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**PROJECT MANAGEMENT PROGRAM**

**Research Project on**

**CAUSES OF PROJECT IMPLEMENTATION DELAY:**

**THE CASE OF DEVELOPMENT BANK OF ETHIOPIA FINANCED  
PROJECTS**

**A Research Project Submitted to Addis Ababa University School of  
Commerce in Partial Fulfillment of the Award of the Master's  
Degree in Project Management**

**Advisor: Temesgen Belayeneh (Ph. D)**

**By: Ifa Shiferaw**

**June, 2018**

**Addis Ababa, Ethiopia**

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**By: Ifa Shiferaw**

**Approved by Board of Examiners**

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Advisor

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Examiner (External)

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Signature

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## DECLARATION

I, the undersigned, declare that this research project entitled “**CAUSES PROJECT IMPLEMENTATION DELAY**” IN THE CASE OF DEVELOPMENT BANK OF ETHIOPIA FINANCED PROJECTS”, is my original work and has not been presented for a degree in any other university or organization, and that all sources of materials used for the research project have been duly acknowledged.

Declared by:

Name: Ifa Shiferaw Kisi

Signature: \_\_\_\_\_

Date \_\_\_\_\_

## CERTIFICATE

This is to certify that this research project, “**Causes of Project Implementation Delay: the case study of Development Bank of Ethiopia Financed Projects**” undertaken by Ifa Shiferaw for the Partial fulfillment of the award of Master’s degree in Project Management at Addis Ababa University graduate school, is an original work and not submitted earlier for any degree either at this university or any other university.

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Temesgen Belayneh (Ph.D.)

Research Project Advisor

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## **List of Abbreviations**

DBE	Development Bank of Ethiopia
DBERF	Bank (DBE) Related Factor
CERF	Cost Escalation Related Factor
CRF	Contractor & Consultant Related Factor
EETPC	Ethiopian Electric Power Corporation
ERCA	Ethiopian Revenue and Customs Authority
GORF	Government Office Related Factor
I	Importance
NPLs	Non Performing Loans
PORF	Project Owner Related Factor
PR	Percentage of Respondents
SRF	Supply Related Factor
RIR	Relative Importance Ratio
SPSS	Statistical Package for Social Science
TR	Total Respondents

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## ***Abstract***

*The Development Bank of Ethiopia is a specialized financial institution established to promote the national development agenda through development finance and close technical support to viable projects from the priority areas of the government by mobilizing fund from domestic and foreign sources while ensuring its sustainability. While financing development projects, however, the bank faces different, in their nature and causes, kinds of problems. One of these problems is delay in project implementation resulting cost overrun, repeated additional loan and loan repayment rescheduling request. The purpose of the study was to assess the causes for project implementation delay. This study investigates the causes of delay in project implementation for DBE financed projects to determine the most important according to the key project participants; internal (bank and project owners) and external factors. The research identifies and analyses whether the major causes of project implementation delay are attributed to project owner related factor or the Banks related factor or whether delay is attributed to some external factors such as government, supplier and contactor related factors like poor customs clearing, infrastructure problems, delays in the procurement machineries and materials required for the projects., rework due to design errors etc.*

*The target populations (projects) for the study were selected from DBE Head Office financed projects and 68 projects were selected as sample for the study purpose. For this study 136 respondents from DBE and different Projects were selected. The study used both primary and secondary data collection methods. The primary data was collected using questionnaires and interviews. Secondary data was derived from the project's files, recorded documents by bank and different documents such as annual reports, journals, articles, various books, websites, other published and unpublished sources and relevant documents. The data from the completed questionnaires was studied, re-coded and entered into the computer using the Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistics were employed to analyze quantitative data. The descriptive statistics included standard deviation, means and percentages. The quantitative collected data was analyzed by establishing the regression tools of the various factors identified as causes for project implementation delay.*

*The results of the study showed that project implementation is negatively affected by owners, bank and external related causes. As a result if project implementation delay is occurred and continued, the bank will not be able to collect its loan on time which ultimately may lead to loss in the operation of the bank.*

*Key words: Project Implementation Delay, Internal Factors, External Factors*

# CHAPTER ONE

## INTRODUCTION

### 1.1. Background of the Study

According B.P. Sunjka1 and U. Jacob (2013) to Projects are considered delayed when their stipulated completion durations have not been achieved. Delays are frequent occurrences in developing countries such as Thailand, Pakistan, Saudi Arabia, Nigeria and Vietnam respectively. Pourrostan, et al (2011), remark that, project delays are the biggest challenges for the construction industry in developing countries. Delays are, however, not only experienced in the developing countries, they are global phenomena. The inability to complete projects on time scheduled and within budget continues to be a chronic problem worldwide and is worsening (Ahmed et al, 2002). According to Azhar and Farouqui (2008) the trend of cost overrun is common worldwide and that it is more severe in developing countries.

Delay could be defined as an act or event that extends the time required to perform the tasks under a contract. It usually shows up as additional days of work or as a delayed start of an activity (Sweis et al, 2008). Projects have a variety of reasons to experience delay. An investigation to find out the reasons for the delays was conducted in Hong Kong where a questionnaire was developed on factors that were identified in past findings. The analysis of the findings indicated the difference in perception of the factors that was between the key stakeholders of the project. There was general agreement about the relative importance of delay factors such as unforeseen ground conditions (Kumaraswamy et al, 1998).

According to Abdalla et al (2002) projects encounter massive delays and thereby overshoot the initial time and cost estimates which in turn result in extensive delays providing a platform for claims and disputes. A survey done with the objective of finding the most important reasons for delay of projects as per the traditional contracts indicate that contractors and consultants agreed that owner interference, inadequate contractor experience, financing and payments, labor productivity, slow decision making, improper planning, and subcontractors are among the top ten most important factors.

One of the biggest factors contributing to the success of a project is how effectively the project manager carries out the steps of implementing project. Managing a project is an orderly process

that, if properly executed, will maximize project resources, enable effective communication among project personnel and the project's clients, and allow for the unexpected bumps along the way. The project start is the most important project management sub-process, because in it the bases for the other project management sub-processes, such as the project plans, the project communication structures, the relationships to relevant environments, are established Abebit H.(2013).

The success of any project is measured in terms of three important dimensions - time, cost and quality. Of all these three deciding dimensions, quality is an abstract one and hence a project's quality can be measured mainly with the customer satisfaction. When the cost of project exceeds the targeted budget, in many cases, the developer has to face the brunt and in rare cases only, the customer may be convinced to release additional funds. Hence, when compared to time, the budget and running costs of the projects should be monitored and controlled more Abdul Rahman (1993).

Generally, a project passes through a cycle involving different stages including implementation. Project implementation is one of the core project management processes. Implementation of a project is the step where all the proper planned activities are put into action. Usually project implementation process involves preparing, deployment, maintaining and use of the final product of the project. Project managers and sometimes project team members are committed to controlling and monitoring project implementation process. Project team helps run project evaluation process, which precedes project implementation process. Project evaluation process includes performing a complete analysis of customer's needs and requirements and results in forming the definition of one or more projects to be implemented. Project implementation process may be effective if some very important factors are kept in minds that are urgent in a project management system (Development Bank of Ethiopia, 2008).

This study was examined the causes of project implementation delay by focusing on DBE financed projects and to draw up possible recommendations/ methods of minimizing delays for successful implementation of projects. In addition, as stated on the fortune news paper on fortune volume 18 No. 929 dated Feb, 18/2018 over the past three years and half years, the non performing loans (NPL) of the Bank is dramatically increased from 12.54 in 2014/15 to 17.71 % a year later. It surged further 24.98% in the last budget year. The aggregate NPL has continued to increase this

fiscal year from little under quarter of outstanding loans in the last quarter of the past year to 25.36% in the next period. Official data of Bank also showed that in January, 2018 G.C NPL galloped to a bit more than 30% and one reason on the increasing NPL of the is implementation delay of projects and other reasons and as the annual report of the Bank for the year ended June 30, 2017 additional loan during the year is 8.9 Billion Birr due to implementation delay and other reasons. For this reason, the researcher is motivated to investigate the causes of project implementation delay financed by Development Bank of Ethiopia specifically at corporate level.

## **1.2. Background of the Organization**

The development bank of Ethiopia (DBE) is one of the financial institutions engaged in providing short, medium and long term development credits. DBE's distinguishes feature is its "Project" based lending tradition. Project financed by the Bank are carefully selected and prepared through appraised, closely supervised and systematically evaluated. Since its establishment in 1909, the bank has been playing a significant role in promoting overall economic development of the country.

The history of Development Bank of Ethiopia goes back to 1909 when the first attempts of its kind known as The Societe Narionale d' Ethiopie Pour le Development de l' agriculture et de Commerce (The Society for the promotion of Agriculture and Trade) was established in the Menelik II era. Since then the Bank has taken different names at different times although its mission and business purpose has not undergone significant changes except for occasional adjustment that were necessitated by change in economic development policies of the country.

The under listed names and periods are its predecessors since initial establishment: -

- ✓ Agricultural Bank of Ethiopia from 1945-1949
- ✓ Agricultural and Commercial Bank of Ethiopia from 1949-1951
- ✓ Development Bank of Ethiopia Share Company from 1951-1970
- ✓ Investment Bank of Ethiopia from 1964-1970
- ✓ Agricultural and Industrial Development Bank Share Company from 1970-1979
- ✓ Agricultural and Industrial Development Bank from 1979-1994
- ✓ Development Bank of Ethiopia from 1994-2003.

In long years of existence, DBE has established recognition at national and international levels. Nationally, it is the sole Bank with reputable experience in long term investment financing. Internationally, and it is recognized as an important on leading channel for development program financed by bilateral and/or multilateral sources.

### **Vision of DBE**

“100% Success for All Financed Projects by 2020”

### **Mission of DBE**

“The Development Bank of Ethiopia is a specialized financial institution established to promote the national development agenda through development finance and close technical support to viable projects from the priority areas of the government by mobilizing fund from domestic and foreign sources while ensuring its sustainability. The Bank earnestly believes that these highly valued objectives can best be served through continuous capacity building, customer focus and concern to the wider environment”.

### **Values of DBE**

- ✓ Commitment to mission
- ✓ Customer focus
- ✓ Integrity
- ✓ Team work
- ✓ High value to employees
- ✓ Learning organization
- ✓ Concern to the environment

**Source:** Company profile

## **1.3. Statement of the Problem**

Delay implementation of projects and cost increase are common phenomena in projects worldwide. However, these are especially severe in developing countries. Implementation delay gives a project a difficult start, unduly long time taken for project implementation results in time-overrun which is invariably followed by cost overrun. Cost-overrun has the ill effect of affecting the financial viability of the project. The problem of cost-overrun will get more compounded if the finance necessary to meet the increased cost cannot be arranged in time. Any delay in arranging for the

finance needed to meet the cost overrun will only further tend to increase the cost and this may land the project in trouble leading eventually to the death of the project and the project may not take off (Adhikarib, 2002).

Delays are endemic to the construction projects in Ethiopia. By examining 15 completed projects in different region of the country, the delay encountered in most projects range from 20.66% to 50% of original contract time. Project delays are the major causes of claims for time extension and associated cost (Abdissa, 2003).

When large projects deviate from their objectives (either in cost, completion time, performance, safety or environmental effects), the damage caused obviously transcends out of the contracting parties and affects the project stakeholders and the public at large. Emphasizing the completion time deviation factors as they are very common in our country's construction industry, lack of justified methodologies in quantifying and analyzing delays happens to be the greater challenge (Abebe, 2003).

In addition, the project delays come from a variety of sources and they have different effects and implications resulting in complex ramifications, creating considerable difficulty to practitioners in the claim resolution (Kumaaswany, 1997). A critical review of literature suggested that the reason for the continuing difficulty with delay claim resolution can be attributed to a number of problems including lack of uniformity in the application of delay identifying methodologies, lack of sufficient guidance from contracts and poor planning practice for more construction sectors.

According to Assaf and Al-Hejji (2006) the some key causes of delay are improper planning, contractor's, poor site management, subcontractor issues, and skilled labor supply and productivity; contractors are insufficient, client's payments for completed and ongoing work, acquiring difficulties for work permit and approval, and availability and failure of equipment.

As stated in annual, semi-annual and quarter report, different projects follow-ups and justification for loan repayment rescheduling and additional loan request, projects are delayed at least one year and above for different internal, external and neither of them. As above different reports indicates that commercial agriculture projects are more delayed projects from priority projects followed by manufacturing sector projects.

As stated in mission, DBE is specialized financial institution established to promote the national development agenda through development finance and close technical support to viable projects from the priority areas of the government by mobilizing fund from domestic and foreign sources while ensuring projects sustainability. The researcher was focus only delayed priority area of projects of the bank at least for one year and above such as industrial, agro-processing and commercial agriculture financed projects financed by Development Bank of Ethiopia.

