



**FACTORS INFLUENCING COMPLETION RATE OF CONSTRUCTION
PROJECTS IN DEVOLVED UNITS IN KENYA: A CASE OF THE
MORDERNIZATION OF SEWARGE SYSTEM
IN WAJIR COUNTY**

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DECLARATION

This Research Project is my original work and has not been submitted for any award in any University.

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DEDICATION

I dedicate this work to my wife and my children: Abdurahman, Ayub, Abdulkhadir, Abdullahi, Daib, Salma and Rowdha and to my loving mother Halima Abdullahi.

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I would like to appreciate Nairobi University for offering me a chance to study this program and enabled us to attend lectures conveniently not forgetting the committed lecturers who ensured course work was completed on time and relevant information and knowledge was impacted on us.

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ABBREVIATIONS AND ACRONYMS

IPD	Initial Project Definition
KPMG	Kenya Project Management Group
PCP	Project Construction Policy

ABSTRACT

The study investigated factors influencing completion rates of construction projects in the devolved units in Kenya. It was conducted in Wajir County. The objectives of the study were to:- Investigate how project plans influence successful completion rate of the construction of modernization of sewerage system in Wajir County; establish the extent to which funding influences completion of construction projects in Wajir County; find out how socio-political attributes influence successful completion rate of construction of modernization of sewerage system in Wajir County; investigate the influence of feasibility study on the completion rate of construction of modernization of sewerage system in Wajir County and to assess the extent to which availability of personnel influences the completion rate of construction of modernization of sewerage system in Wajir County. The Study was undertaken to unearth the reasons why projects undertaken in Wajir County (Wajir District) have either stalled or collapsed and to find a scientific solution that will benefit in formulating strategies and blueprints for successful execution and completion of projects. The findings of this study will assist the central government in devolved units in formulation and implementation of policies by adopting blueprints which will ensure success in executing construction projects. A case study research design was adopted targeting the County executives, project management team and constructors, in Wajir County. The data was collected from a census of 58 respondents using a survey instrument (questionnaire and interview). Descriptive and inferential statistics were used to analyze the data in frequencies and percentages. The findings revealed that out of the five variables tested only one (socio-political attributes) was found not to have much influence on completion rates of construction projects in the devolved units in Kenya with a specific case of construction of modernization of sewerage system in Wajir County. The study concluded that corruption in public offices and lack of professionalism was to blame for the poor performance of the project. Further research is needed to explore the problem on a large sample and also conduct similar study in other parts of the country. The study thus recommends further research to be carried on effect of participatory monitoring and evaluation on completion rate of projects.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Project management as a management discipline emphasizes decision-making and operationalizing of strategies to bring about projects' success. Projects are complex and involve a large number of parties in execution. The demand for major projects has never been greater, and largely driven by an increasing global population, aging infrastructure, increasing urbanization, and continued development of emerging markets (KPMG, 2012). With demand comes the challenges for owners, contractors, and other stakeholders to successfully deliver the much-needed infrastructure projects (Taleb, 2009). According to KPMG (2009), the reality of the situation is that similar to world markets, capital projects have become increasingly complex and challenging. What worked in the past is no longer good enough today and will definitely not be good enough in the future.

Chan, Suhaiza, and Yudi (2008) assert that increasingly these days, organizations are project based, meaning that the work they do is split into programs of projects designed to deliver the organization's strategies and add value. Good management of projects is essential, if the organization is going to succeed. Equally important is ensuring that the right projects are carried out. (Matta and Ashkenas, 2005), further argue that if the series of teams working along parallel tracks fail to anticipate everything that might fall through the cracks, those tracks will not converge successfully at the end to reach the goal and hence leading to project failure.

The period taken in executing construction projects is increasingly becoming an issue of major concern among stakeholders. This causes stress in the construction projects due to issues such as accumulated rate of interests by commercial banks, cost overrun, inflation, clients'(sponsor) pressures and the possibility of disputes and claims leading to litigations or arbitrations (Rosazuwad, 2010). According to Smith (2011), large construction projects are inherently complex and the dynamics for their implementation involves proper planning, identifying and conveying clients, and assessing actual needs and requirements accurately to the project team. Briefing is critical to the successful completion and delivery of Construction projects, as there are many limitations, inhibiting effectiveness of such undertakings, resulting in frequent and severe project delays. Such factors affect construction projects (Owuor and Ruth, 2013). The impact of delays is that funds committed on projects do not benefits intended recipients and subsequently results in cost and time overrun.

In Palestine, results indicate that the average delay because of closures leading to materials shortage was the most important performance factor that impedes project completion. Others being escalation of material prices, availability of resources as planned through project duration, average delay because of closures leading to materials shortage, availability of personnel with a high experience and qualifications, quality of equipment and raw materials in project, and leadership skills for project managers, www.thefreelibrary.com, (2009), Visited on 19.03.2014.

Nigerian construction industry is also faced with the problem of project delays and completion rate. Ogunsemi and Jagboro (2006) noted that one of the most serious problems the Nigeria construction industry is faced with is the project cost overrun, with attendant consequence of completing projects at sums higher than the initial sum. Political insurgency also affects project implementation negatively, as well as the absorptive capacity as is the case of construction projects in some selected districts of Uganda. Closure of special account, stalled procurements and expiry of special commitments, totally disrupted Project activities between March and July 1999, www.thefreelibrary.com (2003), visited on 19.03.2014

According to Jonathan (2011) the most important cause of delays in the construction sector in Kenya, is financing by the contractor during the project, changes in designs by the owner or his agent during the construction, delays in contractor's payment and non-utilization of professional construction management.

In Wajir County, which is located in the former North Eastern Province of Kenya, the few projects initiated by the government have either stalled or failed due to factors ranging from poor funding to lack of goodwill by the government among other dilemmas. A preliminary informal review by the researcher on the projects undertaken by the government in Wajir County are not completed on schedule while others are abandoned before completion because of many problems and complex issues of performance such as cost, time, poor planning and safety. This, among many other factors have prompted the researcher to conduct this study, evaluating the factors influencing completion of construction projects in Devolved units of Government with Wajir County providing the case study.

1.2 Statement of the problem

Maintaining steady completion of construction projects, has until recently, been an issue of serious concern both to the client and contractors. Standish Group Report (2007) noted that mega projects fail at a higher rate than small/medium sized projects. According to Khatak

(2009), the main reasons and causes of project/task failure are embodied in four key dimensions of the task, namely –time, cost, quality and content. The end users and stakeholders of a project also play a fundamentally important role towards success or failure. Lock (2007), asserts that consequences of failure of projects can be multi-dimensional, having far reaching effects on individuals, communities and organizations. In more visible terms time and cost overruns are common features of failure of projects, resulting in delay of service or product delivery. Kappelman et al., (2006) says that the high rate of failed/incomplete or abandoned projects negatively impacts government/organizational performance, costing tax payer billions of money in losses. In quantifiable terms the cost of delays and partial or inadequate accrual of the envisaged benefits in the shape of increase in revenues, improvements in service, quality or technology would vary according to the nature and scope of project.

In developing countries like Kenya, projects are the life line of construction plan or programs. Failure of projects irrespective of the sector, whether public or private contribute to irreparable loss to society and to the economy as whole. Delays and non-completion of projects from initial cost plan has been prevalent on construction sites. However, little or no efforts have been made to curtail the phenomenon. It is against this background that this research attempts to study the factors influencing completion rate of construction project in the devolved units in Kenya with modernization of sewerage system in Wajir County as the case study.

1.3 Purpose of the Study

The purpose of the study was to evaluate the factors influencing the completion rate of construction project in devolved units in Kenya with a case study of modernization of sewerage system in Wajir County.

1.4 Research Objectives

The study was guided by the following objectives:

- I. To determine the influence of project plans in the completion rate of the construction of the modernization of sewerage system in Wajir County.
- II. To establish the extent to which funding influences the completion rate of the construction of the modernization of sewerage system in Wajir County.

- III. To determine the influence of socio-political factors on the completion of construction rate of the modernization of sewerage system in Wajir County.
- IV. To investigate the influence of feasibility study on the completion rate of construction of the modernization of sewerage system in Wajir County.
- V. To assess the extent to which availability of personnel influences the completion rate of construction of the modernization of sewerage system in Wajir County.

1.5 Research Questions and Hypothesis

The study objectives were realized through a set of research questions and hypothesis testing. These are presented in the sections that follow below.

1.5.1 Research Questions

The research questions were focused on finding out the factors influencing completion rate of construction of the sewerage modernization project in the study area. Such questions were:

- I. How does lack of project plans influence successful completion of the construction of the modernization of sewerage system in Wajir County?
- II. To what extent does funding influence completion of the construction of the modernization of sewerage system in Wajir County?
- III. How do socio-political factors influence successful completion of construction of the modernization of sewerage system in Wajir County?
- IV. To what extent do feasibility studies influence the successful completion of the modernization of sewerage system in Wajir County?
- V. How does availability of qualified labour influence the successful completion of the modernization of sewerage system in Wajir County?

1.5.2 Research Hypotheses

Hypotheses' testing was used to find out if there was any relationship between the project plans, project funding, socio-political factors, feasibility study and availability of personnel in the study area.

The following alternative hypotheses were tested for any such relationships:

H₁: There is relationship between project plans and completion rate of the sewerage modernization project in Wajir County.

H₁: There is a relationship between project funding and completion rate of the sewerage modernization project in Wajir County.

H₁: There is relationship between socio-political factors and completion rate of the sewerage modernization project in Wajir County.

H₁: There is relationship between feasibility study and successful completion rate of the sewerage modernization project in Wajir County.

H₁: There is relationship between availability of personnel and completion rate of the sewerage modernization project in Wajir County.

