FACTORS INFLUENCING IMPLEMENTATION OF MAJOR ROAD INFRASTRUCTURE PROJECTS IN KENYA: A CASE OF THE SOUTHERN BYPASS PROJECT, KENYA

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DECLARATION

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

Signed …… Date ……

Kinaro Erick Nyabaro

L50/61944/2013

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

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DEDICATION

I dedicate this work to my dear wife Phillis Nyabaro, my son Chris Nyabaro and daughter Crystal Nyabaro for their inspiration, encouragement and support in the course of developing this report.

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ABBREVIATIONS AND ACRONYMS

BOT	Build-Operate-Transfer
GDP	Gross Domestic Product
GoK	Government of Kenya
IPAR	Institute for Policy Analysis and Research
KeRRA	Kenya Rural Roads Authority
KNBS	Kenya National Bureau Of Statistics
KRB	Kenya Roads Board
KURA	Kenya Urban Roads Authority
M & E	Monitoring and Evaluation
MDGs	Millennium Development Goals
SPSS	Statistical Package for Social Sciences
USA	United States of America

ABSTRACT

Road construction is considered to be one of the most important aspect in an economy, as it interacts with nearly all fields of human endeavor. The productivity, welfare, and security of both rural and urban people are greatly influenced by the level of infrastructural links to various centers of administration and commerce. Research reveals that road construction projects do not succeed as initially planned due to the volatility and complexity of projects and its delivery mechanism. Generally, experiences show that, medium to large size projects appear frequent victims because project complexity fluctuates proportionately with the increase in project size. The purpose of the study was to establish the factors influencing the implementation of major road infrastructure projects in Kenya by examining factors such as: project resource mobilization, Organizational Top Management, regulatory environment and monitoring and evaluationon on implementation of major road infrastructure projects in Kenya with reference to the Southern Bypass project. The study adopted a descriptive survey methodology taking a total population of 125 informants comprising of managers of construction companies and consultants from which a sample of 94 respondents was selected using stratified proportionate random sampling technique. Data was collected using semi structured questionnaire. Quantitative data was analyzed using descriptive statistics and Qualitative data was analyzed thematically using content analysis while Multiple regression analysis was conducted to establish the relationship between the variables. The study may be useful to Kenya Roads Board (KRB), Kenya Rural Roads Authority (KeRRA), Kenya Urban Roads Authority (KURA), Engineers Registration Board , County Development Offices and road contractors in Kenya in understanding their weak and strong points as far as road construction in Kenya is concerned. The study may also be utilized by construction professionals operating in Kenya to gain better understanding on the factors influencing implementation of projects in order to improve performance in project delivery. The study deduced that the aspects of project resource mobilization that influence implementation of projects include financing methods, adequacy of funding, technology availability and project contract mechanism with adequacy of funding having the highest mean score of 4.060 while staffing scoring the lowest of 3.503 . Also it concluded that Organizational Top Management influence implementation of major road infrastructure projects through developing standard procedures, risk identification and allocation, communication systems, technical capability, coordination effectiveness, upfront planning efforts, developing an appropriate structure and decision making effectiveness with developing standard procedures having a mean score of 4.416 while decision making with the lowest mean of 3.564. It was established that the aspects of monitoring and evaluation that influence implementation of roads infrastructure projects include: reporting and review, responses in place, control mechanism, monitoring schedule, performance reviews, data collection and Management and identification of the purpose and scope of the M&E with reporting and review with highest mean score of 4.418 while identification of the purpose and scope of M&E scoring the lowest of 3.636. Finally the study revealed that aspects of regulatory factors including corporate taxes, administrative approvals environment, quality assurance program, safety program, sanitary and building codes, rules on importation of materials, licenses and permits and minimum wage tares influence implementation of major infrastructure road projects with corporate taxes scoring the highest mean of 4.200 with wage tares scoring a low of 2.944. The study recommends that the governmet should ensure that it allocates adequate resources both financial and non-financial to the infrastructure projects it plans to implement. The project also recommends that the Organizational Top Management should ensure effective implementation of infrastructure projects in the country.The study finally recommends that the government should examine the policies governing the implementation of infrastructure projects in the country.

CHAPTER ONE

INTRODUTION

1.1 Background to the Study

Road construction is an important part of the economical backbone in many countries (Ngai, Drew & Skitmore, 2011). This is because it interacts with nearly all fields of human endeavor. The productivity, welfare, and security of both rural and urban people are greatly influenced by the level of road infrastructure development in their communities and the infrastructural links to district, provincial, and national centres of administration and commerce. Infrastructural services are social overhead capital facilities and activities that share techno economic features which enhance productive capacities of firms and households. However all over the world, road construction has attracted criticism for inefficiencies in outcomes such as time and cost overruns, low productivity, poor quality and inadequate customer satisfaction (Chan, Chan & Ho, 2003).

A road construction project is completed as a result of a combination of many events and interactions, planned or unplanned, over the life of a facility, with changing participants and processes in a constantly changing environment. The complexity, uncertainty and dynamics of most road construction projects in most developed countries such as America and Europe create difficulties for even the best project managers (Chan and Kumaraswamy, 2011). Road construction has complexity in its nature because it contains large number of parties as clients, contractors, consultants, stakeholders, shareholders and regulators (Navon, 2005). Decision milestones are used to anticipate outcomes, risk Organizational Top Management is done to prevent disasters and sequential iteration is employed to ensure that the desired facilities are available, yet projects still end up with schedule delays, budget overruns and compromised specifications (Meyer, Loch and Pich, 2011).

Delays in project completion are a common problem in road construction not only with an immeasurable cost to society but also on the contracting parties. The concept of delay in the substantial completion of road construction projects is a global phenomenon. For instance, while evaluating the progress and reports of 28 highway projects constructed during the

period 1999-2006 in Jordan, Battaineh (2006) observed that the average ratio of actual completion time to the planned contract duration is 160.5% for road works. Seboru (2006) further citing other scholars also states that the time frame for major road projects worldwide to reach construction start stage have been observed to range from 10-30 years. The same is seen in Asia where according to Iyer and Tha (2006) most road construction projects record poor performance.

In most African countries road building has been given a higher priority than road maintenance, with scant attention to the imperatives of recurrent costs of road Organizational Top Management once the road has been constructed. In a study on road deterioration in developing countries, Harral and Faiz (2009) estimates the annual maintenance expenditure required to prevent road deterioration. On average, expenditures for 1986–1990 varied from 0.2% of GDP for countries in East Asia and the Pacific to 1% for countries in West Africa. The estimated backlog of maintenance work varied from 1.6% of GDP in East Asia and the Pacific to 3.5% in South Asia.

The poor condition of paved roads, in effect, speak volumes about the low level of maintenance in the individual countries in Africa such as in South Africa (Kuprenas, 2003), as the road networks expand, their institutional and financial burden tends to increase much more rapidly than the national budget could cater for, especially in times of socioeconomic crisis. According to World Bank (1984), many African countries including Nigeria and Guinea are not able to meet maintenance costs from budgetary resources, let alone to finance investment in new trunk road systems that meet stipulated requirements and standards according to volume and weight of traffic. The same is noted by Mubiru (2008) for the Ugandan Road construction. Lack of maintenance has left over 50% of the paved roads in Africa in poor condition.

In Kenya, the existence of good and well-functioning road network is vital for economic growth, poverty reduction, and wealth and employment creation. Thus the Ministry of Roads plays an important role in the attainment of “Kenya vision 2030” goals and Millennium Development Goals (MDGs). The Government has given a priority to ensure that the main road projects under the ‘economic pillar’ are implemented. According to the Ministry of Roads’ Service Charter (2008), there is a need for improvement of roads to a motorable

condition because the road transport carries about 80% of all cargoes and passengers in the country. Due to the importance of roads in socio-economic development of the country, the government has in the recent past steadily increased budget allocation to the road sub-sector. This puts the construction sector in Kenya among the key agents and contributors to growth accounting for 18.8% of the economy in 2010 (Economic Survey 2011, KNBS). However the Organizational Top Management of road construction projects has faced many difficulties leading to stalled projectsthus the success rate of many road construction projects in Kenya is not encouraging. Consequently, the effectiveness of many projects has not been "visible". It is therefore imperative that project Organizational Top Management should be improved in the Kenyan road construction and timely evaluation and monitoring done as roads among other transport and communication infrastructure is a key driver to development of nations as attested in the vision 2030.