Limitation of financial resources is usually regarded as a major bottleneck to the development of many developing countries. To contain this challenge, efforts are made by governments to develop financial institutions that create access to loan for development projects. Credit has long been recognized as one of the most important inputs that support the success of development project which ultimately contributes towards economic development. Similarly DBE provides sustainable credit facility for those engaged in agriculture, industrial and agro- processing sectors which can result in development of the country. Currently, Development Bank of Ethiopia gives due attention to the government focused priority areas and expected to answer the growth and development agenda of the country; that can generate foreign currency to the country and reduce unemployment where is the issue of project implementation delay is more relevant. Despite this fact, project implementation delay is a major problem facing DBE financed projects. Implementation delay will result in time and cost overrun which in turn will result in low loan recovery performance of the Bank. Delays can lead to many negative effects such as lawsuits between clients and banks, owners and contractors, increased costs, loss of productivity and revenue, and contract termination. Due to such adverse effects of delays, the bank will not be able to collect its loan on time which ultimately may lead to loss in the operation of the bank. Thus, it is a series problem for the bank and its customers in particular and the country as a whole. As stated on the fortune news paper on fortune volume 18 No. 929 dated Feb, 18/2018 over the past three years and half years, the non performing loans (NPL) of the Bank is dramatically increased from 12.54 in 2014/15 to 17.71 % a year later. It surged further 24.98% in the last budget year. The aggregate NPL has continued to increase this fiscal year from little under quarter of outstanding loans in the last quarter of the past year to 25.36% in the next period. Official data of Bank also showed that in January, 2018 G.C NPL galloped to a bit more than 30% and one reason on the increasing NPL of the is implementation delay of projects and other reasons and as the annual report of the Bank for the year ended June 30,

2017 additional loan during the year is 8.9 Billion Birr due to implementation delay and other reasons. As a result, there is frequently request for an additional loan due to outcome of project implementation delay and as well as loan repayment rescheduling. Hence, the major factors that cause projects implementation delay in DBE financed projects have to be identified and analyzed. Moreover, the negative outcomes of implementation delay have to be clearly known and acknowledged to give amicable solutions.

In the lights of these problems, conducting this research on the case bank is to assess causes of project implementation delay and to adopt an appropriate framework for improving delay analysis and administration methods.

#### **1.4. Research Question**

Based on the above statement of problems, the following questions are for further investigation of the topic:

1. What are the internal related causes of project implementation delay?
2. What are the external related causes of project implementation delay?

#### **1.5. Research Objectives**

##### **1.5.1. General Objectives**

The general objective of this study is to assess the causes of project implementation delay in the case of development Bank of Ethiopia specifically at head office financed projects.

##### **1.5.2. Specific Objective**

The specific objectives of this research will be are:

- a) To identify the causes of project implementation delay due to the DBE those financed by DBE
- b) To identify the causes of projects implementation delay due to clients those financed by DBE
- c) To identify the causes of projects implementation delay due to external factors (neither due to the Bank nor its clients) those financed by DBE
- d) To draw up possible recommendations for successful implementation of projects with respect to planning and managing of implementation

## **1.6. Research Hypothesis**

The hypothesis was developed from literatures that reviewed in empirical review (Chan and Kumaraswamy 1997; Mansfield, 1994; Wambugu, 2013; Theodore, 2009; Nihal, 2015; Journal of National University of Sciences and Technology. NUST Campus, H-12, Islamabad, Pakistan at December, 2011; Odeyinka HA, Yusif A. 1997; Assaf SA, Alkhalil M & Al-Hazmi M. 1995). Based on reviewed literatures the research hypothesis was identified as follows;

- H1:** Project owners related factors significantly affect project implementation financed by Development Bank Ethiopia
- H2:** Bank (DBE) related factors are significantly affects project implementation financed by Development Bank Ethiopia
- H3:** Cost escalation related factors significantly affect project implementation financed by Development Bank Ethiopia
- H4:** Supplier related factors significantly affects to project implementation financed by Development Bank Ethiopia
- H5:** Government office related factors are significantly affects project implementation Financed Development Bank Ethiopia
- H6:** Contractor and consultant related factors significantly affect to project implementation Financed by Development Bank Ethiopia

## **1.7. Significance of the Study**

Development Bank of Ethiopia is one of the state owned banks facing project implementation delays in its projects. Delays can lead to many negative effects such as lawsuits between clients and banks, owners and contractors, increased costs, loss of productivity and revenue, and contract termination. Due to such adverse effects of delays, the bank will not be able to collect its loan on time which ultimately may lead to loss in the operation of the bank. Hence, problem of delay in project implementation has to be minimized. To minimize such problems, empirical analysis of factors causing delay is necessary. Therefore, this study adds knowledge to the literature on causes of projects implementation delay so as to devise effective and appropriate policy and working procedure towards this problem. It is expected to suggest important recommendations which would be of great importance both to policy makers and financial

institutions providing financial and technical assistance for projects ranging from simple and small to complex and big once. Moreover, the study will be used as an input for individuals who are interested in the subject matter to undertake similar studies and also the study will give direction or add some information to the existing knowledge for researchers who are going to conduct the research in the same area or related discipline in the future.

This study perhaps helps the Development Bank of Ethiopia and any project owner to identify major factors for project implementation delay, which are affecting the operation of the project throughout its life for the consideration of the Banks to finance the projects. Further, the finding of the study might help any project managers, project driven office, practitioners and academicians to compare and contrast the theory and the reality of why implementation of projects delay more or less always. Furthermore, the study is believed to benefit both lender bank and owners of the project as a documented study in this area as well as project driven offices. The study would also recommend adoptable policies and strategies for mitigating some internal and external project implementation delay.

### **1.8. Scope and Limitation of the Study**

The study was delimited to focus on examining the causes of project delay. This study mainly focused on examining the major causes of project implementation delay. The independent variables of the study are; internal factors like banks related, clients related and external factors. The dependent variable is project implantation delay. With regard to the scope of the research is mainly focus on literature review, questionnaire survey and interview questions. The research is focus only at head office financed projects by Development Bank of Ethiopia. Even though, the cause of project implementation delay for all sectors is very crucial and need to be seen at country level. To conduct the study as country level on all sectors, time and budget is constraint and the scope of this study was also limited to investigation the causes of project implementation delay by taking projects financed by Development Bank of Ethiopia for consecutive past three years at head office financed priority area of the banks. In addition to stated limitations the study deals with the delay during implementation stage in projects is also another limitation.

## **1.9. Organization of the Study**

The entire projects work contains five chapters organized as follows. chapter one of this study demonstrates the introduction part that include the backgrounds of study, statements of the problem, basic research questions, objectives, significance and limitation of the study. Chapter two contains selected review of related literature on the subject. In this chapter concept of delay with empirical review, project life cycles and conceptual frame works are discussed. The third chapter explains the research type & design, sampling design, data collection method and its analysis technique and results are discussed at the end of this chapter and findings or results, discussions and analysis of the study would be discussed in the fourth chapter, finally the last chapter contains the research conclusions and recommendations made based on the findings.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

This section reviews the literature written by different authors and researches conducted by different scholars in relation to the study and present a summary of project implementation delay literature such as definitions, assumptions, major concepts regarding main causes of project implementation delay and effect of project delay and review of empirical works. Finally, conceptual framework of the study is included by summarizing literature results.

#### 2.1. Introduction

A project is a complex, non routine, one-time effort limited by time, budget, resources, and performance specifications design to meet customer needs (Gray, C.F. and Larson, E. W., 2008). Project management is a set of tools, techniques, and knowledge that, when applied, helps to achieve the three main constraints of scope, cost and time, (Charvat, J, 2003.) However, based on different literatures, 52.7% of projects were not able to complete on time and over cost, and 31.1% not fulfilled the scope (Charvat, J., 2003). The growth in new knowledge has increased the complexity of projects because projects encompass the latest advances. Today, many companies focus on project management, as it focuses on achieving project objectives. It is important as it applies managerial process and has its tools that give managers a good opportunity to succeed in achieving objectives. A project manager can reform everything right from a project management perspective but the project can still fail depending on its success criteria to help to ensure project success. Project managers can use different techniques and tools that are useful to manage projects efficiently. These include network activity diagram, bar charts, macro and micro cost estimation approaches and resource scheduling techniques. The use of these techniques and tools could lead to better chance of project success. Today, emphasis on an integrated project management process is the focus of all project effort towards the strategic plan of an organization, and reinforces control of both the project management techniques and tools, and the interpersonal skills necessary to orchestrate successful project completion (Clancy, T., 2008).

## 2.2. Project Classification

Basically, projects can be classified into three resolution types (Clancy T., 2008):

- i. *Resolution Type 1 (project success)*: The project is completed on-time, on-budget, fulfilled all functions and features as specified.
- ii. *Resolution Type 2 (project challenged)*: The project is completed and operational but over-budget, over the time estimate, and offers fewer functions and features than originally specified.
- iii. *Resolution Type 3 (project impaired)*: The project is cancelled at some point during the development cycle.

Project success can be defined as meeting goals and objectives as prescribed in the project plan. A successful project means that the project has accomplished its technical performance and maintained (Yaw et al, 2003).

## 2.3. Definition and Concept of Delay

Delay could be defined as an act or event that extends the time required to perform the tasks under a contract. It usually shows up as additional days of work or as a delayed start of an activity (Sweis et al, 2008).

Refer to Aibinu et al (2002) delay is a situation when the contractor and the project owner jointly or severally contribute to the non-completion of the project within the agreed contract period. Sambasivan and Soon (2007) defined delay as a situation in which a project due to some causes related to contractor, consultant, and client or other causes has not been finished in period. Delays in construction projects are frequently expensive, since there is usually a construction loan involved which charges interest, management staff dedicated to the project whose costs are time dependent, and ongoing inflation in wage and material prices. According to Assaf et al (1995) delay in construction 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. It is a project slipping over its planned schedule and is considered as common problem in construction projects. In some cases, to the contractor, delay means higher overhead costs because of longer work period, higher material costs through inflation, and due to labor cost increases.

Project delay can also be defined as a discrepancy where actual completion of the project exceeds the planned period according to the contract (Chabota et al, 2008). According to Larry (2002) project schedule is characterized by client urgent demand of project completion, client preference of speed over cost and quality, and the balance of project managers among project scope, budget and resource available. Thus the ascertainment of the period of project delay serves as basic information from the appointment of responsibility, which may be a highly complex operation in cases with concurrent causes. In this respect, when a delay claim occurs, it is very important to assign responsibility and magnitude to delays, and it is often difficult to analyze the ultimate liability in delay claims (Kraiem and Dieknam, 1987).

Sanders and Eagles, 2001 define delay as an event that causes extended time to complete all or part of a project. Delay may also be defined as the time overrun, either beyond the date for completion specified by the contract or schedule or beyond the extended contract period where an extension of time has been granted. The type of delay focused on in this study is the time overrun beyond the date for completion specified by project implementation schedule or by the contract not considering whether an extension of time has been granted.

Project implementation delay is a global phenomenon affecting not only the parties involved in the project but also the overall economy of countries as well. Delay involves multiple complex issues all of which are invariably of critical importance to the parties, in this case the bank and its clients. These issues concern entitlement to recover costs of delay or the necessity to prolong the project with the consequential entitlement to recovery costs for adjustments to the contract schedules. In the case of Development Bank of Ethiopia, project implementation delay causes wastage of resources to process loan repayment rescheduling, processing of additional loans due to cost overrun and projects are losing substantial market shares due to delay. Questions arise as to the causes of delay and the assigning of fault often evolves into disputes and litigation (Bolton, 1990).

### **2.3.1. Classification of Delay**

Theodore (2009) mentioned that there are four basic ways to categorize type of delays with their discussion below. In the process of determining the effect of a delay on the project, the analyst must determine whether the delay is critical or noncritical. The analyst must also assess if delay

are concurrent. All delays that are identified in the analysis will be either excusable or non-excusable. Delay can be further categorized into compensable or non-compensable delays.

#### **2.3.1.1. Critical or Non-Critical**

Delays that affect the project completion, or in some cases a milestone date, are considered as critical delay Theodore (2009). And delays that do not affect the project completion, or a milestone date, are non-critical delays Theodore (2009). If these activities are delayed, the project completion date or a milestone date will be delayed. The determining which activities truly control the project completion date depends on the following:

- a) The project itself
- b) The contractor's plan and schedule (particularly the critical path)
- c) The requirement of the contract for sequence and phasing
- d) The physical constraint of the project, i.e. how to build the job from a practical perspective

#### **2.3.1.2. Excusable versus Non-Excusable Delays**

All delays are either excusable or non-excusable. An excusable delay is a delay that is due to an unforeseeable event beyond the contractor's or the subcontractor's control or project manager Theodore (2009). Normally, based on common general provisions in public agency specifications, delays resulting from the following events would be considered excusable delays: General labor strikes, fires, floods, acts of God like volcanic eruption, Owner-directed changes, errors and omissions in the plans and specifications, differing site conditions or concealed conditions, Unusually severe weather, intervention by outside agencies and lack of action by government bodies, such as building inspection.

