

DETERMINANTS OF COST AND TIME OVERRUNS UNDER CYNHYDRO  
CONSTRUCTION GEDO FINCHA-LEMLEM ROAD CONSTRUCTION PROJECTS



A THESIS SUBMITTED TO JIMMA UNIVERSITY, COLLEGE OF BUSINESS  
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### DEDICATION

This thesis is dedicated for my parents for their unreserved support for success of this

study.

## STATEMENT OF THE AUTHOR

First, I hereby declare that this thesis is my own work and that all sources of materials used

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## LIST OF ACRONYMS AND ABBREVIATION

CPM	Critical Path Method
PERT	Program Evaluation and Review Technique
IPC	Interim Payment Certificates
MS	Mean Score
SPSS	Statistical Package for Social Science

## TABLE OF CONTENTS

APPROVAL SHEET.....	III
DEDICATION.....	IV
STATEMENT OF THE AUTHOR.....	V
ACKNOWLEDGEMENT.....	VI
LIST OF ACRONYMS AND ABBREVIATION.....	VII
TABLE OF CONTENTS.....	VIII
LIST OF TABLES.....	X
LIST OF FIGURES.....	XI
ABSTRACT.....	XII
CHAPTER ONE.....	13
1. INTRODUCTION.....	13
1.1. BACKGROUND OF THE STUDY.....	13
1.2. STATEMENT OF PROBLEM.....	14
1.3. BASIC RESEARCH QUESTIONS.....	17
1.4. OBJECTIVE THE STUDY.....	17
1.4.1. General objective.....	17
1.4.2. Specific objective.....	17
1.5. SIGNIFICANCE OF THE RESEARCH.....	18
1.6. The scope and Limitation of the study.....	18
1.7. ORGANIZATION OF THE STUDY.....	18
CHAPTER TWO.....	19
2. LITERATURE REVIEW.....	19
2.1. INTRODUCTION.....	19
2.2 THEORETICAL REVIEW.....	19
2.2.1. Project Definition.....	19

2.2.2 Project Delay.....	20
2.3. CAUSES OF TIME AND COST OVERRUNS.....	22
2.3.1. Causes of time overruns (delay).....	22
2.3.2. Identifying factors that influence cost overruns.....	25
2.4. EFFECTS OF DELAY.....	26
2.5. EMPIRICAL REVIEW.....	27
2.6. SUMMARY OF LITERATURES REVIEW.....	28
2.7 CONCEPTUAL FRAMEWORK OF THE STUDY.....	29
<b>CHAPTER THREE.....</b>	<b>30</b>
<b>3. RESEARCH DESIGN AND METHODOLOGY.....</b>	<b>30</b>
3.1. INTRODUCTION.....	30
3.2. STUDY AREA.....	30
3.3. RESEARCH DESIGN AND APPROACH.....	30
3.4. DATA COLLECTION.....	31
3.4.1 Data Type, Source and Method of Data Collection.....	31
3.4.3. Collection of Secondary Data.....	32
3.5.1. SAMPLING TECHNIQUE AND SAMPLE SIZE DETERMINATIONS.....	32
<b>CHAPTER FOUR.....</b>	<b>34</b>
<b>4. RESULTS AND DISCUSSION.....</b>	<b>34</b>
4.1. INTRODUCTION.....	34
4.2. RESULTS OF DESK STUDY.....	34
4.3. RESULTS OF QUESTIONNAIRE FOR CAUSES OF TIME AND COST OVERRUN.....	37
4.3.1. Respondents' Characteristics.....	37
4.3.2 Factors influencing Cost and Time Overruns at Construction Projects.....	39
4.4. EFFECTS OF TIME AND COST OVERRUN.....	46
<b>CHAPTER FIVE.....</b>	<b>48</b>
<b>5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>48</b>

5.1. SUMMARY.....	48
5.2. CONCLUSION.....	50
5.3. RECOMMENDATIONS.....	51
REFERENCE.....	1
APPENDICES.....	4

## LIST OF TABLES

Table 1: Contract time and Actual completed time of some Gedo-Fincha-Lemlem Road Projects.....	41
Table 2: Contract amount and Actual completed amount of some Gedo-Fincha-Lemlem Road Projects.....	43
Table 3: Work experience of respondents (in years).....	47
Table 4: Factors affecting time and cost from contractors point of view.....	48
Table 5: Factors affecting time and cost overrun from clients view.....	54
Table 6: Summary of correlation test on the ranking of causes of time overrun.....	55

## LIST OF FIGURES

Figure 1: Conceptual framework.....	34
Figure 2: Type of respondents' organization.....	45
Figure 3: Respondents designation.....	46
Figure 4: Factors affecting time and cost from consultants view.....	51

## ABSTRACT

*The road construction sector in the Gedo-Fincha-Lemlem road construction projects area is mainly driven by the need to reduce traffic jamming as well as the attractiveness of the country. The study was aimed to identify factors affecting cost and time overrun in CYNHYDRO road construction projects of Gedo-Fincha-Lemlem West Shoa area. The study used both qualitative and quantitative data collected from primary and secondary sources with well-trained data collectors using pre tested semi structured questionnaire, observation and interview. Using census methods 72 contractors, 10 clients and 30 consultants were selected. Descriptive statistics was used to analyze data using SPSS version 23 software. The study result shows that after distributing the questionnaire for professionals who had experience in road construction projects in Gedo-Fincha-Lemlem road construction projects, sufficient responses were collected with a response rate of more than 80%, which was well above the minimum requirement to conduct an analysis. The data was classified into three groups according to the type of respondents: client, contractor and consultant. From the data retrieved in each group, severity, frequency and importance indices were calculated. The most important causes of the project delays identified by the survey, and based on overall results, were: contractor's cash flow problems, improper planning, delay in performing inspection by consultants, poor site management, natural disasters, change in drawings, contract management, labor supply, quality assurance, incomplete drawings, low productivity of labors, in appropriate design, incompetent project team, inaccurate cost estimation, incapable inspectors, unforeseen site condition, slow equipment movement. Likewise, the clients highly ranked contractor's difficulties in financing the project, contractor's cash flow problems, Inflation and poor site supervision, and weather condition, unrealistic contract duration and requirements and payments delay by owner" as the main causes of project cost and time overrun. Similarly Consultants ranked absence of consultant's site staff, contract management, legal issues, test and inspection of time and quality assurance as the main factors that causes delay and cost overrun. The categories of indices of each group were determined by taking the average of the frequency, severity and important indices of the variables under the group in question. The results of the material categories showed the greatest source in project delay as it was highly ranked by all parties. The slowdown of global economy, the fluctuation of currency exchange rate for imported material and inflation of materials challenge the clients, contractors and consultants to complete projects within scheduled time and budget. Generally there are many factors contributing for time and cost overrun of road construction projects and it is better if concerned stakeholders government, contractors and other stakeholders works collaboratively to solve problems of road constructions cost and time overruns because of it is hindering country's economy.*

**Key Words:** Clients, consultants, contractors, cost, factors, road projects, time overrun

## CHAPTER ONE

### 1. INTRODUCTION

#### 1.1. Background of the study

Project management is the application of knowledge, skills, tools and techniques to project activities (PMBK, 2000). Time, cost and quality have their proven importance as a prime measures for project success. (Mohamed, 2013), According to Venkataramanand & Pinto, (2008), Different projects create different opportunities for the country. Most of the opportunities are creating large employments; creating a market for construction inputs providers and its services, creating enormous investment opportunities and improve the overall economy of the country. That is why developing countries also invest in infrastructure development to increase their infrastructure status that is used to compete in the globalized world (J. Lee, 2008).

The development of infrastructure has positive significant effect for developed and developing society. Predominantly road projects creates direct and indirect career opportunity, improve the standards of the country (Garry, Creedy, Skitmore, 2010). The positive significance of the projects depends on the achievements of the goal of the project, which is accomplishing the project within the available environment by putting together all the resources, within a given time, estimated project cost and specified quality. Every project has a pre-determined time and budget. To maintain these stipulated factors (issues) proper management is required (Richard Fellows, 1983).

Time is one of the resources that every project is using. Each project has a predetermined duration with defined beginning and completion time (date). A project, which is not completed within the contract time, is called a delayed project. Delays could occur due to so many uncertainties of the future. Delay on construction projects is a universal phenomenon. They are usually accompanied by cost and time overruns. Delays in projects have a debilitating effect on all parties (owner, contractor, and consultant) (R.Fisk, 2002).

The construction sector particularly road construction is a very important sector for the development and economic growth of country (Haseeb, 2011). The development of road construction in Ethiopia is vital like any other developing country. In oromia, particularly in west Shoa zone, there are many road projects constructed, under construction and planned to be constructed. But, a problem is almost all road construction project in the region is the failure to meet the stated/planned completion time. The inability to complete projects on time and within budget continues to be a chronic problem and is worsening (Ahmed et. al. 2002),

## 1.2. Statement of problem

In today's highly competitive economic environment, the need for completing road construction projects within the stipulated cost, time frame, and expected performance expectations is becoming increasingly important. No doubt that the performance of the road sector plays a vital role in growing the economy of every country irrespective of the level of development. However, the problem of project delays in the construction sector in general and road construction in particular is becoming a common phenomenon that an industry is facing. In fact, the goal of all parties involved in it: project owner, contractors, engineers and consultants in the sectors is to successfully complete the project as scheduled time, planned budget, with specified qualities and in safe manner. But due to different factors which emanate from diverse sources, it is commonly noticeable phenomena in developing countries like Ethiopia experiencing a project delay in road construction.

Construction industry now-a-days is facing severe problem of poor cost management resulting in huge amount of cost overrun. Cost management problem and time overrun in project is serious issue in both developed and developing countries. The success measure for a project is defined by completing it within specified cost, time and quality. However, the construction industry is full of projects that were completed with significant cost deviation (Amhed, Zahara&Juma, 2010). In Ethiopia, though the construction sector is given high prominence but several defects are being noted in the sectors that need immediate action. One of the most and significant problem is current infrastructure that causes cost variation (ECIDP, 2014). This is occurring in spite of the fact that the Ethiopian Government played significant role in assisting contractors by providing training, supplying

machinery, and by developing supportive guidance (ECIDP, 2014 and Zinabu *et al.*, 2015)

Turkey Wakjira (2012), in his study of the risk factors leading to cost overrun in Ethiopia federal road construction projects and its consequences, examined the effects of cost on the delivery of construction projects in the country. To obtain expert opinions from the sector, he listed fifty four (54) factors and 16 possible effects. The result of the desk study indicated that out of 30 upgrading and rehabilitation road construction projects investigated, 24 projects (80%) suffered cost overrun in their execution. The average rate of cost overrun in these projects was 26.95% of the contract amount. And 100% of the respondents to the questionnaire have recognized cost overrun as one of the major problems in Federal road construction projects. Unexpected inflation/ material price escalation, delays on completion time, scope changes, unstable cost of manufactured materials, inadequate site investigation and right of way problems (access to site and quarry) are identified as major factors leading to cost overrun.