1.2 Statement of the Problem

Many of the major road infrastracture projects in developing countries are so large and costly that they can only be accomplished by direct government involvement. The government generally set the rules for the development of contractual relationships, thereby influencing the public construction sector. The private sector also feels this influence through policies and legislation (World Bank, 1984). Road investments have been characterized by low rates of budget execution , cost overruns of as much as 80 percent over engineering estimates, and lengthy delays that tend to double the implementation period. Furthermore, inadequacies in the system for supervising construction contracts have cut quality and shortened the life of public works.

Innovative programmes, such as the Roads 2010 Programme have not yet had a correspondingly large impact on improving the condition of the road network. This is due to a lack of: appropriate resources,Organizational top management support, proper institutional framework and properly crafted monitoring and evaluation programmes.

Road projects in Kenya are seldom completed within the stipulated timeframe .Most of them get completed as late as between 2 - 5 years later or even end up stalled (Ministry of planning and investment, 2012). The completion of most of the road projects in Kenya such as the

Thika Super highway, Eastern bypass and the Southern bypass hangs in the balance due to a combination of shoddy work characterized by inadequately funded and ill-equipped contractors compromising the quality of work being done ,running behind schedule and having high cost overruns (GoK, 2013). This study therefore sought to find out the factors influencing implementation of major road infrastructure projects in Kenya with reference to the Southern Bypass project.

1.3 Purpose of the Study

The purpose of this study was to establish the factors influencing implementation of major infrastructure road projects in Kenya with reference to the Southern Bypass project.

1.4 Objectives of the Study

The study was guided by the following specific objectives:

i. To establish the influence of project resource mobilization on implementation of major road infrastructure projects in Kenya
ii. To determine the influence of organizational top Organizational Top Management on implementation of major road infrastructure projects in Kenya
iii. To assess the influence of monitoring and evaluation on implementation of major road infrastructure projects in Kenya
iv. To establish the influence of regulatory environment on implementation of major road infrastructure projects in Kenya

1.5 Research Questions

The following research questions were answered:

i. What is the influence of project resource mobilization on implementation of major road infrastructure projects in Kenya?
ii. How does organizational top Organizational Top Management influence implementation of major road infrastructure projects in Kenya?
iii. How does monitoring and evaluation influence implementation of major road infrastructure projects in Kenya?
iv. What is the influence of regulatory environment on implementation of major road infrastructure projects in Kenya?

1.6 Significance of the Study

The findings of the study would be useful reference material to Kenya Roads Board (KRB), Kenya Rural Roads Authority (KeRRA), Kenya Urban Roads Authority (KURA), Engineers Registration Board , County Development Offices and road contractors in Kenya in understanding their weak points and strong points as far as road construction in Kenya is concerned.

The findings also would be useful to construction professionals operating in Kenya on key factors that can lead to good project implementation. The knowledge of project success criteria will help one avoid common problems that befall many project managers. The findings also focused to assist practitioners' gain better understanding on the key areas based on factors influencing implementation of projects in order to improve performance in project delivery.

The research would stimulate further research in the area of donor funding for roads and other viable opportunities to improve the performance of road construction in Kenya. The findings of the study will be of importance to the government of Kenya especially in fund allocation on road construction and on the procedures involved in fund allocation on road constructions.

To researchers and academicians, this research may enrich existing research on construction by providing theoretical references for establishing a set of effective mechanisms and methods for enhancing success of road construction projects.

1.6 Delimitation of the Study

The study focused on the influence of project resource mobilization, Organizational Top Management, monitoring and evaluation and regulatory environment on implementation of major roads infrastructure projects in Kenya. The study covered the southern bypass project in Kenya which runs from Kikuyu to Mombasa road via Ngong road and Langata. The bypass covers 28.6 kilometers dual carriageway and is designed to the Class A – International Trunk Road Standard as pursuant to the 'Road Design Manual" of Kenya National Highway Authority as well as in accordance with their functions in the road network. The data was collected from contractors , road users and consultants.

1.7 Limitations of the Study

The researcher foresaw that finance would limit the study as the study required substantial amount of money for travelling, stationeries, payments to research assistants and photocopying among others. The researcher came up with a budget that was affordable and only incured expenses that were necessary for the study. The literature reviewed on factors influencing implementation of major roads projects were scarce for the study. The researcher went through all documents available online and in libraries to ensure a thorough coverage of the literature. The study also encountered respondents unwilling to reveal information . The researcher assuredthe respondents of utmost confidentiality on the information provided.

1.8 Definition of Significant Terms used in the study

Evaluation – refers to assessing as systematically and objectively as possible, a completed project or programme (or a phase of an ongoing project or programme that has been completed). Evaluations appraise data and information that inform strategic decisions, thus improving the project or programme in the future.

Implementation of projects: It is the process which involves the activities carried out from the initial stage of project conception up to the completion stage.Implementation of projects is normally done as per the agreed standards for instance activities done on time, as per the budget and to the satisfaction of the stakeholders.

Organizational Top Organizational Top Management – refers to the person or persons controlling and directing the affairs of a project.

Major infrastructure road projects - These are large-scale road projects of national importance necessary for an economy to function. In Kenya major Infrastractural Road Projects are viewed in terms of scope, budget allocation and classification of the road according to the Kenya national Highways Authority.

Monitoring– refers to the systematic and routine collection of information from projects and programmes to learn from experiences, to improve practices and activities in the future, to have internal and external accountability of the resources used and the results obtained.

Projects resource mobilization - is the process of locating a source of external funds and

negotiating a grant or loan to carry out a development or modernization project.

Regulatory Environment: This refers to legal and administrative requirements associated with project implementationfor instance Licenses and permits.

1.9 Organization of the study

The study was organized into five chapters each containing specific information. Chapter one Outlined the introduction to the study comprising of background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, delimitations of the study, limitations of the study and the definition of significant terms used in the study. Chapter two reviewed the literature based on the objectives of the study, conceptual framework and summary. Chapter three covered the research methodology of the study describing the research design, target population, sampling procedure, tools and techniques of data collection, pre-testing, data analysis, ethical considerations and operational definition of variables. Chapter four presented data analysis,presentation,interpretation and discussions of the study as were set out in the research methodology. The study closed with chapter five with conclusion and recommendations for action and further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review on factors influencing implementation of major roads infrastructure projects. The literature discussed is a summary of research findings of other researchers who have carried out their research in the same field of study so as to provide a theoretical foundation underpinning the study variables. This section is vital as it determines the information that link the current study with past studies and what future studies will still need to explore to improve knowledge.

2.2 The concept of road infrastructure projects

During the five years from 2003 to 2007, Kenya's economy grew at an average annual rate of 5.3 percent, much better than the 2.3 percent recorded in the previous decade. Notwithstanding this improvement, current growth levels still fall short of the sustained 7 percent per annum needed to meet the Millennium Development Goals. Less than half of 1 percent of East Africa's improved per capita growth performance during the 2000s can be credited to improved structural and stabilization policies (Calderon 2008); by contrast, almost 1 percent is related to improvements in the country's infrastructure platform.

Most of the boost was due to Kenya's ICT revolution, while poor roads proved to be a drag on growth. Simulations suggest that if Kenya's infrastructure could be improved to the level of the African leader—Mauritius—annual per capita growth rates would be 3.3 percent higher than they are at present. Evidence from enterprise surveys suggests that infrastructure constraints are responsible for about 30 percent of the productivity handicap faced by Kenyan firms, with the remainder being due to poor governance, red tape, and financing constraints.

Power is the infrastructure constraint that weighs most heavily on Kenyan firms, with transport a close second. Kenya's population and agricultural activity are heavily concentrated in the southern half of the country, along the corridor linking Mombasa to Nairobi and then on to Kisumu and into Uganda. Kenya's infrastructure backbones—including the country's principal road artery and its major power transmission and fiber optic backbones—have followed this route.

The northern half of the country, by contrast is sparsely populated and characterized by fragmentary infrastructure coverage. Kenya's infrastructure networks are largely isolated from those of its neighboring countries. While there are some transport links with Uganda and Sudan, road connections with Ethiopia, Tanzania, and Somalia are of very low quality, while power and ICT backbones are not yet integrated across frontiers. Even if Kenya's road density indicators look relatively low by some standards, the trunk network provides basic regional and national connectivity, linking the capital to the coast, to international border crossings, and to provincial capitals in the interior.