Non-excusable delays are events that are within the contractor's control or that are foreseeable Theodore (2009). These are some examples of non-excusable delays: late performance of subcontractors, Untimely performance by suppliers, Faulty workmanship by the contractor or subcontractors, a project-specific labor strike caused by either the contractor's unwillingness to meet with labor representative or by unfair labor practices.

### **2.3.1.3. Compensable Delays versus Non-Compensable Delays**

According to Theodore (2009) compensable delay is a delay where the contractor is entitled to a time extension and to additional compensation. Relating back to the excusable and non excusable delays, only excusable delays can be compensable. Non-compensable delays mean that although an excusable delay may have occurred, the contractor is not entitled to any added compensation resulting from the excusable delay. Thus, the question of whether a delay is compensable must be answered. Additionally, a non excusable delay warrants neither additional compensation nor a time extension.

Authors such as Fugar and Pagyakwah-Baah (2010) stated that excusable non compensable delays are normally beyond the control of either owner or contractor such as unusual weather conditions, natural disasters, wars, national crises, floods, fires or labor strikes. They add that usually the contractor is entitled to a time extension, but not additional compensation for damages Mohammed and Isah (2012). Trauner et al (2009) discussed that if a delay is compensable or non compensable basically depends on the issues of the contract. The contract determines the types of delays in detail and for which delay the contractor is entitled to extension or monetary compensation.

### **2.3.1.4. Concurrent Delays**

It is the result of more than one factor at the same time, leading to a delay in the project or overlapping periods (Alaghbari et al., 2007). The concept of concurrent delay has become a very common presentation as part of some analysis of construction delays. According to Theodore (2009) the concurrency argument is not just from the standpoint of determining the project's critical delays but from the standpoint of assigning responsibility for damages associated with delays to the critical path. Owners will often cite concurrent delays by the contractor as a reason for issuing a time extension without additional compensation. Contractors will often cite concurrent delays by the owner as a reason why liquidated damages should not be assessed for its delays. Unfortunately, few contract specifications include a definition of concurrent delay and how concurrent delays affect a contractor's entitlement to additional compensation for time extension or responsibility for liquidated damages.

In analyzed concurrent delays, each delay is assessed separately and its impact on other activities and the project duration is calculated. There are some guidelines for concurrent delays classification. Firstly, if excusable and non-excusable delays occur concurrently, only a time extension is granted to the contractor. Next, if excusable with compensation and excusable without compensation delays occur concurrently, the contractor is entitled to time extension, but not to damages. Lastly, if two excusable with compensation delays occur concurrently, the contractor is entitled to both time extension and damages.

According to Lee et al (2007) concurrent delays may be generated by the contractor or by the owner, but if it happens that both parties are responsible, and these delays overlap then neither party can be able to retrieve damages. According to Theodore (2009) Concurrent delays could be caused by the delaying effects of events that were either excusable (i.e. the events for which the employer takes the risk of time and for which extensions of time should be granted to the contractor) or culpable (i.e. events for which the contractor takes the risk of time).

Delay in implementation of projects and cost increase are common phenomena in projects worldwide. However, these are especially severe in developing countries. Delayed implementation gives a project a difficult star. Unduly, long time taken for project implementation results in time-overrun which is invariably followed by cost overrun. Cost-overrun has the ill effect of affecting the financial viability of the project. The problem of cost-overrun will get more compounded if the finance necessary to meet the increased cost cannot be arranged in time. Any delay in arranging for the finance needed to meet the cost overrun will only further tend to increase the cost and this may land the project in trouble leading eventually to the death of the project and the project may not take off (Adhikarib, 2002).

#### **2.4. Causes of Delays**

Mulenga et al (2013) "Causes of delays are factors or events that occur before and during the construction process that will affect the time of completing a project".

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The main purpose of this study is to identify the cause of delay factors on project completion.

Literatures review was made for this particular research study on the causes delay in construction projects since some of the Banks' client's in the industry sector projects are turn key projects I think the it will be applied for projects delay in general. Generally, there are many factors that contributed to causes of delays in construction projects, these range from factors inherent in the technology and its management, to those resulting from the physical, social, and financial environment. Different researchers in different countries investigate factors influencing project completion from different perspectives. There are in total of seven groups of causes for delay in construction project. Those are; causes of delay by client, causes of delay by contractor, causes of delay by Consultant, causes of delay by materials, causes of delay by equipment, causes of delay by labors and causes of delay by external factors (Theodore, 2009).

## **2.5. Empirical Review on Delays**

Delay and cost overrun are inherent part of most projects despite the much acquired knowledge in project management. Although some may argue that this is negligible (Flyvbjerg, 2009), it is important to note that physical and economic scale of projects today is such that it is driven under the platform of profit to the parent organization, and of national interest by the degree of success defined within the iron triangle of cost, time, and scope. It is therefore much appreciated to look at some reasons of delays and cost overrun in project and their mitigation process, so as to increase the perception of project success.

One major factor that has been identified as reasons for cost overrun in most projects is design errors (Nihal Jawad, 2015). It is important to note that proper representation of client's requirement and the blue print to achieving good technical input to project execution are usually mapped out based on project designs (Ibid). Thus a design with errors practically means wrong

or insufficient representation of project deliverables. This will lead to wrong application of techniques in achieving result, such that as the actual execution phase of the project unfolds these design errors, attempt to correct it will lead to delay and cost overrun. Another way design errors could lead to cost overrun and delay could be seen in the fact that project estimations are done based on the produced designs, as such, having errors in design in a form of omission or misrepresentation will mean that the estimation for the project cost will also include these omissions, thereby leading to extra works, change order etc, thus resulting in delay and cost overrun. Similarly, designs that are done without extensive investigation of site could contain potential errors. This is because such designs could lead to additional work, revision of scope of work, and contract revision as the actual site conditions begins to float up at the construction phase of the project. These will no doubt affect the overall project delivery time and cost. Bordat et al, (2004) cited causes of design errors in most projects as inadequate field investigation, error in design and specifications, plan errors, design changes etc. In controlling project delay and cost overrun due to design errors, the basic thing to be considered is the involvement of professional skills and application of competent tools throughout the project. Achieving error free design entails good communication with the entire design team and integrating a design process that is properly planned, giving enough time for corrections, extensive investigation and reviews. Similarly, an effective project planning, controlling and monitoring should be established to enhance project performance throughout the project life cycle. Proper site investigation should be done to ensure that all site conditions are noted in the design, and application of value management could be used to obtain the best cost effective design options.

Delay and cost overrun in project could be as a result of scope change. Scope is the term that defines the entire deliverables that is expected at the end of a project. Therefore, logically, it can be said that all project plans, estimation, schedule, quality and base lines are usually designed based on the initial project scope (Ambsisi A., 2011). Thus, any change in the project scope during execution will mean that the entire initial project plan will have to be reviewed such that a reviewed budget, schedule and quality will have to be developed. This means more time and resources will be needed as against the initial baseline. “With each scope change, precious project resources are diverted to activities that were not identified in the original project scope, leading to pressure on the project schedule and budget” (Narayan 2010). Project scope change could be as a result of wrong initial scope definition, inherent risk and uncertainties, sudden

change of interest, project funding change, etc. this could lead to change request which in turn could lead to change in project deliverables, budget and/or even the entire project team. Poor scope change management could lead to dispute that may require spending time and money on arbitration and litigation for what the contractor or the client believes he is entitled to. This will no doubt lead to delay and cost overrun of the project. To achieve a proper control for scope change, it is important to first identify the fact that change is inevitable in project and could equally be beneficial to the entire project success. Thus the most important thing to do is to integrate a proper change management plan such that a proactive approach could be adopted involving the project stakeholders and incorporating their needs throughout the project lifecycle. Similarly, to avoid disputes, it is important to always seek approval for changes from sponsor and communicate changes in a timely way. For highly evolving change in project, the scope could be frozen so as to concentrate on the expected deliverable.

Another major reason for cost overrun and delay in project is inappropriate and inadequate procurement and faulty contractual management system (Singh 2009). Contracts read out virtually every aspect of a business correlation, including payment terms, pricing, and service levels. Therefore a contract that has not highlighted the entire project scenario may lead to dispute in the contract system. For instance, if the initial contract does not completely specify every relevant aspect of the project work, this may lead to long chains of negotiations, arbitration and/or mitigation due work change orders and the quest for reviewed contractual agreement with new budgets and schedule. The result will no doubt be a project delay and cost overrun. Similarly, ambiguous contractual agreement with unclear clauses can be of potential dispute thus generating delay and cost overrun in project. In the same vein, delay and cost overrun could be inherent in terms of poor contractor selection and unethical behavior, contract bid amount, difference between the winning bid and second bid, difference between the winning bid and the engineer's estimate, etc (Singh 2009), and since majority of projects are executed by contractors, it is important to note that procurement process and contract management is critical to the successful completion of projects. Thus poor selection of contractors due to low bids, with no technical capability to handle the project will lead to cost overruns, schedule delays, poor quality, and a final result that is not acceptable. Also, a contract management system with clients that have a slow payment schedule could lead to delay and cost overrun.

To solve these problems, the needful and ethical thing to do is to firstly identify the most qualified contractor via an ethical tender system and draft out the most suitable contract type as applicable to the conditions of the project and also explicitly define the terms and conditions that govern the contract in clear clauses. These clauses should spell out the penalties associated to delays and cost overruns and the party to bear risk associated to these events. Similarly all important potential dispute contract clauses should be stated in clear unambiguous terms. The use of generic contract templates should be avoided and “careful consideration should be done when forming the contract, about what might happen during its operation, this will ensure that things are included in the contract documents that enable effective contract management”(Ambisi, 2011).

The complexity of project could also be a contributing factor to delay and cost overrun. Complexity could be defined in terms of the size of the project, most mega projects tend to have relatively long implementation period when compared to small project. This could be affected by inflation, change in material price and changes in exchange rates such that the initial budget may need to be supplemented for the project to be completed. The result could be cost overrun and long chains of negotiation which will lead to delay. Similarly, projects with high degree of complexity usually result in complex plans, schedules and estimations. Such that if care is not taken the tendency of omitting certain aspect of the project plans and/or estimation could be prominent, thereby leading to change orders. This could lead to delay and cost. Also, project complexity could also be defined in term of the diversity of stakeholders with different interest and long chain of communication channel with slow feedbacks (Cerpa and Verner, 2009). Therefore integrating their interest could take a lot of time and resources which when overlooked could result in conflicts and dispute, thus affecting the project in the context of delay and cost overrun. To eliminate or reduce the effect of delay and cost overrun due to project complexity, vigorous planning should be done, incorporating every important aspect of the project scope, milestones, delivery time, stakeholders, and methodology to be used. According Johnsinit 2010, “Managing complex projects needs experience, expertise and exposure”.

Thus, project needs its goals and scope to be defined, based on the client requirements. This helps the project to be kept on track and ensures doing only the job that is intended. It is, therefore, important to build a good team with project success interest at heart to achieve this.

A number of studies have been carried out to determine the causes of delay with special emphasis in construction projects. Sweis et al., 2008 studied the causes of delay in residential projects in Jordan and concluded that financial difficulties faced by the contractor and too many change orders by the owner are the leading causes of construction delay. Abd El-Razek et al., 2008 in a similar study in Egypt found that the most important causes of delay are financing by contractor during construction, delays in contractor's payment by owner, design changes by owner or his agent during construction, partial payments during construction, and non-utilization of professional construction/ contractual management.

Odeh and Battaineh (2002) found that contractors and consultants agreed that owner interference, inadequate contractor experience, financing and payments, labor productivity, slow decision making, improper planning, and subcontractors are among the top ten most important causes of construction delay in Jordan. And also as research conducted in Zambia road construction identified fourteen major causes of schedule variation (Chabota et al. 2008). Similar study conducted in Ethiopia showed severe delay in construction projects (Zinabu, 2016).

Effective time control is challenged by different factors. According to Olawale and Sun (2010) the top five factors inhibiting effective project time control in descending order are: design changes, inaccurate evaluation of projects time/duration, complexity of works, risk and uncertainty associated with projects and ill-performance of subcontractors and nominated suppliers. Kasimu and Abubakar (2012) discussed that conducted delay study in the Nigerian construction industry and identified the top five factors that influence delay in ascending order as improper planning, lack of effective communication, design errors, shortage of supply like steel, concrete and slow decision making.