Abubeker (2015) conducted a research on the factors that cause time and cost overrun during construction and their effects on road construction projects in Addis Ababa. The work had concluded that 100% of the road construction projects suffered both time and cost overrun. The rate of time overrun ranges from a minimum of 25% to the maximum of 264.38% of the contract amount and cost overrun ranges from a minimum of 4.11% to the maximum of 135.06% of the contract amount. The most important causes of cost overrun were found to be delay in construction, inadequate supply of raw materials and equipment by contractors, design changes, incomplete design at the time of tender.

According to Islam and Trigunarsyah (2017), Construction delay is one of the basic constrains to achieve the project objectives in developing countries. This project time delays usually lead to adverse effects on the growth of national economies, contribute to major financial losses, and hold back the development of the economy and construction industry, Ahmed Senouci, *et al.* (2016). Different study has identified different causes and different groups causing delays across/within continent/countries and set different ranking for causes and groups. Causes and groups causing delays are country, location and project specific and there are no root causes that can be taking for granted to be the most effective or the least effective delay causes (Remon F. Aziz, *et al.* 2016).

According to the study conducted on Ethiopian construction industry by Werku Koshe, K. N. Jha, (2016) shows that in Ethiopia only 8.25% projects have been finished to the original targeted completion date. According to this study, the remaining 91.75% delayed off its contractual time. In regard to Addis Ababa road construction, delay is becoming the major challenges that the authority is facing and challenging the life of the residents. The impacts of project time delay varying with respect to the involved parties" view for instance owner thinks delay means loss of revenue and lack of services, alternatively contractor considers it as loss of money (Kikwasi, G.J, 2012).

Moreover, this study addressed the cost and time overrun in the case of south west Oromia region Gedo-Fincha-Lemlem road construction projects because of most of the time because of the construction delaying many peoples were complaining on low Performance of the road construction projects in terms of cost and time. Many earlier research conducted on the area of cost and time overrun in road construction project in Ethiopia. (Fantaye, 2017), Conducted a research on the factors affecting time and cost overrun in Addis Ababa city and found that delay to furnish, deliver the site (Right of way problem), financial problems and poor planning are the major factors affecting both time and cost overrun but missed conducting the case of Fincha-Gedo-Lemlem. Similarly (Tadele, 2018) conducted a research on the factors affecting time and cost overrun in Hawassa, Ethiopia and found that delay in construction, inadequate supply of raw materials, equipment by contractors and design changes are the main factors that affect time and cost overruns.

However, this study was conducted in Ethiopia, Gedo-Fincha-Lemlem road construction projects to identify the common factor that affects time and cost overruns as different factors affecting projects in different place. Also the study conducted out of Addis Ababa city on road construction cost and time overrun are very limited. Although the earlier research conducted their work in Addis Ababa recommended certain factors contributing for cost and time overrun, the socio economic factors in Addis is quite different from other city far from Addis. Project in Addis Ababa city have better access to construction materials, skilled man power, labor, electricity and better climatic condition.

Therefore, major factors recommended for project in Addis Ababa city may not work for project at Gedo. Hence, this study will address the cost and time overrun in the case of West Shoa, Oromia region Gedo-Fincha-Lemlem road construction projects. The road

construction in the study area is not performing well in terms of cost and time. The major contributing factors for cost and time overrun for this project is therefore need to be investigated and recommended to reduce its consequential effects

### 1.3. Basic Research Questions

The research were conducted to answer the following basic question

1. What are the factors influencing time and cost overruns in CYNHYDRO road construction in Gedo-Fincha-Lemlem?
2. To what extent time delay and cost overrun increases in Gedo-Fincha-Lemlem road CYNHYDRO construction projects?
3. What are the causes of time and cost overrun of road construction in Gedo-Fincha-Lemlem?

### 1.4. Objective the study

#### 1.4.1. General objective

The Main objective of this study were to assess the most common and frequent factors of cost and time overrun in CYNHYDRO road construction projects of Gedo-Fincha-Lemlem West Shoa zone, Oromia region administration.

#### 1.4.2. Specific objective

This study has been undertaken with the following specific objectives

- To identify factors influencing time and cost overruns of CYNHYDRO road construction in Gedo-Fincha-Lemlem West Shoa zone, Oromia region.
- To evaluate to what extent the time delay and cost increases for CYNHYDRO in Gedo-Fincha-Lemlem West Shoa Zone, Oromia region road construction.
- To identify the causes of time delay and cost overrun of CYNHYDRO road construction in Gedo-Fincha-Lemlem West Shoa zone, Oromia region.

### 1.5.

### **Significance of the research**

The findings of the research work were expected to contribute towards the improvement of cost and time performance of road construction in West Shoa zone Cynhydro projects. And also committed to provide sufficient information for local contractors, local consultants and clients to enhance construction cost and time performance, by analyzing past experience. As well as it forwards recommendation which can be used as a check list and help project managers to improve and control their projects and also this study finding will used as an input for the researcher in the future.

### **1.6. The scope and Limitation of the study**

The scope of the study is limited to Cynhydro construction projects in West Shoa. This study involves quantitative and qualitative approach using structured questionnaire survey in identifying and assessing the factors that cause time and cost overruns in road construction. However, the scope of this research is limited to the Cynhydro road construction companies located in the West Shoa zone on Gedo-Fincha-Lemlem Oromia because of shortage of finance, time and targeted to shorten area coverage.

### **1.7. Organization of the Study**

The research follows the logical steps of establishing the research questions, developing the methodology, gathering and analyzing data and drawing conclusions. Thus the study is presented in 5 chapters. Accordingly, the first chapter presents the background of the study, statement of the problem, research questions, objective of the study, significance of the study, scope of the study. The second chapter deeply deals with review of related literature by reviewing literatures and studies relevant to the study. The third chapter incorporates brief description of methodology that is the population and sampling technique of the study; the sources of data; the data collection tools/instruments employed; the procedures of data collection; and the methods of data analysis. The fourth chapter summarizes the results of the study and interprets the findings. The fifth chapter devoted to summary, conclusions and recommendations and more over the lists of references and appendixes are attached to the research work.

## CHAPTER TWO

### 2. LITERATURE REVIEW

#### 2.1. Introduction

This chapter deals about different literatures' which was conducted on the area of both project management and road project management. Most of the literatures' discussed here under are conducted on different countries and situations to ascertain the fact that delay factors could be different in different countries and situations. The purpose of this chapter is to refer it and integrate with the finding of this study.

#### 2.2 Theoretical Review

##### 2.2.1. Project Definition

A project is a temporary endeavor undertaken to create unique product, service, or result (PMBOK, 2008.). The temporary nature of projects indicates a definite beginning and end. According to *PMBOK*, The end is reached when the projects objectives have been achieved or when the project is terminated because its objective will not or cannot be met, or when the need for the project is no longer exists. Temporary does not necessarily mean short in duration. *PMBOK* implies the fact that, temporary does not generally apply to the product, service or result created by the project; most projects are undertaken to create lasting outcome.

Project management is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements (PMBOK, 2008). The *PMBOK* guide divides project management processes in to initiating, planning, execution, controlling and closing process. A central idea is that these processes form a closed loop: the planning process provides a plan that is realized by the executing process, and variances from the base line or requests for change lead to correction sin execution or changes in further plans (Howell, 2002).

According to Mohamed, (2013) Project success is measured by the planned time, cost and quality as they have their proven importance as a prime measures for project success. As it is prevailed above project requirements are commonly assumed to be time, quality and cost of a project. Success and failure of any project will be measured by these three

requirements.

### 2.2.2 Project Delay

In construction, delay could be defined as the time overrun either beyond completion date specified in a contract, or beyond the date that the parties agreed upon for delivery of a project (Sadi *et al.*, 2006). It is a projects leaping over its planned schedule and it is considered as common problem in construction projects.

In construction, the word “delay” refers to something happening at a later time than planned, expected, specified in a contractor beyond the date that the parties agreed upon for the delivery of a project (Pickavance, 2005). Lo, Fung and Tung (2006) define delay as the slowing down of work without stopping construction entirely and that can lead to time over run either beyond the contract date or beyond the date that the parties have agreed upon for the delivery of the project.

Syed *et al.*, (2002) classify delays into non-excusable delays, excusable non-compensable delays, excusable compensable delays and concurrent delays. Non-excusable delays are delays, which the contractor either causes or assumes the risk for. Excusable non-compensable delays are delays caused by factors that are not foreseeable, beyond the contractor’s reasonable control and not attribute able to the contractor’s fault or negligence. Compensable excusable delays are excusable delays, suspensions, or interruptions to all or part of the work caused by an act or failure to act by the owner resulting from owner’s breach of an obligation, stated or implied, in the contract. Concurrent delays occur when both owner and the contractor are responsible for the delay.

Nega (2008) concluded that, it is common to see construction projects failing to achieve their mission of creating facilities within the specified cost and time. This implies again the extent of projects failure to meet their plan or requirement. Hardly few projects get completed on time and within budgets in construction project share exposed to uncertain environments because of such factors as complex nature of construction projects; presence of various interest groups such as the project owners, end users, consultants, contractors, financiers, materials, equipment, project funding, climatic environment, the

economic and political environment and legal regulations.

The delay incompletion of construction projects is a worldwide problem (M.Haseeb, 2011). This statement again states how delay in construction projects is common even globally. For the client, construction delay refers to the loss of revenue, lack of productivity, dependency of existing facilities, and lack of rentable facilities etc. For the contractor, construction delay refers to the higher costs, longer work duration, increased labor cost, higher material and equipment costs etc. completion construction projects on specified time or time agreed within parties indicates the work and construction efficiency.

According to Abbas (2006), late completion of works as compared to the planned schedule or contract schedule is what is known as delay. Delay occurs when the progress of a contract falls behind its scheduled program. It may be caused by any party to the contract and may be a direct result of one or more circumstances. A contract delay has adverse effects on both the owner and contractor (either in the form of lost revenue so expense) and it often raises the contentious issue of delay responsibility, which may result in conflicts that frequently reach the courts (Apolot, et al, 2009).

According to Majid (2006), a construction project is commonly acknowledged as successful when it is completed on time, within budget, in accordance with specifications, and to stakeholders' satisfaction. In construction industry, contractors tend to maximize profit to increase market share. To achieve this aim, it is crucial for contractors to carefully identify the factors that affect the success of a project and estimate their impacts before the bidding stage. A major criticism facing the Nigerian construction industry is the growing rate of delays in project delivery (Aibinu, &. Jagboro, 2002). Delay is a situation when the contractor or the project owners jointly or severally contribute to the non-completion of the project within the original or stipulated or agreed contract period. When projects are delayed, they are either accelerated or have their duration extended beyond the scheduled completion date. These are not without some cost consequences.