1.6 Significant of the Study

Projects are undertaken to fulfill predetermined objectives. If the projects are not completed, then the objectives shall not have been met and resources shall have been wasted. The significance of this study is therefore to raise awareness of the importance of completing project once they have been started. Secondly, the outcome of making sure projects are completed is that delaying their completion has the implication of added cost to the tax payer. Emphasizing the completion of projects is part of the development agenda since one set of project is completed, the focus is turned to another projects. This is development and it is this development that makes the study to be significant.

1.7 Delimitations of the Study

This study sought to find out the factors influencing completion rate of construction of the sewerage system project undertaken by the County Government in Wajir. It specifically looked at the factors associated with success in construction projects to reflect how these have guided the completion rate of modernization the sewerage system project in the County. Factors such as procurement of materials, environment and government policies are important in construction projects but were not considered in this study.

1.8 Limitations of the study

The study was limited by unavailability of documented information about construction projects in the County and therefore had to rely on the former Wajir District for such information. There was also unwillingness by County Government officials to give information due to fear that they would be giving out information without authority, but this was overcome by the research explaining the purpose for which the study was being

undertaken. To break secrecy and/or lack of openness due to the confidentiality and secrecy policy in most government institutions that restricted some of the respondents from releasing vital information, the researcher re-assured the respondent of confidentiality and that the information collected thereof was purely for academic reasons. There was also a language barrier and the researcher had to use interpreters to enable the respondents understand the questions.

Overcoming the constraints, enabled sufficient data gathered to retrieve the information needed to complete the study.

1.9 Basic assumption of the study

This study was based on the following assumption:

- i) Documented information on the study topic would be available
- ii) Completion rate of construction of the sewerage modernization project was mainly influenced by the variables stated in the study objectives.
- iii) Informants would be truthful.

1.10 Definitions of Significant Terms Used in the Study

Project: An activity with a starting date, specific goals and conditions, defined responsibilities, a budget, planning, a fixed end date and multiple parties involved.

Project Plan: A formal document designed to guide the control and execution of a project (Project Management Body of Knowledge, 2012).

Project management: Understanding the needs of stakeholders, Planning what needs to be done, when, by whom, and to what standards, Building and motivating the team, Coordinating the work of different people, Monitoring work being done, Managing any changes to the plan, and Delivering successful results(Martin Barnes,2012).

Project Completion: The last step in a grant or contract's life cycle whether cost reimbursable or fixed price is project closeout.

Devolution: Transfer of administrative responsibilities to county governments in the country.

Drainage: The natural or artificial removal of surface and sub-surface water from an area.

1.11 Organizational of the Study

This study was organized in five chapters. Chapter one provide a background on factors influencing implementation of construction projects in devolved units, statement of the problem, research objectives, research hypothesis and research questions that the study looked forward to answer, purpose of the study, and significance of the study, delimitations and scope of the study. It also provided definitions of significant terms used in the study and organizational of the study. Chapter Two outline the various schools of thought (literature review) on factors influencing implementation of construction projects and challenges facing the construction industries. The discussions were based on the research objectives. Chapter three outlined the research design and methodology that was used for purposes of completing the study. It also described research design, target population, sample, sampling procedure and data collection instruments, pilot testing of the instruments, data collection procedures and data analysis techniques, ethical considerations and operational definition of the variables. Chapter four covered data analysis and presentation of results, Chapter five consisted of the summary of major findings, discussions of the findings vis-à-vis the literature review, conclusions and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides an overview of the literature related to factors influencing completion of construction of sewerage system project based on previous studies. It encompasses empirical reviews as well as conceptualization of the theories and elements underpinning the study area. Lastly, it provides a focused summary that highlights the existing research gap.

2.2 Influence of Project Plans in the Completion Rate of Construction of the modernization of sewerage system project

Construction industry has a very poor reputation in coping with delays. Delay analysis is either ignored or done subjectively by simply adding a contingency. As a result, many major projects fail to meet schedule deadlines Al-Momani, A. (2000). The duration of construction projects is increasingly becoming an issue of concern among the stakeholders in the construction industry. This is because of the increasing rates of interests, commercial pressure, inflation and the potential of a construction project to result in disputed and claims leading to litigation or arbitration El Razek, Basssioni and Mobarak, (2008).

On the other hand, Amusan, (2009) discovered that inadequate planning, contractors project inexperience, inflation, incessant and variation order, change in project design, project complexity, shortening of contract period and fraudulent practices are factors that results in cost overrun on construction sites.

Plans considered by owners for facility financing typically have both long and short term aspects Ashworth, (1994). Many of these financing options involve the participation of third parties such as banks or bond underwriters. For private facilities such as office buildings, it is customary to have completely different financing arrangements during the construction period and during the period of facility use. On the other hand, the options for borrowing by contractors to bridge their expenditures and receipts during construction are relatively limited El Razek, et al (2008). Construction projects are graded very successful if the work is completed within budget and to the deadlines agreed in the specification. However, the sad truth is that not all projects are guilty of being successful Barnes, (2012).

Ferry, Brandon, and Ferry, (1998) argue that many projects experience failure due to the uncertainties associated with construction projects which include weather, materials, equipment, money and profitability, disagreements between clients, contractors and sub-contractors, statutory regulations, economic and political issues and functionality and purpose. To prevent these failures from constantly occurring, the types of failures need to be addressed so future construction projects do not fall into the same category of ‘unsuccessful construction projects’. It is clear that some of these failures occur regardless of careful planning due to uncontrollable conditions such as climate change, recession, delayed deliveries etc. Therefore addressing the controllable issues, contractors can incorporate these problems into their specification.

2.3 Influence of Funding on Completion Rate of Construction of the modernization of sewerage system project

Chan et al, (2008) hold that the most important cause of delays in the construction sector is financing by the contractor during the project, changes in designs by the owner or his agent during the construction, delays in contractor’s payment and non-utilization of professional construction management. In (2009), Ravindra argued that investment in a constructed facility represents a cost in the short term that returns benefits only over the long term use of the facility. Thus, costs occur earlier than the benefits, and owners of facilities must obtain the capital resources to finance the costs of construction Pilcher, (1992). A project cannot proceed without adequate financing, and the cost of providing adequate financing can be quite large Dissanayaka and Kumaran Sammy, (1999). For these reasons, attention to project finance is an important aspect of project management. Finance is also a concern to the other organizations involved in a project such as the general contractor and material suppliers Kerzner(1998). Unless an owner immediately and completely covers the costs incurred by each participant, these organizations face financing problems of their own Odusami and Olusanya, (2000).

According to Bathurst and Butler, (1980) cost and designs are closely linked and it is important to ensure that projects are delivered within their approved budgets and that the design represents value for money. Projects should be designed taking account of both capital and operational costs, whole-life costing is an integral part of the design process, and whole-life costs of key components of a facility should be considered during the design process

Majid, (1998). To ensure value for money, a balance should be struck between initial capital costs and expected replacement costs over the life of the facility Bosire, (2012).

Ochieng and Tubey, (2013) observe that at a more general level, project finance is only one aspect of the general problem of corporate finance. If numerous projects are considered and financed together, then the net cash flow requirements constitute the corporate financing problem for capital investment. Ashworth, (1994) postulates that whether project finance is performed at the project or at the corporate level does not alter the basic financing problem. In essence, the project finance problem is to obtain funds to bridge the time between making expenditures and obtaining revenues Kerzner, (1998). Based on the conceptual plan, the cost estimate and the construction plan, the cash flow of costs and receipts for a project can be estimated. Normally, this cash flow will involve expenditures in early periods Mbachu and Olaoye, (1999). Covering this negative cash balance in the most beneficial or cost effective fashion is the project finance problem. During planning and design, expenditures of the owner are modest, whereas substantial costs are incurred during construction Harris and MacCaffer, (2005). Only after the facility is complete do revenues begin. In contrast, a contractor would receive periodic payments from the owner as construction proceeds. However, a contractor also may have a negative cash balance due to delays in payment and retain age of profits or cost reimbursements on the part of the owner Bathurst and Butler, (1980).

2.4 Influence of Socio-political Factors on Completion of Construction of the modernization of sewerage system project

Society and political class are two important forces that cannot be ignored so easily for any project to reach its complete maturity stage. Jameel, (2009) asserts that while increased community participation has been advocated as a way to improve the quality of public projects and services, evidence from randomized evaluations provides very mixed results about its effectiveness. While it is clear that the details and context matter for this type of program, some common themes about what works are beginning to emerge. Programs where the community had more direct control over service providers tended to work better. Community involvement is more effective when people are given specific tasks and training. On the other hand, Olusegun and Alabi, (2011) argue that causes of project abandonment are as a results of inadequate planning, inadequate financing, inflation, bankruptcy of contractor

and variation of project scope and political factors among others. These cause disappointment of the populace or proposed users, lowering standards, wastage of resources, and reduction in employment opportunities and difficulties in attracting foreign loans.

2.5 Influence of Feasibility Study on the Completion Rate of Construction of the modernization of sewerage system project

Feasibility studies are preliminary investigations or enquiry into the potential benefits associated with undertaking or execution of a specific activity or a project. The study in construction helps identify whether the building will stand strong on the site and whether there are any hazards that can result as a result of having the construction. The Feasibility, or Concept, stage of the project life cycle is the first development stage undertaken after determining the reasons and benefits for undertaking a project. This usually consists of a study, where an Initial Project Definition (IPD) is developed in outline, demonstrating that the project is feasible, and identifying how the project should be structured in order to deliver the benefits expected of it. Effective and efficient site management by contractors is very important to ensure projects are completed on time. Poor coordination contributes to delay from estimated completion time. Poor site and lack of management may occur when contractors do not have enough experience or knowledge in managing the project team (Kadir et al., 2005).