Odeyinka HA, Yusif A. (1997) categorized some main causes of delays in Nigerian construction projects are the main project owner related causes of delay in Nigerian construction projects are variations of orders, slow decisions, and problems in cash flow and the main contractor related causes of delay in Nigerian construction projects are difficulties in finances, poor site inspection, shortage labor, problems in planning and scheduling, and problems in material management. In addition to, the main external causes of delay in Nigerian construction projects are natural disasters, weather conditions, conflicts, and labor disputes and strikes.

Assaf SA, Alkhalil M & Al-Hazmi M. (1995) categorized some main causes of delays in Saudi large construction project, the main causes of delay according to project owners are slow progress of contractor, labor shortage and poor skills, and errors in design and main causes of delay according to contractors are design modifications and changes, payments by clients, and approval and preparation of design drawing. Lastly, the main causes of delay according to consultants and engineers are slow decisions of client, subcontractor issues, and cash flow during construction.

Assaf and Al-Hejji, 2006 conducted a time performance survey of different types of construction projects in Saudi Arabia to determine the causes of delay and their importance according to each project participant (owner, consultant, and contractor). They identified seventy three (73) causes of delay during the research. The most common cause of delay identified by all three parties was change order followed by financial difficulties.

Assaf et al (1995) studied the most important reasons for delay in large construction projects in Saudi Arabia and the relative importance. A survey was undertaken of a randomly selected sample of 24 contractors, 15 consultant engineering office, and nine owners from the Eastern Province of Saudi Arabia. The survey included 56 causes of delay, asked of the sample questionnaire to determine the degree of importance for these reasons, the delay factors were grouped into nine major groups. The results show that there is a consensus in the views of both the contractors, consultants and owners in the order of reasons for the delay and its importance, and financial matters was ranked first among the items. Several reasons found in this study such as the delay in payment to contractors, change in engineering designs (scope change), mistakes in design, shortages and lack of employment experience.

Assaf and Al-Hejji (2006) studied a variety of projects in Saudi Arabia to determine the most important reasons for the delay in construction projects, from the point of view of both the owner, contractor and consultant. the study conducted on 23 contractors , 19 consultants and 15 owner was developed 73 reason for the delay in nine groups and the study showed that overtaking time by (10%-30%)and appeared the most common causes of delay is (change order) and found 45 out of 76 project may delayed from the planned date for the implementation of. The study revealed that most of the reasons for the delay are as follows: delay in progress

payments, ineffective planning and scheduling, poor supervision, shortage of labors and difficulties in financing.

Mezher and Tawil (1996) studied of the most important reasons for the major causes of delays in the construction industry in Lebanon and the relative importance of these reasons. Was undertaken a survey of a randomly selected sample of 11 owners, 15 contractors and 10 consultant engineering office from Lebanon. The survey included 64 causes of delay, grouped into 10 major groups, which the participants were asked to indicate the level of importance of each delay. the study showed that most of the reasons for the delay in construction projects in Lebanon are; factors related to the owner, contractor and consultant.

Al-Hindawi and Awad (2007) this study showed main reasons of delay in construction projects in Iraq, a questionnaire was includes 78 causes of the delay was presented the questionnaire to 27 who specializes in this area has been reached to 62 reasons in questionnaire after modify, were displayed on random samples include engineers, owner and contractors. Have been placed degrees of the reasons and find arithmetic mean and demonstrate the importance of the reasons, was used regression analysis method to find the relationship between the number of years of experience and the rate of delay rate among respondents. The most important reasons for delay appeared as follows:- refer the bid to the lowest price (unit price), owners financial incompetence and change in the price of materials (cost escalation), delay in laboratory tests of materials (late delivery of materials and poor logistic), the study showed that the reasons for the owner are more important in a delay, then the reasons for contractor.

Sambasivan and Soon (2007) identified the delay factors and their effect on project completion in Malaysia. Earlier studies considered either the causes or the effects of project delays separately. In this study an integrated approach and tries to analyze the impact of specific reasons for specific effects was done through the work of a questionnaire was distributed to 150 respondents from clients, consultants and contractors. Some of the causes are identified like experience of the contractor, inadequate funding by the client, lack of materials, unavailability of equipment and failure, weakness of the process of communication between the parties, errors during the implementation phase. Also ,(AL-Najar,2008) studied delay and cost overrun in the construction projects in Palestine-Gaza Strip through the work of a random survey includes 66 contractors and 27 consultants and 31 owners and contained 110 reason within 12 groups included

42 reason for cost overruns. There seems to be a general agreement between contractors, consultants and owners regarding causes of delays and cost overruns, the most important reason for the delay is political matters, especially strikes and border closures. The main causes of time delays included strikes and border closures, material related factors, lack of materials in markets, delays in materials delivery to the site. The main causes for cost overruns include price fluctuations of construction materials, contractor delays in material and equipment delivery and inflations.

Journal of National University of Sciences and Technology, NUST Campus, H-12, Islamabad, Pakistan at December, 2011 conducted causes and effects of delays in large construction projects of Pakistan to know the causes of project delay and distributed a total of 150 questionnaires among the respondents from different backgrounds working on large construction projects and by using scale ranging from 1 (not important) to 4 (very important) and then for each causes. Then, by using statistical formula  $RIR = PR/I*TR$  project owner's related causes like financial problems, inadequate fund allocation (low capacity of the promoter to cover unseen costs during the project implementation), external related causes like contractor and consultant related causes such as inappropriate construction methods, errors during construction, inadequate contractor's experience, changes in drawings (scope change), inadequate consultant experience and etc, suppliers related factors such as shortage of material, late delivery, and as well as delay in disbursement of allocated fund are some of the causes for project implementation.

For the purpose of this study, I have classified delay causes into three. The first is the one caused by the Bank's actions such as, lack of prudent pre-credit risk assessment, bureaucratic loan disbursement, poor supervision, follow up and inspection by the Bank, lack of comprehensiveness of appraisal report and similar cases, the second is causes originating from the project owners such as loan diversion, plan (scope) change by clients or clients initiated variations, failure to contribute equity contribution on time, low capacity of the project owner to cover unseen costs during the project planning and lack of comprehensiveness of feasibility study submitted by the project owner and the third is external factors such as cost escalation related factors (serious budget deficit resulted from fluctuation and price escalation, utilization of low unit price (unit rate) of civil works in estimating the cost and cost escalation on various items and underestimation of projects cost), suppliers related factors (shortage of foreign

currency, delays in the procurement machineries and materials required for the projects and late deliveries of materials) and government offices related factors (delay in obtaining the required documents from concerned government offices, municipality, regional environmental offices & etc, lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, investment office, different ministerial offices, regional governments, EEPCO and ERCA etc, government's failure to avail the required infrastructures like road, water, power on time and poor customs clearing and inefficient logistics), contractors and consultant related factors (rework due to errors during construction, conflicts between contractor, consultant and owner, poor communication and coordination among consultant, contractor and client, failure to build as per the approved design and specification, poor qualification of the contractor's technical staff and failure to give the required technical advice and feedback from consultant).

## **2.6. The Project Cycle**

The project cycle considers various stages in which each stage not only is grown out of the proceeding ones, but also leads into the subsequent ones. The planning process does not contain such a stringent sequence of events since all aspects of the project have to be considered simultaneously and, if necessary, adjusted to one another.

Therefore, projects cycle is a self – renewing cycle in that new projects may grow out of the old ones in a continuous process and self – sustaining cycle of activity.

As is in the case with aspects of project analysis, there are many equally valid ways in which the project cycle may be divided. There are various models that deal with the project cycle. However, here more emphasis is given to the Basic Models – **The Baum's cycle**.

### **2.6.1. The Baum Cycle (World Bank Procedures)**

The first basic model of a project cycle is that of Baum (1970), which has been adopted by the World Bank and initially recognized four main stages, namely.

1. Identification
2. Preparation
3. Appraisal and Selection
4. Implementation

### **2.6.1.1. Identification**

The first stage in the cycle is to find potential projects. Project identification could be resource based, market based, need-based, expansion of existing one or well-informed technical specialists and local leaders are also common sources of projects. In general, most projects start as an elementary idea. Eventually, some simple ideas are elaborated into a form to which the title “project” can be formally applied.

### **2.6.1.2. Preparation (Pre-feasibility & Feasibility Studies)**

Once projects have been identified, there begins a process of progressively more detailed preparation and analysis of project plans. At this stage the project is being seriously considered as a definite investment action. Project preparation (project formulation) covers the establishment of technical, economic and financial feasibility. Decisions have to be made on the scope of the project, location and site, soil and hydrological requirements, project size (farm or factory size) etc

Resource base investigations are undertaken and alternative forms of projects are explored. Complete technical specifications of distinct proposals accompanied by full details of financial and economic costs and benefits are the outcome of the project preparation stage. The project now exists as a set of tangible proposals. Project design and formulation is an area in which local and international consultants are very active especially for big project that cover large areas and have big budgets.

### **2.6.1.3. Appraisal**

After a project has been prepared, it is generally appropriate for a critical review or an independent appraisal to be conducted. This provides an opportunity to re-examine every aspect of the project plan to assess whether the proposal is appropriate and sound before large sums are committed.

Appraisals should cover at least seven aspects of a project, each of which must have been given special consideration during the project preparation phase. These are technical, financial, commercial/market, incentive, economic, managerial and organizational appraisals.

These issues are the subjects of specialized appraisal report. And on the basis of this report, financial decisions are made – whether to go ahead with the project or not. In practice, there can be quite a sequence of project selection decisions. Following appraisal, some projects may be discarded.

In the case of DBE where projects involve loan finance, the bank certainly carries out his own appraisal before completing negotiations with the borrower. Comments made at the appraisal stage frequently give rise to alterations in the project plan (project proposal).

#### **2.6.1.4. Implementation**

The objective of any effort in project planning and analysis clearly is to have a project that can be implemented to the benefit of the society. Thus, implementation is perhaps the most important part of the project cycle.

Each project implementing entity has its own internal project cycle with different definitions for various milestones, including project start dates. Some may consider project start to be the date an implementing entity's board approves a project, others the date of first disbursement, still others the date of the signed agreement between the entity and government. In case of the Development Bank of Ethiopia, however, projects are assumed to start implementation immediately after the signing of the loan contract. The Bank, in its project feasibility appraisal format sets out project implementation schedule from loan approval up to commencement of operation. Hence, 'projects implementation' in this study focuses on the period from loan contract signing up to the project commences operation and/or production of the specified products.

In project implementation stage, funds are actually disbursed to get the project started and keep running. A major priority during this stage is to ensure that the project is carried out in the way and within the period that was planned. Problems frequently occur when the economic and financial environment at implementation differs from the situation expected during appraisal.

Frequently original proposals are modified, though usually only with difficulty, because of the need to get agreement between the parties involved. It is during implementation that many of the real problems of projects are first identified. Because of this, the feedback effect on the discovery

and design of new projects and the deficiencies in the capabilities of the project actor can be revealed.

Therefore, to allow the parties involved in the project to become aware of the difficulties that might arise, recording, monitoring and progress reporting are important activities during the implementation stage. There are some aspects of implementation that are of particular relevance to project planning and analysis.

- i. The first is that the better and more realistic a project plan is, the more likely it is that the plan can be carried out and the expected benefit realized. This emphasizes once again the need for careful attention to each aspect of project planning and analysis.
- ii. The second is that project implementation must be flexible. Circumstances will change and project managers must be able to respond intelligently to these changes.