According to Faridi et al (2006), delays have an adverse impact on project success in terms of time, cost, quality and safety. The effect of construction delays are not confined with construction industry only, but influence the overall economy of the country. 100% of road construction projects implemented in the west bank suffering from time overrun

(Mahamid&Bruland, 2012). The delays in construction projects happen because of various causes or reasons. These causes lead to the delay in construction completion, and these delay leads to some negative effects on the construction projects. In Ethiopia, Addis Ababa, it is very rare case that road construction projects are completed on the time specified or agreed upon. There are many road projects in Addis Ababa which suffered delay or in some cases suffered suspension or even abandonment. And a numbers of studies have been conducted to identify important causes of delay in road construction which is common globally.

### **2.3. Causes of time and cost overruns**

#### **2.3.1. Causes of time overruns (delay)**

In the construction industry, the aim of project control is to ensure the projects to finish on time, within budget and achieving other project objectives. It is a complex task undertaken by project managers in practice, which involves constantly measuring progress, evaluating plans and taking corrective actions when required (Kerzner, 2009). During the last few decades, numerous project control methods, such as Gantt Bar Chart, Program Evaluation and Review Technique (PERT) and Critical Path Method (CPM), have been developed (Nocholas, 2004).

Delays occur in every construction project and the magnitude of these delays varies considerably from project to project. Some projects are only a few days behind schedule; some are delayed by over a year. So it is essential to define the actual causes of delay in order to minimize and avoid delay in any construction project (Ahmed, 2003). Previous research has attempted to discover reasons for the disparity between the actual completion time and the estimated completion time. Here is the right position to see some of the works for the purpose of this research work.

Worku Koshe in his study of Causes of Construction Delay in Ethiopian Construction Industries|| investigated the critical factors that cause construction delays in the country. His findings show that the main critical factors that cause construction delays in Ethiopia are; difficulties in financing project by a contractor, escalation of the materials price, infective project planning, scheduling or resource management, delay in progress payments

for completed works, lack of skilled professionals in the field of construction management in the organization, and fluctuating labor availability season to season /Seasonal labors availability (Worku, 2016).

Construction delay is considered to be one of the most recurring problems in the construction industry and it has an adverse effect on project success in terms of cost, time, quality, and safety.

There are several factors that cause delay in construction. Delay may be caused by Clients, Users, Consultants, Designers, Owners, Contractors and Suppliers. (Shiferaw, 2016) while studying causes and effects of delay in educational construction projects, he pin pointed that mistakes and discrepancies in design documents, delay in material delivery, shortage of construction materials, frequent change and variation order, unclear and inadequate details in drawings, slow response and inspection, finance arrangement and inadequate fund allocation, inaccurate site investigation, change and variation order during construction, and inefficient planning and scheduling are ranked as the top ten causes of delay.

Robel Aseffa in his research studied and concluded that construction delay in Ethiopia is mostly caused due delayed site handover and right of way, lack of coordination with the stakeholders, delayed external work due to public agencies and poor economic conditions financial problem, managerial problem or local contractor's limited capacity and ability (Robel, 2015). Robel further stated that the causes of delay as; delay in delivering material on site, poor site management and untimely provision of documents by the contractor, slow supervision and decision by the consultant delay in site handover, right of clearance, late in approving payments and lack of proper liaison work of the employer with local authorities.

(Mansfield et al, 1994), carried out a questionnaire survey amongst 50 contractor, consultant and client organizations in Nigeria and found out that the most important variables causing construction delays are poor contract management, financing and payment of completed works, changes in site conditions, shortage of materials, imported materials and plant items, design changes, subcontractors and nominated suppliers. Peter F.Kaming et al, 1997), identified factors influencing construction time overrun on high rise building projects in Indonesia through a questionnaire survey administered on 31 project managers. Design changes, poor labor productivity, inadequate planning, material shortages,

inaccuracy of material estimate, skilled labor shortage and etc. were identified for time overrun.

Desalegn Disasa has conducted a critical literature review on the main cause of delay on construction projects and understands that although different researchers from different area study the causes of delay in a construction project, some of the explored delay causes are similar. (Desalegn, 2018). So, based on his different literature study he identified that the main groups of delay and their sub-groups in construction projects as follows;

#### **Consultant related delay factors/cause**

Lack of experience, disagreement with a design engineer, delay in approving project scope, delay in performing inspection and testing, poor site investigation, unskilled project management assistance, delay in approving and checking design documents, inadequate coordination and communication between project holders and developers, recurrent change of contractors and sub-contractors, kind of project award and bidding, variation during construction by owners, unfavorable weather condition during construction work, poor experience of consultant and contractors, delay in checking working drawing, error in design documents and discrepancies, less brief specifications in drawings, quality pledge.

#### **Contractor Related Delay Factors/Cause**

Dishonesty/problems in funding by contractor, ineffective site supervision, ineffective scheduling, revise due to mistakes during work, sub-contractors work related delay, poor experience of the contractor, delay in site arrangement, delay in preparation of working drawing and sample of material, delay in payment of executed work for a contractor by the owner, slow decision-making, late approving design documents ,variation by owner, delay in procurement of materials, mistakes in design documents, recurrent changing of subcontractors, poor methods of construction, unskilled project crew, poor technology, poor coordination and communication between them, ineffective contractor's policies, unskilled

sub-contractors, ineffective economic control on site, inadequate procurement of construction materials, improper equipment, frequent equipment breakdowns, shortage of equipment, subcontractor turn-over, lack of labor, slow mobilization of labor, ineffective equipment, slow equipment deliver, materials damage, strike, conflict between labor and client.

### **Owner Related Delay Factors/Cause**

Corruption, intermittent termination of variation while project is ongoing, less on-time payment for developers, variation of specifications and material type during construction work, delay in checking contract document, variation of project scope, poor coordination with other stakeholders, slow decision-making, inadequate information during project feasibility study, delay in site delivery, lack of motivations for contractor to finish ahead of schedule, ineffective representative, poor experience, interference during actual project work, joint-owners disagreement, improper feasibility study, poor coordination and communication, interruption of work, slow document approve, nature bidding and award, impractical contract duration, unrealistic delay penalties.

### **2.3.2. Identifying factors that influence cost overruns**

Previous research has attempted discover reasons for the disparity between the tender sum and the final account (Al-Najjar, 2008). This section identifies the factors that influence cost overruns.

Fetene (2008) in his study has identified 39 causes of cost overrun in Ethiopian case. The most important causes of cost overrun were found to be inflation or increase in the cost of construction materials, fluctuations in the cost of labor, Change in foreign exchange rates(for imported goods), change orders, poor planning and coordination, failure to identify problems and institute necessary and timely design and programming changes, changes in plans and drawings, insufficient geotechnical investigation, contractors bankruptcy, difficulties in obtaining construction materials in the local market and cost under estimation are among the most causes of cost overrun.

According to (Abubeker, 2015), among the factors influencing cost overruns in the construction projects in Ethiopia from the point view of contractors, consultants and clients design changes was ranked first. Inadequate review for drawings and contract documents by

consultants, fluctuations in the cost of materials, lack of cost planning/monitoring during pre and post contract stages, indecision by the supervising team in dealing with contractors queries resulting in delays...technical incompetence, poor organizational structure, additional work at owner's request, etc. are also ranked higher. Many articles and studies are conducted from the different corners of the world to identify the principal variables of cost overruns. Some of them are reviewed below for the purpose of this research.

Cost performance is the most important indicator of project success ((Frimpong, 2003); (Olawale, Y., and Sun M., 2010). It presents not only the firm's profitability but also the productivity of organizations at any point during the construction processes The prime variables of cost overruns have been commonly identified as: unpredictable weather, inflationary material cost, inaccurate materials estimates, complexity of project, contractor's lack of geographical experience, contractor's lack of project type experience, and non-familiarity with local regulations (Peter F.Kaming et al, 1997).

(Mansfield et al, 1994), found that cost overrun is attributed to problems in finance and payment arrangements, poor contract management, material shortages, changes in site conditions, design changes, mistakes and discrepancies in contract documents, mistakes during constructions, price fluctuations, inaccurate estimating, delays, additional work, shortening of contract periods, and fraudulent practices and kickbacks. (Stewart, 1991), attributes cost overruns to several factors that are either not controllable or that to a varying degree are unmanageable. They include the accuracy of original cost estimate, degree of government regulation and control, construction completion delays, number of design changes, and labor related matters such as their availability, skills, and increases in fringe benefits.

According to (User's Guide, 2005), the following are the factors that change the cost of the construction projects through time: poor project management, design changes, unexpected ground conditions, inflation, shortages of materials, change in exchange rates, inappropriate contractors, funding problems and force majeure. According to the above previous studies the literature review helped to identify most of the common factors that often lead to project cost overruns 44 factors are shortlisted for the survey.

#### **2.4. Effects of Delay**

A study by Aibinu and Jagboro, (2002) reveals six effects of delay on project delivery in

Nigerian construction industry which are: time overrun, cost overrun, dispute, arbitration, total abandonment and litigation. Sambasivan and Soon (2007) disclose the same effects of delay in Malaysian construction industry. Haseebetal (2011) identifies effects of delays in Pakistan construction industry as clash, claims, total desertion and slowing down the growth of the construction sector. Ramabodu and Verster (2010) identify critical factors that cause cost overruns in construction projects as changes in scope of work on site, incomplete design at the time of tender, contractual claims(extension of time with cost), lack of cost planning and monitoring of funds, delays in costing variations and additional works. These critical factors in turn are the delay factors. Chileshe and Berko (2010) indicate that causes cost overrun in Ghanaian road construction sector are delay in monthly payments to contractors; variations;inflation, and schedule slippage. Again, these explain the causes of delays and the effect of cost overrun.

According to A.A. Aibinu, G.O. Jagboro (2002), it was observed that the most frequent effects of delay on project delivery in Nigeria were time overrun. Therefore, based on the above articles, we can argue that delay in road construction projects affect everything negatively. Especially in developing countries, it might be worse than that as road and other infrastructures are needed badly to enhance the economic development of the country or the town in the case of this research. And again, developing countries didn't afford any compensation (additional cost) for a late completion of road construction projects. These fact among other things tells us about the very high extent of negative effects caused by road project delays in a given developing country or region.

## 2.5. Empirical Review

Cruthers, Kuotcha, McCaffer and Edum (2008) stated that the management of costs begins with the financial feasibility study, progresses through all the costs that are required to purchase all the resources needed by the project, through to using cost control to ensure that all work that is done is properly completed. The cost implications of scope creep need to be rigorously controlled by way of formal variation orders (Caruthers et al., 2008).

Cost overruns are very common in the construction industry. Hardly few projects get completed within original costs. Al-Najjar (2002)] defines cost overruns as the change in contract amount divided by the original contract award amount. Olawale and Sun (2010) stated that despite the availability of various control techniques and project control

software many construction projects still do not achieve their cost objectives. Hence, despite its proven importance it is not uncommon to see a construction project failing to achieve its objectives within the specified cost. Park and Papadopoulou (2012) argued in their joint journal that construction cost overruns mean negative publicity for the design team and loss of client confidence. The impacts for contractors are similar as they see their profit margins shrink (Mukuka, Aigbavboa, and Thwala 2014).

