ASSESSMENT OF THE FACTORS CAUSING DELAY IN COMPLETION OF ROAD CONSTRUCTION PROJECTS IN TANZANIA: A CASE OF TANZANIA NATIONAL ROADS AGENCY

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A DESSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PROJECT MANAGEMENT

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Open University of Tanzania a dissertation entitled: ***"Assessment of the Factors Causing Delay in Completion of Road Construction Projects in Tanzania: A Case of Tanzania National Roads Agency",*** in partial fulfilment of the requirements for the degree of Master in Project Management of the Open University of Tanzania.

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Dr. France Shayo

(Supervisor)

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Date

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DECLARATION

I, **John Charles Egina**, do hereby declare that this Research paper will be my own original work. It has will not be presented to any other University or High Learning Institutions for a similar or any other degree award.

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Signature

……..……..……

Date

DEDICATION

This work is dedicated to my beloved father Mr. Charles Mosamba Egina and my mother Ms. Monica Mathayo whose understanding on the importance of education laid the foundation to my schooling, since they enabled me to see the light, value and force of knowledge and showed me how to walk in life. This study is also dedicated to my beloved Spouse Ms. Kuruthumu Ziadi and our beloved daughters Michelle John Egina and Catherine John Egina for their continued prayers and moral support. Without forgetting my beloved sister Winnie Egina.

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Foremost, i would like thank the Almight God; the head of my life for keeping me healthy, full of strength and alive with all the challenges till the completion of this report. Also for the unmeasurable blessings that he has given me.

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ABSTRACT

Construction industry particularly road sector plays a vital role in the development of any country. Most construction projects especially in developing economies usually suffer delay in completion as the schedule surpasses the initial outlined contract duration. The outcome of such delays can lead to negative multiplier effect in the economy. The main objective of the study was assessing the factors for delay of road construction projects in Tanzania. The study mainly focused on the specific objectives of external, contractor-related, and client-related factors and how they influence the delay in completion of road construction in Mtwara Region, Tanzania. The study deployed the descriptive research design, and the survey was conducted in TANROADS Mtwara in which targeted population involved Road Contractors, Consultants, road users, and Supervisors such as Road Inspectors, Technicians and Engineers involving in road construction projects from Mtwara region. The sample obtained included 90 respondents out of 300 from targeted population who were determined through simple random sampling. Data were collected through the use of questionnaires that composed of both structured and unstructured questions. Data were analysed using SPSS version 20, to establish a causal relationship between the independent and predicted variable. Based on the report findings, inadequate supervision has deterred timely completion of projects. Therefore the study recommends that construction companies to adopt modern databases to improve control and supervision tools to guide the project operations and using analytics software which correlate present data and predict future variations hence enabling decision making.

Keywords: Factors Causing Delay in Completion of Road Construction Projects in Tanzania

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CAG	Control and Audit General

OUT	Open University of Tanzania
TANROADS	Tanzania National Roads Agency

CHAPTER ONE

INTRODUCTION

1.1 Background to the Problems

Construction indurstry particulary road sector plays a vital role in the development of any country. Most construction projects usually suffer delay and surpass the outlined contract sum (World Bank, 2014). The outcome of such overrun can lead to abandonment of a project. Projects are supposed to run continuously without delays and the responsibilities to keep this check lies to project managers and other stakeholders who are directly linked with the project.Azha et al (2008) conducted a study in Pakistani and revealled that delays on construction projects are a universal phenomenon because the trend of time and cost overrun is common worldwide and it is more happening in developing countries.

World Bank (2014) stated three major benefits which are brought by sustainable infrastucture such as; they induce stractural changes which influences production, they reduce cost during production process and also they contribute to to sources of income and better income levels. Whoever, In most countries especially Less Developed; raod construction sector has been faced with a major problem of delay in delivery.

Road sector is very important in the economy of any nation due to the impact it brings on the welfare of its citizen and the national income as well. Road sector promotes the

movement of factors of productions such as Capital, labour, land and entrepreneurship respectively.

The importance of road sector is propound by the fact that transportation sector plays a major role in promoting socio-economic development of a country. Construction industry in includes real estate, transportation infrastructure and other civil works. In United States of America road construction sector is facing challenges such as lack of financing, over costs and concerns about potential delays that impacts the project (Chism &Armstrong, 2010). According to Fapohunda & Stephenson (2010), who carried a study in United Kingdoms identified poor efficiency from project managers, time management which has been caused by ineffective schedule for project for project delivery as the factors causing delay in Road construction sector.Delays in completion of road construction projects often occur due to poor project management related to project owners, contractors and consultants (Sweis et al, 2008).

According to McNair (2011) who conducted as study in Australia argued that up 30% of road projects fail due to weather situation that faced the desert continent betweeen 2000 to 2005. He also stated that, political indifference, financial constraints caused by economic crisis of the Millenium and contractors have limited chance of claiming additional money to the circumstance where the project company has ordered the variation of the work. According to Hussin & Omran (2011) who carried a study in Malaysia stated that road construction projects encoutered delays during execution.

Al-Momani (2000) investigated causes of delay in 130 public projects in Jordan and identified factors such as user changes, weather, site conditions, late deliveries, economic conditions and increase in quantity (i.e. poor design and negligence of the

owner, change orders, weather condition, site condition, late delivery, economic conditions, and increase in quantities) to be the main causes of delay of road construction projects. Gohou & Soumaré (2010) identified themain causes of project delays which include poor financial management by clients, inadequate designs, and poor management of the construction process by the parties involved in project implementation.

Road construction projects tend to delay in south Africa just like other countries in the world (Ahmed et al, 2012). In their study in Johannesburg they stated that most of road construction projects are accompanied by cost and time overruns which affect all parties such as owners, contractors and consultants. Karim & Marsszeky (2012), conducted a study in Soweto, South Africa and concluded that 45% of road construction projects were not completed on time between 2004 to 2009 due to factors such as political instabilities, poor governance, corruption and low level of technology.

Seven out of ten projects suffered cost and time overrun due to lack of financial commitments of the contractors due to lack of capacity (Fugar & Agyarkwa, 2010). Delay of construction projects is affected by high level of corruption among local Chiefs, Governors, NGOs and the Government(Chiota, 2011). In his study he stated that up to 60% of road projects have failed to meet deadlines due to corruption during processes of awarding contracts, misuse of funds, lack of expertise during selection and poor technology.

In his writing Kimemia (2015) who conducted a study in Kenya obsersed that road construction industries is affected by factors such as lack of financial and capital base, lack of managerial skills to adequately face that encounters the projects during excution. Delay in implementation of road constuction projects in Kenya Coast areas is caused by colonial mentalities and attitudes which were left by Arabs and Portuguese who made the Regions depend on ideas of the masters, rejection of new technologies and religious repulsion among themselves (Waihenya J. W, 2011).

Kenya National Bureau of Statistics (2012), conducted a study in the coast region's development projects undertaken by the Government and observed that 47.5% of the road projects who get funded by the Kenya Roads Board have never been completed in time from 2004 to 2012 due to various factors such as contractual agreements and funding criteria between the parties. Most of the road projects in Kenya delay due to factors such finances and political intrigues between the Governmentg and Donors (World Bank, 2014). Corruption and embezzlement of funds are the factors affecting projects that are under the Kenya National Highways Authority (Ndegwa, M.K 2013). Majority of road infrastructure in Kenya do not get completed within the initially set targets of time (Seboru, 2015).

The financial management skills among or within the road sector industry is not well practiced in Tanzania (Kamwelwe, 2009). He revealed that lack of basic skills in financial management which implies the existence of illiteracy in financial management in road projects as the factors affecting the road industry. According to Albert (2009) factors contributing to projects delay in Tanzania include variation of

quality and cost of construction materials; change in labour including plant costs; inadequate planning; inadequate design of projects; variation orders issued by clients and unforeseen circumstances due to third parties.

Simon (2017) revealed that officials, contractors, consulting firm, politician's interference, poor management of the construction process, inadequate designs, resources availability and contractual relations as the causes of delay of road project in Tanzania.Design changes, delays in payments to contractors, information delays, poor project management, funding problems and disagreements on the amounts of work done and effects – time overrun, cost overrun, disputes, and other negative impacts (Kikwasi, 2012).