Time extensions are very serious and chronic problems in construction projects (Kazaz and Ulubeyli 2009). The late completion of a project results in the overrun of the construction budget allocated at project inception as well as the delay of the potential income that could be obtained with the operation of the constructed facility. Similarly, the early completion of a project likely causes cost extension due to complications of overstaffing. Although some changes in a time schedule can normally be made according to client's demands, construction projects are described as "successful" on condition that they are completed in the planned time, budgeted cost, and specified quality (Ritz 1994). According to Enshassi et al, (2009), delays are one of the most important factors affecting project performance. In practice, total project duration may potentially go beyond the calculated limits of the scheduled time because of the owner, contractor, subcontractors, or some technical, legal, and natural difficulties.

Site location in terms of geographical, political and functional context fixes the site in relation to climate conditions, adjacent land uses, utilizes and infrastructure availability, and the social cultural environment. The topography and slope determine drainage patterns and problems, on-site and off-site views, erosion and sedimentation, and suitability for different uses and activities. The general climate of the location determines the design form and also implementation scheduling. Feasibility study for construction projects in Kenya vary, with some of the issues such as foundation soil conditions only evident on excavation. This subsequently has an effect on completion rate. For instance, the study of Wajir County has varied characteristics ranging from sandy soil, desert terrains and some parts with hot, flat and clay soil (Source: County Works Office – Wajir).

2.6 Influence of Personnel on the Completion Rate of Construction of the modernization of sewerage system project

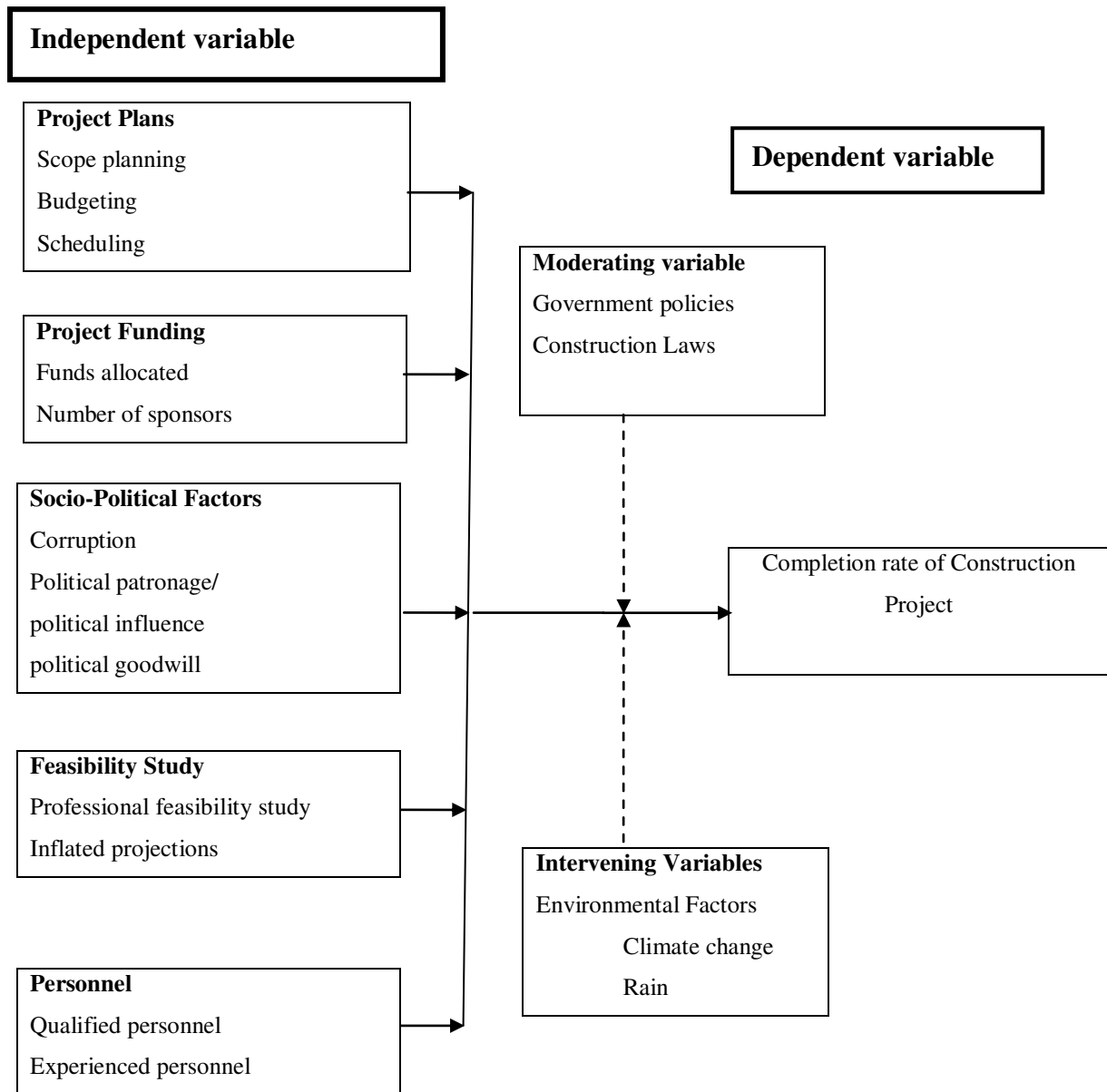
Bruce and Dulipovici (2001) defined labour shortages in simple terms as the difficulty in finding the right people to fill the available job. Labour shortage is a problem faced by many countries all over the world. This is shown by the reports by Wang (2010) and Hanim (2010). As stated by Trendle (2008), there are several causes of labour shortages; a shortage of skilled labour can result from an increase in the demand for labour. This is due to the increase in demand for the goods or services provided. In the construction industry context, the buying power of the consumer and this will lead to higher quality buildings being produced to meet increasing demands. Thus, more skilled personnel are required to produce high quality work. The second cause of labour shortage is the cost of foreign labour. Hanim (2010) claimed that higher recruitment costs of foreign labour due to payment for the levy, medical checkup, security bond and medical costs by the employers lead to labour shortages in Malaysia. In the Malaysian construction industry, unskilled foreign labourers are widely used because the prices of foreign labourers are much cheaper compared to local labourers. Hence, the increasing cost to hire foreign labour will result in labour shortages in the construction industry and at the same time, contribute to delays in construction projects in Malaysia. Sweiset al, (2008) also indicated that shortage of manpower including skilled, semi-skilled and unskilled labour causes delays in construction projects. This is further supported by Sambasivan and Yau, (2007) who conducted a study in Malaysia and found out that labour supply is ranked number seven out of twenty eight causes of construction delay. It shows that labour supply is the major cause of delay due to the construction industry in Malaysia making

use of foreign workers, some of which are working illegally in Malaysia. These illegal workers are frequently detained by Malaysian immigration officials and deported, causing further shortages of labour in the construction industry.

2.7 Conceptual framework

The conceptual framework for the study as illustrated in figure 2 indicates the relationship between the variables. The defining premise for the framework as derived from the literature review is that manipulation of the independent (Predictor) variables consisting of project plans, funding, socio-political factors, feasibility study and availability of personnel in the construction projects within devolved units. The framework further illustrates the moderating and intervening variables identified and government policy and construction laws. It also includes the indicators of the dependent variables that would be used to measure the levels of influence which is completion rate of construction of sewerage project.

Figure 1: Factors Influencing Completion rate of Construction of the modernization of sewerage system project



2

2.8 Gaps in Literature Reviewed

Many studies have been done on factors affecting projects' construction or causes for delays in projects' construction like Al-Momani, (2000); Sweis, et al, (2008); Rosazuwad, (2010); Sambasivan and Yau, (2007); Enshassi et al, (2009); Ochieng and Tubey, (2013) and Chan et al, (2008); Jagboro, (1998); Majid, (1998) and El Razek et al, (2008) to mention but a few. Regardless of the approaches adopted by various international agencies, scholars and/or

researchers in examining the completion rate of construction of sewerage projects and the underlying factors influencing the same, the existing literature on this topic suffer various weaknesses and gaps: so far, very little attempt has been made towards unearthing the significance of those factors in influencing completion rate. This is an area which calls for the collection of hard data from the field and analyzing them so as to determine how the findings can be incorporated and integrated in the planning of faster completion rate of construction of the sewerage modernization project. Coming to the local scene (Kenyan situation), it is important to note that no study has been done on examining the underlying factors influencing completion rate of construction of sewerage project in arid and semi-arid environmental setting (including Wajir County), especially the influence of project plans, funding, feasibility study, socio-political factors and availability of qualified personnel. Thus, no factual contribution of other scholars and/or researchers has been made in the target area. The existence of these weaknesses/gaps in the literature cited above, calls for further research on the inherent factors influencing completion rate of construction projects. Such information is crucial and forms an integral part in the planning and management of construction projects so as to meet the current and possibly future needs of the people.

All these studies and many others reviewed by the researcher so far, none has studied on the factors influencing completion rate of construction projects in the devolved units. Due to this situation, it prompted the researcher to undertake this particular study with a bias of Wajir County.

2.9 Summary of Literature Review

The researcher reviewed the literature basically based on the study objectives in question. This was done to establish what are the underlying concepts in the area as well as what other researchers have found in their previous studies. The conceptual framework was outlined showing the relationship existing between the variables under study.

From the preceding cited literature, it is evident that completion rate of construction of sewerage project problems are not only experienced at the local level but also at the global level. These problems include lack of project plans, lack of funding, poor feasibility study, political interference and lack of qualified personnel. The experience from case studies has shown that often time wasted drawing plans which cannot be implemented; and if

implemented, such projects are usually abandoned or only function intermittently and therefore do not meet the expectations of the sponsors.

These problems and others not mentioned but discussed above are influenced by several factors including lack of funding and the absence of strong moves by the Governments for change; lack of community participation in all the stages of the projects; lack of institutional structures; political, economic, technical and manpower constraints; operation and maintenance personnel; cultural conservation; and lack of in-depth planning process which focuses on the geographical, economical and socio cultural conditions of the target area. Thus, the above literature has given an in-depth knowledge about the nature and the genesis of the above mentioned completion rate of construction of sewerage project, first by giving a general (global) overview and secondly, by drawing from experiences of case studies mainly from the developing countries, focusing on the respective arid areas, especially in Africa and finally merging into the Kenyan situation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology used in the study. It outlines the study design, target population, sampling procedure, methods of data collection, validity and reliability and data analysis methods as well as operationalization of variables. All these were used in order to achieve the research objectives.