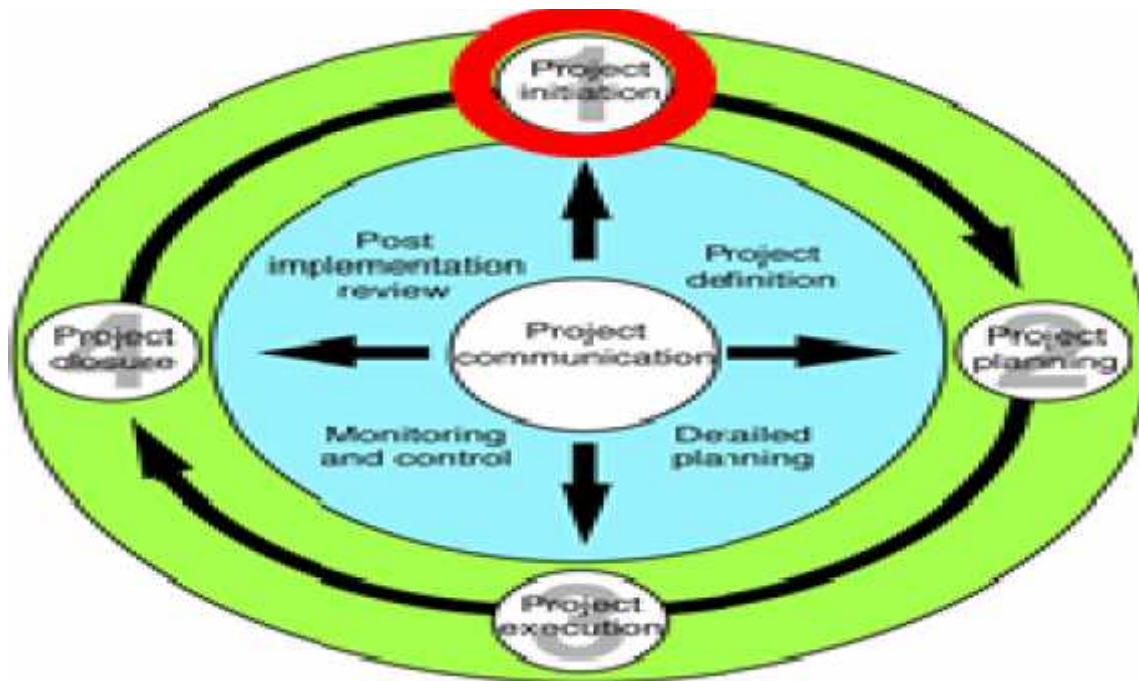
#### **2.6.1.5. Evaluation**

The final phase in the project cycle is evaluation. Once a project has been carried out, it is often useful, (though not always done) to look back over what took place, to compare actual progress with the plans, and to judge whether the decisions and actions taken were responsible and useful.

The extent to which the objectives of a project are being realized provides the primary criterion for evaluation. The analyst looks systematically at the elements of success and failure in the project experience to learn how better to plan for the future. Evaluation is not limited only to completed projects. Continuously evaluating the smooth implementation of the project is highly important. In the case of DBE, monitoring and evaluation is conducted following every release of loan at project implementation stage which is an important task to control that the funds are being used for the intended purpose. It is also a most important managerial tool in ongoing projects and rather formalized evaluation may take place at several times in the life of a project.

Evaluation may be undertaken when the project is in trouble, as the first step in a re-planning effort. Careful evaluation should precede any effort to plan follow – up projects. And, finally, evaluation should be undertaken when a project is terminated or is well into routine operation. Evaluation can help not only in the management of the project after the initial phase, but will also help in the planning of future projects.

The four phase of project life cycle with the related to project communication is stated figure 2.2.



**Figure 2.1:** *The four phase of project life cycle, adopted from J,westland, The project management life cycle, Kogan phase limited(2006).*

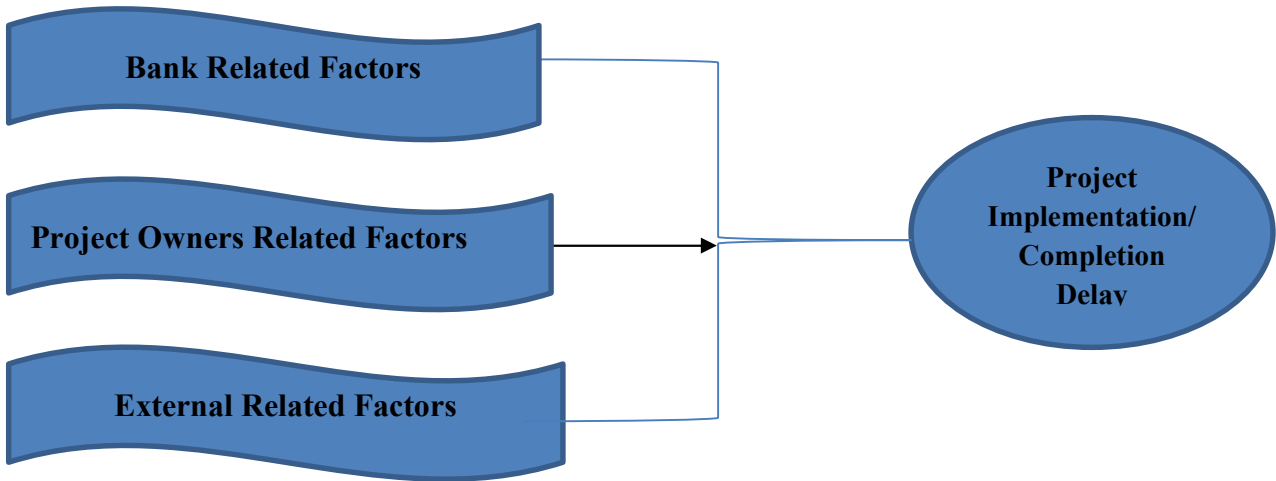
## 2.7. Conceptual Framework

Wideman (1990) and Ahmed et al. (2003) showed two type of factors caused delay in completing construction projects that are internal and external reasons. Internal causes are reasons produced from one of three main parties in the project (contractor, consultant and owner). External factors related to materials, weather conditions, governmental, political reasons, etc. There are many reasons that lead to delay in construction projects, which come from different sources and cannot be counted; each project has a special environment and circumstances that distinguish it from other projects such as nature of work, total cost, experience of contractor, site condition, and flexibility in design and implementation (Alzubaydi, 2000).

Based on above researchers and empirical review part of this study, below conceptual framework captured which is a tabulated relationship between the independent variables and dependent variable. The study was guided by conceptual framework.

**Figure 2.2 Conceptual framework of the study**

**Independent variables (Critical Delay factors)**



Source: Own Analysis

The conceptual frame work states that causes of project implementation delay leads projects not to be implemented as per schedule and this leads to cost and time over run. Cost and time over run leads projects fail to meet their repayment plan and this makes rescheduling of loan repayment by the Bank which results in decrease in loan recovery performance.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1. Introduction**

The methodology refers to the procedural framework within which the research is conducted. This chapter will present how the current study was designed and provide a clear description of the specific steps that were taken to address the research problem and test each of the six hypotheses. This chapter presents the procedures to be used in conducting the study, focusing on research design, target population, sample and sampling procedures, research instruments, and data collection and analysis procedures.

#### **3.2. Research Type**

This study is applied research type in application because it is aimed at solving a currently experienced problem in project financing. It is also an explanatory research type in objectives because it is intended to explain the cause and effect relationship between causes to projects implementation delay and project delay and mixed research approach (structured and unstructured) in mode of inquiry (which both qualitative and quantitative research methods are applied).

#### **3.3. Research Design**

In order to answer the research questions and achieve the stated objectives, the study used a combination of descriptive and inferential research designs. The cause and effects (causal) relationship between variables are assessed throughout the study. Causal research design is designed to collect raw data and create data structures and information that will allow the decision maker or researcher to model cause-and-effect relationships between two or more decision variables (Hair et al., 1998). The research also used a cross sectional data because the data was collected at one point in a time to assess the causes of project implementation delay of the projects those financed in the case bank (DBE). Cross sectional data is a study in which various segments of population are sampled at a single point in a time (Zikmend, 2003).

Initially, the delayed projects and their respective factors are identified by reviewing projects implementation follow up reports, project completion and project operation follow-up conducted by the Bank and as the bank's quarterly report as at December 31, 2017 G.C, a total of 222 projects have delayed beyond their planned implementation schedules those approved projects from January, 2014-December 2017 for consecutive of three years.

Questionnaires, interviews, and document analysis were the main data collecting tools for this study. Self framed questionnaire designed for identification of the most important factors of project implementation delay was applied. Respondents are asked to indicate by ticking a column the relative importance of each of the factors of project implementation delay (in terms of 5 = 'Strongly Agree' 4='Agree', 3 = 'Neutral', 2 ='Disagree', 1 = 'Strongly Disagree'). In addition, non-structured interviews of the bank's credit officers, their immediate supervisors/team leaders and clients/promoters of projects facing project implementation delay selected based on literature search are conducted.

The purpose of interviewing the key players is essentially to validate a preliminary set of project implementation delay factors gleaned from literature and to determine from their experience other causes which cause project implementation delay. To assess the both causes of project implementation delay qualitative and quantitative methods of data analysis techniques were applied.

### **3.4. Research Approach**

Depending on the type of data that are used in the research, the general research approaches are identified, qualitative or quantitative. The quantifiable data are gathered by closed ended questions of the questionnaire which were designed to keep the respondents in scope. There were also open ended questions, providing unquantifiable data, which were designed to provide respondents with the freedom of expressing what they believe important for the study. This leads for the study to use a mixed mode of inquiry which both qualitative and quantitative research methods are applied.

### **3.5. Study Population**

According to Kitchenham (2002) population represents the group or the individuals to whom the survey applies. In other words, population contains those group or individuals who are in a position to answer the questions and to whom results of the survey apply.

The background of the selected organization is discussed here in short and precise. The development bank of Ethiopia (DBE) is specialized financial institution established to promote the national development agenda through development finance and close technical support to viable projects from the priority areas of the government by mobilizing fund from domestic and foreign sources while ensuring its sustainability. DBE's distinguishes feature is its "project" based lending tradition. Project financed by the Bank are carefully selected and prepared through appraised, closely supervised and systematically evaluated. Since its establishment in 1909, the bank has been playing a significant role in promoting overall economic development of the country. Currently the bank has 110 branches in Ethiopia including districts and head office. All branches of the bank are not on the same level in all aspects of the bank operation. On the bases volume of loan sanctioning limit, type of bank services and number of employees from higher level to lower level, the bank has classified as head office (corporate level), Districts and under each districts there are different branches of the bank which are graded as A, B and C branches.

Thus, in the current study the populations (projects) for this study head office (corporate level) financed projects was selected by probability sampling from head office and districts financed projects. From probability sampling method, simple random probability sampling method was implied and projects financed at corporate level was obtained. Projects under consideration at corporate levels are engage in mega project financing and have relevant information related to the research input.

Most of the loans, especially those of Mega Projects, are located in the Head Office. Until very recently, the lending limit of district offices was set at a maximum of Birr 25 million which has recently increased to Birr 45 million on date 28/2/2018. Hence, due to this low lending limit of districts, more than 80% of the total loan portfolio of the Bank is found in Head Office. The researcher applied proportionate stratified sampling technique. In doing these first the researcher was divide the total population (projects) in to different STRATA based on loan sanctioning limit from 25- 100, above 120 million respectively. By applying simple random

probability sampling method, projects those loan sanctioning limit above 120 million was obtained. The target populations of the study was the total number of delayed projects from January 2014-December 2017 that found in the head office and loan sanctioning limit was 180million that found Addis Ababa and surrounding.

### 3.6. Sampling Method and Sample Size

According to the bank’s quarterly report as at December 31, 2017 G.C, a total of 222 projects have delayed beyond their respective implementation schedules from the approved projects the period ranging from January, 2014-December 2017 for consecutive of three years. From those projects 188 projects are above 120 million loans sanctioning limit those found in Addis Ababa and surrounding it. This is considered as the total population of the study. Therefore, it is very expensive in terms of money and time to collect data from those entire projects. So, that the researcher has to determine sample which is representative for the total population size. Uma Sekarar (2003) stated that a simplified formula to calculate sample sizes of finite population, which was used to determine the sample size for this particular study. A 95% confidence level is assumed for this formula to determine the sample size, at  $e=0.05$  and the sample size were determined by the following formula.

$$n = \frac{N}{1 + N(e)^2}$$

where ‘n’ is the required sample size,

N is the population size and

E is the level of percision

Applying the above formula,  $n = \frac{188}{1+188(0.05)^2} = 136.05 = 136$  rounding to nearest integer. So, a total of 68 sample sizes are selected as samples for this study.

Hence, again to ensure a balanced view, 136 questionnaires was distributed to DBE employees and 68 questionnaires to clients and their employee (a total of 136) questionnaires are distributed.

Table 3.1: Summary of questionnaire distribution and collection rate

<b>Sr. No</b>	<b>Respondent</b>	<b>Distributed</b>	<b>Responded</b>	<b>Response Rate (%)</b>
1	DBE employees	68	68	100%
2	Project employees	68	68	100%

*Source: Own Survey, 2018*

### **3.7. Data Type and Source**

For the completion of this study, both primary and secondary types of data are used. The primary data for this research is acquired from sample respondent of DBE employees, project employees and owners of the projects. The secondary sources are the second-hand information which includes project's files, recorded documents by bank and different documents such as annual reports, journals, articles, reference materials, different researches, various books, websites, other published and unpublished sources and relevant documents were used to avoid the inadequacies of the data and to make the study reliable.

### **3.8. Data Collection Methods/Instruments**

Questionnaires, interviews, and document analysis were the main data gathering tools for this study. Regarding this, Creswell (2009) states that employing multiple data collection instruments help the researcher to combine, strengthen and amend some of the inadequacies and for triangulation of the data.