It was revealed that the outstanding claims were caused by under release of funds by the Ministry of Finance and Planning; that eventually inhibited TANROADS to pay the contractors on time and consequently resulted to slow progress of works as well as escalation of project cost due to interest charges (CAG, 2019). He stated that contractors and consultants had claims amounting to TZS 1.03 trillion as at November 2019 due to late payment of interim payment certificates. Construction projects relating to roads and airports at TANROADS has revealed significant overdue claims which lead to delays and escalation of project costs due to interest charges to claimants.

This study aimed to asssess the factors such as contractor related, client related and external factors relative to their influence on delay in completion of road construction projects. Through this study, an in depth insight was envisaged onthefactors causing delay of delivery in road construction projects which affect socio-economic

development of the country. This research will be significant because the knowledge that will be generated from it will assist planners during policy formulation by relevant authorities in project planning process and implementation.

The research was guided by the Contingency and General Systems theories respectively.The contingency theory of leadership was proposed by the Austrian psychologist Fred Edward Fiedler in 1964. This theory emphasizes the importance of both the leader's personality and the situation in which that leader operates. The theory provides data on leadership styles that could be useful to organizations in developing leadership profiles for project planning. The General Systems theory was developed by Ludwig von Bertalanffy between 1930’s and 1940’s and furthered by Ross Ashby (1964) whereby it states thatthat a system is a complex of interacting elements and that they are open to, and interact with their environments.

1.2 Statement of the Research Problem

Road projects are funded by the Tanzania Government through the Road Fund Board or consolidated fund form the ministry of Finance. These projects also are funded jointly by the Government of Tanzania and Development partners. The development partners funding road projects in Tanzania are World Bank, African Development Bank, European unions, OPEC, JICA, KOICA, BADEA and development partners states like Japan, Norway, Kuwait, Denmark (Mlinga, 2016). The Government is the main financier of road infrastructure development in Tanzania. This financing comes from three main sources; the Tanzania Road Fund, Donor Fund, and Consolidated Fund.

The Ministry of Works, Transport and Communication is responsible for overseeing Tanzania's transportation sector, with the mandate to provide affordable, safe and reliable transport systems to meet public needs. The ministry is responsible for managing activities including contracting, engineering, designing, building materials research and development, environmental impact studies and human resources development. The Tanzania National Roads Agency (TANROADS) as one of the agencies under the MWTC is responsible for the development of trunk and regional roads. TANROADS has been tasked with creating new routes and rehabilitating existing roads while the progress has so far been gradual (TANROADS, 2017).

Despite huge investments the Government of Tanzania is putting in road infrastructure development; the successfulness of some road projects remains of main questionable because there are not been completed in time (Mlinga, 2016). Examples of road projects which have not been completed in time in Mtwara Region include Routine Maintenance (41.5km -paved) and Bridge Preventive along Mtwara –Mtegu Trunk road of financial year 2019/20 which is executed by M/s LAS Construction Company Limited; Routine Maintenance (48.33 unpaved), Routine Maintenance (5.5km paved) and 3 Bridges Preventive Maintenance along Mpapura- Mikao- Kinolombedo Road of financial year 2019/20 which is executed by M/s KIWEHA Construction Company Limited; and Upgrading to Bitumen standard of Mtwara – Mnivata road section (50km)of financial year 2016/17which is executed by M/s Dott services Limited.

According to Zietlow & Bull (2001) projects solely funded by the Government of Tanzania do not get completed in time because those funds are timely released of funds due to lack of enough budget. Major causes of delay in completion of road

construction projects in Tanzania include shortage of fund, high price of construction and Extreme weather and inadequate feasibility study Majority (Mlinga, 2016). Time overrun, Cost overrun, Delaying in getting profit by clients, Create stress on contractors, Disputes and Arbitration are the main effects caused by delay in completion of road construction projects in Tanzania (Simon, 2017). According to Mlinga (2016) Supervisory units of the Ministry responsible for development of road infrastructure and its agencies should make sure that the allocated funds are used to the entire project and completion of project on time.

The previous studies have envisaged on different causes of delay in completion of road construction projects, which include poor management, environmental, factors and corruption but categorical analysis on their classifications remains scant. Thus, this study aimed to assess the influence of three categories of delay factors namely; contractor-related delay factors, client-related delay factors and external factors and their influence in delay of completion of road construction projects. This study will benefit planners, contractors, project managers and supervisors on how to overcome the challenges hindering smooth excution of road construction projects.

1.3 Objective of the Study

The main objective of this study is to assess the factors for delay of road construction projects in Tanzania. Specifically, this study intends to do the followings:

1.3.1 Specific Objectives

(i) To determine the influence of contractor-related factors cause delay in completion of road construction projects.

(ii) To determine the influence of client-related factors on delay in completion of road construction projects.

(iii) To determine the influence of external factors on delay in completion of road construction projects in Tanzania.

1.3.2 Research Questions

(i) To what extent docontractor-related factors causes delay in completion of road construction projects?

(ii) In which ways doclient-related factors cause delay in completion of road construction projects?

(iii) What is the influence of external factors on delay in completion of road construction projects in Tanzania?

1.4 Scope of the Study

This study particularly focused on the roads projects that are still under construction which have not been completed within the projected time. All these projects are managed by Tanzania National Roads Agency in Mtwara Region in the past five years (2015-2020).

1.5 Significance of the Study

This study will be very important to professionals like Engineers, Technicians, Architects, Surveyors, Site Agents and Project Managers because it will provide mechanisms and skills which will be vital for successful completion of the projects within the scope of planned period.

It will also help the Government to be aware of the factors that cause delay in completion of road construction projects so that they can find important ways of addressing such factors in order to promote efficiency in executing the projects by applying the findings which will be gathered from this study.

1.6 Limitation of the Study

In attempt to carry out this study, the researcher anticipated to face several challenges during gathering information such as poor cooperation from respondents. It was expected that; strong opposition may rise when trying to investigate the reasons casing delay of road construction projects especially from TANROADS officials due to concealment of some strategic factors caused by agency. Therefore the researcher obtained a key informant who offered further insights on the subject matter.

1.7 Delimitation of the Study

This study delimits itself to road construction projects under Tanzania National Roads Agency (TANROADS) in Mtwara Region. This study considered some projects from Mtwara Region that were not been completed within the agreed contract period. Some

of these projects include; Routine Maintenance on Mkungu– Masasi Trunk Road (68.9km Paved) and Bridge Preventive Maintenance, Routine Maintanane on Masasi – Mangaka Trunk Road (54km Paved) and Mangaka – Mtambaswala, Periodic Maintenance 3.0km Paved and Spot Improvement 6.0km Along Mtwara – Mtegu Trunk Road; and Periodic Maintenance and Bridge Major Repairs on Mkungu – Masasi. These are outstanding projects, which were supposed to be complete in the financial year 2018/19.

In spite of the fact that delays in completion of road construction projects can be caused by several factors, this study will only consider the influence of client related, external and constructor related factors on road projects in Mtwara Region. Thus; the findings from such a small sample may not be generalized to all Regions in Tanzania.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This part summarizes the literature that exist regarding the factors causing delay in road construction projects in the World and Tanzania with Mtwara Region be a specific case study area. It provides an overview of previous researches, studies and works on related topic and provides the background for the purpose of this research. This chapter includes Conceptual definitions; Theoretical literature review; Empirical literature review; Research Gap and Conceptual framework.

2.2 Conceptual Definitions

2.2.1 Project

A project is a temporary endeavour undertaken to create a unique product, service, or result (PMBOK, 2015). The temporary nature of projects indicates that a project has a definite beginning and end. The end is reached when the project's objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists. A project may also be terminated if the client (customer, sponsor, or champion) wishes to terminate the project. Temporary does not necessarily mean the duration of the project is short.