3.2 Research Design

Since the study targeted a single unit, a survey approach was the research design chosen to accomplish it because of its simplicity in the methods of data collection. The information was gathered on a population at a single point in time because a pre-determined set of questions were used based on the objectives of the study. The study adopted a cross-sectional survey research design in order to explore the factors influencing completion of construction of the sewerage project as a case study in the devolved units of Government for Wajir County. A cross-sectional survey research design was found to be appropriate for this study because it allows for generalization of information.

3.3 Target Population

The population of informants targeted in the study included the employees of the county government, contractors, residents and people who work as casual labourers within the construction projects as the 'true population'. However, very often the true population is not amenable to sampling in the time available and a surrogate has to be found. The researcher specifically targeted County executives, project management team and constructors.

3.4 Sample Size and Sampling Procedures

3.4.1 Sample Size

The study targeted three project components namely the sewerage system, modern toilets and a sewage water purification plant, which in total comprise the sewage system of modernization aspect. The sample frame for the study was 58 respondents comprised of County executives, project management team and constructors in Wajir County that were involved in the construction of the above mentioned works.

3.4.2 Sampling Procedure

Census technique was employed to select on all the 58 personnel directly or indirectly involved in the three selected project works. It was deemed imperative to select on these personnel because it was assumed that they had the necessary information as it pertains to the study problem. Census technique was chosen because the respondents' number was small and manageable within the constraints of the study.

For a survey design based on random sample, the sample size can be calculated using the following formula;

$$n = \frac{t^2 * p(1-p)}{m^2}$$

Where: n= required sample size

t=standard variant at a given confidence level (95% is 1.52)

p= estimated value for the proportion of a sample that will respond a given way to a survey (0.5 for 50%)

m= the margin of the error (±10% is .1) (Moore, D and McCabe, G. 1999).

$$n = \frac{(1.52)^2 * 0.5(1-0.5)}{0.01} = 0.5776/0.01 = 57.76 = 58 \text{ respondents}$$

3.5 Data Collection Instrument

The data collection instrument used in the study to collect secondary information is the questionnaire and interview guide. The questionnaire was used because it gave respondents time to answer the questions and saved time for the researcher. Interview guide elaborated the questions that were not answered in the questionnaire since the respondents had enough time with the researcher. The questionnaire contained both open-ended and closed-ended questions. The open-ended questions were used in order to elicit views from the respondents on the subject under study. The closed-ended questions were used to limit the respondents' answers on the subject matter for easier analysis.

3.5.1 Validity and reliability of research instruments

Selection of the research instruments was based on their validity and reliability to achieve the objectives of this study. Questionnaires and interview guide were the main research instruments used to collect information for this study.

3.5.2 Validity of the Instrument

Three instruments were given for data collection. These were the administration of questionnaires, one-on-one interviews with stakeholders and field observations as instruments for data gathering. Questionnaires reduce biasness because the researcher's own opinions does not influence respondent to answer in a certain manner. On the other hand, interviews provide detailed information since it allows further probing and also have high response rate hence were ideal to collect data from the respondents in a devolved government of Wajir County.

In order to achieve the required degree of validity of the research instruments of data collection that is questionnaires and interviews, their design was formulated in such a way that clarity of the objectives of the study is achieved.

3.5.3 Reliability of the Instrument

The reliability of the instrument was established through pre-testing of 4 pieces of questionnaires at Wajir County where projects' managers were involved. Internal consistency method was used. The most popular internal consistency reliability estimate is given by Cronbach's alpha reliability coefficient, which should be 0.70 or higher to be considered "acceptable" in most social science research situations (Nassiuma and Mwangi 2004). Analysis of data ascertained the reliability and consistency of the research instrument. Consequently, the instrument was used to generate the results adopted in the study report.

3.6 Data Collection Procedures

A field visit was made to administer the questionnaires to the respondents. These were distributed to the respondents on the 'give and take up later bases, giving them a period of three days to fill them. The questionnaires thereafter were collected and accordingly prepared for analysis. Interview guide was used to make the questions that were not clear in the questionnaire more understandable to the respondents.

3.7 Data Analysis Techniques

Once the questionnaires were collected, they were carefully edited to detect errors and omissions for consistency and completeness. The questionnaires were set in a style that on analysis would provide results consistent with the five objectives of the study for Wajir County. Descriptive statistics were employed to analyze the data, The SPSS software was used to enhance faster and easier interpretation of the data into meaningful information.

3.8 Ethical Considerations

Research ethics that were considered in this study are debriefing, voluntary participation and confidentiality.

Before issuing questionnaires, the researcher explained the purpose and procedures of the study. Respondents were informed about all the procedures that were followed in this study. Attempts were made to remove any misconceptions that the respondents had about the study (Kerlinger & Lee, 2000).

The respondents were assured that all the information obtained would be treated as confidential. That is, data was only used for stated purposes and no other person would have access to the collected data. The respondents were informed that their names would be omitted and that numbers were only used for statistics.

Respondents were made aware that participation in the study was voluntary, and they were free to withdraw from the study if they so wished. However, the respondents were informed that their participation was important for this study and that it would contribute to understanding the factors influencing completion rate of construction of the sewerage modernization project in Wajir County.

3.9 Operational Definition of the Variables

Below is the table exhibiting the operationalization of the variables used in the study. The main variables that are being elaborated hereunder are the independent and dependent variables, which are captured in the research objectives.

Table 3.1: Operationalization of the Variables

Objectives	Variable	Indicators	Measurement	Scale	Data tools	Analysis
To establish the extent to which funding influences completion of construction of sewerage system projects in Wajir County.	Independent Funding Dependent Completion of construction projects	-Funds allocated -Number of sponsors -Projects completed in time. -Projects in use -Clients benefiting from the projects	-Amount of money spent on various projects -Number of completed projects	Ordinal Nominal Ordinal Nominal	Questionnaire Questionnaire Interview Guide	Frequencies Percentages Frequencies Percentages Qualitative and quantitative
To investigate the influence of feasibility study on the completion of construction of sewerage system projects in Wajir County.	Independent Poor feasibility study Dependent Completion of construction projects	Unprofessional feasibility studies done. Wrong/inflated projections -Projects completed in time. -Projects in use -Clients benefiting from the projects	-Effective and efficient results -Number of completed projects	Ordinal Nominal Ordinal Nominal	Questionnaire Questionnaire Interview Guide	Frequencies Percentages Qualitative and quantitative Frequencies Percentages
To assess the extent to which personnel influences the completion of construction of sewerage system projects in Wajir County.	Independent Availability of skilled personnel Dependent Completion of construction projects	-Quality projects constructed -Delivery of projects in time -Projects completed in time. -Projects in use -Clients benefiting from the projects	-Effective and efficient results -Number of completed projects	Ordinal Nominal Ordinal Nominal	Questionnaire Questionnaire Interview Guide	Frequencies Percentages Qualitative and quantitative
To determine the influence of project plans in the completion rate of construction of sewerage system projects in Wajir County.	Influence of projects plans	Poor scope plan Poor budgeting Poor scheduling		Nominal	Questionnaire Interview Guide	Percentages Charts Tables Qualitative and quantitative
To determine the influence of socio-political factors on completion of construction of sewerage system projects in Wajir County:	Socio-political factors	Corruption Political patronage Undue political influence Lack of political goodwill		Ordinal Nominal	Questionnaire Interview Guide	Frequencies Percentages Qualitative and quantitative

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS

4.1 Introduction

The purpose of this study was to find out the factors influencing completion rate of construction projects in Wajir County, Kenya with the Wajir the modernization of sewerage system project forming the case study. Among the factors investigated included; project plans, funding, feasibility study, availability of personnel and the influence of socio-political factors. The study targeted the County executives, project managers and contractors within Wajir County whereby a sample of 58 respondents were selected. The data was presented in form of frequency tables, pie charts and percentages where applicable.

4.2. Response Rate

This study had targeted a total of 58 respondents which is computed as shown in table 4.1. However, due to the study limitations, only 50 responses were achieved which represented 86.2% response rate. This formed the basis for the analysis presented in this chapter. This is shown in table 4.1 below.

Table 4.1: Response Rate

Response	Percentage
Target Sample	58
Successful Responses	50
Missed Responses	8
Response Rate	86.2%

4.2.1 Respondents Position against Gender

Table 4.2 shows a cross tabulation of respondents position versus gender. The findings show that majority of the respondents (40%) were project managers with most of them being males as accounted by 32% of the respondents. Male project managers accounted for 8% as shown in table 4.2. Table 4.2 also shows that male respondents were 80% and female respondents were 20%.The disparity in gender is a clear indication that male are more conversant with project construction environment than their female counterparts hence the research findings were found to be reliable

Table 4.2: Respondents Position versus Gender

Respondents Position		Gender of the Respondents		
		Male	Female	Total
Contractors	Count	15	1	16
	% of Total	30%	2%	32%
County Executives	Count	8	2	10
	% of Total	16%	4%	20%
Project Managers	Count	16	4	20
	% of Total	32%	8%	40%
Others	Count	0	4	4
	% of Total	0%	8%	8%
Total	Count	39	11	50
	% of Total	78%	22%	100%

4.2.2 Respondents Position and Age Category

Majority of the respondents (40%) were project managers within the age category of 30 to 39 years as accounted by 18% of the respondents. These were followed by contractors who accounted for 32% of the respondents. Other details are as shown in table 4.3. Table 4.3 also shows that majority of the respondents were between the ages of 30 to 49 years as accounted by 86% of the respondents and few were in the age category of 20 to 29 years and above 50 years as accounted by 14% of the respondents. Age has direct bearing on individual involvement in construction projects since at the age of between 30 to 49 is when one energetic and productive enough to work in a construction project.