The data is collected from both the primary and secondary data sources. The primary data was obtained through structured questionnaire and interviews. The secondary data was obtained through review of literatures, such as Bank's annual reports, journals, articles, reference materials, different researches, various books, websites, other published and unpublished sources and relevant documents, bulletins, follow up and inspection reports etc. The data collection process involved two stages. The first stage consisted of literature search for information on the causes of projects implementation delay in Ethiopia and in other countries. The second stage involved non-structured interviews of directors, team leaders and project promoters/owners and that have already become the Bank's clients involved in the implementation process. The purpose of interviewing the key players was essentially to validate a preliminary set of project implementation delay causes gleaned from the literature and to determine from their experience

other factors which cause project implementation delay in DBE financed projects. Questionnaires incorporating the most causes of delay are developed and distributed for data collection. The questionnaire was organized in the form of likert's scale. Respondents are asked to indicate by ticking a column the relative importance of each of the factors of project implementation delay (in terms of 5 = 'Strongly Agree' 4='Agree', 3 = 'Neutral', 2 = 'Disagree', 1 = 'Strongly Disagree'). A total of 136 questionnaires were distributed. The questionnaires were personally delivered to the respondents by the data collectors who also went back to collect them at appointed times. The collection of data took 4 weeks. At end of the period, 136 questionnaires (100%) were received for analysis out of which 68 were responses from project employees and owners of the projects and the remaining 68 were from the Bank's employees. The response rate by both employees was higher than expected by the researcher. The groups of respondents were most enthusiastic and cooperative.

The main tool for data collection was questionnaire. A questionnaire is a formalized set of questions for obtaining information from respondents that translate the researcher's information needs into a set of specific questions that respondents are willing and able to answer.

For the purpose of data collection, the researcher was used closed-ended questionnaires and structured interviews. Closed-ended questionnaires were prepared by considering main causes of project implementation delay in case projects financed by the Development Bank of Ethiopia.

### **3.9. Data Collection Method**

Data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses, and evaluate outcomes.

A self-administered, structured questionnaire was used to gather data from both place employees. The researcher was formally request permission from the bank for the study to distribute these structured questionnaires. Then after getting permission, distribution and collection of questionnaires and interviewing the concerned body was made by the researcher as per the schedule.

### **3.9.1. Questionnaires**

Questionnaire was used to collect relevant and first-hand information from the respondents who are currently working on process owner, team leader and expert positions at both organizations. The items of the questionnaire, which was designed by the researcher, was mainly close-ended questions and accompanied by some open ended ones. The ground why questionnaire was used is that it is easier to grip and is simpler for the respondents to reply to answer within a short period of time (Koul, 2008).

### **3.9.2. Interview**

non-structured interviews was used to collect data from directors, team leaders and project managers/owners that have already become the Bank's clients involved in the implementation process. The researcher will formally request permission from the bank and the project manager for the study as stated in ethical issues. Then after getting permission, distribution and collection of questionnaires and interviewing of the concerned body was made by the researcher as per the schedule. The motive why interview employed is that the procedure to be used is standardized and determined in the advance of the interview (Koul, 2008). Using this data gathering instrument is imperative to get substantial data about the issue under study.

## **3.10. Data Processing and Analysis**

### **3.10.1. Data Processing**

Document analysis was also used to gather the essential information about the factors of project implementation delay to strengthen the data obtained through questionnaires and interview. Due to this reason, documents, books, articles, and reports were used. In addition to this, Best and Khan (1989) states that document analyses are important and relevant sources of data and useful in yielding information and exploring educational practice. After collecting data from primary sources it was appropriately checked. In addition to that in-house editing was made by the researcher to detect errors committed by respondents during completing the questionnaires. Then the edited data was coded and manually enter in to the computer.

### 3.10.2. Data Analysis Techniques

In the study both qualitative and quantitative methods of data analysis techniques were employed. Analysis of data in this research was done by using statistical tools like mean, standard deviation and percentages, bivariate correlation type and multiple regressions analysis. Descriptive analyses were also used for demographic factors such as gender, age, educational level, and year of experience.

In the study six hypotheses were analyzed using methods of statistical inference. Pearson correlation analysis was conducted to test the existence of significant relationship between the delay factors and project delay. Then, the multiple regression analyses were also conducted to determine by how much percent the independent variable i.e. delay factors explain the dependent variable which is project implementation delay.

Causal analysis is concerned with the study of how one or more variables affect changes in another variable. It is thus a study of functional relationships existing between two or more variables. The data from the completed questionnaires was studied, re-coded and entered into the computer using the Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistics were employed to analyze quantitative data.

Base on the conceptual model of the study expressed by Figure 2.2, mathematically the relationship between delay factors and project implementation phase completion as scheduled is expressed in the multiple regression equation as:

$$Y = X_0 + X_1 (\text{PORC}) + X_2 (\text{DBERC}) + X_3 (\text{CERC}) + X_4 (\text{SRC}) + X_5 (\text{GORC}) + X_6 (\text{CRC}) + e$$

Where: Y= PD= Project Delay.

PORC = Promoter/ Owners Related Causes.

DBERC = DBE Related Causes.

CERC= Cost Escalation Related Causes

SRC= Supply Related Causes

GORC= Government Office Related Causes

CRC= Contractor & Consultant Related Causes

X<sub>0</sub>= the constant parameter.

X<sub>1</sub>= Coefficient of Promoter/ Owners Related Causes.

X<sub>2</sub>= Coefficient of DBE Related Causes.

$X_3$ = Coefficient of Cost Escalation Related Causes.

$X_4$ = Coefficient of Supply Related Causes.

$X_5$ = Coefficient of Government Office Related Causes

$X_6$ = Coefficient of Contractors & Consultant Related Causes

$e$  = error term

In accordance with the above mathematical model the constructed hypothesis were tested by considering significance level of each constant parameter in multiple regression analysis.

### **3.11. Validity and Reliability of Research Instrument**

In any research results, the issue of validity and reliability are important confidence measures. Validity and reliability are essential ways by which any research instruments are evaluated before being undertaken to the field for data collection.

#### **3.11.1. Validity**

Validity is the most critical criterion and indicates the degree to which an instrument measures what it is supposed to measure. According to Paton (2000), validity is the quality attributed to proposition or measures to the degree to which they conform to established knowledge or truth. Content validity of the research instruments is established in order to make sure that they reflect the content of the concepts in question and it is the extent to which a measuring instrument provides adequate coverage of the topic under study. The researcher went through the instruments and compared them with the set objectives and ensures that they contained all the information that answers the set questions and address the objectives.

Validity refers to the ability of the instrument to measure what it is designed to measure. Kumar, (2005) as cited by Ndegwa, (2013) defines validity as the degree to which the researcher has measured what he set out to measure. It is the accuracy and meaningfulness of inferences which are based on research results. Validity therefore is whether an instrument is on target in measuring what is expected to measure. To check the validity of the instrument the researcher worked with the adviser as the expert and agreed whether the instrument was valid or not. The tool was also subjected to peer review to ensure its validity. The instrument was subjected to face validity, content validity test and construct validity test through testing it using the research done in the past.

### 3.11.2. Reliability Test

Reliability is the extent to which the same finding will be obtained if the research was repeated at another time by another researcher. If the same finding can be obtained again, the instrument is consistent or reliable. The Cronbach's alpha instrument is one of the most commonly use for accepted measures of reliability. It measures the internal consistency of the items in a scale. It indicates that the extent to which the items in a questionnaire are related to each other (Fubara and Mguni, 2005). The normal range of Cronbach's coefficient alpha value ranges between 0-1 and the higher values reflects a higher degree of internal consistency. Different authors accept different values of this test in order to achieve internal reliability, but, satisfactory value is required to be more than 0.6 for the scale to be reliable (Sekaran, 2003 as cited by Mariam Sirbel, 2012).

According to Mugenda (2003), the reliability of an instrument is the measure of the degree to which a research instrument yields consistent results or data after repeated trials. In order to test the reliability of the instrument to be used in the study, the Cronbach's alpha method was used and the result was 0.953 which is possible to proceed to the distribution and collection data from the respondents for the study.

*Table 3.2 Cronbach's Alpha for the entire questionnaire*

Cronbach's Alpha	N of Items
0.953	22

**Source: Own Survey (2018)                      n=136**

In the study the Cronbach's alpha coefficient was calculated of the questionnaire. Table 3.2 above shows the values of Cronbach's Alpha of the questionnaire and the entire questionnaire.

*Table 3.3 Cronbach's Alpha for each of the Factors of delay*

<b>Reliability Statistics</b>		
<b>Causes of Project Implementation Delay</b>	<b>Cronbach's Alpha</b>	<b>N of Items</b>
Project Owner Related Factor	0.741	3
Bank Related Factor	0.868	4
Cost Escalation Related Factor	0.743	3
Supply Related Factor	0.753	3
Government Office related factors	0.701	4
Contractors and consultant related factors	0.852	5

**Source: Own Survey (2018)                      n=136**

Table 3.3 above shows the values of Cronbach's Alpha for the fields, the values Cronbach's Alpha ranged between 0.701 & 0.868. This is range considered high. Hence, the result ensures the reliability of each field of the questionnaire. Cronbach's Alpha for the entire questionnaire equals 0.953 which indicates very good reliability. Therefore, it can be said that the above questionnaire is adequately reliable.

### **3.12. Ethical Issues**

The respondents in the study were assured of confidentiality of the information they provided. The information obtained from this study was used for the fulfillment of the researcher's academic requirement. The information was not divulged to any third parties at any cost. Apparent explanation about the purpose and usefulness of the study and by excluding names and other identifying numbers from the questionnaire in order to pledge confidentiality of information and assure the respondent not participating in the research could not cause any harm and they were not disclosed to protect their rights and personal details was limited to general information as well as the letter dated 17/4/2018 G.C with Ref BAIS /H/88/18 to the institution (DBE) and the same date with Ref BAIS /H/89/18 to different projects from the University were assured confidentiality of the respondents. No respondent was forced to participate except those that voluntary agreed to participate in the study. The researcher maintained humility and conducted the research with utmost honesty avoiding distortions and misleading data manipulation. The researcher also endeavored to arrive at conclusions based on objective inferences that are purely and blindly guided by the data collected. The analysis of data and interpretation of the results of data analysis were restricted to what the data actually tell.

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATIONS AND INTERPRETTATIONS

#### 4.1. Introduction

The chapter deals with presentation and discussion of the statistical result of both the descriptive and inferential statistics.

Descriptive statistics stand for the conversion of raw data into useful information, which can be interpreted to explain a group of dimensions. They represent one of the most important early stages of statistical data analysis. This form of statistical analysis can include a number of outputs, including frequencies, %ages, means and standard deviation (Pallant, 2007). Inferential statistics is a part of statistics that is concerned with the analysis, interpretation and drawing conclusion about the source of the data (Dejene, 2011).

This chapter presents the analysis, discussions and findings on causes of project implementation delay. This was guided by the objectives to present empirical evidence to agree or controvert. The researcher administered questionnaires and used interviews to collect the data. The data that was collected was analyzed to be able to come up with results.

The objectives were to determine the project owner/clients related factors, DBE related factors, cost escalation related factors, suppliers related factors, government offices related factors, and contractors and consultant related factors that influences completion of projects on schedule. Descriptive statistics have been used to describe respondents' characteristics. Further regression analysis has been used to determine the relationship between the initial duration and final project duration. Correlation test has been applied to test the instrument reliability and the correlation of responses on the same issues coming from different professions.

The researcher issued 136 questionnaires and had a return rate of 136 or hundred percent (100% response rate). Questionnaire Return rate=  $136 \times 100 / 100 = 100\%$ . The questionnaire return rate as per the calculation is 100%. This return rate is considered acceptable for the purposes of data analysis, and the discussion here forth came from these data. This clearly indicated that employees of DBE and projects were very cooperative to fill the questionnaires.

#### 4.2. Description Characteristics of the Respondent

Here, the analysis of the collected data is presented in table followed by interpretations. A median response value below 3 indicates disagreement, 3 neutrality, and above 3 agreements to the statements of the respondents. A frequency analysis was also conducted for the profiles related to the general information about the respondents and projects. This information includes the gender of the respondents, age of the project respondents, marital status of the respondents, education level of the respondents, position level of the respondents and work experience of the respondents.