It refers to the project's engagement and its longevity. Temporary does not typically apply to the product, service, or result created by the project; most projects are undertaken to create a lasting outcome. It is an overall task, which has a definable beginning and definable end, it consists of a number of related and dependent activities, all of which utilize resources and upon which there are imposed internal and external conditions.

2.2.2 Delay

According to Pickavance (2005), delay refers to something happening at later time than planned, expected, and specified in a contract or beyond the date that the parties agreed upon for the delivery of the project. The delay referred to in this study is the failure of government road construction projects to meet standards, to reach target group, cost and time overrun.

2.2.3 Construction projects

According to Mbaluku&Bwisa (2013) Construction projects (CPs) are a mix of very complex processes that seldom go according to the implementation plan. Project implementation is the stage where all the planned activities are put in to action, the project is produced and the performance capabilities are verified. A project is considered to be successfully implemented if it comes in on –schedule, comes in on budget, and achieves basically all the goals originally set for it and is accepted and used by the clients for whom it is intended.

2.3 Theoretical Literature Review

In establishing an in-depth understanding of relationship between variables, this study was guided by the Contingency and General Systems theories respectively.

2.3.1 The Contingency Theory

This theory was developed by Fred Edward Fiedler who stated that; when managers make a decision, they must take into account all aspects of the current situation and act on those aspects key to the situation at hand (Couto, 2007). Project Management Insitute (2012), suggested that organizations should adopt project-specific core principles in managing different projects as their complex nature canot rely on the routine maagement strategies to deliver the expected results. Accoring to Sawega (2015), construction project should be managed according to its specific characteristics and environment because of its own complexities.

The contingency theory acknowledges the existence of this aspect thus attempts to identify practices that best suit the unique demands of different projects. The contigency theory rejects the idea of one best way to manage projects because of the varying management situations. The contingency theory takes into account the interaction and interrelation between the organization and the environment (Mutem et al, 2013). Sauser *et al* (2016) suggest that when project fail to be completed in time is not a result of technical glitches but rather managerial decisions throughout the project life. Considering diverse issues and complexities involved in construction projects, management should focus on both internal and external factors that may influence the project. Implying that decision making is not uniform but require flexibility and customization depending on the specific milestone or challenge arising in the process (Hosny, 2010).

Considering that project completion within required time is a hard task, organizations adopt the contingency theory in order to attain set objectives efficiently. The theory empahisizes on time-critical principal where by decison making should be timely to avoid delays (Bubshait & Selen, 2012). Furthemore, crisis project where solutions should be immediately provided irrespective of the magnitude of the challenge. In relation to changing macro economic indicators the organization should be constantly adopting new market patterns in order to conter possible changes that may affects the organizatio (Yeo, 2014). It can be in form of new technology, change in government policies, and change in designs, among others. Implying that flexibility of the highest level is required in order to ensure alternative solutions are provided in different and

complex situations during the operations of the project to ensure delays are kept on check.

2.3.2 The General Systems Theory

System is a collection of parts unified to accomplish an overall goal whereby, if one part of the system is removed, the nature of the system is changed (Von, 1971). Road construction projects can also be viewed as systems because they are accompanied by inputs, processes and outputs. In order for a project to succeed the system variables should be brought together because they dependent on each other. The failure of different parties to a project to work seamlessly leads to infighting that eventually derail the completion of a project (Memon et al, 2013).

The theory is guided by core principle that an organization is not a closed sytem but rather an open system which relies on the external enviroment in attaining its objectives. The theory classifies three levels of organization; the systems operating the organization, human resources and external enviroment. Implying that human resources and systems can be comporomised by external influences therefore intergation of these three levels is vital (Hofkirchner, 2007).Considering the supplies and the market originate in the external eneviroment, intergrating of activities between the relevant stakeholders in the value chain to organization's is of utmost importance. This ensures variations in the external environment can be tracked earlier and therefore reduce negative implications in the operations of the firm (Poole,2014).

In management of road constructionprojects, the systems theory is significant in understanding how to approach the potential delays in completion of the project relative to external environment. The theory emphasizes the importance of intergration and coordination between each stakeholder, external environment, component, process and department involved in the operations of the projects (Brummans *et al*, 2014). It requires coordination between activities in a way that flaws, technical glitches, materials shortages, and revised cost estimations are communicated to all required hiearachies (Chikere & Nwoka, 2015). This in turn ensures all the activities are running smoothly since they are inter dependent therefore timely completion of the project is guaranteed.

2.4 Empirical Literature Review

Delay refers slowing down of work without stopping construction entirely and that can lead to time overrun either beyond the contract date or beyond the date the parties have agreed upon for the delivery of the project (Fung et al, 2006).Delays are classifed into four categories such as non-excusable, excusable non-compansable, excusable compansable and concurrent respectively (Syed et al, 2002). Non-excusable delays are those which are either caused or assumed by the contractors. Excusable non-compansable delays are those causes by factors that are not fereseable, beyond the contractor's reasonable control and not attributable to the contractor's fault or negligence.

Excusable non-compensable delays are those causes by factors that are not foreseeable, beyond the contractor's reasonable control and not attributable to the contractor's fault or negligence. Compensable delays are those, which are excusable

because they have been caused by the act of the owner resulting from breach of an obligation stated in the contract. Concurrent delays are those, which occur when both parties such as owner and contractor are responsible for such delay.

Dawood (2011) made a study pertaining construction projects in United Kingdom by using questionaire survey. The factors causing delay in construction projects were ranked using the scale of freequency of occurrence and severity respectivly. The study revealed that, construction projects in developing countries sucffer more delay thn developed countries due to lack of technology. A survey conducted by Mahamid (2013) on time pefromance of different types of construction projects in Saudi Arabia revealed that; 70% of projects experinecd time overrun such as 53 out of 76 projects.

Kumar (2016) stated various causes of delay of construction projects such as; delay in progress payments, delay to furnish and deliver the site, late in approving shop drawings and sample materilas, slowness in decision making process, bureaucracy in client's organization and un availabiltiy of professional construction management, poor estimation of project time and quantities of material required before contracting, often changing of project shcedule, fraudulent practices and kickbacks, inadequaete contractor's experience and also poor risk management and ignorance, rework due to errors during construction, change in material type during construction, weather, climate and rain effects on construction activities, civil unrest and public stricks and change in government regualations and laws.

Gaba(2013) argues that government construction projects are facing hindering factors such as corruption, poor financial management and limited financil resources. CAG

(2010) highlighetd some major factors facing road constructionsector in Tanzania such as cost overrun, time management, weakness in quality control.

2.4.1 Causes of Delay in Road Construction Projects

Kumaraswamy & Chan (1998) conducted a Research survey in Hong Kong to evaluate the significant factors, which are responsible for delays in construction projects. They highlighted the main causes of delays in to be poor site management and supervision, unforeseen ground conditions, low speed in decision making, client initiated variations.

Sambasivan & Soon (2007) survey the causes of time overrun in Malaysia construction projects and revealed important causes of delay such as; lack of communication between parties, poor site management, improper planning, inadequate contractor's experience, inadequate client's finance and payment for completed works, shortage of materials, equipment availability and problems with subcontractors.

The establishment of TANROADS has brought significant improvements on completion within planned time and budgeted cost in Tanzania comparing to projects with had been implemented under the ministry of works (Albert, 2009). Through his study he revealed some factors causing delays in construction projects to be inadequate planning, inadequate design of projects, variation orders and unforeseen circumstances.

2.4.2 The Effects of Delay in Road Construction Projects

Schedule overrun in road construction projects the effects such as; reduced quality assurance, decrease in owner's commitment, negative social impacts and safety issues (Denini, 2009). Haseeb et al (2011) highlights some effects of delays in Pakistani to be counter claims and slowing down in growth of construction sector. Kikwasi (2012) identified effects of delay in road construction projects in Tanzania such as; idling resources, negative social impact, bankruptcy, stress created on contractors, poor quality of workmanship and delay by the client to return the loan.

2.4.3 The Remedial Measures of Delay in Road Construction Projects

Ade-Ojo & Babalola (2013) state some measures to be considered in order to control delays in road construction projects such as; prompt payment, accurate design, financial capability of client and contractors, favourite site condition and availability of subcontractors. Effective planning, adequate funding to finance projects to completion, ensuring that the parties play their vital roles in project implementation are the most effective ways to minimize schedule overruns on construction projects (Sambisav and Soon, 2007).