Many studies have been conducted to find out and address the questions of "why the project didn't achieve its goal within pre-estimated cost? What are the main reasons behind this?" Researches on construction projects in some developing countries indicate that by the time a project is completed, the actual cost exceeds the original contract price by about 30 %. Mahamid et al. investigated the statistical relationship between actual and estimated cost of road construction projects using data from road construction projects implemented in the West Bank in Palestine over the years 2004–2008. They found that 100% of projects suffering from cost diverge, it is found that 76.33% of projects have cost over estimation while 23.67% have cost underestimation. They also concluded that the discrepancy between estimated and actual cost has average of 14.56%, ranging from -39.27% to 98.04%.

Oko, Aliu&Koleola (2010) jointly concluded six important factors affecting the accuracy of a pre tender cost estimate. The six factors are: expertise of consultants, quality of information and information flow requirements, the project team's experience of the construction type, the tender period and market condition, extent of completion of pre-contract design, and the complexity of design and construction. Okpala&Aniekwu (1989) studied the causes of high costs of construction in Nigeria, the results indicated that: High costs can be minimized. Hence, this study mainly focuses on the potential problem behind the road project cost overrun prevailing in and around the construction operation premises of the Ethiopian Construction Works Corporation, Transport Infrastructure Construction Sector, i.e. road.

Abubeker (2015) conducted a research on the factors that cause time and cost overrun during construction and their effects on road construction projects in Addis Ababa. The work had concluded that 100% of the road construction projects suffered both time and cost overrun. The rate of time overrun ranges from a minimum of 25% to the maximum of 264.38% of the contract amount and cost overrun ranges from a minimum of 4.11% to the

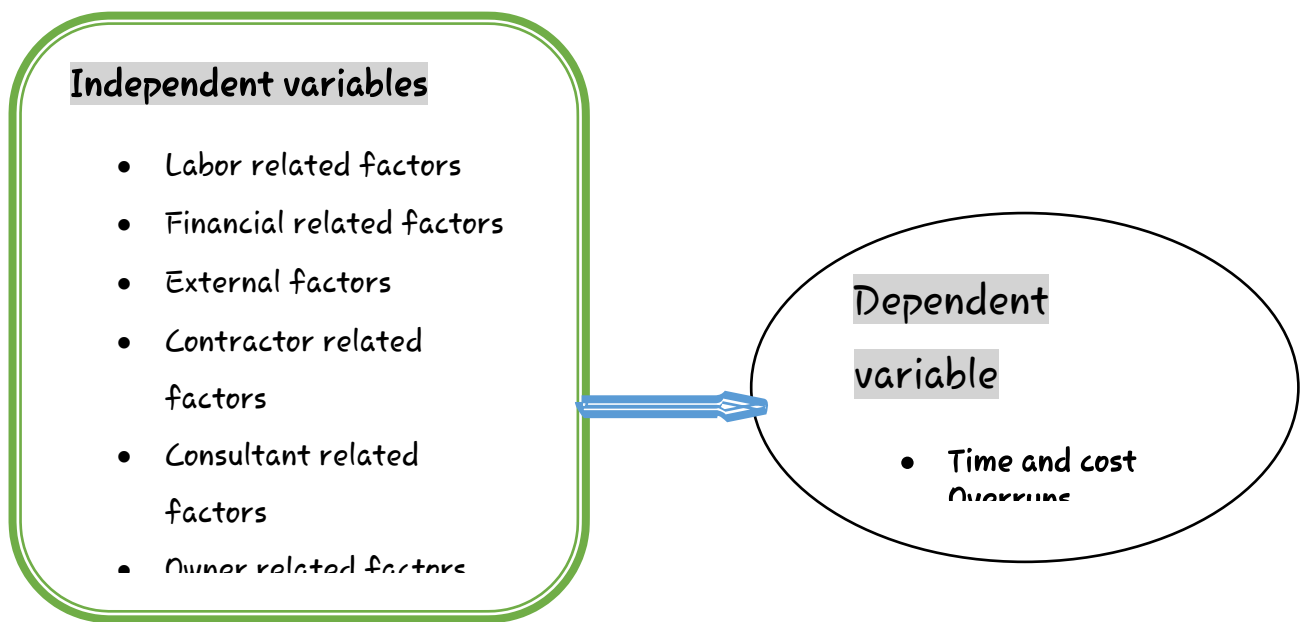
maximum of 135.06% of the contract amount. The most important causes of cost overrun were found to be delay in construction, inadequate supply of raw materials and equipment by contractors, design changes, incomplete design at the time of tender.

## 2.6. Summary of Literatures Review

In general, the literatures reviewed covered mostly what are major factors of cost overrun in road construction projects and, how and why it is becoming a recurrent problem in most of the countries where survey was conducted, especially in developing countries. Basically, literatures studied, primarily focusing on factors of cost overrun in road construction projects performed in Ethiopia, were reviewed. In addition, recent literatures, published by both from domestic and foreign scholars, have also revealed that this problem has been recurring more and more serious and frequent.

## 2.7 Conceptual Framework of the Study

The conceptual framework of this study was driven from reviewed literature to put the core variables of the study to achieve study objectives. The dependent variable was time and cost overruns, measured by the mean score indexes of deviation from the initial project time and cost estimates. The independent variables were the factors cost overrun in road construction projects in Cynhydro road construction such as factors owner, labor, contractor, economic, consultant, externalities and material related. Hence, this study mainly focuses on the potential problem face the road project cost and time overrun prevailing in and around the construction operation premises of the Cynhydro road construction it shows the dependent and independents.



Source: From reviewed literature (2023)

Figure 2.1: Conceptual framework

## CHAPTER THREE

### 3. RESEARCH DESIGN AND METHODOLOGY

#### 3.1. Introduction

This chapter describes the methodology of the study. The main topics included in this chapter are research strategy, research design and data collection. The objective of this thesis is to identify factors affecting cost and time overruns in West Shoa Oromia region Gedo-Fincha-Lemlem road construction projects .The research strategy and design will follow towards this end are discussed as follows.

#### 3.2. Study Area

The research was conducted in Gedo - Fincha West Shewa Zone of Oromia National Regional State, 182-196 km west of Addis Ababa (Finfinne).West Shewa is one of the zones of the Oromia Region in Ethiopia. This zone takes its name from the kingdom or former province of Shewa. West Shewa is bordered on the south by the Southwest Shewa Zone and the Southern Nations, Nationalities and Peoples Region, on the southwest by Jimma, on the west by East Welega, on the northwest by Horo Gudru Welega, on the north by the Amhara Region, on the northeast by North Shewa, and on the east by Oromia Special Zone Surrounding Finfinne. Its highest point is Mount Wanchi (3386 meters); other notable peaks include Mount Menagesha and Mount Wachacha, Towns and cities in West Shewa include Ambo.

#### 3.3. Research Design and Approach

Research designs are plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis. It involves the intersection of philosophical assumptions, strategies of inquiry, and specific methods (Creswell, 2009).This research work is categorized as descriptive type. The descriptive research design was used since, we use descriptive statistics to describe (analyze) the variables numerically. Mean score value, spearman correlation relative importance index, rankings are used in this work.

In order to overcome the limitations of a single design, a Mixed Approach is used in the data collection and analysis process. Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative

research approaches (e. g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration. (Johnson *et al.*, 2007, p.123). So quantitative survey backed by qualitative interviews are used in the data collection process. Similarly combination of the qualitative and quantitative approaches also used for the analysis in order to provide richer conclusion and recommendations.

### **3.4. Data Collection**

#### **3.4.1 Data Type, Source and Method of Data Collection**

The data collection comes after the research problems and the research design or plans are completed. There are primarily two sources of information normally used for this research purpose: these are primary data and secondary data.

#### **3.4.2. Collection of Primary Data**

The primary data are those which are collected a fresh and for the first time and thus happen to be original in character (Kothari, 2004). Therefore, in the study primary data is used. The primary data includes opinions, attitudes, perceptions and beliefs of the practitioners (clients, consultants and contractor) in the road construction industry. In this research several methods of collecting the primary data are employed. The major ones are:

##### **Interview Method**

The primary data was collected using interviews. As Shiferaw( 2016) described in his research work, the responses gathered through questionnaires are becoming less reliable as the respondents did not give due attention to the outcomes, it is essential to strengthen through interviews and face to face discussions. The interview method of collecting data involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses with project managers as key interview using open ended questionnaire.

##### **Collection of Data through Questionnaires**

In order to investigate the causes of project delay and cost overrun in construction projects primary data are also collected using questionnaire from client, contractors and consultants. A questionnaire of factors is carefully designed from previous preliminary investigations conducted in construction projects in Ethiopia and the world by different researchers. The questionnaire is divided into three sections. The first section looks the

background information about the respondents.

The second section of the questionnaire is made up of factors identified from the literature concerning the major causes of project delay and cost overrun in the construction industry in to two subsections. The causes for project delay are categorized into the following major groups: project-related, design and documentation, materials, execution, labor and equipment, contractual relationship, government relations and external factors.

Factors related to contractor's consultant, client In this section respondents are invited to rate the levels of importance of these factors according to a five-point Likert Scale 1-5 (1 = not significant, 2 = slightly significant, 3 = moderately significant, 4 = very significant, and 5 = extremely significant). The final section is dedicated to some open ended questions for gathering some company specific causes of project delay and cost overruns, comments, recommendations and the like. Data were collected from the target population. More specifically the data source for this study was the study population which comprises Cynhydro Construction clients, contractor and consultant's representatives.

### **3.4.3. Collection of Secondary Data**

The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process (Kothari, 2004). Secondary data may either be published data or unpublished data. In this particular study secondary data are used from different sources. More specifically this work uses: project completion reports, contract administration manuals, standard bid documents, letters, and payment request and disbursement letters, Interim Payment Certificates (IPC), journals, books.

## **3.5 Target Population**

The Target populations of this study were Contractors, Clients and Consultants in the study area which targeted 72 contractors, 10 clients and 30 consultants.

### **3.5.1. Sampling technique and sample size determinations**

The sampling technique used in this study was Census methods to collect data from companies, consultant offices and client because of numbers of respondents finite or not huge in numbers and possible for the researcher to interview them. Therefore 72 contractors, 10 clients and 30 consultants were included based on their potential of

providing valid data for the study.

**3.6 Methods of data presentation and analysis**

It was organized in the form of priority scaling such as (1=not significant, 2= slightly significant, 3=moderately significant, 4=very significant, and 5=extremely significant) was used. The procedure was used in analyzing the results aimed at establishing the mean score of the various factors responsible for project delay and cost overruns. The score for each factor is calculated by summing up scores assigned to it by respondents. Therefore, the level of importance as indicated by the client, contractors and consultants has been used to measure the mean score of each factor.