Current levels of capital spending for the roads sector—at around 1 percent of GDP—are low by regional standards and fall substantially short of what would be needed to clear the rehabilitation backlog in a reasonable period of time. There is a need for a one-time push on road sector investment to remedy this situation. Kenya is not spending enough to catch-up with its road rehabilitation backlog

However, systemic issues affect the country's public investment system. These will need to be addressed to ensure that any major scale-up in capital expenditure is cost-effective. The government has taken steps to improve capital budget execution ratios, and it is hoped that

the establishment of the new National Construction Authority will improve the quality of public works. Beyond the trunk network, accessibility falls off. About 30 percent of Kenya's population lives within two kilometers of an all-weather road—well above the benchmark for low-income countries, but only half the level found in middle-income countries. When making the necessary improvements, it will be important to ensure that road investments are spatially synchronized with other interventions aimed at raising agricultural productivity. The need to provide a basic level of connectivity for the north of the country should also be taken into account.

2.3 Projects Resource Mobilization and Implementation of Major Road Infrastructure Projects

The belief that transport infrastructure projects have significant impacts on the development of regional economies has often been used to justify allocating resources to transport infrastructure investment. According to IPAR (1999), there exists lack of consensus about the goals of projects in Kenya. It is observed that a wide disparity exists in the development status of the people due to lack of equity in project policy systems. Allocation equity which is an elusive goal demands that resources should be shared fairly, but in Kenya, the powerful elites tend to have undue influence on the allocation of project resources. An enormous gap exists between available resources and increasing demand for access to interventions. Policy formulation and implementation calls for hard choices and using the best information available to design strategies that maximize effectiveness and efficiency. Policy makers have to confront the reality of severe resource constraints.

Government has the ultimate responsibility to provide access to services and to ensure that public –private partnership does not alter the basic responsibility of government. According to Kelechi (2004), policy making requires a strong legitimate institutional structure for decision making and policy enforcement. Kelechi further observes that policy formulation, among other things, requires a strong representative government which is seen as legitimate and relevant to the masses which will result in a strategy for domestic revenue mobilization through acceptable taxation policies that the citizen will be willing to comply with because they appreciate and relate to it. It also requires that policies be made on the basis of strategic options and choices be rooted in the states realistic efforts at internal resource mobilization.

In Kenya, policy formulation process influences environmental exploitation, considerations of indigenous perspectives, creation of educational awareness, empowering of the beneficiaries, capacity building, considerations of consumer interest and local peoples' involvement in decision-making. All the above have either direct or indirect influence on the timely delivery of road construction projects.

Gupta (2011) stated that infrastructure projects are complex, capital intensive, having long gestation period and involve multiple risks to the project participants. Due to this, the task of providing infrastructure is traditionally that of the government as the government is able to utilize its planning and administrative capabilities in undertaking infrastructure development. According to Bonnafous and Jensen (2004) public authorities were generally in charge of financing and building new infrastructures. However, infrastructure development is also financially taxing to the government. That is why even when infrastructure development has a positive effect on the economy, no government can afford to concentrate all its resources towards the provision of infrastructure. Any government in the world will have to balance between the need for developing infrastructure such as road and highways with other requirement such as providing healthcare and education since the economic rule of resource scarcity will limit its capability to do so.

With a lot of progress made in repairing vital road links in the country, another critical challenge is lack of adequate funding. While the World Bank and the IMF has already given their seal of approval to progress made, these institutions are yet to unlock the funding required to complement Government efforts. The country's economic ranking has improved to 3.7 points, qualifying the country for more funding from the donor agencies. Available figures indicate that the Government's expenditure on road construction has increased from the allocated Sh10 billion budgeted for the 2006/07 financial years to Sh17 billion for the 2007/08 financial years. Funding for the road sector is from the exchequer, donors and fuel levy. Already, the Ministry of Roads has a budget of Sh100 billion, a huge bulk of it coming from the donors. In a bid to bridge the financing gap, the Government is also opening tenders for the construction of various bypasses, which will be on a concession basis. The process involves public- private sector participation, on a Build-Operate-Transfer (BOT) basis. The

Government is also looking at floating bonds, to raise resources (funds) for road construction - one of the many aspects of bringing in private sector participation (GoK, 2011).

Construction materials can be purchased by two procedures, either purchasing directly, or purchasing for entire lump sum contract. However, purchasing materials before due time is very important in the construction, because the delay in purchasing will delay the completion date, and interrupt the schedule. Consequently, the contractor will be exposed to penalty which might sometimes cause contractor to fail thus monitoring and evaluation is essential (Phua and Rowlinson, 2004).

2.4 Organizational Top Management and Implementation of Major Road Infrastructure Projects

The responsibility of Organizational Top Management towards any project is important and its commitment and support is a crucial requirement for project success (Munns and Bjeirmi, 2009). It is noted that Organizational Top Management should be understood to mean Organizational Top Management of all concerned project parties. Organizational Top Management support demonstrates visibly how strong the commitment to the project is. For example, project members usually do not see project Top Management as something to help them but rather something which is mandatory, serving little useful purpose.

The project manager is key and his competence is a critical factor influencing project planning, scheduling, and communication (Belassi and Tukel 2009). Variables under this factor consist of the skills and characteristics of project managers, their commitment, competence, experience, and authority (Chua *et al*. 1999). A road construction project requires team spirit, therefore team building is important among different parties. Team effort by all parties to a contract—owner, architect, construction manager, contractor, and subcontractors—is a crucial ingredient for the successful completion of a project (Hassan 2008). As such, motivation is prerequisite to ensure comfortable working environment within and around project sites. On road construction projects in developing countries, it is extremely difficult to assemble adequate and capable professionals to direct projects to success. Thus, it is not surprising that these factors are perceived as having high impact on project success. The involvement of many parties is a dominant characteristic of road construction projects (Eriksson, 2008). If one of the parties is not capable to act within

his/her role, the project is likely to fail. It is, therefore, essential to ensure that the bidding process can help single out the right designers, contractors and other parties to effectively transform project ideas into reality.

Ogunlana et al, (2009) recommended the need for focused effort by economy managers and road construction associations to provide the infrastructure needed for efficient project Organizational Top Management and performance. Dissanayaka and Kumaraswamy (1999) stated that the knowledge that would influence potential performance enables project managers to pay special attention to control performance more effectively. Chan and Kumaraswamy (2011) remarked that effective communication and fast information transfer between managers and participants help to accelerate the building construction process and performance. Kuprenas (2003) studied the impact of the use of a project Organizational Top Management based organizational structure, project manager training, frequency of design meetings, and frequency of design reports on design phase cost performance. The process of a design team meeting frequency and the process of written reporting of design phase progress were found to be statistically significant in reducing design phase costs.

The variables influencing an organization's successful delivery of services such as implementation and completion of road construction projects are dynamic and are likely to be moderated by situational aspects such as nature and type of organizational structure. Luthaus (2011) defines organizational structure as the ability of an organization to divide labor and assign roles and responsibilities to individuals or groups in the organization as well as the process by which the organization attempts to coordinate its labor and groups. Public organizations such as Ministry of Roads, where the idea of ownership is not as clearly defined as in the private sector, the problem of governance continues to become increasingly important in that public managers are frequently subjected to less rigid controls and likely to have greater incentives to satisfy their own interests at the expenses of the organizational goals. Ineffective and lax institutional framework and enforcement mechanisms characterize developing nations and acts as a perfect recipe for mass public sector misOrganizational Top Management.

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2.5 Regulatory Environment and Implementation of Major Road Infrastructure Projects

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The Kenyan government, according to a statement in 2011 (Government of Kenya 2011), introduced reforms addressing the reorganization of the transport sector and created institutions as well as the necessary legal and regulatory framework for an integrated and enhanced system. Besides this, the introduction of intermediate public transport safety measures, such as speed regulations and safety belts was processed. Besides acting independently to make changes, the government also works in cooperation with the Kenya Roads Board (KRB). This is occupied in working together with local authorities to ensure the opening of feeder roads and the maintenance of the existing roads. It is also involved in the introduction of policy and strategy recommendations for an effective and sustainable Management and financing of the roads sub-sector. Furthermore, an amendment to existing legislation has been proposed, which allows private sector participation including road concessioning and tolling. In addition to these new regulations and projects, the Kenyan

government has also made an amendment to the KRB Act to streamline the assignment of responsibilities for the road network.