According to Sadi et al (2006) the following factors should be considered in order to control delays in construction projects: client should give special attention to the payment regime so that contractors are paid in time, check for adequacy and availability of resources and capabilities and avoid uncalled for reviewing and approving of design documents than anticipated. He argues that consultants should be flexible in reviewing and approving of design documents. Also architects and

engineers should produce designs documents on time and avoid discrepancies during the process.

2.5 Research Gap

Most of the researchers have identified some factor which cause delay in completion of road construction project. Among of the factors identifies include political indifferences, economic factors, poor governance,misuse of funds, lack of expertise during selection and poor technology. The authors have explained how other factors can affect the completion in construction of road project but did not state categorically how various classifcations of delay factors can distort timely completion of road construction. Hence, among other aims, the study focused on addressing the identified gaps and provide more knowledge on how External, contractor, and client related factors can cause major delay in completion of road construction projects.

2.6 Statement of Hypothesis

H_1 There is a positive relationship between contractor-related delay factors and completion of road construction projects.

H_2There is a positive relationship betweenclient-related delay factors and completion of road construction projects.

H_3There is a positive relationship betweenexternal delay factors and completion of road construction projects.

2.7 Conceptual Framework

The conceptual framework underlines a number of factors that determine the degree at which the road construction projects are completed. In this study the dependent is the delay in completion in road construction projects in the construction industry. Independent variables are the factors that interact to bring this influence on the dependent variable. Independent variables include contractor related factors, client related factorsand externalfactors, respectively. Figure1 shows the relationship between dependent variable and the independent variables.

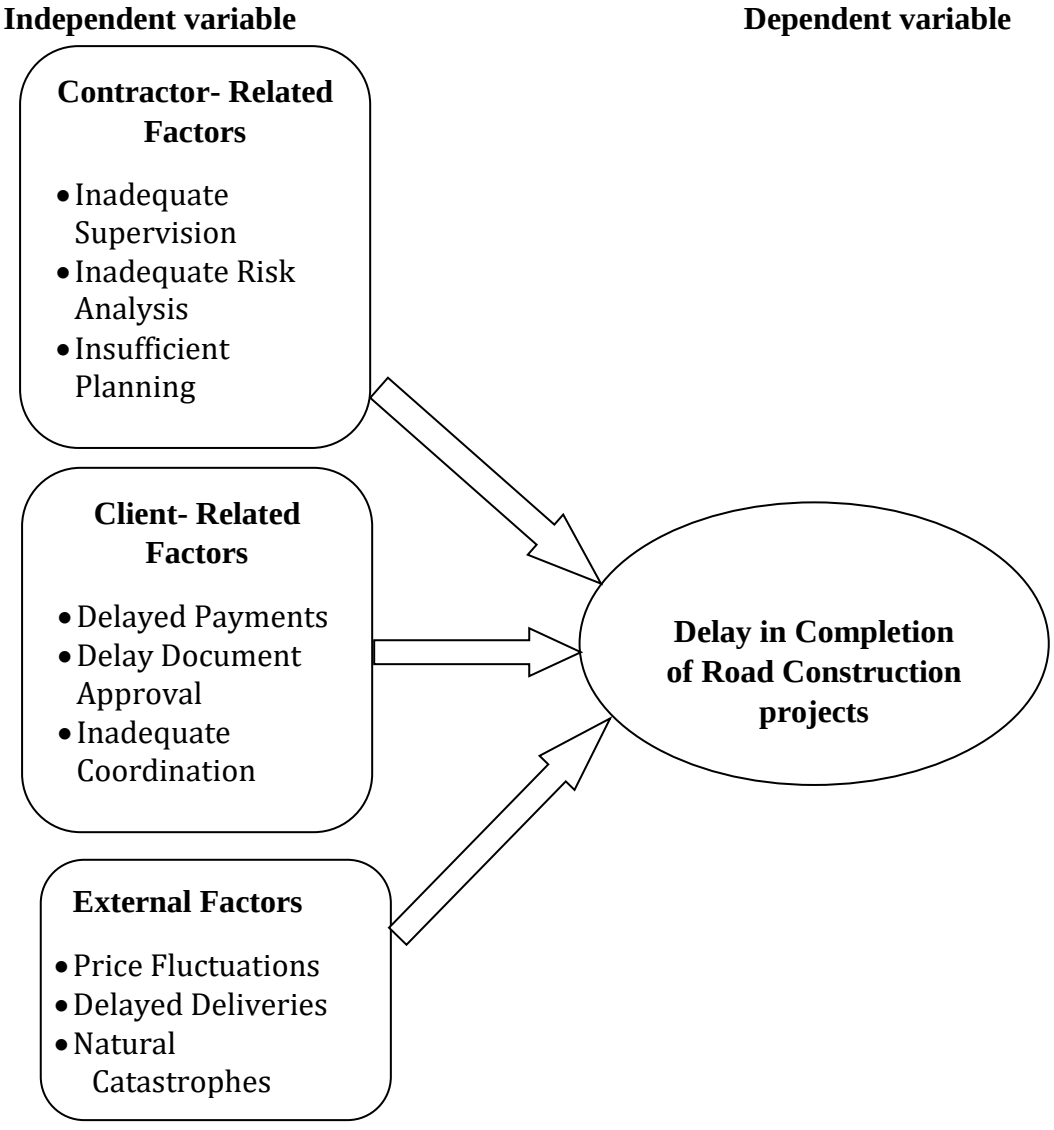

Figure 2.1: Relationship among Variables

Source: Researcher's own construct 2020

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented details of the research approach and focuses on the methodology used, and why such methods were chosen over the others. This chapter provided the methodology, which was used to carry out the study. The methodology elements included the research philosophy, research design, area of study, targeted population, data type and sources, methods of data collection, data analysis procedures, reliability and validity of issues, ethical issues, times scale, resources and budget issues.

3.1 Research Philosophy

This study adopted positivism philosophy, which adheres to the view that only "factual" knowledge gained through observation (the senses), including measurement. Moreover, integrating positivist approach to the study implied that, the researcher was independent of the research and the research can was purely objective (Saunders, 2012). Positivist approach was adopted due to the fact that it ensured the researcher wasn't biased with the findings or data collection but rather depended on the facts generated from the study in order to make inferences.

3.2 Research Design

According to Orodho & Kombo (2002) research design refers to entire process that includes organization of data, presentation, analysis and interpretation of collected data. A descriptive design that aimed to give a relationship between delay of projects in the construction industry which are the dependent and independent variables that are contractor-related factors, client-related factors and external factors.

The research design was used to generate answers to research problems. According to Sekaran (2003) research desgn is the procedure for data collection and analysis in the manner that aims to put together relevance findings with the research propose. Therefore; basing on the above definitions, this study adopted descriptive design to assess the factors causing delay in road construction projects in Mtwara Region.

3.3 Area of the Study

The study was carried out at Tanzania National Roads Agency (TANROADS) in Mtwara Region, Tanzania. Criteria for the selection of this case study were due to the fact that, the southern corridor regions are potential hubs for major government capital investments therefore an information gap to be covered will be vital for obtaining information pertaining established projects. The case study is found in Mtwara Region of Tanzania, East Africa. Tanzania National Roads Agency (TANROADS) is an Executive Agency under the Ministry of Works, Transport and Communications, established under section 3(1) of the Executive Agencies Act (Cap 245) and came into operation in July 2000. The agency is responsible for maintenance and development of the trunk and regional road.

3.4 Target Population

Borg & Grall (2007) described population as a universal set of study of all members of real or hypothetical set of people, events or objects to which an investigator wishes to generalize the result. Population is the group of all items of interest to a statistics practitioner. It is frequently very large and may, in fact, be infinitely large (Kothari, 2004). In this study, the targeted population was expected to be 300 from Road Contractors, Consultants, road users, and Supervisors such as Road Inspectors, Technicians and Engineers involved in road construction projects from Mtwara region.