The mean score (MS) for each variable of time and cost overrun is computed by using SPSS data analysis method. The Spearman (rho) rank correlation coefficient is used for measuring the differences in ranking between two groups of respondents scoring for various factors (i.e. clients versus consultants, clients versus contractors, and consultants versus contractors).

The Spearman (rho) rank correlation coefficient for any two groups of ranking is given by the following formula.

$$Rho(\rho_{cal}) = 1 - \frac{6 \sum d_i^2}{N \times (N^2 - 1)} \tag{1}$$

Whereas, Rho (ρ<sub>cal</sub>) represents spearman rank correlation coefficient, d<sub>i</sub>- The difference in ranking between each pair of factors, and N is number of factors (variables). As well as **Weighted Average** is calculated by using the following formula:

$$\text{Weighted Average} = \sum w_i x_i \tag{2}$$

Whereas, w= relative weight (%), x= mean score and a, b & c represent contractor, consultant and client respectively.



## CHAPTER FOUR

### 4. RESULTS AND DISCUSSION

#### 4.1. Introduction

This chapter describes the results and discussion of desk study and questionnaire survey concerning time and cost overruns in Gedo-Fincha-Lemlem road construction projects from contractors, consultants and client points of view. Finally, the effects of time and cost overrun in construction on the various stakeholders on the construction industry and on the national economy in general will be dealt.

#### 4.2. Results of Desk Study

Before identifying the causes of time and cost overrun, it has to be identified whether time and cost overrun exists or not. During desk study six road projects are selected and evaluated their estimated completion time and actual completion date then calculated the rate of time overrun if any. This is also done for cost overrun in the same approach. The data was collected via reviewing project documents. On the basis of data gathered from the desk study, the entire project evaluated in desk study registered time and cost overrun. The rate of time overrun ranges from a minimum of 32% to the maximum of 264.38% of the contract time. Cost overrun, on the other hand, ranges from a minimum of 4.49% to the maximum of 135.06% of the contract amount for individual projects.

Based on the result found in desk study, the name of selected road projects, contractors name, contract time, contract amount, actual completion time, actual completion cost, rate of time overrun and rate of cost overrun of selected road are presented on the following tables (Table 4.1; 4.2).

Table4. 1: Contract time and Actual completed time of some Gedo-Fincha-Lemlem Road Projects.

No	Project name	Project type	Length	Contractor's name	Commencement date	Contract (days)	Actual Time (days)	Rate of Overrun (%)
1	Gedo To Goda	Asphalt	2100 m	Jafar Construction	End of Dec,2010	330	1048	217.58
2	Goro to Wayyu	Coble	1435 m	IFH Enginee	Nov.02,2015	365	1330	58.42
3	Goban To Gabatte	Asphalt	12km	Berhanu Keneni	Octo,22,2008	550	1155	216.44
4	Goban to Fincha	Asphalt	660 m	Ekilas construction	Nov,19,2011	365	726	32
5	Gabatte to Fincha	Asphalt	32 km	Ogaden Enginee	14th july 2014	620	2370	114.26
6	Fincha to Lemlem	Asphalt	50 km	FE Construction PLC	Dec 22,2010	875	3200	264.38

Source: Ambo town Road Authority (Projects' Progress and completion report)

Table 4. 2: Contract amount and Actual completed amount of some Gedo–Fincha–Lemlem Road Projects

No	Project Name	Project Type	Length	Contractor's Name	Commencement date	Contract Amount(Birr)	Actual Completed Cost	Rate of Cost Overrun(%)
1	Gedo To Goda	Asphalt	2100m	Jafar Construction	End of Dec.2010	154,485,787. 41	181,139,826.67	17.25
2	Goro to Wayyu	Coble	1435m	IFH Enginee	Nov.02,2015	36,213,579	54,334,900	26.47
3	Goban To Gabatte	Asphalt	12km	Berhanu Keneni	Octo.22,2008	3 billion	3,684,562,343.00	32.69
4	Goban to Fincha	Asphalt	660m	Ekilas construction	Nov.19,2011	1,162,448,900.69	1,214,586,635.23	4.49
5	Gabatte to Fincha	Asphalt	32km	Ogaden Enginee	14th july 2014	15 billion	15,558,144,543	50.04
6	Fincha to Lemlem	Asphalt	50 km	FE Construction PLC	Dec22,2010	30 billion	30,920,223,110	135.06

Source: Ambo town Road Authority (Projects' Progress and completion report)

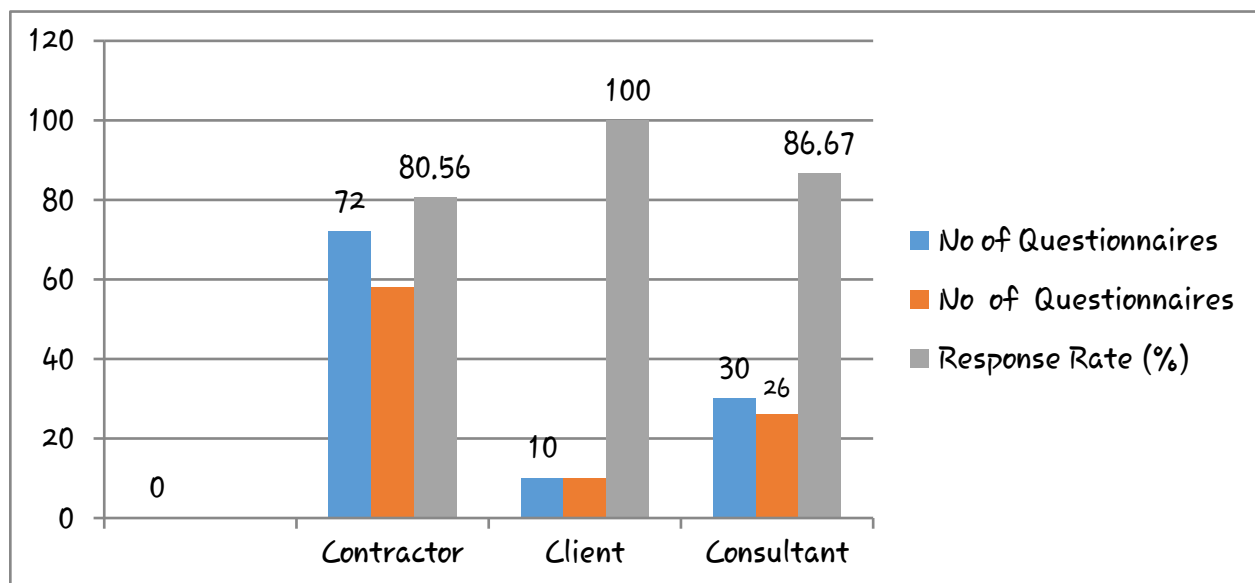
Tables 4.1 and 4.2 clearly show that, the rate of time and cost overrun has been significantly high in Ambo town road construction projects. From the projects' completion report, it was found that the main reasons for time and cost overruns are right of way problem, design change, contractors' financial problem.

### 4.3. Results of Questionnaire for Causes of Time and Cost Overrun

The causes of time and cost overrun from the questionnaire survey are also identified based on participants' responses on each variable of time and cost overrun. Accordingly, causes of time overrun identified by the different researchers, as indicated in the literature review part of this study, might not be causes of time overrun for the Gedo-Fincha-Lemlem construction industry. Hence it was important to ask the respondents for their agreement on each particular variable of time and cost overrun, and then this was accompanied by identification of causes of cost overrun based on their occurrence. To clearly identify the most common causes of cost overrun, it was important first to identify the causes of cost overrun for Gedo-Fincha-Lemlem road construction projects, and then identify their rate of occurrence.

#### 4.3.1. Respondents' Characteristics

This part is mainly designed to provide general information about the respondents in terms of the name of organization, company type, position and experience contact person.



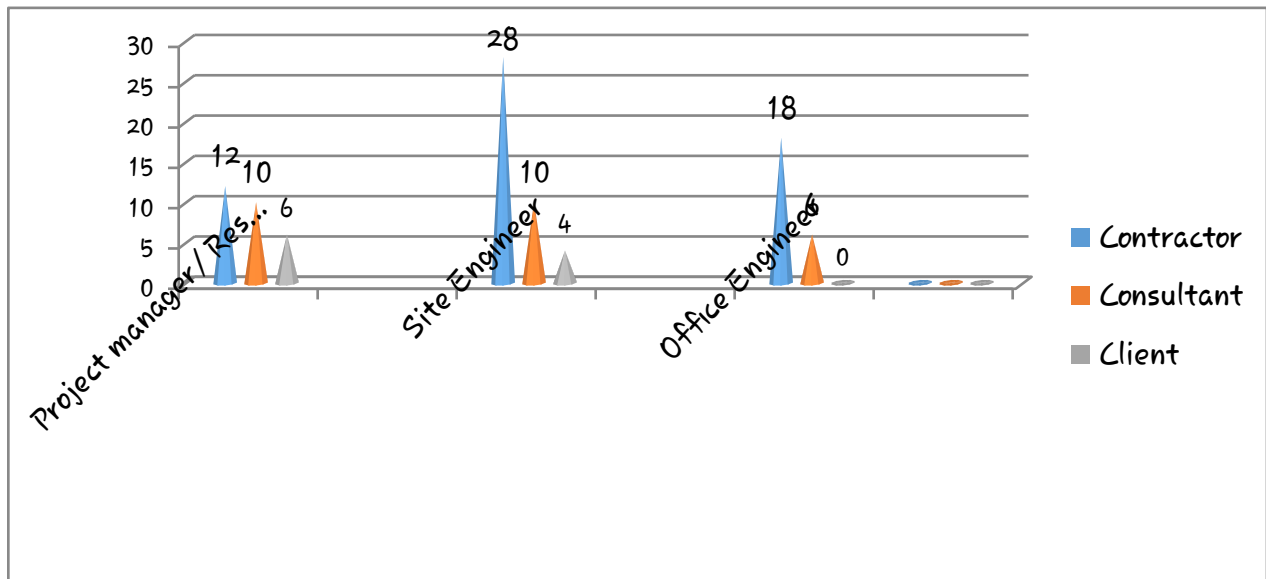
Source: Own computation (2023)

Figure 4. 2: Type of respondents' organization

As shown on the above figure 4.2, 58(61.70% contractors, 26 (27.66 %) owners, and 10 (10.64%) consultants filled in and returned the questionnaires distributed. The general response rate for all participants was 83.93%. In terms of each category of participants, the response rate of contractors was 58 (80.56%), for the owner 100% (10 out of 10 participants) and it was 26 (86.67%) for consultants.

**Respondents' designation**

Participants of this research were selected from different backgrounds. In order to show how diverse they are, the summarized data is presented on the figure 4.3 below.