2.6 Monitoring and Evaluation and Implementation of major Road Infrastructure Projects

Construction, especially with respect to the contracting and bidding for civil works, requires the effective evaluation and supervision of contractors and their bids. Without this ability at tender, marginal or unacceptable bidders can distort the bidding process by excessive underbidding for contracts or future inability to complete. Organizational Top Management of the road network requires different information, at different levels of the decision-making process, for example, for planning, for programming, for design, and for implementation (Wells, 1986). The concept of success in a road construction project can, according to some researcher can be evaluated only when the evaluation dimenions are adequately defined (Baker et al., 1993). Generally, in any project the evaluation dimensions correspond to the traditional constraints of time, cost and quality parameter.

The most widely used measures of construction success are time achieved, quality of product and cost at the completion of the project. Lehtonen (2008) stated that performance measurement is a basis for progressive improvement and monitoring of company productivity. Chan and Kumaraswamy (2011) remarked that project performance measurement include time, budget, safety, quality and overall client satisfaction. Thomas (2011) defined performance measurement as monitoring and controlling of projects according to regular basis. The time element in construction means that a delay costs money and incase of bottlenecks, the delay can be extremely expensive. The quality achieved has a bearing on the life of the project while cost has a value for money element. Thus contracts must be designed to ensure that each contractual party is capable of performing the obligations set out.

The desired output of any contractual arrangement is the successful completion of the given project. And yet during construction process, there are many unexpected events including controllable and uncontrollable factors that can adversely influence or hinder successful completion of projects and cause delay. A well-designed monitoring and evaluation programme is a critical component of any resource Organizational Top Management,

conservation, or rehabilitation activity. It can also help reduce the cost and increase the benefits of future rehabilitation in part by minimizing failures (Lewandowski *et al.*, 2011).

2.7 Theoretical Framework

A theory is a set of assumptions, propositions, or accepted facts that attempts to provide a plausible or rational explanation of cause-and-effect (causal) relationships among a group of observed phenomenon. A theoretical framework on the other hand is a group of related ideas that provides guidance to a research project or business endeavor. In this section, the focus is on various theories under which the study is underpinned. It specifically focus on system theory, co-evolutionary theory and classical theory.

2.7.1 System Theory

The term system theory originates from Bertallanfy's (1993) general system theory. Margaret Mead was an influential figure in systems theory. Organizations are social systems. Real systems are open to and interact with their environments. The different parts/elements within and around the organization intermingle to influence the way organization operate and therefore strategy implementation.

It can be argued from a system's approach to strategic Organizational Top Management that many of the reasons for strategies failure may be attributed to the "successive dominance of different reductionism approaches to strategic Organizational Top Management (Gregory, 2011). Such partial approaches to project Organizational Top Management ignore the complex, embedded and dynamic nature of today's organization.

Taking the system approach in project implementation helps managers of organizations to have to understand the customer, better predict environmental reaction, estimate resource competence, and coordinate strategic project activities, obtain Organizational Top Management commitment, estimate time requirements, ability to follow the plan, manage the strategic change and ensure effective communication.

2.7.2 Co-evolutionary Theory

Co-evolutionary theory, according to Lewin and Volberda (1999), indicates that as firms grow and evolve from small to larger and multidivisional organizations, the strategy implementation methods also evolve simultaneously. The various project implementation

models are meant to meet the changing needs of firms as they evolve through various stages of the organizational life cycle (Parsa, 1999). In contrast to the earlier descriptive models, this model is more prescriptive with an, albeit limited, empirical basis. The research highlights three of Bourgeois and Brodwin's (1984) classifications of project implementation styles: change, collaborative, and cultural.

Not all firms implement their projects in the same manner; nevertheless, research investigating the differing styles of implementation is scarce. Nutt (2008) utilizes Jungian theory (Jung, 1923) for his framework of implementation style, however, this is very much an analysis of the psychological style of individuals within the firm. More recently, Parsa (1999) utilized Bourgeois and Brodwin's (1984) classification of strategy implementation types.

The majority of existing classification models in project implementation tend to be normative in nature. Alternatively, they are developed from organizational observation, and as such, become context specific and frequently lack any broader theoretical grounding. In contrast, Bourgeois and Brodwin's (1984) model is comprehensive and based on specific theoretical assumptions and has been used by authors such as Parsa (1999). Bourgeois and Brodwin (1984) to refute the traditional approach to project implementation as simply an addition to the strategy formulation phase of the strategy process. Rather, they contend that project implementation evolves either from a process of winning group commitment through a coalitional form of decision-making, or as a result of complete coalitional involvement of implementation staff through a strong corporate culture.

2.7.3 Classical Theory

According to this theory by Chandler (1962), two main approaches to strategy have emerged over time: the Design School and the Process School. Under the Design School of thought strategy formulation is a formal process that is de-linked from strategy implementation. Strategy is carefully crafted by senior Organizational Top Management and then implementation begins, with the aim of maximizing profits of the organisation. Chandler (1962) a major proponent of the design school, defines strategy as ‘the determination of basic, long term goals of the enterprise, and the adoption of courses of action and allocation

of resources necessary for those goals. This definition clearly shows strategy formulation as separate from strategy implementation.

The design school is consistent with the classical theory, which, according to Whittington (2008), sees strategy formulation as formulation of plans of attack by the general, and these preconceived plans are executed according to commands transmitted through obedient hierarchies to officers and their men at the front. This approach to strategy places great confidence in the readiness and capacity of managers to adopt profit maximization strategies through long term planning. It views strategy as an economic rational process and primarily restricted to issues related to market share and profitability.

The process school lays less confidence in the ability of top Organizational Top Management to plan and act rationally. It advocates that whatever methods managers adopt, it will only be the best performers that survive. According to Handerson (1989), competition is not a matter of detached calculation, but a constant struggle for survival. According to Mintzberg (1987), crafting strategy is a continuous and adaptive process, with formation and implementation inextricably entangled. Thus, process school advocates are inclined towards incremental adjustment of strategy and cultivating of core competences. The process school views strategy as an outcome of a process where the emphasis is not on construction of detailed plans but on organizational and social aspects of strategy formations. Capabilities of an organization in terms of structure, system, technology, and Organizational Top Management styles restrict the range of options an organization can pursue.

2.8 Conceptual Framework

This represented all the variables and their indicators which the study considered. The dependent variable was implementation of major infrastructural road projects with indicators such as :time , budget, quality and stakeholder' satisfaction. On the other hand there were four independent variables namely: Project Resource Mobilization, Organizational Top Organizational Top Management, Monitoring and Evaluation and Regulatory Factors.The indicators for Project Resource Mobilization included: adequacy of funding,financing methods , Project contract mechanism and material price fluctuation. While those of Organizational top Organizational Top Management included: communication systems,upfront planning efforts, coordination effectiveness, decision making effectiveness

and developing standard procedures. Those for monitoring and evaluation included: control mechanism, reporting and review,performance reviews and monitoring schedules. Lastly, indicators for regulatory factors involved: quality assurance program, safety program,administrative approvals environment, minimum wage tares and lincenses and permits. This was represented as in figure 1 .