Table 4.3: Respondents Position versus Age category

Respondents Position		Age Category of the Respondents				Total
		20 to 29 years	30 to 39 years	40 to 49 years	Above 50 years	
Contractors	Count	2	4	6	4	16
	% of Total	4%	8%	12%	8%	32%
County Executives	Count	0	4	6	0	10
	% of Total	0%	8%	12%	0%	20%
Project Managers	Count	0	13	7	0	20
	% of Total	0%	26%	14%	0%	40%
Others	Count	1	2	1	0	4
	% of Total	2%	4%	2%	0%	8%
Total	Count	3	23	20	4	50
	% of Total	6%	46%	40%	8%	100%

4.2.3 Respondents Position and Duration of Construction Projects

Most of the respondents (40%) were project managers who had been involved in the construction projects between 3 to 5 years as accounted by 18% of the respondents. Those project managers who had worked for above 5 years accounted for 12% as shown in table 4.4. This shows that the key staff members were experienced with the construction projects since they have been in these projects for more than three years. Table 4.4 also shows that majority of the employees had worked with the projects for more than 3 years as accounted by 58% of the respondents and few had worked for less than three years as accounted by 42% of the respondents. This showed that most respondents were experienced to work in the construction sewerage project. Better results and experience are correlated since most respondents had more than three years working in the construction projects. Therefore the findings of this research were reliable.

Table 4.4: Respondents' Position versus Duration of Construction Projects

Respondents Position		Duration of Work					Total
		Less than 6 months	Between 6 months to 1 year	Between 1 to 3 years	Between 3 to 5 years	Above 5 years	
Contractors	Count	1	4	6	1	4	16
	% of Total	2%	8%	12%	2%	8%	32%
County Executives	Count	1	1	3	3	2	10
	% of Total	2%	2%	6%	6%	4%	24.4%
Project Managers	Count	1	2	2	9	6	20
	% of Total	2%	4%	4%	18%	12%	40%
Others	Count	0	0	0	1	3	4
	% of Total	0%	0%	0%	2%	6%	9.8%
Total	Count	3	7	11	14	15	50
	% of Total	6%	14%	22%	28%	30%	100%

4.2.4 Respondents Position and Highest level of Education

Majority of the respondents had attained undergraduate level of education as accounted 36% of the respondents. However most of the project managers had attained tertiary college education as accounted by 14% of the respondents. This is shown in table 4.5. This shows that most of the key personnel in the construction projects had attained a high level of education (that is; tertiary and university levels) as accounted by 96% of the respondents and few had primary level of education as accounted by 4% of the respondents. The higher the education levels of an individual the better management of construction projects.

Table 4.5: Respondents Position versus Level of Education

Respondents Position		Highest Level of Education				Total
		Basic Education	Tertiary	Undergraduate	Postgraduate	
Contractors	Count	1	8	7	0	16
	% of Total	2%	16%	14%	2.4%	32%
County Executives	Count	0	1	4	5	10
	% of Total	0%	2%	8%	10%	20%
Project Managers	Count	0	7	6	7	20
	% of Total	0%	14%	12%	14%	40%
Others	Count	1	2	1	0	4
	% of Total	2%	4%	2%	0%	9.8%
Total	Count	2	18	18	12	50
	% of Total	4%	36%	36%	24%	100%

4.3 Influence of Project Plans on Completion Rate of Construction of the modernization of sewerage system project

The first objective of this study sought to find out if project plans had any influence on the completion rate of construction of sewerage system project. The findings presented in table 4.6 and 4.7 show that majority of the respondents (90%) had the project plans prior to the construction and only 10% of the respondents said there was no project plans before construction project is done. This study established that most construction projects had plans in place. The respondents who were in agreement that there were plans, however were divided as far as how the project plans helped in the completion rate of the projects. 48.9% of the respondents (cumulative frequency for very helpful and helpful), 33.3% said that the plans were not helpful while 17.8% didn't know.

This shows that the completion rate of construction project is influenced by the planning. This therefore calls for the county government to plan for the projects before they are implemented to ensure the construction projects are delivered on time. Poor scope plan, poor budgeting, poor scheduling, poor resource utilization planning and poor logistics planning could be the major planning issues affecting the completion rate of the sewerage system the modernization of sewerage system project in Wajir County.

Table 4.6 Whether or Not there are project plans on Construction of the sewerage modernization project Projects

	Responses	Frequency	Percentage
Are there project plans (N=50)	Yes	45	90%
	No	5	10%
	Total	50	100%

Table 4.7 Whether or Not Project Plans are Helpful on the Completion Rate of Construction of the sewerage modernization project Projects

If the plans are helpful or not (N=45)	Very Helpful	10	22.2%
	Helpful	12	26.7%
	Not Helpful	15	33.3%
	Not Very Helpful	0	0%
	Do not Know	8	17.8%
	Total	45	100%

4.4 Influence of funding on the Completion Rate of Construction of the modernization of sewerage system project

The second objective of this study sought to find out if funding had any influence on the completion rate of construction of sewerage system project.

4.4.1 Major Sources of Income

The study established that Wajir County raises funds for the project through national government as accounted for by 72%. Other sources of additional funding are shown in table 4.7. This shows that most projects had strategies in place to obtain additional funding.

Table 4.8: Major Source of Income

Major source of income	Frequency (N=50)	Percentage
Through Donors	12	24%
Through fundraising	2	4%
Through national government	36	72%
Total	50	100%

4.4.2 Funding of the Projects Influence Completion Rate

The study found that project funding influences completion rate of construction project as all the respondents i.e. 50 (100%) were in consensus on this factor. This is consistent with Rahman (2013) study and he says financial stability of contractors and adequate cash flow is very critical in keeping construction progress as planned. Some project managers and county executives during a one on one interview with the researcher gave an example of stalled

projects like Wajir sewerage modernization project which was behind schedule. According to the respondents, the project was initiated in 2008 with an estimated budget of 1.5 billion but only 400 million had been raised. The same sentiments are supported in www.sabahionline.com (cited on June 25th 2014) by former Minister of State for Development of Northern Kenya and Other Arid Lands Mohamed Ibrahim Elmi.

"We expected the new sewage system to be in place by the beginning of 2013, but could not get funds to finish the project on time," Elmi told Sabahi. The project should be completed by august, 2014, depending on availability of funds, said the Minister.

The respondents were asked to indicate whether project funding influences completion rate. The results are shown on table 4.8 below.

Table 4.9: Project Funding Influence Completion Rate of Construction of the modernization of sewerage system project

Funding Influence	Frequency	Percentage
Yes	50	100%
No	0	0%
Total	50	100%

4.4.3 Rating Funding Levels Influence on Project Completion Rate of the modernization of sewerage system project

The respondents were asked to rate the funding levels influence on project completion of the sewerage modernization project rate. The study undertook to investigate the following funding levels of project completion rate: Adequate funding allocation, Sponsors play a key role on funding, Misappropriations of project funds, Irregular funds disbursement and late payment to contractors. The likert scale ratings were: Very Great = 5; Great = 4; Minor = 3; No Effect =; Not Sure = 1. The results are indicated on table 4.9.

The respondents ranked misappropriation of project funds and lack of adequate funding as the factors that would stall the completion rate of construction of the sewerage modernization project projects in Wajir County with 84% and 64% respectively had very great influence.

The role played by the sponsors other than the national government was rated at 48% very great influence while irregular funds disbursement and late payment to contractors has 28% and 14% respectively very great influence on completion of projects.

From the interview, the research found out that all respondents were of the opinion that financial procedures used in the disbursement of devolved funds, greatly affects the completion rate of the projects. Therefore, there is need for the government to streamline the financial procedures used to disburse funds to ensure that funds flow effectively to avoid delays.

Table 4.10: Project Funding levels influence Completion Rate of the modernization of sewerage system project

Statements	5	4	3	2	1
Adequate funding allocation enhances completion	64%	12%	8%	0%	16%
Sponsors play a key role on funding	48%	6%	18%	20%	8%
Misappropriations of project funds lead to delay	84%	0%	0%	0%	16%
Irregular funds disbursement	28%	36%	16%	12%	8%
Late payment to contractor	14%	18%	36%	28%	4%

4.5 Influence of Socio-Political Factors on Completion Rate of the modernization of sewerage system project

This study sought to determine how the social political factors interfere in completion rate of construction of the sewerage modernization project in Wajir County. Political interference manifests itself in form of political patronage, politician interfering with tendering procedures and selection of contractors.

From the study findings as indicated in table 4.11 majority of the respondents 37 (74%) indicated that there were no politicians interfering with completion rate of construction project with only 13 (26%) indicating that there were politicians interfering with completion rate of the projects. They indicated that politicians did not interfere with the construction projects though those who agreed said that politicians influence the tendering process of construction and selection of contractors. On further interview respondents disagreed that politicians attend tendering meetings and they invoke government policy on financial management of construction projects by allowing their cronies only in funds management.

Politicians also influence where the project should be constructed and due to lack of agreement, the project may stall for a long time thus delaying it. Since modern sewage system was constructed in town, it did not have much political interference because it benefited all communities. This study concurs with a study by George MisGigah (2010) on factors affecting timely completion of community projects in Nakuru County. He found that on political interference affecting the timely completion of community project, 50% of the respondents said that corruption greatly paralyzed the completion of the projects, 25% of the respondents said that political patronage caused the delay. This study concludes that the hypothesis on socio-political factors do not have influence on the completion rate of construction of the sewage modernization project. The findings were as indicated in table 4.11.

Table 4.11 Political Interference

If there is Political Interference	Frequency	Percentage
Yes	13	26%
No	37	74%
Total	50	100%

4.6 Influence of Feasibility Study on Completion Rate of Construction of the modernization of sewerage system project

The study sought to establish the influence of feasibility study as well as the people responsible in carrying out the feasibility study before commencing the project. According to majority of the respondents, feasibility study is a prerequisite before any project construction as accounted by 80% and 20% of the respondents disagreed.. The results are shown in table 4.12 below.