Source: Own data computation (2023)

Figure 4.3: Respondents designation

Table 4.3 above shows that 28 (48.28%) of contracting companies' respondents were site engineers, 12 (0.69%) were projects managers and 18 (31.03%) were office engineers. It has been founded

that an equal number of participants, i.e. 10 (38.46%), of the consultants companies respondents were resident and site engineers, the remaining 6(23.08%) were office engineer.

It has been found that 4(40.0%) of the client respondents were site engineers and 6(60%) were project managers. Moreover, the table shows none of the client participants were from office engineers. And totally, out of the 94 respondents from all three parties of participants, 42(44.68%) respondents were site engineers, 28 (29.79%) were projects managers and 24 (25.53%) were office engineers (Table 4.4). Whereas, work experience of the participants such as contractor, client, consultant was presented here below on the table 4.5 below based on their job positions in the company.

Table 4. 3: Work experience of respondents (in years)

Experience of respondents	Contractor	Client	Consultant	Total
1 - 4	24	3	7	38
4 - 8	26	2	9	34
8 - 12	7	4	6	15
>12	1	1	4	7

Source: Own data computation (2023)

The above table shows that 38 (40.43 %) of the respondents' firm had a work experience between 1 to 4 years at construction works and 34 (36.17%) had experience between 4 to 8 years. Meanwhile, 15 (15.96%) of the participants had a work experience of 8 to 12 years, and the remaining 7(7.45%) had an experience of more than 12 years in the construction sectors.

#### 4.3.2 Factors influencing Cost and Time Overruns at Construction Projects

This part consists of results and discussion of factors that influenced time overruns in the projects they had been working when the researcher met them. For simplicity of analysis, the factors are grouped into project related factors, contractors' responsibility, consultants' responsibility, client's responsibilities, and external factors. Based on this, all three groups of participants expressed their views as mentioned below.

##### 4.3.2.1 Contractors, Consultants and clients' Views

###### Contractors' point of view

In terms of factors that have been affecting the time overrun on the selected road

construction projects in the Gedo-Fincha-Lemlem road construction projects, the views of contractors who took part in this study is presented on the table below.

As indicated on the Table 4.4 below, the contractors ranked "Improper Planning" in the first position with a mean score of 4.64. This indicates how improper planning of the project affected the time of the selected projects. If the project is not planned in a proper way in construction project, therefore, it will lead to a significant delay in a project. As revealed in the findings of many studies reviewed in this study, Tadesse (2009) based on the empirical review from Business Management model (Ibrahim Khalid, 2013), poor project planning and management of the construction projects may lead to several negative effects on the duration and completion of the project.

Table 4.4: Factors affecting time and cost from contractors point of view

Contractors view factors	N	Mean
Improper planning	58	4.64
Delay in performing inspection by consultants	58	4.62
Poor site management	58	4.29
Natural disasters	58	4.14
Change in drawings	58	4.10
Contract management	58	4.09
Labor supply	58	4.09
Quality assurance	58	4.09
Incomplete drawings	58	4.07
Low productivity of labors	58	4.05
In appropriate design	58	4.03
Incompetent project team	58	3.98
Inaccurate cost estimation	58	3.97
Incapable inspectors	58	3.95
Inadequate contractors experience	58	3.91
Personal conflict b/n labors	58	3.88
Test and inspection of time	58	3.69
Labor injuries	58	3.67
Non-attendance of labors	58	3.62

Unforeseen site condition	58	3.59
Slow equipment movement	58	3.57
Regulatory change	58	3.57
Legal issues	58	3.55

Source: Own data computation (2021)

Failing to plan exposes the project to unpredicted high risks and problems. This leads to time wastage in trying to figure out how to solve the challenges that the project faces. Time is money hence the funds of the project will be used in solving the issues that arise from the project due to poor planning (<https://www.copperproject.com > 2016/07 > why-poor-pl...>). In other words, it can be inferred that improper planning has a high impact of delay and cause time overrun in Gedo-Fincha-Lemlem road construction projects.

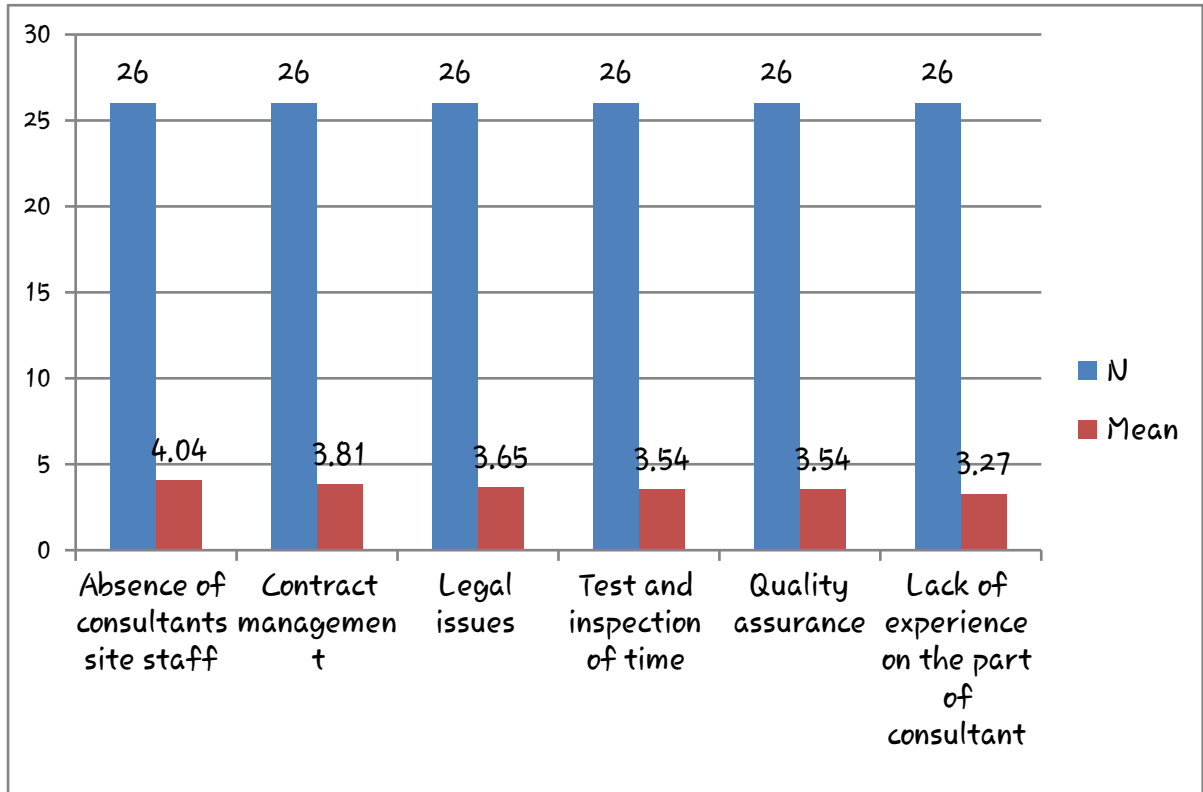
The second important factor ranked by contractor was delay in performing project inspection by consultants with a mean score of 4.62. So according to this study checking the project progress from time to time by consultants has its own advantages for completion of the project. This is also in line with the studies undertaken by (Ying Li, 2019) which found that a project that utilizes project inspection by consultants had higher levels of full-time equivalent construction staffing than projects that utilized only agency staff.

According to the above table poor site management and natural disaster were ranked the third and fourth factors that affects project time and cost over runs with mean score of 4.29 and 4.14 respectively. As contractors response poor site management natural disaster has its own effect on projects time delay and also increases the cost of the project. Poor site management can cause many constraints at the projects, such as poor following up of progress, incorrect distribution of works, lack of employees' commitment at the site, poor monitoring of project, etc. These factors, therefore, contribute to delay in the road construction project to a greater extent in the study area.

This coincides with results of a research done by (Apurza, Sharareh and Sanjagna, 2020) who finds that the number of natural catastrophic events has increasing remarkably in recent decades, and the resulting challenges of construction projects have increased even more. The study recommends that it is imperative to recognize these challenges and employ suitable strategies to mitigate them to avoid project failures.

### Consultants View

As indicated on the Figure 4.4 below, the Consultants ranked "absence of Consultants site staff as the first factor that affects time and cost overruns on project" with a mean score of 4.04.



Source: Own data computation (2023)

Figure 4.4: Factors affecting time and cost from consultants view

In construction projects, consultants work hand-in-hand with technical and commercial teams to ensure that project meets its goals. And with a consultant specialized in value engineering, you'll quickly get back the value for that consultant's fee. The result of this study were coincide with the

studies undertaken by (Masengesho *et al.*,2021) who found that Project consulting is more crucial, especially in construction measured throughout the project budget, project completion, and project quality as needed.

Therefore, it is very important to know how the project consulting copes with the problems encountered in the project through good cooperation with all involved parts of the project. The second important factor ranked by Consultants was “Contract Management” with a mean score of 3.81. Effective contract management lies in assessing contractor's performance through safe, timely delivery of their duties. The results of this study were in line with the studies undertaken by (Joshua, 2014) who found that Contract management has strongest influence on performance of outsourced projects. According to Consultants response Legal issues, test and time inspections and quality assurances are another factor that delays project time and cost over runs with the mean score of 3.65, 3.54 and 3.54 respectively (Table 4.4).

### **Clients view**

The first important factors ranked by clients were “Financial problems” with a mean score of 4.40. This is a strong indication that financial problem causes delay of project. This result also coincides with the results of Tadesse (2009). The suitable description for this consensus is that cash is very necessary for contractor to construct the project within specified time. Any shortage of cash for the contractor will most likely cause many problems such as slow progress and work decline in productivity. Moreover, financial shortage results in problems being not able to purchase the needed equipment for work, and so the client has to pay in advance before the project starts. Hence, the financial problem reflects client’s mismanagement.

*Table 4.5: Factors affecting time and cost overrun from clients view*

Factors	N	Mean
financial problems	10	4.40
Inflation	10	4.10
poor site supervision	10	3.90
weather condition	10	3.80
unrealistic contract duration and requirements	10	3.70
progress payments delay by owner	10	3.70
undefined scope of working	10	3.70
exchange rate fluctuation	10	3.60
legal issues	10	3.50
bankers policy for loans	10	3.50
suspension of work	10	3.40
poor ground condition	10	3.30
poor soil quality	10	3.30
rework due to errors	10	3.30
change order	10	3.30
discrepancies b/n contract	10	3.30
test and inspection of time	10	3.10
change in specification	10	2.90
non capable owner representative	10	2.90

Source: own data computation (2023)

As shown on the table 4.5 above the second factor that affects time and cost were inflation with mean score of 4.10. Inflation is a major challenge for the construction industry as it leads to an increase in the prices of building materials, hiring rates of machinery, consultation fees, and other inputs to construction projects.

As a result, it may delay project completion, increase construction costs, and reduce profit margin. The economy of countries depends on a number of variables in which inflation is one of them.