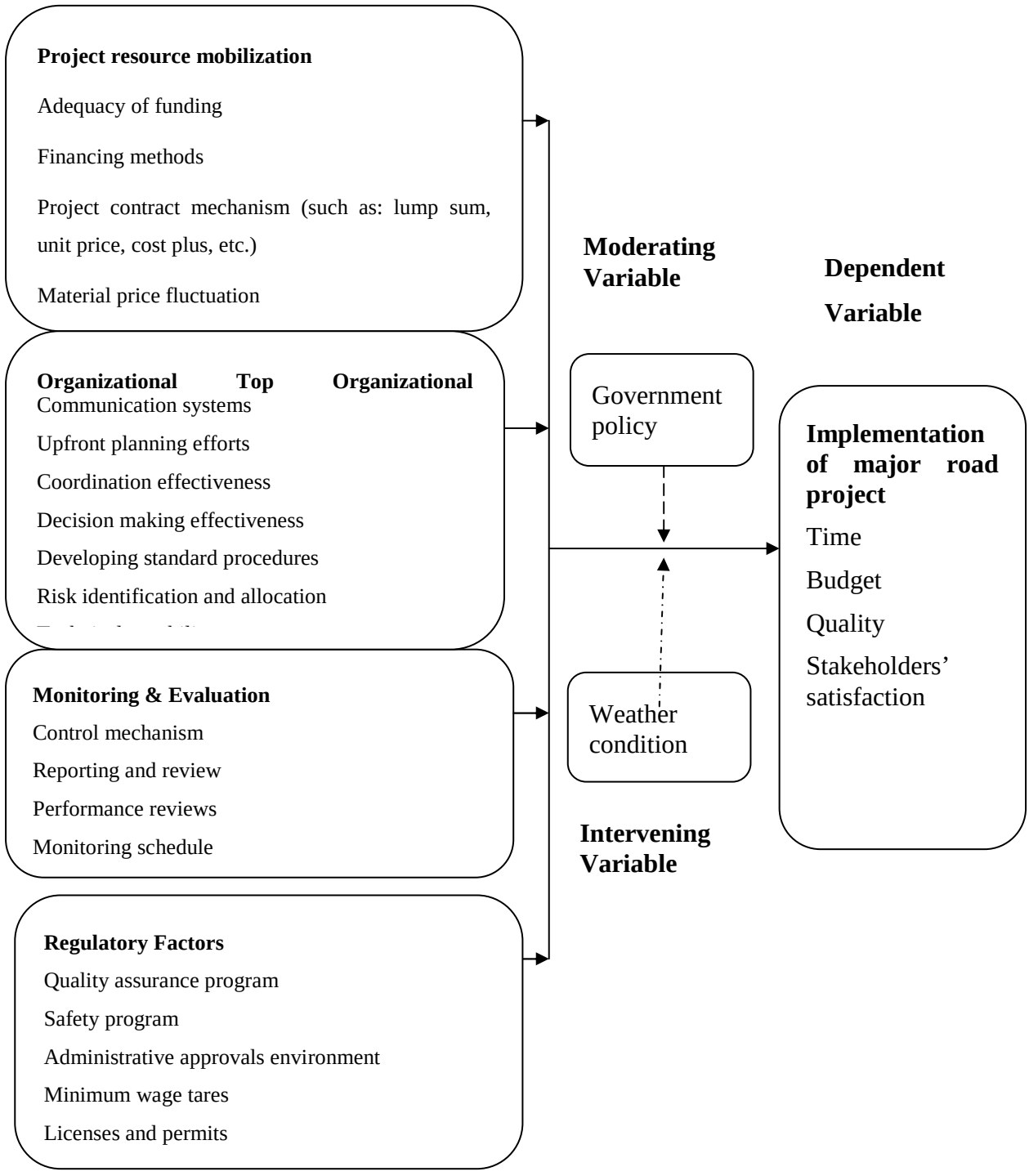

Figure 1 : Conceptual Framework

2.9 Knowledge Gap

Although literature has been reviewed on factors influencing implementation of major road infrastructure projects, most of these studies have been done in other countries whose strategic approach and financial footing is different from that of Kenya. None of them therefore focused on how these apply in the Kenyan case. It is evident therefore that a literature gap exists on the factors influencing implementation of major road infrastructure projects in Kenya. This study therefore seeks to fill this gap by focusing on the Southern Bypass project.

2.10 Summary of literature reviewed

This study is grounded on the system theory, co-evolutionary theory and classical theory. The belief that transport infrastructure projects have significant impacts on the development of regional economies has often been used to justify allocating resources to transport infrastructure investment. An enormous gap exists between available resources and increasing demand for access to interventions. Due to this, the task of providing infrastructure is traditionally that of the government as the government is able to utilize its planning and administrative capabilities in undertaking infrastructure development by raising the funds needed.

The responsibility of Organizational Top Management toward the project is important and its commitment and support is a crucial requirement for project success. A road construction project requires team spirit, therefore team building is important among different parties. On road construction projects in developing countries, it is extremely difficult to assemble adequate and capable professionals to direct projects to success without the support of organizational top management since the variables influencing an organization's successful delivery of services are dynamic and are likely to be moderated by situational aspects such as nature and type of organizational structure.

Government has the ultimate responsibility to provide access to services and to ensure that public-private partnership does not alter the basic responsibility of government. Many of the road construction projects in developing countries are so large and costly that they can only be accomplished by direct government involvement. The government generally set the rules for the development of contractual relationships, thereby influencing the public construction sector.

Construction, especially with respect to the contracting and bidding for civil works, requires the effective evaluation and supervision of contractors and their bids. The most widely used measures of construction success are time achieved, quality of product and cost at the completion of the project. A well-designed monitoring and evaluation programme is a critical component of any resource Organizational Top Management, conservation, or rehabilitation activity.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter presented the research methodology in the following order; research design, target population, sample size,sampling procedures, data collection instruments, pretesting of the research instruments,validity of research instruments,reliability of the research instruments, data collection procedure, data analysis techniques,ethical issues and finally operationalization of variables.

3.2 Research Design

This research adopted a descriptive survey design. The method was chosen since it was more precise and accurate in description of events in a carefully planned way (Babbie, 2004). This research design also portrays fully the characteristics of a population (Chandran, 2004). This design was appropriate in describing the key factors in a road construction project, estimate their keyness based on the responses from the project Organizational Top Management team and make predictions. The design was also able to produce statistical information about aspects of the subject of interest to policy makers and researchers.

3.3 Target Population

The population of the study was 125 informants comprising of managers of the construction companies and the consultants (Kenya National Highway Authority, 2013).Mugenda and Mugenda (2003) described population as the entire group of individuals or items with common attributes under consideration in any field of inquiry.

3.4.1 Sample Size

The study used a sample of 94 respondents comprising of managers of the contracting firms and the consultants sampled with their feedback on factors influencing implementation of major infrastructural road projects.

3.4.2 Sampling Procedure

Stratified proportionate random sampling technique was used to select the sample. According to Babbie (2004), stratified proportionate random sampling technique produce estimates overall population parameters with greater precision and ensures a more representative sample is derived from a relatively homogeneous population.

Mugenda & Mugenda (2003) defines sampling as the process of selecting a number of individuals for a study such that the individual selected is representative of the larger group from which they are selected. The sample size was calculated at for 95% confidence level (Israel, 2003):

n= n'/ [1+(n'/N)]

Where:

N = total number of population

n= sample size from finite population

n' = sample size from infinite population

= S^2/V^2; where S is the variance of the population elements and V is a standard error of sampling population = 384

So, for 125 project personnel:

n= n'/ [1+(n'/N)]

n= 384/ [1+ (384/125)]

Approx = 94

3.5 Data Collection Instruments

Data was collected using semi structured questionnaire. Sekaran (2003) indicated that questionnaire is a popular method of collecting data because researchers can gather information fairly easily and the questionnaire responses are easily coded. The data was collected using drop and pick later method. The target respondents were ninety four (94) senior officials of the targeted firms, with good education, adequate knowledge in project Organizational Top Management, and over five years' experience in road construction.

Secondary data was also collected through contract documents and progress reports for the projects.

3.5.1 Pretesting of the Research Instruments

The questionnaire designed by the researcher based on the research questions were pilot tested to refine the questions before it was administered to the selected sample. A pilot test was conducted to detect weakness in design and instrumentation and to provide proxy data for selection of a probability sample. Chandran (2004) asserted that, the accuracy of data to be collected largely depended on the data collection instruments in terms of validity and reliability

3.5.2 Validity of the Research Instruments

To ensure the validity of the questionnaire, two statistical tests were applied. First, Criterion-related validity test (Spearman test) measuring the correlation coefficient between each paragraph in one field and the whole field. The second test was structure validity test (Spearman test) that was used to test the validity of the questionnaire structure by using the correlation coefficient between one filed and all the fields of the questionnaire with same level of scale.

The designed questionnaire was distributed randomly to three principal construction parties (Client, project Management, Consultant and Contractor), and two University Lecturers each from the fields of Building Construction and Project Management. The pilot survey data was analyzed and the results were used for comprehensiveness and suitability for full study.

3.5.3 Reliability of the Research Instruments

A pilot study was carried out to determine reliability of the questionnaires. The pilot study involved the sample respondents from managers of the contracting firms and the consultants. Reliability analysis was subsequently done using Cronbach's Alpha which measured the internal consistency by establishing if certain items within a scale measured the same construct. Cronbach Alpha was established for every objective which formed a scale. Table 4.1shows that regulatory environment had the highest reliability (α= 0.915), followed by project resource mobilization (α=0. 835), Organizational Top Management (α=0. 819) while monitoring and eveluation had the least reliability (α=0. 798). Coefficient of 0.6-0.7 is a commonly accepted rule of thumb that indicates acceptable reliability and 0.8 or higher

indicated good reliability (Chandran, 2004), thus forming the study's benchmark.Hence all the four variables were reliable as their reliability values exceeded the prescribed threshold of 0.6.