Table 4.12: Feasibility Study is a Prerequisite

Feasibility Study is a Prerequisite	Frequency	Percentage
Yes	40	80%
No	10	20%
Total	50	100%

4.6.1 Feasibility Study has Influence on Construction Projects

The respondents were asked to rate the extent to which they agreed or disagreed with the various stated statement as related to the influence of feasibility study on the completion rate of construction of the modernization of sewerage system project in Wajir County. A five-point scale (comprising of Strongly Agree, Agree, Neutral, Disagree and Strongly Disagree) was used and the findings are as presented in the table 4.11. The findings showed that majority of the respondents agreed with the following statements; poor feasibility study can stall the successful completion construction projects, poor feasibility study lead to wastage of resources for completion of construction projects., poor feasibility causes delays on completion of construction projects and as accounted by 78%, 74%, 80% (strongly agree and agree) cumulative responses. This shows that the feasibility study is important before construction of any project. This was a step forward toward faster completion rate of construction project. During the interviews, some respondents alluded to a case where Wajir County is on a water bed which is barely 20 meters from the ground. When modernization of the public toilet was done, the projects stalled because the sewage waste contaminated water used by the residence thus almost causing an epidemic in Wajir urban center forcing the ministry of public health temporarily stopping the project. These findings are in line with the documentary carried by NTV on 2nd February 2014 and was concluded that without feasibility study, construction projects would not be completed on stipulated time. The finds as well concurs with Kadir et al., (2005) where he says that poor coordination contributes to delay from estimated completion time. Poor site and lack of management may occur when contractors do not have enough experience of knowledge in managing the project team.

Table 4.13: Feasibility Study of construction projects

	Strongly Agree	Agree	Not Sure	Disagree	Strongly disagree
	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>	<i>%</i>
Poor feasibility study can stall the successful completion construction projects.	36%	42%	18%	2%	2%
Poor feasibility study lead to wastage of resources for completion of construction projects.	22%	52%	14%	8%	4%
Poor feasibility causes delays on completion of construction projects.	44%	36%	16%	0%	4%

4.7 Influence of Personnel on Construction Rate of the modernization of sewerage system project

The analysis was done based on the fourth objective of the study. The table below was set accordingly to help analyze the relationship between personnel and completion rate of the construction of the sewerage modernization project in Wajir County.

From the below table, 70% of the respondents said that people who work in the construction projects are not trained while 30% said that they are trained. The results shows that most of the employees who work on construction projects are not trained in any way concerning projects and specifically construction projects. This shows that hiring of personnel has not been part of the project teams in the county government and if so, it is yet to reach project localities. Most of the untrained workers were the casual labourers while other professional work had few trained employees. From the hypothesis testing, this research concurs with it that personnel influences completion rate of the construction of the modernization of sewerage system project

Table 4.14: Level of staff training

Level of Staff Training	Frequency	Percentage
Trained	15	30%
Not Trained	35	70%
Total	50	100%

4.7.1 Extent of Influence of the Personnel

The respondents were asked to rate the extent of influence of personnel completion rate of construction of the sewerage modernization project. A five-point Likert Scale (comprising of very small extent, small extent, undecided, large extent, very large extent) was used and the findings are as shown in table 4.16. The findings show that availability of semi & skilled labour helps to expedite the completion rate of construction projects, skilled labour provides quality completion of construction projects, lack of semi & skilled labour delays or stalls altogether the completion of construction projects and skilled labour saves wastefulness of resources during construction of projects were rated by majority of the respondents as accounted by 62%, 64%, 68% and 72% (large extent and very large extent) cumulative responses. This showed that engaging personnel in the construction of projects in Wajir had influence on completion rate. These findings are consistent with the literature review since this study found out that the shortage of manpower including skilled, semi-skilled and unskilled labour causes delays in construction projects (Sweiset al, 2008).

Table 4.15: Extent of the Influence of Qualified Personnel

	Very small extent	Small Extent	Undecided	Large Extent	Very Large Extent
Availability of semi & skilled labour helps to expedite the completion of construction projects.	20%	6%	12%	34%	28%
Lack of semi & skilled labour delays or stalls altogether the completion of construction projects.	6%	14%	16%	40%	24%
Skilled labour provides quality completion of construction projects.	10%	20%	2%	20%	48%
Skilled labour saves wastefulness of resources during construction of projects	4%	24%	0%	22%	50%

4.8 The Relationship among the Variables

The chi-square test was used to determine the relationship between independent and dependent variable.

The relationships between project plans, funding, socio-political factors, feasibility study and availability of personnel were thus tested. The reason for using chi-square was that it helps to determine the significance of the relationship between variables.

4.8.1 Hypothesis testing (one): Relationship between project plans and completion rate of the modernization of sewerage system project

H1: There is significant relationship between the project plans and completion rate of construction of the modernization of sewerage system project.

The Pearson of 12.8 at 3 degree of freedom is greater than 0.05, implying that the chi-square was significant and this indicated that there was a relationship between the project plans and completion rate of construction of the sewerage modernization project.

In summary, the data analyzed showed that the project plans had an impact on completion rate of construction of the sewerage modernization project. The results therefore pointed to the acceptance of the alternative hypothesis and rejection of the null hypothesis.

Table 4.16: Chi-Square Tests-relationship between the project plans and completion rate of the modernization of sewerage system project

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.320 ^a	3	12.8
Likelihood Ratio	1.243	3	.743
Linear-by-Linear Association	.132	1	.717
N of Valid Cases	50		

a. 0 cells (50.0%) have expected count less than 5. The minimum expected count is 1.12.

4.8.2 Hypothesis testing (two) Relationship between project funding and completion rate of the modernization of sewerage system project

H1: There is significant relationship between project funding and completion rate of construction of the modernization of sewerage system project

A Pearson chi-square test was conducted to examine whether there was a relationship between project funding and completion rate of construction of sewerage system project in Wajir County. The results revealed that there was significant relationship between the two variables (Chi square value = 2.485, df =1, $p = .115$) since the p value $> \alpha=0.05$, thus H_0 was rejected and H_1 accepted. This meant that project funding has an impact on completion rate of the construction of the sewerage modernization project in Wajir County?

Table 4.17: Chi-Square Tests-relationship between funding and completion rate of construction of the modernization of sewerage system project

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.485 ^a	1	.115		
Continuity Correction	1.359	1	.244		
Likelihood Ratio	2.504	1	.114		
Fisher's Exact Test				.217	.122
Linear-by-Linear Association	2.436	1	.119		
N of Valid Cases	50				

a. 0 cells (50.0%) have expected count less than 5. The minimum expected count is 3.08.

4.8.3 Hypothesis testing (three): Relationship between social political factors and completion rate of the modernization of sewerage system project

H1: There is significant relationship between socio-political factors and completion rate of construction of the modernization of sewerage system project.

P value in (figure 4.3) is less than 0.05 ($p = .2$) means there is no significant relationship between socio-political factors and completion rate of construction of sewerage system project in Wajir County. This therefore points to the rejection of alternative hypothesis and acceptance of null hypothesis. In a nutshell politicians had no impact on completion rate of construction of modern sewerage project. This was basically attributed to the fact that Wajir modernization of the sewerage system was done in urban center which served all the residents irrespective of social class, community and political affiliation hence no much interference.

Table 4.18: Chi-Square Tests-relationship between social political factors and completion rate of the modernization of sewerage system project

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.108 ^a	2	.20
Likelihood Ratio	.110	2	.183
Linear-by-Linear Association	.086	1	.169
N of Valid Cases	50		

a. 1 cells (50.0%) have expected count less than 5. The minimum expected count is 1.82.

4.8.4 Hypothesis testing (four) Relationship between feasibility study and completion rate of the modernization of sewerage system project

H1: There is significant relationship between feasibility study and completion rate of construction of the modernization of sewerage system project

The p of 0.279 at 1 degree of freedom is greater than 0.05, which implied that the chi-square was significant and indicated that there was a relationship between feasibility study and completion rate of the sewerage modernization project in Wajir County.

In summary, the data analyzed showed that prior feasibility study had an impact on the completion rate. The results therefore pointed to the acceptance of the alternative hypothesis and rejection of the null hypothesis.

Table 4.19: Chi-Square Tests-relationship between feasibility study and completion rate of construction of the modernization of sewerage system project

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.174 ^a	1	.279		
Continuity Correction	.418	1	.518		
Likelihood Ratio	1.327	1	.249		
Fisher's Exact Test				.406	.269
Linear-by-Linear Association	1.150	1	.283		
N of Valid Cases	50				

a. 0 cells (50.0%) have expected count less than 5. The minimum expected count is 2.24.

4.8.5 Hypothesis testing (five): Relationship between personnel and completion rate of the modernization of sewerage system project

H1: There is significant relationship between personnel and completion rate of construction of the modernization of sewerage system project

Pearson chi-square test conducted to examine whether there was a relationship between personnel and completion rate of construction of the sewerage modernization project in Wajir County and revealed that there was a significant relationship between the two variables (Chi square value = .008, df=1, $p = .929$) since the p value $> \alpha=0.05$, the research accept H_1 and reject the H_0 .

Table 4.20 Chi-Square Tests-relationship between of personnel and completion rate of construction of the modernization of sewerage system project

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.008 ^a	1	.929		
Continuity Correction	.000	1	1.000		
Likelihood Ratio	.008	1	.929		
Fisher's Exact Test				.000	.652
Linear-by-Linear Association	.008	1	.930		
N of Valid Cases	50				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.10.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of findings, discussions, and conclusion on the factors influencing completion rate of construction of the modernization of sewerage system project in Wajir County and makes recommendations for remedial measures, and closes by proposing other areas for further research.