3.4.1 Sample Size

Sampling is selecting a given number of subjects from a defined population as representative of the population. It describes the list of all population units from which the sample will be selected (Cooper & Schindler, 2011). Due to the fact that it wasn't easy for the researcher to study the whole population due to hindrance factors such as time, financial situation and climatic conditions; sample becomes unavoidable. In this study five categories of correspondents' representatives were selected to repressing the entire population.

3.4.2 Sampling Procedure

According to Gakuu & Kidombo (2013) sampling procedure describes the list of all population units from which the sample will be selected. This study will use questionnaires to stakeholders involving in construction of road projects and enhance generation of information based on reference of knowledge from different

participants. Simple random sample is a subset of a statistical population in which each member of the subset has an equal probability of being chosen (Hayes et al, 2002). The researcher employed a simple random sample because it ensured unbiased representation of a group. It is also known as judgment, selective or subjective sampling). Moreover there was intentional selection of informants based on their ability to elucidate a specific theme, concept, or phenomenon.

Table 3.1: Categorization of Respondents

Category of respondents	**Sample**	**Sampling Procedure**
Contractors representatives	25	Simple random Sampling
Other stakeholders (road users)	32	Simple random Sampling
Consultants	10	Simple random Sampling
Supervisors (Road Inspectors and Technicians) from TANROADS	15	Simple random Sampling
Project Managers, Planners and Engineers from TANROADS	8	Simple random Sampling
Total	**90**	**N/A**

Source: Researcher's Own Construct, (2020)

3.5 Data Type and Sources

This study used two types of data namely primary and secondary data respectively. Each of these types was obtained using specific sources as specified in the following sections.

3.5.1 Primary Data and Sources

According to Ghauri et al (2005) primary data are those collected a fresh and for the first time. Primary data for this study involved all data and information generated by

researcher for the first time and they were not found anywhere until they are gathered using specific techniques.

This study collected primary data, which was gathered, from Road contractors, government representatives and employees, consultants, supervisors of the projects and Engineers participating in road construction projects executed by TANROADS in Mtwara Region. The primary data facilitated the research to find out how client related, external factors and contractor-related delay factors affected delay in completion of road construction projects.

3.5.2 Secondary Data and Sources

The second types of data to be involved in this study are secondary data. These are documentary data, which include sources like journals, websites, magazines, newspapers, books, and the like. Using secondary data was advantageous because it less expensive, it saves resources, it facilitates triangulation of findings and also it helped to contextualize findings within a more general context (Ghauri & Gronhaug, 2005).

According to Denscore (1998) secondary data are non-advantageous because sometimes data collected for a specific study may differ from the research objectives. This study used secondary data from different studies, researches and reports from TANROADS. The secondary data was used to find out the effect of independent variables on delay in completion of road construction projects.

3.6 Methods of Data Collection

3.6.1 Questionnaire

Ghauri & Gronhug (2005) define questionnaires as a written list of questions that are answered by number of people so that information can be collected from the answers. Questionnaire was employed with focus that some of the respondents might not have time to participate in other methods due to lack of enough time and being occupied by other socio-economic responsibilities. Thus; it allowed the respondents to participate in the study at their convenient time and place. This study also involved open-ended and close questions.

3.7 Data Analysis Procedure

The researcher employed a quantitative data analysis method. Quantitative data was coded and entered into Statistical Packages for Social Science (SPSS Version 20.0) and analysed using descriptive statistics. In presenting the data, the study used reliability analysis and multiple regression analysis will be used for hypothesis testing to determine the relationship between predictor and dependent variables.

3.8 Reliability and Validity Issues

Reliability refers to the consistency of the scores obtained how consistent they are for each individual from one administration of an instrument to another and from one set of items to another (Fraenkel &Waleen, 2003). This study used the Cronbach Alpha to test the research instrument. According to Enon (1998), Validity refers to the quality that a producer or an instrument (tool) used in research is accurate, correct, true, meaningful and right. The researcher constructed clear and understandable instruments to all respondents. Moreover the researcher used English language due to

the fact that the majority of respondents involving in construction of road projects are familiar with the respective language.

Table 3.2: Reliability Statistics

Variables	**Cronbach's Alpha**
Contractor Related Delay Factors	0.715
Client Related Delay Factors	0.731
External Delay Factors	0.722

The output is interpreted based on the rule of George and Mallery (2003):>0.9 (excellent), >0.8 (Good), >0.7 (Acceptable), >0.6 (Questionable), >0.5 (Poor), and <0.5 (Unacceptable). In which in this case all variables were above 0.7 this shows that the objectives are reliable as it's shown in Table 3.2 above;

3.9 Ethical Issues

According to Gakuu & Kidombo (2013) ethics in research should be viewed as an integral part of the research planning and implementation. This study maintained ethical issues like confidentiality of data provide by respondents. Also, data collected will be used only for academic purposes only.

CHAPTER FOUR

PRESENTATION OFFINDINGS

4.1 Profile of Respondents

In assessing the influence of factors affecting completion of road construction projects in Tanzania, demographic characteristics of respondents in terms of gender, age, education background, and experience in the construction field were presented for the purpose of understanding the nature of the respondents.

4.1.1 Gender Distribution

The respondents where requested to indicate their gender in the questionnaire. The findings are illustrated in Figure 4.1.

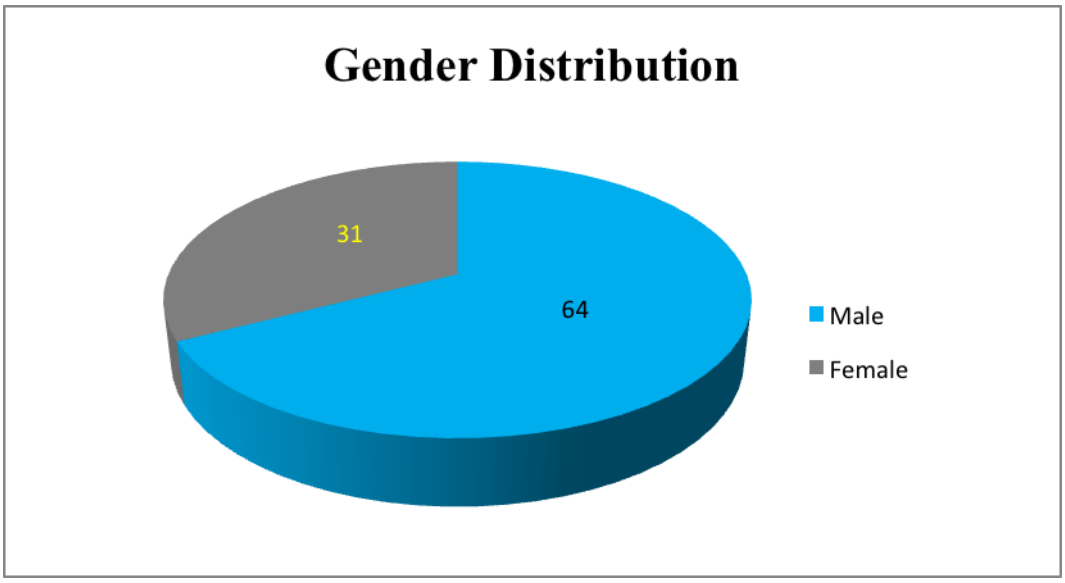

Figure 4.1: Gender Distribution

Findings in Figure 4.2 indicate that gender distribution among respondents was proportionally represented in the study hence reliability of the findings as it considers inclusiveness of opinions from both genders of the society which avoids biasness.

4.1.2 Age Distribution

The researcher sought to determine the age distribution of respondents; findings are elaborated in the Table 4.1.

Table 4.1: Age Distribution of Respondent

Age distribution	Frequency	Percent
20-30	13	14.7
31-45	29	47.4
46-60	42	31.6
61+	6	6.3
Total	**90**	**100.0**

Table 4.1 shows that majority of the shoppers in supermarkets are youths segment. This finding is crucial in marketing implications, as firms should concentrate on

making packages that can attract the youth segment, as they are majority of the purchasing age group.