Table 3. 1: **Reliability Analysis**

Scale	Cronbach's Alpha	Number of Items
Project resource mobilization	0.835	7
Organizational Top Management	0. 819	8
Monitoring and evaluation	0. 798	7
Regulatory environment	0.915	9

3.6 Data Collection Procedure

The questionnaires were self-administered. Self-administered questionnaire enabled one to clarify the questions or probe for more answers. To increase the response rate, an introduction letter from the University was attached as this assured the respondents of their safety, trust and confidentiality.

3.7 Data Analysis Techniques

After collecting data , the researcher analyzed the quantitative data using descriptive statistics by applying the statistical Package for Social Science (SPSS V.21) and was presented using percentages, means, standard deviations and frequencies. The use of structured questionnaires enabled the researcher to quantify quantitative data using the size, frequency distribution, and association of variables in the study population and answers to questions that could be counted and expressed numerically.

In addition, factor analysis was used to select the most important factors while Spearman's rank correlation was used to calculate the average ranking of the factors. The purpose of factor analysis was to discover simple patterns of relationships among variables. In its procedure, rotation was applied to identify meaningful factor names or descriptions.

3.8 Ethical Issues

The study collected sensitive information; therefore, the researcher had a moral obligation to treat the information with utmost modesty. The researcher assured the respondents confidentiality to encourage them to give the information as sought by the study.a

demonstration of this was backed by the letter of transmittal, introduction letter from the University of Nairobi and the research permit.

3.9 Operational Definition of Variables

The operationalization of variables is shown in Table 3.2

Table 3.2: Operationalization of variables

Objective	Variable	Indicators	Measurement scale	Tools of analysis	Type of data analysis
To establish the influence of project resource mobilization on implementation of major road infrastructure projects in Kenya	**Independent:** Project resource mobilization	Adequacy of funding Technology availability Financing methods Project contract mechanism (e.g. lump sum, unit price, cost plus, etc.) Material price fluctuation Terms of financing for construction Staffing	Ordinal Ordinal Interval Ordinal	Mean Percentage	Descriptive Factor analysis Correlation
To determine the influence of Organizational Top Management on implementation of major road infrastructure projects in Kenya	Organizational Top Management	Communication systems Upfront planning efforts Developing an appropriate structure Coordination effectiveness Decision making effectiveness Developing standard procedures	Ordinal Ratio Interval Ordinal	Mean Percentage	Descriptive Factor analysis Correlation

		Risk identification and allocation Technical capability			
To assess the influence of monitoring and evaluation on implementation of major road infrastructure projects in Kenya	Monitoring and Evaluation	Control mechanism Responses in place Reporting and review Performance reviews Monitoring schedule Data collection and Organizational Top Management Identification of the purpose and scope of the M&E system	Ordinal Ratio Ordinal Ordinal	Mean Percentage	Descriptive Factor analysis Correlation
To ascertain the influence of regulatory factors on implementation of major road infrastructure projects in Kenya	Regulatory Factors	Quality assurance program Safety program Administrative approvals environment Sanitary and building codes Minimum wage tares Licenses and permits Corporate taxes Rules on importation of materials	Nominal Ordinal Ordinal Interval	Mean Percentage	Descriptive Factor analysis Correlation

	Dependent: Implementation of major road infrastructure projects	Time Budget quality Stakeholders' satisfaction	Ordinal Ordinal Interval	Mean Percentage	Descriptive Factor analysis Correlation

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

4.1 Questionnaire Response Rate

The study targeted a sample size of 94 respondents from which 81 filled in and returned the questionnaires making a response rate of 86.2%. This response rate was representative and conforms to Mugenda and Mugenda (1999) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent.

4.2 Demographic Characteristics of respondents

The study sought to establish the background information of the respondents including respondents' highest level of education and duration of work in the institution. The education level was important in the implementation of major road infrastructure projects since in a road project the ratios of both skilled , semi skilled and unskilled workers contribute a lot to the delivery of the project. Equally important is the level of experience of the workforce.

4.2.1 Disribution of respondents on highest Level of Education

The study sought to establish the respondents' highest level of education. The findings were as presented in Table 4.1.

Table 4. 1: Respondents' highest level of education

Level of Education	Frequency	Percent
Postgraduate	14	17.9
Undergraduate	43	53.7
Diploma	13	16.4
Certificate	10	11.9
Total	**81**	**100.0**

According to the findings, the majority of the respondents (53.7%) had an undergraduate degree, 17.9% had a postgraduate degree, 16.4% had a diploma while 11.9% of the respondents had a certificate.

4.2.2 Distribution of respondents on Work Experience

The study also sought to establish the duration they had worked in the institution. The findings are as indicated in Table 4.2

Table 4.2: Distribution of respondents on work experience

Duration	Frequency	Percent
1 to 5 years	19	23.9
6 to 10years	5	6.0
11 to 15 years	22	26.9
16 to 20 years	11	13.4
21 years and above	24	29.9
Total	**81**	**100.0**

On the duration they had worked in the institution, the findings in Table 4.2 show that 29.9% of the respondents had worked for 21 years and above, 26.9% had worked for 11 to 15 years, 23.9% had worked for 1 to 5 years, 13.4% had worked for 16 to 20 years, while 6% had worked for 6 to 10 years.

4.3 Project Resource Mobilization and implementation of major road infrastructure projects

The study sought to establish the influence of project resource mobilization on implementation of major road infrastructure projects in Kenya.

Table 4.3: Extent to which various aspects of project resource mobilization influence implementation of major road infrastracture projects

Project Resource Mobilization Aspect	Mean	Std. Deviation
Financing methods	4.060	0.715
Adequacy of funding	3.955	1.173
Technology availability	3.910	1.011
Project contract mechanism Like lump sum, unit price, cost plus and others	3.746	0.891
Material price fluctuation	3.598	0.892
Terms of financing for construction	3.551	0.893
Staffing	3.503	0.893

On the extent to which various aspects of project resource mobilization influence implementation of major road infrastructural projects, the respondents indicated that the aspects that influence implementation of projects to a great extent include financing methods as shown by a mean score of 4.060, adequacy of funding as expressed by a mean score of 3.955, technology availability as indicated by a mean score of 3.910, project contract mechanism (for instance: lump sum, unit price, cost plus and others) as expressed by a mean score of 3.746, material price fluctuation as indicated by a mean score of 3.598, terms of financing for construction as expressed by a mean score of 3.551 and staffing as expressed by a mean score of 3.503.

4.4Organizational Top Management and implementation of major road infrastructure projects

The study further sought to find out the influence of Organizational Top Management on implementation of major road infrastructure projects in Kenya.

Table 4.4: Extent to which various aspect of Organizational Top Management influence implementation of major road infrastructure projects in Kenya

Aspect of Organizational Top Management	Mean	Std. Deviation
Developing standard procedures	4.416	0.715
Risk identification and allocation	4.269	1.120
Communication systems	4.155	0.561
Technical capability	4.121	0.846
Coordination effectiveness	4.119	0.683
Upfront planning efforts	4.007	0.636
Developing an appropriate structure	3.860	1.012
Decision making effectiveness	3.564	0.896

According to the findings, majority of the respondents indicated that the aspects of Organizational Top Management that influence implementation of major road infrastructure projects in Kenya to a great extent include developing standard procedures as indicated by a mean score of 4.416, risk identification and allocation as shown by a mean score of 4.269, communication systems as indicated by a mean score of 4.155, technical capability as shown by a mean score of 4.121, coordination effectiveness as indicated by a mean score of 4.119, upfront planning efforts as expressed by a mean score of 4.007, developing an appropriate structure and decision making effectiveness as indicated by a mean score of 3.860 and 3.564 respectively.

4.5 Monitoring and Evaluation and implementation of major road infrastructure projects

The study further sought to assess the influence of monitoring and evaluation on implementation of major road infrastructure projects in Kenya.