5.2 Summary of Findings

The first objective was to determine the influence of project plans in the completion rate of the construction of modernization of sewerage system in Wajir County. The study established that it had influence on completion rates of construction of the modernization of sewerage system project. Almost 50% of the respondent agreed that project planning is a vital ingredient for successful completion of construction of sewerage system. Proper planning of scope, budgeting, scheduling, resource utilization and logistics help in speeding up completion rate of the sewerage system project. This finding concurred with the conclusions of a study by Amusan, (2009) which observed that that inadequate planning could lead to increase in rate of interest, commercial pressure, inflation and the potential of a construction project to result in disputed and claims leading to litigation or arbitration as a result of delay in completion.

The second object was to establish the Influence of project funding on the completion rate of construction of the modernization of sewerage system project. The study showed that project funding had a great influence on the completion rate of construction of sewerage system projects in Wajir County. This was attributed by the 100% response. National government was the highest donor of the projects with 62%. This study concurs with Chan et al, (2008) who stated that the most important cause of delays in the construction sector is financing by the sponsor during the project. The Chi-square testing rejected the null hypothesis and accepted alternative hypothesis. This is a manifestation that project funding are blood life of a construction project.

The third objective was to determine the influence of socio-political factors on the completion rate of construction of the modernization of sewerage system project in Wajir County. The study findings were that 74% of the respondents disagreed that socio-political factors had influence on completion rate of construction of the modernization of sewerage system project in Wajir County. While 26% agreed. Although the finding of Jameel (2009), Olusegun and Alabi, (2011) disagrees with this finding, the Wajir case was different because modernization of the sewerage system was done in urban center which served all the residents irrespective of social class, community and political affiliation hence no much interference.

The fourth objective was to find the influence of feasibility study on the completion rate of construction of the modernization of sewerage system project. The respondents agreed that feasibility study is a prerequisite on the construction projects. The study findings were in agreement with earlier research finding by Kazaz and Ulubeyli (2009), Kadir et al., (2005) and Enshassi et al, (2009), which found that feasibility study is the backbone of successful completion of construction projects. The study also found out that the feasibility study were done by people who had no background knowledge of the area of study as the demographic of Wajir water table is high and the feasibility study did not take that into consideration. This resulted in delays in the completion rate of the sewerage modernization project in the area.

The last objective was to find out the influence of personnel on the completion rate on construction of the modernization of sewerage system project in Wajir County. This finding concurred with the conclusions of a study by Wang and Hanim (2010) Sweiset al, (2008) and Yau, (2007) who indicated that shortage of manpower including skilled, semi-skilled and unskilled labour causes delays in construction projects.

This study concluded from the likert scale rating (table 4.13) by the respondents where cumulatively, over 60% of the respondents agreed on the statement posed to them about the influence of personnel on the completion rate of construction projects thus accepting the positive hypothesis.

5.3 Discussions

Data of this study was obtained through administering questionnaires to 58 respondents included county executives, project managers and contractors who were responsible for the construction of the modernization of sewerage system project in Wajir County. Research analysis was done using SPSS program to obtain frequency tables and percentages. Research findings revealed the following findings. Research findings revealed the following findings:

Project Planning, there was lack of proper planning for the project right from inception, which led to poor planning of scope, budgeting, scheduling, resource utilization and logistics thus resulting in project stalling time and again due to this factors. There was also no goodwill from the central government which is the main donor to make a follow up in terms of monitoring and evaluating the project progress with a view of accountability and compliance to ensure its completion. However, with the coming in of the devolved united of government, the project has been re-elevated, redrawn and proper measures that will ensure its successful completion put in place, hence giving the beneficiaries much hope and enthusiasm to abandoned the old fashioned bucket toilets for the ultra-modern sewerage system ever witnessed in Wajir urban center.

Project funding, misappropriation of project funds and lack of adequate funding was one of the major obstetrical that led to the sewerage modernization project in Wajir County stalling several time. The central government which was the mother donor left the project supervisions to the contractors and project managers thus leading to misuse of the little available funds allocated for the project by the same. The study found that government tendering system and its approach of giving free hands to the person or firms that won the tender to do what they wish to do without proper supervision and accountability led to corruption, laxity and inefficiency to ensure rapid completion of the project.

Social political factors, contrary to many scholars who carried studies on project completion rate and found that social political factors has negative impacts on the project, for example Jameel (2009), Olusegun and Alabi, (2011). However, this study established that in this project it had little impacts. These could be due to the fact that , the modernization of the sewerage system project was done in urban center which happen to serve all the residents irrespective of social class, community and political affiliation hence no much interference. However, the Pearson correlation accepted the negative hypothesis and rejected positive hypothesis.

Project feasibility study was done unprofessionally and there was very limited knowledge of the author of the study on the geography, terrain and demographic profile of wajir. These was depicted by the fact that the project stalled for several years because upon excavation of land 20 meters down the sewerage waste mixed with water used by the residence for their domestic purposes thus contaminating the whole water table in the township, prompting the public health officers to suspend the project development for some time. The study further established that the feasibility study was actually conducted from the desktop without visits to the work area.

Influences of personnel were found to have significant effects on the completion rates of a construction project. Similarly, Wang and Hanim (2010) Sweiset al, (2008) and Yau, (2007) found that that shortage of manpower including skilled, semi-skilled and unskilled labour causes delays in construction projects.

5.3.1 Summary of Discussion

Respondents were in agreement that the sewerage project had stalled for a long time because of poor planning and lack of adequate funding. Correlation analysis of the association between the dependent variable and independent variables provides deeper insight into the respondents' views. Strong correlation was revealed between the completion rate of construction of sewerage project and only four of the independent variables, namely, project plans, funding, feasibility study and personnel. Most of the literature reviewed does not specifically isolate the factors in terms of their relative importance. For instance, the literature reviewed that socio-political factors had influence on the construction on projects but this study rejected this objective.

Reasons for this situation may be attributed to unique characteristic of sewerage project since it was constructed in the urban center which was a prerequisite for all the residents. From this premise both of these factors may significantly differ from project to project depending on the construction site.

5.4 Conclusion

This study has established that construction project completion rate in Wajir County is faced with major challenges ranging from project planning, project funding, project feasibility, project socio-political factors and availability of skilled personnel.

Conclusion for project planning, the study established that inadequate planning led to premature depletion of resources, waste of time and energy thus negatively influencing completion rate of the modernization of sewerage system project.

The conclusion for the project funding on completion rate of construction rate of the modernization of sewerage system project in Wajir County is that lack of funds, under costing as well as inaccurate estimates causes project to derail, delay or even fail thus negatively impacting completion rate of the projects in the area.

The conclusion for socio-political factors on the completion rate of construction of the modernization of sewerage system project within Wajir County had no positive bearing. The devolved units being political offices the researcher anticipated greater political interference which would have negatively influenced completion rate of construction of the sewerage modernization project in the county. However due to the fact that Wajir urban center where the study is based happen to be the headquarter for all the constituencies in Wajir county thus the project benefits all the residents irrespective of social class, community and political affiliation hence no much interference.

The conclusion for the project feasibility study is that the study was not done professionally since factors such as demographic environment profiles such as soil content, and the level of water table were not factored in during the study, thus resulting in unnecessary delays in the completion of the modernization of sewerage system project in the area. The study further established that the project feasibility study was actually done from the desktop by people who had no background knowledge of the area of study nor visited the region during the study.

The conclusion for the availability of qualified personnel on the completion rate of construction of the modernization of sewerage system project in Wajir County is that skilled and educated personnel are needed to manage and spearhead plans and programs from the project initiation to completion cycle. Hence non availability of the professionals will negatively impact the completion rates of a construction projects.

5.5 Recommendations

Based on the findings and conclusions, the following recommendations were made:

To drastically reduce the effects of projects derailing, the county government should undertake an adequate planning for the project at inception and make sure that enough fund is available based on reliable estimate made by the Quantity Surveyor at the inception. Where funds from the national government is not enough for construction projects, they should source for funds from donors, fundraising and county taxation to add more revenue. The county government should engage services of competent construction professionals as well as competent employees to run the project. Once it's on, a mechanism should be put in place to see it to completion regardless of change of leadership. The government should also put in all efforts to reduce inflation and when there is change in political government, previously started project should not be abandoned for their new idea.

5.6 Suggestion for Further Research

Further research is needed to explore the problem on a large sample and also conduct similar study in other parts the country. The study also recommends further research to be carried on effect of participatory monitoring and evaluation on completion rate of projects. The study was focused in Wajir County which is a arid setting, therefore a similar research need to be carried out in semi-arid and wetlands areas to find out whether similar result would be obtained.

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APPENDICES
APPENDIX I: COVER LETTER

Dear Respondent,

RE: REQUEST TO RESPOND TO THE STUDY QUESTIONNAIRE

I am a student at University of Nairobi Mombasa Campus pursuing a Master degree in Project Planning and Management. As part of this course requirement, I am expected to carry out a research on **Factors Influencing Completion Rate of Construction Projects in devolved unit in Kenya: A Case of the Modernization of Sewerage System in Wajir County**. I therefore, humbly request for your assistance and cooperation in responding to the questions attached herewith. The information given will be treated with utmost confidentiality and will be used only for the purpose of the study.

Looking forward for your response and cooperation

Yours faithfully,

A handwritten signature in black ink, appearing to read 'Abdi Mohammed Daib', with a stylized flourish at the end.

ABDI MOHAMMED DAIB

APPENDIX II: RESEARCH QUESTIONNAIRE

Section A: Respondents' Profile

1. Kindly indicate your gender?

Female []

Male []

2. Respondents' Position:

a) County Executives []

b) Project Manager []

c) Contractor []

d) Others (Specify)

.....