4.1.3 Highest Level of Education Attained

The study sought to understand the education status of respondents in terms of highest education attained. The results are summarized in Figure 4.2.

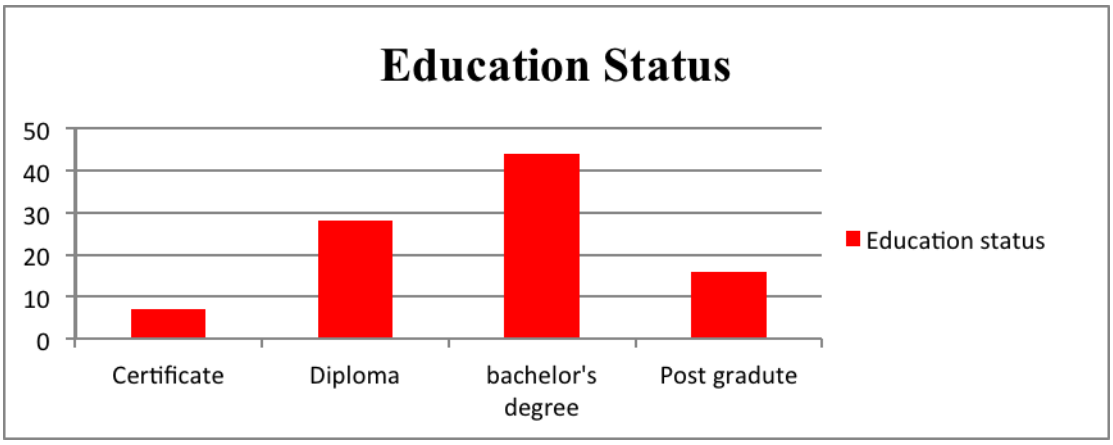

Figure 4.2: Education Status

From the above findings on Figure 4.2, Majority of the respondents have attained higher learning education, thus the finding implies that the majority of the respondents in this study have sufficient knowledge on product packaging to make informed decisions. This finding further ensured reliability and accuracy of the information provided for the study.

4.1.4 Experience in the Field

Table 4.2 Years of Experience in Construction Sector.

	Frequency	Percent
1-5 years	9	9.4
6-10 years	40	44.2
Up to 15 years	31	34.7

Above 15 years	10	11.7
Total	**90**	**100.0**

As described in Table 4.2 Majority of the respondents have been shopping supermarket products for more than five years. These findings signify that the respondents have the needed experience in purchasing from supermarkets hence encompassing relevant information for this study.

4.2 Factors for Delay of Road Construction Projects in Tanzania

Table 4.3: Contractor Related Factors

	Mean	Std. Deviation
Contractor's inadequate in site mobilization and supervision	4.34	.782
Inadequate risk analysis and site information	4.21	1.071
Insufficient planning and scheduling	4.15	1.025

Based on the findings on Table 4.3 above, mean of 4.34 and SD= .782 signifies that most respondents strongly agreed with the statement that Contractor's inadequate in site mobilization and supervision is responsible for the delay in construction. Furthermore, majority of respondents with a mean of 4.21 and SD=1.071, mostly agreed that inadequate risk analysis and site information is responsible for delay of road construction projects. Majority of respondents strongly agreed with a mean of 4.15 and SD=1.025, implying that Insufficient planning and scheduling in terms of milestone duration estimations and forecasts lead to delays in completion of road construction projects.

Table 4.4: Client Related Delay Factors

	Mean	Std. Deviation
Delay in revision and approval of essential documents	3.56	.746
Delayed payments	3.83	.676
Inadequate coordination with client and contractor	4.32	1.16

Basing on the findings in Table 4.4 above, majority of respondents averaged a mean of 3.56 and SD=.746 implying they agreed with the statement that delay in revision and approval of essential documents is responsible with delay in completion of road construction projects. Concerning slow decision making, responses attained a mean of 3.83 and SD=.676 implying that it's responsible for delaying completion of road construction projects.

Furthermore, majority of responses attained a mean of 4.32 and SD=1.16; implying strong agreement with the statement that inadequate coordination with consultant and contractor is credited for the delay in completion of road projects.

Table 4.5: External Factors for Delay

	Mean	Std. Deviation
Fluctuation of material prices and labor costs	4.30	.840
Delayed deliveries and protracted lead times	3.86	.663
Extreme weather and natural catastrophes	3.66	.736

Basing on the findings in Table 4.5 above, a mean of 4.30 and SD=.840 reveals that majority of respondents strongly agreed with the statement that fluctuation of material prices and labor costs is responsible for delay in completion of road construction projects. Respondents attained a mean of 3.86 and SD=.663, signifying a moderate agreement with the statement that delayed deliveries and protracted lead times sparks a delay in completion of road construction projects. Furthermore, respondents attained

a mean of 3.66 and SD=.736, implying a moderate agreement with the statement that extreme weather and natural catastrophes influence a delay in completion of road construction projects.

4.3 Regression Results

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.758[a]	.063	.568	.86631

a. Predictors: (Constant), Contractor Factors, Client Factors, External Factors

Table 4.6 presents a model summary of regression analysis between independent variables; Contractor Factors, Client Factors, External Factors and the predicted variable; Delay in completion of road construction projects. R square value of 0.063 signifies that 63% of variation in delay of completion of road construction projects is predicted by the independent variables used in the study. Whereas 37% of changes in the dependent variable are attributed to other factors other than the ones proposed in this study. Model summary presented positive R values signifying that the study has a logical basis.

Table 4.7; ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	56.468	5	11.293	16.258	.000[b]
	Residual	143.106	126	1.135		
	Total	**182.744**	**131**			

a. Dependent Variable: Delay in completion of road construction projects

b. Predictors: (Constant), Contractor Factors, Client Factors, External Factors

ANOVA statistics of the regression data at 5% significance level is P value < 0.005 implying that the model is significant in predicting the dependent variable. F value of 16.258 further shows a significant relationship between the predictor variables and the dependent variable.

Table 4.8: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.386	.867		1.276	.131
	Contractor Factors	.635	.085	.737	.162	.001
	Client Factors	-.013	.116	.015	.072	.005
	External Factors	.017	.126	.019	5.421	.000

a. Dependent Variable: Delay in completion of road construction projects

Where X1= Contractor Factors, X2= Client Factors, X3= External Factors, B=Beta coefficient, A=Constant and Y= Delay in completion of road construction projects.

Therefore; $Y = 6.386 + 0.635x_1 - 0.013x_2 + 0.017x_3 + e$

Basing on the regression analysis findings in Table 4.8 if all predictor variables i.e. Contractor Factors, Client Factors, and External Factors were held constant, delay in completion of road construction projects would be at 6.386. An increase in unit of contractor-related delay factors would imply a corresponding increase in delay of completion by 0.635. Furthermore, a unit increase in Client- related delay factors would lead to a coinciding increase in delay of construction completion by -0.13. Implying client-related delay factors have a negative relationship with delay in completions. Moreover, a unit increase in external delay factors would lead to a congruous increase in delay by 0.17.

CHAPTER FIVE

DISCUSSION AND ANALYSIS OF FINDINGS

5.1 Contractor-Related Delay Factors

The study sought to establish a causal relationship between contractor-related delay factors and delay in completion of road construction projects. The study revealed most respondents strongly agreed that contractor-related delay factors in terms of inadequate in-site mobilization and supervision cause a delay in completion of road construction projects.

This implies that, inadequate mobilization of required labor, materials and essential equipment to service the project milestones causes a delay since workers won't meet targets within the required time frame. The findings are in line with Chan *et al* (2007) who suggested that inadequate supervision in terms of clarifying responsibilities of each labor, effective site management, supervision of labor efficiency and effectiveness have coinciding effects in terms of delay in completion of road construction projects.