Table 4.5: Extent to which various aspects of monitoring and evaluation influence implementation of roads infrastructure projects

Aspect of M&E	Mean	Std. Deviation
Reporting and review	4.418	0.499
Responses in place	4.269	0.517
Control mechanism	4.166	0.595
Monitoring schedule	3.988	0.907
Performance reviews	3.925	0.858
Data collection and Organizational Top Management	3.812	1.022
Identification of the purpose and scope of the M&E	3.636	1.138

The study found that the aspects of monitoring and evaluation that influence implementation of major roads infrastructure projects to a great extent include reporting and review as shown by a mean score of 4.418, responses in place as indicated by a mean score of 4.269, control mechanism as expressed by a mean score of 4.166, monitoring schedule as shown by a mean score of 3.988, performance reviews as indicaetd by a mean score of 3.925, data collection and Organizational Top Management as shown by a mean score of 3.812 and identification of the purpose and scope of the M&E as indicated by a mean score of 3.636.

4.6 Regulatory Factors and implementation of major road infrastructure projects

The study sought to establish the influence of regulatory environment on implementation of major road infrastructure projects in Kenya.

Table 4.6: Extent to which various aspects of regulatory factors influence implementation of major infrastructure road projects

Regulatory Factor	Mean	Std. Deviation
Corporate taxes	4.200	0.862
Administrative approvals environment	4.194	0.968
Quality assurance program	4.091	1.118
Safety program	3.872	0.799
Sanitary and building codes	3.736	0.968
Rules on importation of materials	3.663	0.948
Licenses and permits	3.594	1.070
Minimum wage tares	3.588	1.021

The respondents indicated that to a great extent aspects of regulatory factors influence implementation of major road infrastructure projects include corporate taxes as shown by a mean score of 4.200, administrative approvals environment as indicated by a mean score of 4.194, quality assurance program as expressed by a mean score of 4.091, safety program as shown by a mean score of 3.872, sanitary and building codes as indicated by a mean score of 3.736, rules on importation of materials as shown by a mean score of 3.663, licenses and permits as indicated by a mean score of 3.594 and minimum wage tares as shown by a mean score of 3.588.

4.7 Implementation of major road infrastructure Projects

The study sought to establish the extent to which aspects of implementation of projects are successful. The findings are as shown in Table 4.8.

Table 4.7: Extent to which Major road infrastracture project implementation is successful

Success Indicators	Mean	Std. Deviation
Budget	3.457	0.917
Time	3.246	0.923
Stakeholders' satisfaction	3.215	0.892
Quality	2.944	0.910

The study established that project implementation was successful by looking at aspects such as : completion within budget as shown by a mean score of 3.457, Time as indicated by a mean score of 3.246, stakeholders' satisfaction and Quality as expressed by a mean score of 3.215 and 2.944 respectively.

4.8 Pearson's Correlation Analysis

The data on project resource mobilization, Organizational Top Management, monitoring and evaluation and regulatory environment were computed into single variables per factor by obtaining the averages of each factor. Pearson's correlations analysis was then conducted at 95% confidence interval and 5% confidence level 2-tailed. The results were indicated the correlation matrix between the factors (project resource mobilization, Organizational Top Management, monitoring and evaluation and regulatory environment) and implementation of major road infrastructure projects in Kenya. On table 4.8, there is a positive relationship between project resource mobilization, Organizational Top Management, monitoring and evaluation and regulatory environment of magnitude 0. 713, 0.645, 0.624 and 0.746 respectively. The positive relationship indicates that there is a correlation between the factors and implementation of major road infrastructure projects in Kenya with regulatory environment having the highest influence on implementation of major road infrastructure projects in Kenya, followed by project resource mobilization, then Organizational Top Management while monitoring and evaluation having the lowest effect on the implementation of major road infrastructure projects in Kenya.

Table 4. 8: Correlations Matrix

		Implementation of major road infrastructure	Project resource mobilization	Organizational Top Management	Monitoring and evaluation	Regulatory environment
Implementation of major road infrastructure	Pearson Correlation	1				
	Sig. (2tailed)					
Project resource mobilization	Pearson Correlation	.713	1			
	Sig. (2tailed)	.000				
Organizational Top Management	Pearson Correlation	.645	.692	1		
	Sig. (2tailed)	.005	.000			
Monitoring and evaluation	Pearson Correlation	.624	.508	.627	1	
	Sig. (2tailed)	.002	.007	.014		
Regulatory environment	Pearson Correlation	.746	.686	.593	.709	1
	Sig. (2tailed)	.008	.025	.031	.009	

4.9 Discussion

This section sought to discuss the effect of project resource mobilization, Organizational Top Management, Monitoring and Evaluation and Regulatory environment on implementation of major road infrastructure projects in Kenya in the light of previous studies done.

4.9.1 Project Resource Mobilization

The study deduced that the aspects of project resource mobilization that influence implementation of major infrastructure projects to a great extent include financing methods, adequacy of funding, technology availability, project contract mechanism (such as: lump sum, unit price and cost plus), material price fluctuation, terms of financing for construction and staffing. These findings concur with Bonnafous and Jensen (2004) who states that public authorities are generally in charge of financing and building new infrastructures. However, infrastructure development is also financially taxing to the government. That is why even when infrastructure development has a positive effect on the economy, no government can afford to concentrate all its resources towards the provision of infrastructure. Phua and

Rowlinson (2004) posit that construction materials can be purchased by two procedures, either purchasing directly, or purchasing for entire lump sum contract. However, purchasing materials before due time is very important in the construction, because the delay in purchasing will delay the completion date, and interrupt the schedule. Consequently, the contractor will be exposed to penalty which might sometimes cause contractor to fail.

4.9.2 Organizational Top Management

The study further established that the aspects of Organizational Top Management that influence implementation of major road infrastructure projects in Kenya to a great extent include developing standard procedures, risk identification and allocation, communication systems, technical capability, coordination effectiveness, upfront planning efforts, developing an appropriate structure and decision making effectiveness. The findings are in line with Munns and Bjeirmi (2009) who state that the responsibility of top Organizational Top Management towards the project is important and its commitment and support is a crucial requirement for project success. Eriksson (2008) argues that on road construction projects in developing countries, it is extremely difficult to assemble adequate and capable professionals to direct projects to success. Thus, it is not surprising that these factors are perceived as having high impact on project success. Chan and Kumaraswamy (2011) remarked that effective communication and fast information transfer between managers and participants help to accelerate the building construction process and performance.

4.9.3 Monitoring and Evaluation

The study established that the aspects of monitoring and evaluation that influence implementation of roads infrastructure projects to a great extent include reporting and review, responses in place, control mechanism, monitoring schedule, performance reviews, data collection and Organizational Top Management and identification of the purpose and scope of the M&E. These findings cconcur with Wells (1986) who stated that construction, especially with respect to the contracting and bidding for civil works, requires the effective evaluation and supervision of contractors and their bids. Without this ability at tender, marginal or unacceptable bidders can distort the bidding process by excessive underbidding for contracts or future inability to complete. Organizational Top Management of the road network requires different information, at different levels of the decision-making process, for example, in planning, programming, design, and implementation.

The desired output of any contractual arrangement is the successful completion of the given project. However, during construction process, there are many unexpected events including controllable and uncontrollable factors that can adversely influence or hinder successful completion of projects and cause delay. A well-designed monitoring and evaluation programme is a critical component of any resource Organizational Top Management, conservation, or rehabilitation activity. It can also help reduce the cost and increase the benefits of future rehabilitation in part by minimizing failures (Lewandowski *et al.*, 2011).

4.9.4 Regulatory Factors

This study also revealed that to a great extent aspects of regulatory factors influence implementation of road projects. These include corporate taxes, administrative approvals environment, quality assurance program, safety program, sanitary and building codes, rules on importation of materials, licenses and permits and minimum wage tares. The findings are in line with World Bank (1984) that posits that the government generally sets the rules for the development of contractual relationships, thereby influencing the public construction sector. The private sector also feels this influence through policies and legislation regarding licenses and permits, sanitary and building codes, minimum wage tares, corporate taxes, rules on importation of materials and terms and availability of financing for construction

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents conclusion drawn from the findings highlighted and recommendation made there-to. The conclusions and recommendations drawn were focused on addressing the objectives of the study.

5.2 Summary of Findings

The study sought to establish the factors influencing implementation of major road infrastructure projects in Kenya: a case of the southern bypass project, Kenya. The chapter also provides the major findings and results of the study.