**Table 4.1: Frequency and %age of Respondents' Demographic Characteristics**

No	Demographic Factors	Classification	Frequency (n = 136)	%age
1	Sex of the respondents	Male	105	78.7
		Female	29	21.3
2	Age of the respondents	25 years or less	10	7.4
		Between 26-30Years	65	47.8
		Between 31-35Years	41	30.1
		Between 36-50Years	20	14.7
3	Marital status of the respondents	Married	61	49.9
		Single	75	55.1
		Divorced	-	-
		Widowed	-	-
4	Education level of the Respondent	Certificate	-	-
		Diploma	-	-
		Degree	81	59.6
		Maters	55	40.4
		PhD	-	0
5	Experience of the respondents	From 2 -5 years	40	29.4
		From 6-12 years	68	50
		From 13-25 years	28	20.6
6	Current position of the respondents	Directorate/Managerial	15	11.03
		Team Leader	24	17.65
		Senior	38	27.94
		Officer	46	33.82
		Junior	13	9.56

*Source: Own survey (June, 20180*

*n=136*

This table shows the summary of the respondents, characteristics. As we can see from the table above, 105 (78.7%) of the respondents were male and the remaining 29 (21.3%) of them were

females this shows gender distribution was not equal. Regarding the age the findings established that 10 (7.4%) took part in the study were 25 years or less, 65(47.8%) respondents was took part in the study were between 26-30 years, 41(30.1%) respondents was took part in the study were between 31-35 years. While 20 (14.7%) respondents aged between 36-50 years old. From this we can observe that in the sampled respondents found in their productive age.

As far as the educational qualification of employees is concerned, the below Table 4.1 shows that from the total respondents majority, 81(59.6%) of the respondents were degree holders, 55 (40.4%) of the respondents were masters holder. The results imply that the respondents are fairly educated and can understand and discharge their mandate in the management of projects.

Regarding to current position of the respondents the finding established that 15 (11.03%) of them were at Directorate or Managerial position, 24 (17.65%) of them were at team leader position, 38 (27.94%) of them were at senior level, 46 (33.82%) of them were at officer level position and 13 (9.56%) of them were at junior level position.

### **4.3. Descriptive Statistics of Variables**

#### **4.3.1. Perception of Respondents on Project Implementation Delay Factors**

In this section of the analysis, the employees response were used to assess their perception level on project delay factors of the DBE and project office staff employees. From the collected data, mean scores and standard deviations were calculated for all Five-Point Likert Scale items. Then to assess the employees' perception level of on each project implementation delay factors descriptive statistics, mean and standard deviation were considered.

According to Al-Sayaad, Rabea, and Samrah (2006) the calculated mean score of an item were classified in ranges to fit the five-scaled Likert's measure of responses (strongly disagree, disagree, neutral, agree, and strongly agree) as shown in the table 4.2 below. Hence, in this study the perceptions of employees on each item for all variables were labeled according to its calculated mean score result and the classification presented in following table.

**Table 4.2: Mean Score Range for Five-Scale Likert's Response**

Mean	Response
From 1.00 to less than 1.80	Strongly Disagree
From 1.80 to less than 2.60	Disagree
From 2.60 to less than 3.40	Neutral
From 3.40 to less than 4.20	Agree
From 4.20 to less than 5.00	Strongly Agree

*Source: Al-Sayaad et al. (2006)*

#### 4.3.2. Respondents Perception on Project Owner Related Factors

Project owners or clients are the identified customers that provide more values for projects through providing more profits, active long-term relationships, and powerful leadership for the bank (Akroush et al., 2011)

**Table 4.3: Mean and Standard Deviation Results of Project Owner Related Factors**

Questionnaires' Items	N	Mean	Std. Deviation	Over all Response
Diversion of the Disbursed Fund and scope change by clients	136	3.45	1.258	Agree
Low Capacity of the Promoter to Cover Unseen Costs During the Project Planning and Lack of Comprehensiveness of Feasibility Study Submitted by the Promoter	136	3.66	1.097	Agree
Failure to contribute equity contribution on time	136	3.51	1.241	Agree
Valid N (list wise)	136			
Aggregate Mean		3.54		Agree

*Source: Own Survey (June, 2018) n=136*

As shown in Table 4.3 above project owners/client related factors was assessed by three measurement items. According to the mean score of the items that describes project

owners/client related factors of project implementation delay, the highest mean score was attained by the item included to the level to determine the owners related factors are affecting the project implementation schedule with (mean = 3.66 & standard deviation = 1.097) and the least mean was scored by an item stated to analyze the project owners/client related factor (mean = 3.45, standard deviation =1.258). As the statistical results on Table 4.3 above depicts that, employees of both place agree with three items of project owners related factors (Diversion of the disbursed fund, low capacity of the promoter to cover unseen costs during the project planning and lack of comprehensiveness of feasibility study submitted by the promoter and failure to contribute equity contribution on time) for client related factors. This indicates that even though, owners/client related factors is one of the most important dimensions of project implementation delay that involves an overall bank (DBE) focus those clients can raise minimum level of equity contribution on time, utilize loan as per agreement and provide comprehensive feasibility study.

On the other side, information collected from interviewing team managers and directors of the corporate levels of the bank has to consider the situation related to project owners' related factors. According to them, since issue of development is top agendas of the government, for this particular case Ethiopian government by itself has its own strategy to let both foreign and domestic investors to be engaged in the investment activities by setting priority areas of investment. However, their response accepted the existence of some weakness from the promoter side in addressing that owners are affecting project implementation schedule from planned one.

#### **4.3.3. Respondents Perception on Bank (DBE) Related Factors**

Regarding to bank related factors, clients and bank should highly focus in order to implement project as scheduled time and bank should have minimize such factors those significantly affect project implementation schedule.

**Table 4.4: Mean and Standard Deviation Results of Project Bank Related Factors**

Questionnaires' Items	N	Mean	Std. Deviation	Over all Response
Lack of prudent pre- credit risk assessment	136	3.24	1.314	Neutral
Lack of Comprehensiveness of Appraisal Report	136	3.21	1.302	Neutral
Poor supervision, follow up and inspection by the Bank	136	3.24	1.278	Neutral
Delay in disbursement of loan and equity by the Bank	136	3.25	1.413	Neutral
Valid N (list wise)	136			
Aggregate Mean		3.24		Neutral

**Source: Own Survey (June, 2018) n=136**

According to the mean score of the items that describes bank related factors of project implementation delay, the highest mean score was attained by the item included to the level to determine the bank related factors are affecting the project implementation schedule with (mean = 3.25 & standard deviation = 1.431) and the least mean was scored by an item stated to analyze the bank related factor (mean = 3.21, standard deviation =1.302). As the statistical results on Table 4.4 above depicts that, employees of both place neutral with four items of project bank related factors (Lack of prudent pre- credit risk assessment, lack of comprehensiveness of appraisal report, poor supervision, follow up and inspection by the bank and delay in disbursement of loan and equity by the bank) for bank related factors. This indicates that even though, bank related factors is one of the most important dimensions of project implementation delay that involves an overall project delay factors that can delay projects implementation schedule from planned one.

On the other hand information gathered through interview indicates that, recently the bank has been making a considerable improvement in collecting and analyzing customer information to evaluate competitiveness of the services that the bank delivers to its customers by mentioning the currently effort that the bank made to facilitate knowledge management by adopting ERP (Enterprise Resource Planning) System. In addition to above one, to solve such problems the bank revised credit policy and loan manual in previous quarter.

#### 4.3.4. Respondents Perception on Cost Escalation Related Factors

Regarding to cost escalation related factors, clients and bank should highly focus in order to implement project as plan and concerned body have to take into account that the project implementation is heavily dependent on cost of all inputs.

Table 4.5: Mean and Standard Deviation Results of Cost Escalation Related Factors

Questionnaires' Items	N	Mean	Std. Deviation	Over all Response
Budget Deficit Resulted from Fluctuation and Price Escalation	136	3.42	1.303	Agree
Utilization of Low Unit Price (unit rate) of Civil Works in Estimating the Cost	136	3.29	1.349	Neutral
Cost Escalation on Various Items and underestimation of projects cost	136	3.54	1.240	Agree
Valid N (list wise)	136			
Aggregate Mean		3.42		Agree

*Source: Own Survey (June, 2018) n=136*

According to the mean score of the items that describes cost escalation related factors of project implementation delay, the highest mean score was attained by the item included to the level to determine the cost escalation related factors are affecting the project implementation schedule with (mean = 3.54 & standard deviation = 1.240) and the least mean was scored by an item stated to analyze the cost escalation related factor (mean = 3.29, standard deviation =1.349). As the statistical results on Table 4.5 above depicts that, employees of both place agree with two items of cost escalation related factors (budget deficit resulted from fluctuation and price escalation and cost escalation on various items and underestimation of projects cost) and whereas neutral with the reaming one items of cost escalation related factor. This indicates that even though, cost related factors is one of the most important dimensions of project implementation delay that can delay projects implementation schedule from planned one.

#### 4.3.5. Respondents Perception on Supply Related Factors

Regarding to supply related factors, clients/promoters and bank should highly focus in order to implement project as plan and government have to take into account that the project

implementation as our country is heavily dependent on supply of material those needed to implement projects.

Table 4.6: Mean and Standard Deviation Results of Supply Related Factors

Questionnaires' Items	N	Mean	Std. Deviation	Over all Response
Shortage of foreign currency	136	3.60	1.285	Agree
Delays in the procurement machineries and materials required for the projects	136	3.17	1.342	Neutral
Late deliveries of materials	136	3.44	1.287	Agree
Valid N (list wise)	136			
Aggregate Mean		3.40		Agree

*Source: Own Survey (June, 2018) n=136*

According to the mean score of the items that describes supply related factors of project implementation delay, the highest mean score was attained by the item included to the level to determine the supply related factors are affecting the project implementation schedule with (mean =3.60 & standard deviation = 1.285) and the least mean was scored by an item stated to analyze the supply related factor (mean = 3.17, standard deviation =1.342). As the statistical results on Table 4.6 above depicts that, respondents agree with two items of supply related factors (shortage of foreign currency and late deliveries of materials) and whereas neutral with the reaming one items of supply related factor (delays in the procurement machineries and materials required for the projects). This indicates that even though, supplies factors are one of the most important dimensions of project implementation delay that can delay projects implementation schedule from planned one and the bank and project owners should verify the source of supply for the project to implement as scheduled time.

#### **4.3.6. Respondents Perception on Government Office Related Factors**

Government have to consider factors related its office, and also clients/promoters and bank should highly focus as the gov't related factors that are affecting implementation of the projects and consider during project planning and appraisal report. To promote sustainable development the government also focus those factors that delay projects by knowing due to implementation

delayance of projects, the overall cost of projects increase and this affect the economy of the country.

Table 4.7: Mean and Standard Deviation Results of Government Office Related Factors

Questionnaires' Items	N	Mean	Std. Deviation	Over all Response
Delay in Obtaining the Required Documents from Concerned Government Offices. Municipality, Regional Environmental Offices & etc	136	3.54	1.122	Agree
Lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, Investment Office, Different Ministerial Offices, Regional Governments, EEPKO and ERCA etc	136	3.38	1.288	Neutral
Government's failure to avail the required infrastructures like road, water, power on time	136	3.71	1.198	Agree
Poor customs clearing and inefficient logistics	136	3.89	1.120	Agree
Valid N (list wise)	136			
Aggregate Mean		3.63		Agree

**Source: Own Survey (June, 2018) n=136**

According to the mean score of the items that describes government office related factors of project implementation delay, the highest mean score was attained by the item included to the level to determine the government office related factors are affecting the project implementation schedule with (mean =3.89 & standard deviation = 1.120) and the least mean was scored by an item stated to analyze the government office related factor (mean = 3.38, standard deviation =1.288). As the statistical results on Table 4.7 above depicts that, respondents agree with three items of government office related factors (delay in obtaining the required documents from concerned government offices. municipality, regional environmental offices & etc, government's failure to avail the required infrastructures like road, water, power on time and late deliveries of materials and poor customs clearing and inefficient logistics) and whereas neutral with the reaming one items of government office related factor (lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, investment office, different ministerial offices, regional governments, EEPKO and ERCA etc). This indicates that even though, government office related factors are one of the most important

dimensions of project implementation delay that can delay projects implementation schedule from planned one and government have to solve this problem as possible.

#### 4.3.7. Respondents Perception on Contractors and Consultant Related Factors

The purpose of bank, promoter is to effectively implement project as scheduled and the purpose of contractors and consultant is implement the project as bank and promoter agreement for the intended purpose.