Furthermore, majority of respondents mostly agreed that inadequate risk analysis and site information is responsible for delay of road construction projects. Considering sites have different attributes and limitations, respondents suggest that lacking enough information in terms of convenience in site access, terrain conditions and proximity to social amenities will cause delay in sorting various on-site milestones. Therefore delay in road completion will be imminent due to extended hours in attaining goals. More over respondents suggest that inadequate risk analysis in terms of foreseeing and mitigating potential uncertainties such as delay in obtaining permits, change in scope of work, delay in availability of drawings, strikes & disputes, delays completion of road projects within required time. The findings are in line with Shahid *et al* (2015) who established that inadequate assessment of unanticipated risks such as accidents during operations, shortage of material supply, and inaccurate forecasts and schedule led to completion delays.

Majority of respondents strongly agreed that insufficient planning and scheduling led to delays in completion of road construction projects. Implying that insubstantial planning and scheduling in terms of milestone duration, sequencing, activity

networking, order quantity, duration estimations and forecasts lead to delays in completion of road construction projects. This finding is in line with Zidane& Andersen (2018) who established that inadequate planning leads to reduced output, project milestone rescheduling, and cost overruns thus instigating delays in completion of construction projects.

Project completion delays have negative implications in project management, in light of this respondents outlined cost overrun as one of the major effects of delay in completions. Project cost are estimated basing on the initial proposed work schedule therefore delay in completion within the required time expounds further costs such as build permits, work permits for expatriates, fixed costs such as electricity for work sites, and compounding labor wages. Furthermore, respondents outlined that time overrun is another major effect of project delay since the projects are completed adrift from required timeline. Aslam & Haq (2014) suggested that due to delays in approving work plans, inadequate supervision, and inaccurate planning amounts to time overrun which stretches project timeline beyond the initial plan.

Considering the implications of delay in completion of road constructions, various mitigation strategies where suggested by respondents in order to avert the effects. Majority of respondents suggested coordination between client and contractor in terms of in terms of constant communication during the entire project lifespan. This will ensure project objectives to be attained since client communicates reviewed budget controls and cost estimations to the contractor who in turn focuses on thorough supervision of labor and equipment in order to ensure on productivity and check on redundancies. Jung & Banobi (2019) suggest integrated efforts in joint evaluation and

coordination during the various stages of the construction projects ensures all challenges and risks are evaluated. Moreover, it allows all responsible stakeholders apply their input in sorting the issue within the shortest period possible.

Incorporating penalties or extra charges to contractor-related delay factors was suggested as a remedy to project delays. Considering cost overruns have detrimental implications in investor funds, therefore provisions of penalty clauses in contracts will ensure contractors are compliant to the estimated schedule. Bergantinos & Lorenzo (2019) analyzed possible solutions to projects delays, and suggested that inclusion of penalty clauses in contracts where a fee is charged to a contractor for extra days since the elapsing of required project schedule. This will motivate contractors to work tirelessly and attain the objectives timely in order to avoid incurring extra costs.

Frimpong (2013) outlined that delay in material procurement greatly influences delay in completion of road construction projects. In light of this, respondents further suggested that, timely procurement of essential materials necessary for the smooth operations of the work station is paramount. This ensures that the projects remains supplied at each stage hence avoiding the risk of material shortage in terms of delayed supplies and logistical challenges, which would otherwise halt work progress.

5.2 Client Related Delay Factors

The study sought to establish a causal relationship between client-related delay factors and delay in completion of road construction projects. Majority of respondents moderately agreed with the statement that delays in revision and approval of essential documents are responsible in delaying completion of road construction projects.

Implying that long durations in confirming and approving documents such as architectural drawings, change orders, permits, and contracts can slow down the process thus leading to delays in completion. The findings are in line with Hamzah (2011) who determined that among other factors delay in clients approving documents necessary for on-site activities leads to time-overrun hence delaying completion of projects within required time frame.

Pertaining to delayed payments, respondents agreed with the statement implying that deferred payments in due time is responsible for delaying completion of road construction projects. Delaying payments affects the contractor and consultant in meeting project costs in terms of wages, materials, equipment and logistics. The findings are in line with Alhomidan (2013) who established that delay in client decision making and payments is a vital setback in timely completion of construction projects.

Furthermore, majority of responses were in strong agreement with the statement that inadequate coordination with consultant and contractor is credited for the delay in completion of road construction projects. Entailing that, inadequate coordination in terms of inconsistent communications with contractors and un-integrated decision making leads to low efficiency and productivity. The findings are in line with Mohamed (2012) who stressed that inadequate leads to abandoned tasks due to unallocated labor and resources to sort the activity.

Respondents were asked of other possible client-related delay factors, mostly suggested that delay in completion of road construction projects is credited to awarding of lowest bids. They tend to lower their cost estimations to attract the client however in the long run cost overruns prevail thus delaying completion. Furthermore, respondents suggested that clients' low budget allocation in meeting project costs delays completion. Implying that funds injected to the project in a dawdling way and gazing intervals slows down the construction momentum thus delay in completion within the required time. Hanna *et al* (2015) suggests that:

In regard to other variables affected by client related delay factors apart from delay in completion of construction project. Respondents suggested that cost overruns, loss accumulation to clients, bankruptcy due to project abandonments, cost and time overruns due to extended work schedules. Furthermore, termination of contracts and litigations are possible effects due to delayed payments to the contractors and consultants. In relation to project financing, client delay factors reduce the reputation ad credit rating to financial institutions, as their loans and interest won't be reimbursed within the required time. Mukuka *et al* (2015) analyzed multiple factors that are affected by client related factors; the findings obtained are in line with study respondents. Time and cost overruns, bad reputation and loss accumulation were derived to be major effects of client delay factors.

5.3 External Related-Delay Factors

The study sought to establish a causal relationship between external-related delay factors and delay in completion of road construction projects. Based on the findings in

table 4.7, majority of respondents strongly agreed with the statement that fluctuation of material prices and labor costs is responsible for delay in completion of road construction projects. Implying that completion will delay due to cost overruns associated with changes in exchange rates, labor laws in terms of wage increments, and changes in market prices for materials and equipments contrary to estimated budget. The findings are in line with koushki *et al* (2015) who established that among other factors, inflationary effects on material & equipment prices lead to high cost overruns which tend to delay the completion of road & rail construction in Kuwait.

Moreover majority respondents agreed with the statement that delayed deliveries and protracted lead times sparks a delay in completion of road construction projects. Implying that, the construction project will face a shortage of materials and equipment necessary for completion of the project within the required timeframe. The findings are in line with Abdellatif & Alshibani (2019) who established that delayed deliveries due to port customs and other logistical challenges cause shortage of material essential for project operations, therefore prolonging completion schedule.

Furthermore, respondents predominantly agreed with a statement that extreme weather and natural catastrophes influence a delay in completion of road construction projects. Changes in weather and environment such as extreme weather, ground & geological conditions may be unforeseen during the planning process, therefore interrupting with schedule or obliterate the work site hence prolonging completion schedule. This finding is in line with Aziz & Hakam (2016) who among 23 factors

analyzed in delaying road construction completion; they established that extreme weather conditions greatly affect project milestones.

Respondents suggest thorough risk assessment and evaluation in order to foresee possible price fluctuations and change in labor costs therefore allowing the owner and contractor to factor in risk management plan for the uncertainty. This shall ensure the project activities will flow based on the proposed schedule. Hossen *et al* (2015) Suggests that contractors should use Risk Management Process (RMP), which identifies possible uncertainties, evaluates their impact and proposes control measures to ensure possible risks are averted or controlled to ensure timely completion of road constructions.

Furthermore, respondents suggest using modern technology and estimating techniques in pre determining weather forecasts and adjusting schedules based on the forecasts. This ensures timely completion of construction projects as possible risks associated with weather severity are adjusted prior to the commencement of the project. Momani (2010) suggests that construction companies to adopt multiple estimation techniques in factoring weather changes to the project schedule. Techniques such as float allocation method, time impact analysis, and As-Planned method are deemed to ensure project schedules are in line with weather changes and therefore influence accurate decision making.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter presents conclusion and recommendations of the study based on the main objective of the study, which was to determine the role of insurance intermediaries in insurance industry penetration in Tanzania. The specific objectives of the study were to determine the influence of insurance agents, brokers and banc assurance in insurance industry penetration.