5.2.1 Project Resource Mobilization

The study deduced that the aspects of project mobilization that influence implementation of projects to a great extent include financing methods as shown by a mean score of 4.060, adequacy of funding as expressed by a mean score of 3.955, technology availability as indicated by a mean score of 3.910, project contract mechanism (e.g. lump sum, unit price, cost plus, etc.) as expressed by a mean score of 3.746, material price fluctuation as indicated by a mean score of 3.598, terms of financing for construction as expressed by a mean score of 3.551 and staffing as expressed by a mean score of 3.503.

5.2.2 Organizational Top Management

The study further established that the aspects of Organizational Top Management that influence implementation of major road infrastructure projects in Kenya to a great extent include developing standard procedures as indicated by a mean score of 4.416, risk identification and allocation as shown by a mean score of 4.269, communication systems as indicated by a mean score of 4.155, technical capability as shown by a mean score of 4.121, coordination effectiveness as indicated by a mean score of 4.119, upfront planning efforts as expressed by a mean score of 4.007, developing an appropriate structure and decision making effectiveness as indicated by a mean score of 3.860 and 3.564 respectively.

5.2.3 Monitoring and Evaluation

The study established that the aspects of monitoring and evaluation that influence implementation of roads infrastructure projects to a great extent include reporting and review as shown by a mean score of 4.418, responses in place as indicated by a mean score of 4.269,

control mechanism as expressed by a mean score of 4.166, monitoring schedule as shown by a mean score of as shown by a mean score of 3.988, performance reviews as indicaetd by a mean score of 3.925, data collection and Organizational Top Management as shown by a mean score of 3.812 and identification of the purpose and scope of the M&E as indicated by a mean score of 3.636.

5.2.4 Regulatory Factors

This study also revealed that to a great extent aspects of regulatory factors influence implementation of major road infrastructural projects include corporate taxes as shown by a mean score of 4.200, administrative approvals environment as indicated by a mean score of 4.194, quality assurance program as expressed by a mean score of 4.091, safety program as shown by a mean score of 3.872, sanitary and building codes as indicated by a mean score of 3.736, rules on importation of materials as shown by a mean score of 3.663, licenses and permits as indicated by a mean score of 3.594 and minimum wage tares as shown by a mean score of 3.588.

5.3 Conclusion

From the findings the study recommends that project resource mobilization influence implementation of major infrastructure road projects in Kenya to a great extent. This is through financing methods, adequacy of funding, technology availability, project contract mechanism like lump sum, unit price, cost plus and others material price fluctuation, terms of financing for construction and staffing.

The study also concludes that Organizational Top Management influence implementation of major road infrastructure projects in Kenya to a great extent. This is through developing standard procedures, risk identification and allocation, communication systems, technical capability, coordination effectiveness, upfront planning efforts, developing an appropriate structure and decision making effectiveness.

The study further concludes that aspects of monitoring and evaluation including reporting and review, responses in place, control mechanism, monitoring schedule, performance reviews, data collection and Organizational Top Management and identification of the purpose and scope of the M&E influence the implementation of major road infrastructure projects in Kenya to a great extent.

The study finally concludes that regulatory factors including corporate taxes, administrative approvals environment, quality assurance program, safety program, sanitary and building codes, rules on importation of materials, licenses and permits and minimum wage tares influence the implementation of major road infrastructure projects in Kenya to a great extent.

5.4 Recommendations

Based on the research findings and conclusions, the study recommends that the governmet should ensure that it allocates adequate resources both financial and non-financial to the infrastructure projects it plans to implement. Regarding the financial resources, the government should ensure timely disbursement of cash so that the projects can start and end as planned.

The research also recommends that the Organizational Top Management should ensure that they develop standard procedures, better communication systems, identify risks and allocations, evaluate their technical capability, better coordination and have upfront plans. This will ensure that the Organizational Top Management is prepared enough to deal with any eventuality and that they can easily identify hindrances in their operations and respond effectively. Consequently this will lead to effective implementation of infrastructure projects in the country.

The study finally recommends that the government should examine the policies governing the implementation of infrastructure projects in the country. This examination will ensure that the government helps deal with the hurdles that are faced in the implementation of infrastructure projects in the country especially by ensuring that issues such as development of roads in phases, design and construction and operation and maintenance are spelled out. These will in turn accelerate integration, accessibility, safety, economy, tackling congestion and environmental impact awareness.

5.5 Suggestion for Further Research

Similar studies should be conducted to find out if the same results are realized. Among the key topics to be researched include:

1. Factors influencing the implementation of major road infrastructure projects in Mombasa County.
2. Factors influencing the implementation of major road infrastructure projects financed by the public private partnerhips.
3. Factors influencing the implementation of minor road infrastructure projects.

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APPENDICES

Appendix 1: Letter of Transmittal of Data Collection Instruments

Kinaro Erick Nyabaro

P.O. Box 18631-00100

Nairobi.

May, 28th, 2014

Dear Sir/Madam,

RE: **REQUEST FOR PARTICIPATION IN A RESEARCH SURVEY**

I am a final MA degree student at the University of Nairobi. My area of specialization is project planning and Organizational Top Management. I am currently undertaking a research on "**Factors Influencing The Implementation Of Major Road Infrastructure Projects In Kenya: A Case Of The Southern Bypass Project, Kenya**".

I would be grateful if you could spare some time from your busy schedule and complete the enclosed questionnaire. All the information provided will be used purely for academic purposes and your identity will be treated with utmost confidentiality.

Thank you for your cooperation.

Yours faithfully,

Kinaro Erick Nyabaro

Appendix II: Research Questionnaire

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

PART A: Background Information

1. Which department are you working at? ……..
2. Which is your highest level of education?

Post Graduate	[ ]	Undergraduate	[ ]
Diploma	[ ]	Certificate	[ ]

Any other (specify)……

3. How long have you worked in this institution?

1 to 5 years	[ ]
6 to 10years	[ ]
11 to 15 years	[ ]
16 to 20 years	[ ]
21 years and above	[ ]

PART B: Project Resource Mobilization

4. To what extent do the following aspects of project resource mobilization influence implementation of projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Adequacy of funding					
Technology availability					
Financing methods					
Project contract mechanism (e.g. lump sum, unit price, cost plus, etc.)					
Material price fluctuation					
Terms of financing for construction					
Staffing					

PART C: Organizational Top Management

5. To what extent does the following aspect of Organizational Top Management influence implementation of major road infrastructure projects in Kenya?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Communication systems					
Upfront planning efforts					
Developing an appropriate structure					
Coordination effectiveness					

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

PART D: Regulatory Factors

6. To what extent do the following influence implementation of road projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Quality assurance program					
Safety program					
Administrative approvals environment					
Sanitary and building codes					
Minimum wage tares					
Licenses and permits					
Corporate taxes					
Rules on importation of materials					
Minimum wage tares					

PART E: Monitoring & Evaluation

To what extent do the following influence implementation roads infrastructure projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Control mechanism					
Responses in place					
Reporting and review					
Performance reviews					
Monitoring schedule					
Data collection and Organizational Top Management					
Identification of the purpose and scope of the M&E					

PART H: Implementation of Project

7. To what extent is your company successful in the following aspects of implementation of projects?

	Very great extent	Great extent	Moderate extent	Low extent	Very low extent
Time					
Budget					
Quality					
Stakeholders' satisfaction					

THANK YOU FOR YOUR PARTICIPATION

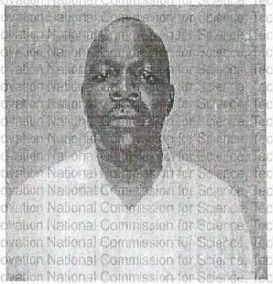
THIS IS TO CERTIFY THAT:
MR. ERICK NYABARO KINARO
of UNIVERSITY OF NAIROBI, 59728-200
NAIROBI,has been permitted to conduct
research in *Nairobi County*

on the topic: *FACTORS INFLUENCING IMPLEMENTATION OF MAJOR ROAD INFRASTRACTURE PROJECTS IN KENYA: A CASE OF SOUTHERN BYPASS, KENYA.*

for the period ending:
4th December,2015

.....
Applicant's Signature

Permit No : NACOSTI/P/15/8655/7411
Date Of Issue : 5th August,2015
Fee Recieved :Ksh 1,000



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Director General
National Commission for Science, Technology & Innovation