The position of inflation in economic growth cannot be overlooked, as it is retaliating either positively or negatively. According to the study undertaken by (Muhammed, 2021) the inflation rate is neglected in most of the construction projects economics and budgeting that causes the project cost overrun as the building materials prices, labor wages, and machinery hire rates are changing annually.

According to the client's response, the third and fourth factor that causes delay in project and cost were poor project supervision and weather condition with mean score of 3.90 and 3.80 respectively. The respondents from contractors ranked "Weather condition" in the fourth with mean score of 3.845. It is known that July and August are the rainy months and this period is being taken in to consideration in most road projects. But sometimes the rain might extend up to October or might start early in June. This has therefore been affecting the project completion time significantly in Addis Ababa. Moreover, roads can be constructed in the rainy season by using shades. But the shading should be done properly so as to avoid water entering to sites that affect optimum moisture content.

#### **4.3.4 Tests for Agreements on Causes of Time and Cost Overrun among Stakeholders in the Construction Industry**

One of the purposes of this study is to investigate whether there is agreement or not on the attitudes of stakeholders towards the causes of time and cost overrun on road construction projects in Fincha-Gedo-Lemlem. In this section, hence, response of the participants are tested for correlation using Spearman rank correlation coefficients to see if there is difference in ranking between two groups of respondents; these are Clients versus Contractors, Contractors versus Consultants, and Clients versus Consultants, on the variables of cost overrun and their rate of occurrence. The purpose of a hypothesis test is to avoid being deceived by chance occurrences. The test also helps to evaluate whether consensus of opinions exist among respondents. For this study, therefore, the null and alternative hypotheses were outlined as follows:

**Null Hypothesis (H<sub>0</sub>):** There is no agreement in the ranking of causes of time and cost overrun between two groups of respondents.

**Alternative Hypothesis (H<sub>A</sub>):** There is agreement in the ranking of causes of cost overrun between two groups of respondents

The spearman correlation coefficient ( $\rho$ ) is used and tabulated as shown below in Table 4.6 below in

order to decide whether to accept or reject the null hypothesis with the level of significance 95% ( $P = 0.05$ ). This allows to state whether or not there is "agreement" between respondents response.

**Table 4.6: Summary of correlation test on the ranking of causes of time overrun**

		Consultant	Contractor	clients	
Spearman's rho	Consultant	Correlation Coefficient	1.000	.	
		Sig. (2-tailed)			
	Contractor	Correlation Coefficient	0.437**	1.000	.
		Sig. (2-tailed)	0.000	.	
	Clients	Correlation Coefficient	0.174	0.431**	1.000
		Sig. (2-tailed)	.01070	0.000	.

\*\* . Correlation is significant at the 0.01 level (2-tailed).

With a significance level of 95% ( $P = 0.05$ ), the  $p$  value for all the three group cases are less than 0.05. This finding further indicates that contractors and consultant related factors influencing road construction cost and time overrun has an associatetion and it implies that both of them were highly correlated at 5% significance level. As well as clients and contractors related factors was also associated at 5% significance level. So the hypothesis that there is no significant agreement between the respondents is rejected i.e. the null hypothesis is rejected.

From Table 4.6 above, it can be concluded that there is strong correlation between the attitudes of the respondents in all the three groups. Hence, the null hypothesis is rejected and the alternative hypothesis is accepted. In other words, most of the participants have the same perception about causes of time overrun and their responses are acceptable.

#### 4.4. Effects of Time and Cost Overrun

It was noted from the desk study result that almost all projects were delayed and incurred additional cost from estimated amount. This shows the severity of the effects of time and cost overrun. The first victim from time and cost overrun is the project end user; i.e. the people of the city. Although the degree of effects of time and cost overrun on the stakeholders varies in the construction industry, all the parties involved are affected by time and cost overrun. Cost overrun does not only affect those parties that are involved directly in the construction of a project, but its effects also pass to the construction industry as a whole. This in turn affects the national economy of the country.

If there is excessive cost overrun, then it requires additional budget; this in turn affects the scarce financial resources of the country, which lead to further budget short fall for construction projects. This prevents the planned increase in property and service production from taking place and this phenomenon affects, in a negative way, the rate of national growth. Cost overrun will also be a source of dispute among stakeholders and it will lead to adversarial relationship among project participants. Clients will lose confidence on consultants and on professionals in general. To the industry as a whole, cost overruns could bring about a drop in construction activities, bad reputation, and inability to secure project finance easily from public authorities in the future.

## CHAPTER FIVE

### 5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1. Summary

The road construction sector in the Gedo-Fincha-Lemlem road construction projects area is mainly driven by the need to reduce traffic jamming as well as the attractiveness of the country. Therefore, this sector is severely suffering from over extended project delays and excessive cost overruns, affecting the implementation of the country's construction sector development programs and the country's economy by losing investments on a project.

There are many causes of delays and cost overruns in construction projects and several studies have pointed out various factors based on the underlying conditions that their specific study is concerned with. Therefore, this research attempts to investigate the problems particularly for road construction projects in Gedo-Fincha-Lemlem.

The study was identified variables causing delays and cost overruns in construction projects as a whole. Then the variables have been scrutinized in line with the road construction. Forty-five variables for delay and cost overruns have then been identified.

After distributing the questionnaire for professionals who had experience in road construction projects in Gedo-Fincha-Lemlem road construction projects, sufficient responses were collected with a response rate of more than 80%, which was well above the minimum requirement to conduct an analysis. The data was classified into three groups according to the type of respondents: client, contractor and consultant. From the data retrieved in each group, severity, frequency and importance indices were calculated. Significance levels for the null hypothesis to be true were found out to be less than 0.05, confirming that the alternative hypothesis, there is agreement among the sets of rankings by the parties, was verified with more than 95% confidence level.

The most important causes identified by the survey, and based on overall results, were:

contractor's cash flow problems, improper planning, delay in performing inspection by consultants, poor site management, natural disasters, change in drawings, contract management, labor supply, quality assurance, incomplete drawings, low productivity of labors, in appropriate design, incompetent project team, inaccurate cost estimation, incapable inspectors, unforeseen site condition, slow equipment movement.

Out of these most important variables that causes contractors delay and over cost were "cash flow problems, improper planning, delay in performing inspection by consultants, poor site management,". The respondent groups showed disagreement in some causes of delay, where one points out the responsibility of delay causes on other parties. For instance, the contractors ranked "improper planning, and delay in performing inspection" as the first and second most important causes of delay respectively, blaming the other parties. However, the clients and consultants gave these causes a lesser ranking. Likewise, the clients highly ranked contractor's difficulties in financing the project, contractor's cash flow problems, Inflation and poor site supervision, and weather condition, unrealistic contract duration and requirements and payments delay by owner" as the main causes. Similarly Consultants ranked absence of consultant's site staff, contract management, legal issues, test and inspection of time and quality assurance as the main factors that causes delay and cost overrun.

Furthermore, the categories of causes of delay with respect to responsible parties were analyzed based on the overall results. The categories of indices of each group were determined by taking the average of the frequency, severity and important indices of the variables under the group in question. The results of the material categories showed the greatest source in project delay as it was highly ranked by all parties. The slowdown of global economy, the fluctuation of currency exchange rate for imported material and inflation of materials challenge the clients, contractors and consultants to complete projects within scheduled time and budget.



## 5.2. Conclusion

Based on the results of the analysis of desk study and respondents' responses the following conclusions were drawn. The first specific objective was to identify whether time and cost overrun exist or not and evaluate the extent of time and cost overrun in Gedo-Fincha-Lemlem road construction projects. For this six road projects investigated in the research suffered time and cost overrun in their execution. For these road construction projects, the actual time overruns ranges from 32% to 264.38% of the contract time and the cost overrun ranges from 4.49% to 135.06% of the contract amount. The second specific objective was to identify factors influencing time and cost overruns in road construction in Gedo-Fincha-Lemlem. From the results of this thesis 45 causes of time and cost overrun were identified by the respondents. Common causes of time and cost overrun are Delay to deliver the site (Right of way problem), financial problems of contractors, Improper planning, inflation, Site management and fluctuation in the cost of materials

Results indicated that contractors ranked "improper planning" delay in performing inspection by consultants and poor site management in the first, second and third factors respectively.. This result indicates the high importance of proper planning is the main important factor used to complete the project on time and also used to minimize the cost of the project. Delay in performing inspection by consultants and poor site management problem creates disputes between the parties of project, and then the time of completion will be affected even more. This agreement of opinions between contractors and owners proves the importance of these factors in projects delay.

The factor of "Financial problems" has been ranked in the first position by the Clients. This result indicates the high importance of cash for the progress of project. Any shortage of cash for the contractor causes many problems such as slow progress and work decline in productivity. Also the contractors will not be able to purchase the needed equipment for work. More over the problem of cash also expanded to traders and suppliers, which in turn leads to slow the work, then to occurrence of project's delay. Shortage of cash is created either by improper use of advance payment by contractor or delay in payment by client.

From the results obtained at this thesis, and compare it with the results and analysis of previous literatures, it's found that there are a real similarity of the important factors

that influencing time and cost overruns. But right of way problem is a major problem in Ethiopia and not that much significant in other country. Because literatures that are done out of Ethiopia not included right of way problem as a major factor for time overrun. The third specific objective was to identify the effect of time and cost overrun in overall road construction in Gedo-Fincha-Lemlem road construction projects. There are many effects of time overrun to stakeholders in the construction industry. The most common effects of time overrun in the construction industry are; cost overrun, dispute and arbitration.

Cost overruns have obvious effects for the key stakeholders in particular, and on the construction industry in general. To the client, cost overrun implies added costs over and above those initially agreed upon at the onset, resulting in less returns on investment. To the end user, the added costs are passed on as higher rental/lease costs or prices. To the professionals, cost overrun implies inability to deliver value for money and could well tarnish their reputations and result in loss of confidence reposed in them by clients. To the contractor, it implies loss of profit for non-completion, and defamation that could jeopardize his/her chances of winning further jobs, if at fault.

### **5.3. Recommendations**

The following points are recommended to all parties in order to minimize and control time and cost overruns in construction projects.

#### **Contractors are recommended to:**

- Have a proper planning and good site management system in the different activities of the project so as to avoid any mistakes that may lead to rework of activities, resulting time and cost overruns. Contractors are advised to setup stores for required construction materials, and especially that are scarce or that are in limited quantity in the markets to avoid time and cost overruns.
- Carry out planning and scheduling: they are continuing processes during construction and match with the resources and time to develop the work to avoid cost overrun and disputes. Site management and supervision: administrative and technical staff should be assigned as soon as project is awarded to make

arrangements to achieve completion within specified time with the required quality, and estimated cost.

#### **Clients are recommended to:**

Use advance payment properly to eradicate the financial problems. It is advised to conduct breakeven analysis from time to time.

