/thesis to our office.

BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Machakos County.

The County Director of Education
Machakos County.

APPENDIX IV: RESEARCH CLEARANCE PERMIT

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officer will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one (1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEACH CLEARANCE PERMIT

Serial No.A 12665

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MR. EZEKIEL FUKWO WAFULA
of UNIVERSITY OF NAIROBI, 71541-622 nairobi,has been permitted to conduct research in *Machakos County*

on the topic: *FACTORS INFLUENCING ROADS PROJECT PERFORMANCE IN KENYA: A CASE OF ROAD CONTRACTORS IN MACHAKOS COUNTY*

for the period ending:
9th February,2018

.....
Applicant's Signature

Permit No : NACOSTI/P/17/83688/15460
Date Of Issue : 9th February,2017
Fee Recieved :Ksh 1000

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