3. Which one best describes your age bracket?

20 – 29 years []

30 – 39 years []

40– 49years []

Over 50 years []

4. How long have you been involved in the Construction projects?

Less than 6 months []

Between 6 months to 1 years []

Between 1-3 years []

Between 3-5 years []

Above 5 years []

5. Indicate the highest level of your education?

Basic Education (Pry & Sec) []

Tertiary []

Undergraduate []

Postgraduate (Masters/PhD) []

Others (Please specify).....

Section B: Lack of Project Plans Influence

- 6. Do you normally have project plans prior to construction of projects in your County?
Yes []
No []
- 7. How helpful are the plans to the project(s) that is/are to be undertaken in the County?
Very helpful []
Helpful []
Do not know []
Not helpful []
Not very helpful []

SECTIONC: Extent of Influence of Funding

- 8. How does your county raise funds for the projects?
Thro' Donors []
Thro' Fundraising []
Thro' Government []
Other (please specify).....
- 9. Does funding influence completion rate of construction projects in Wajir County?
Yes []
No []
- 10. Describe the magnitude of project funding levels in the construction projects you have been involved in.
Sufficient funds []
Intermittent Funding []
Funding in Phases []
Insufficient funding []
- 11. Indicate the level of extent of influence of funding on completion of construction projects in the County. React on the items provided by using the scale given. Please tick (√) appropriately.
5= Very Great
4= Great
3= Minor
2=No effect
1=Not Sure

Statements	1	2	3	4	5
Adequate funding allocation enhances completion of construction					
Sponsors play a key role on funding for completion of construction					
Misappropriations of project funds lead to incompleteness of projects.					

12. What advice could you offer on funding to enhance successful completion of construction of projects in the County?

.....
.....
.....

SECTION D: Influence of Feasibility Study

13. Is feasibility study a prerequisite before any project construction?

Yes []

No []

14. Who carries the feasibility study for County's projects?

Experts []

Politicians []

Quarks []

Others (specify).....

15. Indicate the level of your agreement or disagreement against every statement given below about the influence of poor feasibility study on completion of construction projects in the County. React on the items provided by using the scale given. Please tick (√) appropriately.

1=Strongly Disagree

2=Disagree,

3=Not Sure,

4=Agree

5=Strongly Agree

Statement	1	2	3	4	5
Poor feasibility study can stall the successful completion construction projects.					
Poor feasibility study lead to wastage of resources for completion of construction projects.					
Poor feasibility causes delays on completion of construction projects.					

16. What advice could you offer on feasibility studies to enhance successful completion of construction of projects in the County?

.....
.....
.....

SECTION E: Extent of Influence of Skilled Personnel

17. How is the labour force recruitment done for project construction?

Trained []

Not Trained []

Others (please specify).....

18. Indicate the level of extent of influence of availability of skilled personnel on completion of construction projects. React on the items provided by using the scale given. Please tick (√) appropriately.

1=To a Very Small extent

2=To a Small Extent

3=Undecided

4=To a Large Extent

5=To a Very Large Extent

Statements	1	2	3	4	5
Availability of semi & skilled labour helps to expedite the completion of construction projects.					
Lack of semi & skilled labour delays or stalls altogether the completion of construction projects.					
Skilled labour provides quality completion of construction projects.					
Skilled labour saves wastefulness of resources during construction of					

19. What advice could you provide on the use of skilled personnel in enhancing completion of construction of projects in the County?

.....

20. Indicate the influence of the following factors on completion of construction projects in the county. React on the items provided by using the scale given. Please tick (√) appropriately.

- 1=To a Very Small extent
- 2=To a Small Extent
- 3=Undecided
- 4=To a Large Extent
- 5=To a Very Large Extent

Statements	1	2	3	4	5
Funding significantly influences completion of construction projects.					
Poor feasibility study significantly influence completion construction projects.					
Availability of skilled labour significantly influences completion of construction projects.					

SECTION F: EXTENT OF POLITICAL FACTORS

21. To what extent do politicians take part in project identification in this county?

Great extent [] Some Extent [] Never Involved []

22. Do politicians take part in costing of the project?

Yes [] No []

23. Does local politics interfere with the completion rate in construction of projects in this County?

Thank You for your participation...

APPENDIX III: INTERVIEW GUIDE

This interview is designed to gather information on the ongoing research to seek your opinion on the factors influencing completion rate of construction projects in Wajir County. Your opinion will be treated with a lot of confidentiality. This information is purely for academic purposes.

1. What is your position in this county?
2. How old are you?
3. How long have you been involved in the Construction projects?
4. What is your highest level of your education?
5. Do you normally have project plans prior to construction of projects in your County?
6. How helpful are the plans to the project(s) that is/are to be undertaken in the County?
7. How does your county raise funds for the projects?
8. Does funding influence completion rate of construction projects in Wajir County?
9. Describe the magnitude of project funding levels in the construction projects you have been involved in.
10. What advice could you offer on funding to enhance successful completion of construction of projects in the County?
11. Is feasibility study a prerequisite before any project construction is done?
12. Who carries the feasibility study for County's projects?
13. What advice could you offer on feasibility studies to enhance successful completion of construction of projects in the County?
14. How is the labour force recruitment done for project construction?
15. What advice could you provide on the use of skilled personnel in enhancing completion of construction of projects in the County?
16. To what extent do politicians take part in project identification in this county?
17. Do politicians take part in costing of the project?
18. Does local politics interfere with the completion rate in construction of projects in this County?

Thank You for your participation...

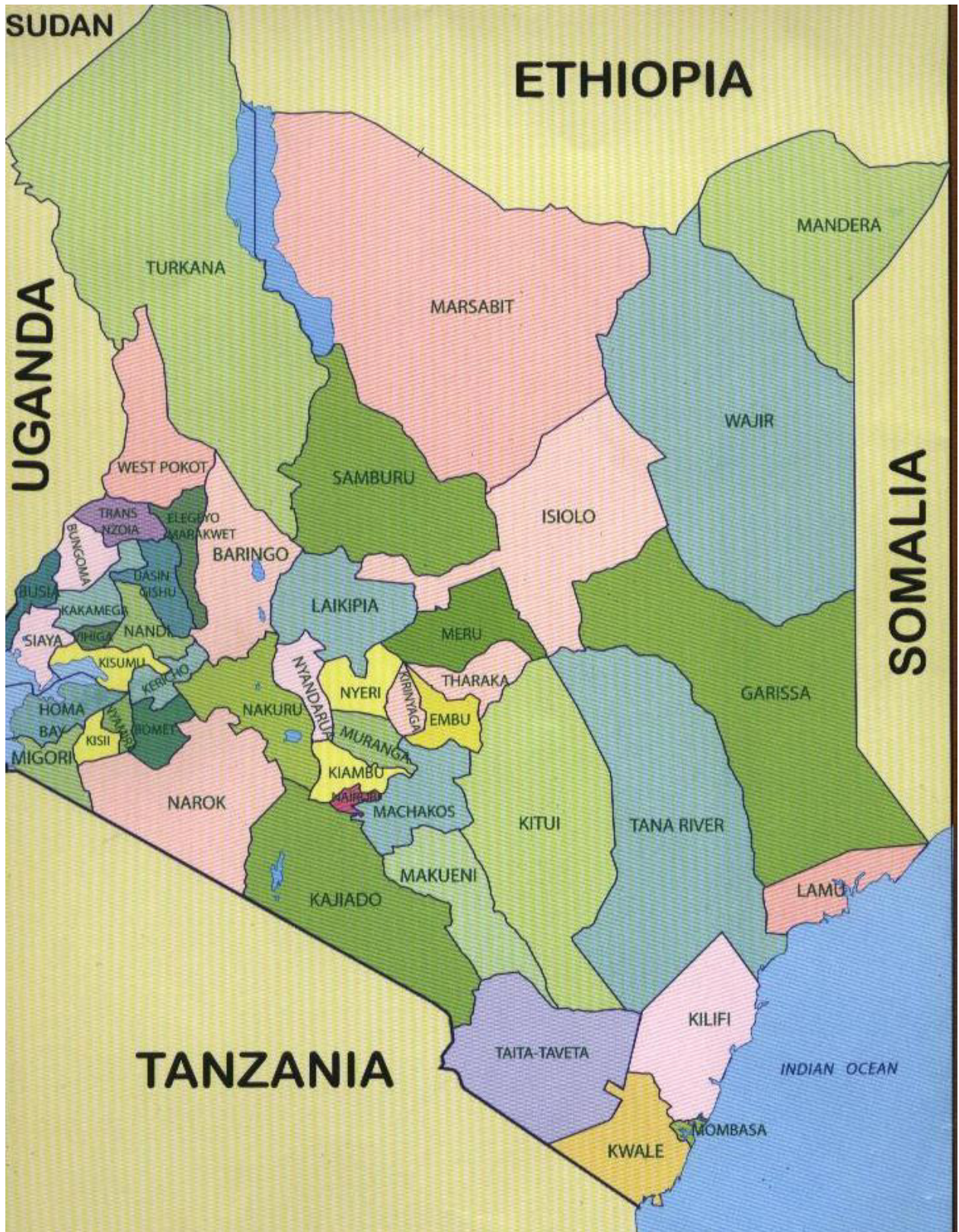
APPENDIX IV: TIME SCHEDULE

Activity/ time	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Searching and Revising								
Writing proposal & Presentation								
Data collection								
Data analysis & Report Writing								
Report Defense								

APPENDIX V: BUDGET

No.	Activities	Unit Amount	Quantity	Total Cost Kshs.
1	Transport to the field	5,000	10 Trips	50,000
2	Stationeries	2,000	5 Reams	10,000
3	Typesetting, printing and binding, photocopying	15,000	-	15,000
4	Meals and breakfast	500	20 meals	10,000
5	Telephone calls and e-mails	55	100 Calls	5,500
6	Contingency expenses	30,000	-	30,000
	Total			120,500

APPENDIX VI: MAP SHOWING WAJIR COUNTY



APPENDIX VII: MAP SHOWING WAJIR COUNTY URBAN CENTRE