- Clients should have to give more attention on the inflation the site from time to time. Before the construction starts the client has to fulfill all the necessary requirements for delivering the site. Failure to deliver the site will cause time and cost overrun.
- Determine the required duration of project and impose realistic duration to avoid time and cost overruns. Client recommended to have technical staff who is able to manage the different stages of any project and to follow the performance percentages, and also able to compare the actual performance with the planned one.
- Giving sufficient time for bid documents such as technical specifications, drawings, bill of quantities and designing of the project and revising it in a good way. This is because any discrepancy in bid documents will lead to disputes between projects parts and so delay may occur. Pay progress payment to the contractor on time because it impairs the contractors' ability to finance the work.
- Minimizing change orders as possible as they can in order to avoid any time and cost overruns. The communication and coordination between the stake holders also have to be improved to minimize time and cost overruns.

#### **Consultants are recommended to:**

- Continuous coordination and direct communication with contractors and clients, which will eliminate design discrepancies and errors as well as omissions in design and also provide an opportunity to review the contract documents thoroughly. This would help in eliminating change orders or variations due to discrepancy in contract documents.
- Hire a qualified technical staff to manage the project in a good way, so he would be able to overcome any technical or management problems that happen. It is also advised for consultant to have high qualification to give suitable instruction in a suitable time

and to be able to answer any question stated by contractor to avoid time and cost overruns.

They have to Review and approve design documents, shop drawings, and the payments of contractor to avoid any delay or cost overruns at the project. Adopt efficient information distribution systems to guard against communication gaps; respond as quickly as possible to contractor and client questions and requests for clarification to avoid associated delays and confusions which consequentially will lead to time and cost overrun.

**Government is recommended to:**

- Create a climate of economic stability that is sufficient to inspire investors, especially in the production of construction materials to be produced from local materials and production of enough quantity and quality of construction materials in the local market, this will help to reduce excessive price fluctuations associated with imported construction materials.
- Give capacity building for professionals and firms on the construction sector so as to develop the performance of the professionals. In addition, government has to initiate intellectuals to do researches regarding causes of time and cost overrun.
- Create opportunities for local contractors and consultants to work with international contractors and consultants to share experiences and adopt new technologies.

## REFERENCE

- Ahamed, F., Zahra, L., & Juma, T. (2010). Causes and effects of cost overrun on public building construction projects in Ethiopia. *International Journal of Project Management*, 9, 365-478
- Ahmed Senoucia, Alaa Ismailb, Neil Eldina., Time Delay and Cost Overrun in Qatari Public Construction Projects. Creative construction conference 2016, CCC 2016. *Procedia Engineering* 164 (2016).
- Al-Gahtani, K., & Mohan, S. (2007). Total float management for delay analysis. *Journal of Cost Engineering*, 49 (2), 32-37.
- Chan, D., & Kumarswamy, M. (2002). Compressing construction duration: lessons learned from Hong Kong building projects. *International Journal of Project Management*, 20 91, 23-35.
- Choudhury I., and Phatak O., 2004, Correlates of time overrun in commercial construction, ASC proceeding of 4th Annual Conference, Brigham Young University-provo-Utah, April 8-10.
- Enshassi, A. (2008). Risk management and responsibility allocation of large EPC turnkey construction projects in Ethiopia. Addis Ababa University, School of Graduate Studies. *Management in Engineering*, 150-155.
- Frimpongs Yaw, Oluwoye Jacob, and Crawford Lynn., 2003, Causes of delay and cost overruns in construction of groundwater projects in a developing Countries; Ghana as a case study. *International Journal of Project Management*, Vol. 21, No.5, pp. 321-326.
- Ghana Statistics Service (2010). [http://www.government data/.erte.com](http://www.governmentdata.erte.com). accessed; 20/7/2015.
- Idoko, D. (2008). Fire services installation related contributors of construction delay. *Journal of Building and Environment*, 41(1), 211-222.
- J.-K. Lee, "Cost Overrun and Cause in Korean Social Overhead Capital Projects: Roads, Rails, Airports, and Ports," *Journal of Urban Planning and Development @ ASCE*, pp. 59-62, 2008.

- Jennifer S. Shane, "Construction Project Cost Escalation Factors," *Journal of Management in Engineering*, pp. 221-229, 2009.
- Kaming, P., Olomolaiye, P., Holt, G., & Harris, F. C. (1997). Factors influencing construction time and cost overruns on high-rise projects in Indonesia, *Journal of Construction Management and Economic*, 15(1), 83-94.
- Kikwasi, G.J, (2012) „Causes and effects of delays and disruptions in construction projects in Tanzania“, *Australasian Journal of Construction Economics and Building, Conference Series*, 1 (2) 52-59
- Koushki, P.A, AL-Rashid, Khalid and Kartam, Nabil., 2005, Delays and cost increases in the construction of private residential projects in Kuwait, *Journal of Construction Management and Economics*. Vol. 23, No.3, pp. 285-294.
- Lo, T., Fung, I., & Tung, K. (2006). Construction delay in Hong Kong civil engineering projects. *Journal of Construction Engineering and Management*, 132(6), 636-649.
- Long L.H., Lee Y.D. and Lee J.Y (2008). Delay and Cost Overruns in Vietnam Large Construction: A Comparison with Other Selected Countries. *KSCIE Journal of Civil Engineering*. Volume 12.Issue 6. Pages 367-377
- Nega, F.(2008). *Causes and effects of cost overrun on public building construction projects in Ethiopia*. Master thesis, Addis Ababa University, Addis Ababa, Ethiopia.
- Ofori, L. (2006). A comparative analysis of tender sums and final costs of public construction and supply projects in Nigeria. *Journal of Financial Management of Property and Construction*, 13(1).
- Olawale, Y. A, and Sun M., 2010, Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice. *Construction Management and Economics*, 28 (5), 509 - 526.
- S.A. Assaf, S. Al-Hejji(2006), Causes of delay in large construction projects, *Int. J. Project Manage.* 24 (4) 349-357.
- Sambasivan, M., & Soon, Y. (2007). Causes and effects of delays in Malaysian

construction industry. *International Journal of Project Management*, 25(5), 517-526.

Syed, M., Salman, A., Mauricio, C., Castillo, G., & Pragnya, K. (2002). Construction delays in Florida: An Empirical Study  
<http://www.cm.fiu.edu/pdfs/Research-Reports>

Vidalis, D. P., Allinson, C. W., & Hayes, J. (2002). Transferring the western model of project organisation to a bureaucratic culture: The case of Nepal. *International Journal of Project Management*, 14(1), 53-57.

WerkuKoshe, K. N. Jha, 2016. Investigating Causes of Construction Delay in Ethiopian Construction Industries. *Journal of Civil, Construction and Environmental Engineering*. Vol. 1, No. 1, 2016, pp. 18-29. doi: 10.11648/j.jccee.20160101.13

Zawawi, K., Azman, S., & Shamil, J. (2010). Structural equation model of construction contract dispute potential. *Journal of Construction Engineering and Management* 126(4), 268- 277.

## APPENDICES

JIMMA UNIVERSITY COLLEGE OF BUSINEES AND ECONOMICS MASTER OF  
PROJECT MANAGEMENT AND FINANCE

## QUESTIONNAIRE

Dear Participants,

My name is AbrehamTadele, I am a graduate student at Jimma University School of Business and Economics and currently I am conducting a research for the completion of my masters in project management and Finance. This research work is Factors Affecting cost and time overruns the case Gedo - Fincha -Lemlem road construction projects.

I kindly request you to participate in this research study by completing the attached questionnaire. In order to ensure that all information will remain confidential please do not include your name anywhere in the questionnaire. I also sincerely request you to respond to the questions as honestly as possible and return the completed questionnaires. Knowing that your time is valuable please, take few minutes of your time to complete the questionnaire.

In case of any question please contact me via  
abtadele955@gmail.com“or

“0922954814”

Thank you in advance for your committed co-operation!

**General Instruction and information:**

- ✓ Section I includes demographic of general information.

- ✓ Section 11 includes close and open ended questions

Please indicate the significance of each factor by circling the appropriate Section open ended question where it allows you to elaborate the practice in your own words.

Please attempt to answer all the question relating to each factor on the last column e.g. as to thereasons, the critical factors or the solutions.

**SECTION A: GENERAL ORGANIZATION INFORMATION**

- 1. Name of organization: \_\_\_\_\_
- 2. State your organization/company type.

Client                       Contractor     Consultant

3. Respondents designation: Factors Affecting cost and time overruns the case Gedo -Fincha -Lemlem road construction projects

Owner of organization      Project manager      Site Engineer      Office Engineer  
                                                                                         

Resident Engineer      Site Supervisor                      Other \_\_\_\_\_  
                             

4. Relevant working experience (Years):

1-4Yrs       4-8Yrs       8-12Yrs       above 12Yrs

**SECTION B: FACTORS AFFECTING TIME AND COSTOVERRUNS OF ROAD CONSTRUCTION PROJECTS IN GEDO-FINCHA-LEMLEM.**

Please indicate the effect of each factor on time and cost overrun by ticking the appropriate boxes. Add any remarks relating to each factor on the last column e.g. as to the reasons, the critical factors or the solutions.

E.S. = extremely significant (5); V.S. = very significant (4); M.S. = moderately significant (3); S.S. = slightly significant (2); N.S. = not significant (1)

<i>Hypothesized factors</i>		1	2	3	4	5	<i>Remark</i>
<i>Common factor</i>							
1	Discrepancies between contract documents						
2	Suspension of work by owner or contractor						
3	Change order						
	<b>Owner -related</b>						
4	rework due to errors during construction						
5	Poor soil quality						
6	Poor ground condition						
7	undefined scope of working						
8	financial problems						
9	poor site supervision by consultant						
10	progress payments delay by owner						
11	Inflation						
12	exchange rate fluctuation						
13	bankers policy for loans						
14	weather condition						
15	Unrealistic contract duration and requirements						

16	Non-capable owners representative						
17	Change in specifications						
	<b>Contactor</b>						
18	Poor site management						
19	delay in performing inspection by consultants						
20	incapable inspectors						
21	Improper planning						
22	Inadequate contractor's experience						
23	Inaccurate cost estimation						
24	Incompetent project team						
25	inappropriate design						
26	Contract management						
27	Incomplete drawings						
28	Changes in drawings						
29	Labor supply (insufficient labors)						
30	low productivity of labors						
31	personal conflict between labors						
32	Labor injuries						
33	Non-attendance of labors						
34	Slow equipment movement						
35	Natural disasters						

36	Regulatory change						
37	Unforeseen site conditions						
38	Quality assurance						
	<b>Consultant</b>						
39	Absence of consultant's site staff						
40	Lack of experience on the part of the consultant						
41	Contract management						
42	Quality assurance						
43	Test and inspection of time, cost and scope						
44	Legal issues						

Do you feel there are any factors that would have significant impact on cost and time overrun of road construction other than that of questioned above? Please list them down and briefly explain how they affect cost and time overrun.

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If you have comments regarding cost overrun kindly request to write here,

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