6.2 Conclusions

This section presents conclusion of the study findings based on the main and specific research objectives and the statement of hypothesis. From the specific objectives the following are the conclusions of the study.

6.2.1 Contractor-related Factors in Delaying Completion of Road Construction Projects

The study established that there's a positive relationship between contractor-related delay factors and delay in completion of road construction projects. In light of this inadequate mobilization of required labor, materials and essential equipment to service the project milestones causes a delay since workers won't meet targets within the required time frame. More over findings suggest that inadequate risk analysis in terms of foreseeing and mitigating potential uncertainties convenience in site access, terrain conditions and proximity to social amenities will cause delay in sorting various on-site milestones. Furthermore, inadequate planning leads to reduced output, project milestone rescheduling, and cost overruns thus instigating delays in completion of construction projects. Inclusion of penalty clauses in contracts was suggested as

motivation for contractors to work accurately and attain the objectives timely in order to avoid incurring extra costs.

6.2.2 Client-related Factors in Delaying Completion of Road Construction Projects

Study findings ascertained a relationship between client-related delay factors and delay in completion of road construction projects. Study revealed that long durations in confirming and approving documents such as architectural drawings, change orders, permits, and contracts can slow down the process thus leading to delays in completion. More so delaying payments affects the contractor and consultant in meeting project costs in terms of wages, materials, equipment and logistics. Furthermore findings unveiled that awarding low-cost bids is detrimental since majority tend to lower their cost estimations to attract the client however in the long run cost overruns prevail thus delaying completion. Also, funds allocated to the project in a protracted interval slow down the construction momentum thus delay in completion within the required time.

6.2.3 External Factors in Delaying Completion of Road Construction Projects

The study sought established significant relationship between external-related delay factors and delay in completion of road construction projects in Tanzania. The study ascertained that projects completion delay due to cost overruns associated with changes in exchange rates, labor laws in terms of wage increments, and changes in market prices for materials and equipments contrary to estimated budget. Furthermore, delayed deliveries and protracted lead times due to port customs and other logistical challenges cause shortage of material essential for project operations,

therefore prolonging completion schedule. More so, in solving the challenge of extreme weather changes, findings suggest using modern technology and estimating techniques in pre determining weather forecasts and adjusting schedules based on the forecasts.

6.3 Recommendations

Based on the report findings, inadequate supervision has deterred timely completion of projects therefore the study recommends that construction companies to adopt modern databases to improve control and supervision tools to guide the project operations. They include databases that track labor efficiency relative to personal objectives, improved reporting of redundancies, and machine defaults among other vices, which may deter timely completion of project milestones. Furthermore, the problem of cost estimations and weather forecasts should be sorted using analytics software which correlate present data and predict future variations hence enabling decision making on the budget estimations & allocation, and activity schedule to be in line with the imminent risks to be faced in the course of the project. In light of this, inspections and thorough risk assessments should be conducted during the course of the project life in order to determine variations that may influence the delay of project activities.

6.4 Limitation of the Study

Considering delay factors have a coinciding effect in the construction projects, the study basic limitation was that it did not measure each delay factor relative to its effect to the project completion, which would’ve determined the most critical delay factor for construction companies to consider prior to the execution of the project.

6.5 Area for Further Studies

The study confined on the factors that cause delay of completion of road construction projects. Other studies and scholars may expand the basis of the study by focusing on specific variable factors such as client based, consultant based or sub-contractor based delay factors I order to provide more information on how delay factors from different perspectives may affect timely completion. As the construction industry worldwide ventures into technology and IT, a study can be conducted on how ICT may remedy the delay factors in terms of ease of payments, forecasting using analytic software, logistic monitoring through RFID techniques among other modern technologies to ensure timely execution of operations in construction process.

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APPENDICES

Appendix 1: Questionnaires

Dear respondent,

I am **John Charles Egina**, a postgraduate student from The Open University of Tanzania (OUT) pursuing Master's Degree in Project Management. I am conducting an academic study as titled Assessment of the Factors Causing Delay in Completion of Road Construction Projects in Tanzania, A Case of Tanzania National Roads Agency (TANROADS) Mtwara Region. This questionnaire intends to get your views and insights concerning the subject matter.

I kindly request you to respond to the questions to the best of your knowledge and understandings. I assure you that the information you provide to this study will be treated confidential and used only for the academic purpose. For the questions that need elaboration please provide brief clarification on the place provided or contact me through Tel; +255766274037, +255657106489

Thank you in advance.

John Charles Egina.

RESEARCHER

PART A: BACKGROUND INFORMATION

(Put a tick in front of appropriate answer)

A1. Gender: Male ☐ Female ☐

A2. Age: 20 - 30 ☐ 31 - 45 ☐ 46 - 60 ☐ 61+ ☐

A3. Education status: Certificate ☐ Diploma ☐

Master's degree ☐ Bachelor degree ☐

A4. Experience in the construction sector: 1-5 Years ☐ 6-10 Years ☐

Up to 15 years ☐ Above 15 years ☐

PART B: Contractor related delay factors in completion.

1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree

No.	**Statement**	**Ranking**				
B1	Contractor's inadequate in site mobilization and supervision	1	2	3	4	5
B2	Inadequate risk analysis and site information	1	2	3	4	5
B3	Insufficient planning and scheduling	1	2	3	4	5

B4. What are the possible effects of contractor related delay factors in completion of road construction projects?

……..

……..

……..

B5. Suggest possible solutions/remedies to overcome contractor related delay factors

……..……..

……..……..

……..……

PART C: Client related delay factors in completion.

1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree, 5=Strongly Disagree

No.	**Statement**	**Ranking**				
C1	Delay in revision and approval of essential documents	1	2	3	4	5
C2	Delayed payments	1	2	3	4	5
C3	Inadequate coordination with client and contractor	1	2	3	4	5

C4. What are other factor (s) client-related factors causing delay in completion of road construction project.

……

……

……

C5. What are other variables affected by client related delay factors apart from delay in completion of construction project.

……

……

……

PART D: External related delay factors

1=Strongly Agree, 2=Agree, 3=Neutral, 4=Disagree,

5=Strongly Disagree

No.	**Statement**	**Ranking**				
D1	Fluctuation of material prices and labor costs	1	2	3	4	5
D2	Delayed deliveries and protracted lead times	1	2	3	4	5
D3	Extreme weather and natural catastrophes	1	2	3	4	5

D4. Suggest possible solutions/remedies to overcome external factors for delay in completion of road projects

……..……..

……..……..

……..……

THANK YOU

Appendix III: Research Clearance Letter

THE OPEN UNIVERSITY OF TANZANIA

DIRECTORATE OF RESEARCH, PUBLICATIONS, AND POSTGRADUATE STUDIES

P.O. Box 23409 Fax: 255-22-2668759
Dar es Salaam, Tanzania,
http://www.out.ac.tz

Tel: 255-22-2666752/2668445 ext.2101
Fax: 255-22-2668759,
E-mail: drpc@out.ac.tz

PG: 201702605 24th May 2019

Regional Manager
TANROADS
P.O. Box 383
Mtwara

RE: RESEARCH CLEARANCE

The Open University of Tanzania was established by an act of Parliament no. 17 of 1992. The act became operational on the 1st March 1993 by public notes No. 55 in the official Gazette. Act number 7 of 1992 has now been replaced by the Open University of Tanzania charter, which is in line the university act of 2005. The charter became operational on 1st January 2007. One of the mission objectives of the university is to generate and apply knowledge through research. For this reason, staff and students undertake research activities from time to time.

To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you Mr. **John Charles Egina**, **Reg No: PG 201702605** pursuing **Master Degree of Project Management.** We hereby grant this clearance to conduct a research titled: **"Assessment of the Factors Causing Delay in Completion of Road Construction Projects in Tanzania: A Case of Tanzania National Roads Agency"**, he will collect his data in Mtwara, Tanzania from 11th December 2019 to 7th February 2020.

In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O. Box 23409, Dar es Salaam. Tel: 022-2-2668820. We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

,

Prof Hossea Rwegoshora
For: VICE CHANCELLOR
THE OPEN UNIVERSITY OF TANZANIA