Table 4.8 Mean and Standard Deviation Results of Contractors and Consultant Related Factors

Questionaries' Items	N	Mean	Std. Deviation	Over all Response
Rework due to errors during construction	136	3.64	1.257	Agree
Conflicts between contractor, consultant and client	136	3.52	1.271	Agree
Poor Communication and coordination among consultant, contractor and client	136	3.32	1.245	Neutral
Failure to build as per the approved design and specification	136	3.60	1.290	Agree
Poor qualification of the contractor's technical staff and failure to give the required technical advice and feedback from consultant	136	3.54	1.338	Agree
Valid N (list wise)	136			
Aggregate Mean		3.52		Agree

*Source: Own Survey (June, 2018) n=136*

According to the mean score of the items that describes consultant and contractors related factors of project implementation delay, the highest mean score was attained by the item included to the level to determine the consultant and contractors related factors are affecting the project implementation schedule with (mean =3.64 & standard deviation = 1.257) and the least mean was scored by an item stated to analyze the government office related factor (mean = 3.32, standard deviation =1.245). As the statistical results on Table 4.8 above depicts that, respondents agree with four items of consultant and contractors related factors (rework due to errors during construction, conflicts between contractor, consultant and client, failure to build as per the approved design and specification and poor qualification of the contractor's technical staff and failure to give the required technical advice and feedback from consultant) and whereas neutral with the

remaining one items of consultant and contractors related factor (poor communication and coordination among consultant, contractor and client). This indicates that that, consultant and contractors related factors are one of the most important dimensions of project implementation delay that can delay projects implementation schedule from planned one and consultant, contractors have great role in project implementation on time. Similarly, information was gathered from an interview conducted with directors. Basically they expressed their perception in this regard by pointing the strong agreement with consultant, contractors, client and bank should be needed as they do this work effectively and implement project without any delay case.

#### **4.4. Results and Discussion of Inferential Statistics**

##### **4.4.1. Correlation Results of Project Implementation Delay Factors and Project Delay.**

In this study, to process the correlation analysis, data from the scale typed questionnaires were entered in to the SPSS software version 24.

Correlation coefficient is used to specify the strength and the direction of the relationship between the independent variable (Owner/Clients Related Factors, DBE Related Factors, Cost Escalation Related Factors, Suppliers Related Factors, Government Offices Related Factors, and Contractors and consultant Related Factors that influences completion of projects on schedule.) and the dependent variable i.e. project delay. The results of the correlation between these variables are shown in table 4.9 below. As it is indicated in the table 4.9 below, generally there is a positive, strong and statistically significant correlation between project implementation delay factors and project delay at 1% level of significance ( $P < 0.01$ ) which signifies the project implementation delay causes on the project completion delay.

To be specific for each factors, from presented correlation matrix table again we can observe that there is a positive, strong and statistically significant correlation between project implementation delay causes (the project owner/clients related causes, DBE related factors, cost escalation related factors, suppliers related factors, government offices related factors, and contractors consultant and related factors that influences completion of projects on schedule) and project implementation completion delay, as the correlation coefficient between each factors and project delay described as 0.847, 0.805, 0.713, 0.708, 0.952, and 0.866 respectively and in all cases at 1% significance level ( $p < 0.01$ ).

**Table 4.9: Correlations between factors of project delay and project delay**

No.	Items	Profit Performance		
		Degree of the correlation	Level of significance	Significance
1	Owner/Client Related Factor	.847**	0.00	Significant
2	Bank (BDE) Related Factor	.805**	0.00	Significant
3	Cost Escalation Related Factor	.713**	0.00	Significant
4	Supply Related Factor	.708**	0.00	Significant
5	Government Office Related Factor	.952**	0.00	Significant
6	Contractor & Consultant Related Factor	.866**	0.00	Significant

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

**Source: Own Survey (June, 2018)**

**n=136**

#### **4.4.2. Discussion of the Correlation Results and Hypothesis Testing Results**

The findings of this research supported the earlier works on this subject matter. The hypothesis was to check for a significant relationship between all the dimensions of factor of project implementation delay and project delay. The correlation results presented in table 4.9 above indicates that all of the project implementation factors are correlated with project delay at 1% level of significance. The result of correlation analysis of this study was consistent with the findings of (Assaf, 2006; Sekaran, 2000 and Nihal Jawad, 2015) in which all project implementation factor significantly and positively related to project delay.

By taking the strength of their relationship, the finding further indicates that the government office related factor has highest correlation with project delay, followed by supply related factor and cost escalation factor. Comparatively the least relationship was found between Contractor & Consultant Related Factor and project delay.

The correlation coefficient between government office related factor and project delay is placed first from all correlation results of PD with ( $r=0.952$ ;  $p<0.000$ ). This means if the government improves the overall situation of its related factor, the project delay will be minimized by 95%. From this it is possible to say that the extent of government office performance can determine the project implementation schedule.

**Table 4.10. Summary of hypothesis testing of correlation**

Hypothesis	Tool	Outcome
H <sub>1</sub> : Owners related factors has correlation with project implementation delay	Correlation	<b>Correlated</b>
H <sub>2</sub> Bank (DBE) related factors has correlation with project implementation delay	Correlation	<b>Correlated</b>
H <sub>3</sub> : Cost Escalation related factors has correlation with project implementation delay	Correlation	<b>Correlated</b>
H <sub>4</sub> : Supply related factors has correlation with project implementation delay	Correlation	<b>Correlated</b>
H <sub>5</sub> : Government office related factors has correlation with project implementation delay	Correlation	<b>Correlated</b>
H <sub>6</sub> : Contractors & consultant related factors has correlation with project implementation delay	Correlation	Correlated

*Source: Own Survey (June, 2018) n=136*

#### 4.4.3. Regression Analysis and Hypothesis Testing Results

The regression analysis was conducted to know by how much the independent variable explains the dependent variable. In this study, regression was employed to examine the effect of the independent delay causes such as the project owner/clients related factors, DBE related factors, cost escalation related factors, suppliers related factors, government offices related factors, and contractors and consultant related factors that influences completion of projects on schedule on dependent variable project delay.

The Multiple regression analysis model the relationship between the independent variable and dependent variable. The coefficient of determination ( $R^2$ ) and correlation coefficient (R) shows the degree of association between the two. The results of the analysis indicates that  $R^2=0.926$  and  $R = 0.964$  that indicates that there is a positive relationship between independent variable (the project owner/clients related factors, DBE related factors, cost escalation related factors, suppliers related factors, government offices related factors, and contractors & consultant related factors that influences completion of projects on schedule) and dependent variable (project delay). Therefore, to make sure that there is low co-linearity, the values of Tolerance and VIF (Variance Inflation Factor) should be checked. According to Pallant (2007), tolerance indicates to what extent the independent variables do not explain much of the variability of a specified

independent variable and the value should not be small (more than 0.10) to indicate the absence of co-linearity. In addition to that, VIF, the inverse of tolerance value, should have a value of less than 10 to avoid any concerns of co-linearity (Pallant, 2007). Hence, the values in the table 4.10 below indicate low co-linearity because all Tolerance values are above 0.1 and all VIF values are less than 10. Therefore, these tests reflect that the variables used in the study are free from multi co-linearity.

**Table 4.11: Multicollinearity Test table**

No	Model	Unstandardized	Collinearity	
		Coefficients B	Tolerance	VIF
	(Constant)	0.329		
1	PORF (Project Owner Related Factor)	0.087	0.252	3.972
2	DBERF ( Bank Related Factor)	0.084	0.210	4.764
3	CERF (Cost Escalation Related Factor)	0.073	0.358	2.792
4	SRF (Supply Related Factor)	0.092	0.280	3.573
5	GORF (Government Office Related Factor)	0.706	0.140	7.119
6	CRF ( Contractor & Consultant Related Factor)	0.097	0.184	5.438

*Source: Own Survey (June, 2018)*

*n=136*

**Table 4.12: Multiple Regression analysis result of project implementation delay factor and PD**

Model Summary <sup>b</sup>									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.964 <sup>a</sup>	0.93	0.926	0.23277	0.93	283.72	6	129	0

a. Predictors: (Constant), CRF, SRF, PORF, CERF, DBERF, GORF

b. Dependent Variable: PD

The results of regression analysis indicate positive and significant relationship between the project delay factors and project delay. This means the predictive variables (independent variables) such as the project owner/clients related factors, DBE related factors, cost escalation related causes, supplier related causes, government offices related causes, and contractors & consultant related factors jointly determine the dependent variable project delay. The adjusted R-Square ( $R^2 = 0.926$ ) shows the explanatory power of all variables involved in the study. Hence the project owner/clients related factors, DBE related factors, cost escalation related causes,

supplier related causes, government offices related causes, and contractors & consultant related factors jointly determine (explain) 92.6% of the variance in project delay. Whereas 7.4% of the project implementation delay/project completion delay was explained by the variables which were not included in the study.

**Table 4.13: Beta Weights of Predictor Variables in the Test**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
	(Constant)	0.329***	0.091		3.616	0	0.149	0.509
PORF (Project Owner Related Factor)	Diversion of the Disbursed Fund and scope change by clients	0.087**	0.041	0.099	2.135	0.035	0.006	0.168
	Low Capacity of the Promoter to Cover							
	Failure to contribute equity contribution on time							
DBERF ( Bank Related Factor)	Lack of prudent pre- credit risk assessment	0.084**	0.039	0.11	2.157	0.033	0.007	0.161
	Lack of Comprehensiveness of Appraisal Report							
	Poor supervision, follow up and inspection by the Bank							
	Delay in disbursement of loan and equity by the Bank							
CERF (Cost Escalation Related Factor)	Budget Deficit Resulted from Fluctuation and Price Escalation	0.073**	0.032	0.089	2.286	0.024	0.01	0.135
	Utilization of Low Unit Price (unit rate) of Civil Works in Estimating the Cost							
	Cost Escalation on Various Items and underestimation of projects cost							
SRF (Supply Related Factor)	Shortage of foreign currency	0.092***	0.035	0.114	2.582	0.011	0.162	0.021
	Delays in the procurement machineries and materials required for the projects.							
	Late deliveries of materials							

GORF (Government Office Related Factor)	Delay in Obtaining the Required Documents from Concerned Government Offices. Municipality, Regional Environmental Offices & etc	0.706***	0.062	0.708	11.355	0	0.583	0.829
	Lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, Investment Office, Different Ministerial Offices, Regional Governments, EEPKO and ERCA etc							
	Government's failure to avail the required infrastructures like road, water, power on time							
	Poor customs clearing and inefficient logistics							
CRF (Contractor & Consultant Related Factor)	Rework due to Errors During Construction	0.097**	0.046	0.115	2.115	0.036	0.006	0.188
	Conflicts Between Contractor, Consultant and Owner							
	Poor Communication and Coordination among consultant, contractor and client							
	Failure to build as per the approved design and specification							
	Poor qualification of the contractor's technical staff and failure to give the required technical advice and feedback from consultant							

a. Dependent Variable: Project Delay (PD) \*\*\* Significant at  $p < 0.01$  and \*\* Significant at  $p < 0.05$

Source: Own Survey (June, 2018)

n=136

The values of the unstandardized Beta Coefficients ( $\beta$ ) indicate the effects of each independent variable on dependent variable. Furthermore, the values of the unstandardized Beta Coefficients in the Beta column of the Table 4.11 above, indicate which independent variable (determinants of delay) makes the strongest contribution to explain the dependent variable (project delay), when the variance explained by all other independent variables in the model is controlled. The  $t$  value and the sig ( $p$ ) value indicate whether the independent variable is significantly contributing to the prediction of the dependent variable.

The study's hypothesis testing was made based on  $\beta$ ,  $t$ , and  $P$  values. Hence using those coefficient results, the proposed hypotheses for this study were tested as follows.

**Hypothesis 1: Promoter/ Owners Related Factors Have a Significant Negative Impact on Project Completion.**

The results of multiple regressions, as presented in Table 4.11 above, revealed that project owners related factor had a positive and significant effect on project delay with ( $\beta = 0.087$ ,  $t = 2.135$  &  $p < 0.05$ ). Thus, the proposed hypothesis was accepted. This statistics infer that if the owner/promoters of the project increased its focus to his/her own related causes by one %, then its project delay would decreased by 8.7%. Therefore, promoter /owners related factors had a negatively affect the project completion time. The findings agree with Rashed (2008) and Scott (1991), Mezher and Tawil (1996) who argues that the factor that always happen relate to the project owners/clients related factors are: diversion of the disbursed fund, low capacity of the promoter to cover unseen costs during the project planning, failure to contribute equity contribution on time Ogunlana et al (1996) and lack of comprehensiveness of feasibility study submitted by the promoter.

**Hypothesis 2: DBE Related Factors Have a Significant Negative Impact on Project Completion.**

The results of multiple regressions, as presented in table 4.11 above, revealed that DBE related factors had a positive and significant effect on project delay with values ( $\beta = 0.084$ ,  $t = 2.157$ ,  $p < 0.05$ ). Thus, the proposed hypothesis was accepted. Here also the beta coefficient implies that if the attention is given to DBE related causes by one %, by keeping the other variables constant its project delay would decreased by 8.4%. Therefore, Bank (DBE) related factors had a negatively affect the project completion time. The findings concur with Frimpong, Oluwoye and Crawford

(2003) and Klopperborg (1987) that points out the causes always happen relate to DBE related causes are; lack of prudent pre- credit risk assessment, lack of comprehensiveness of appraisal report, poor supervision, follow up and inspection by the bank and delay in disbursement of loan and equity by the bank (Abd El-Razek, et al 2008).

**Hypothesis 3: Cost Escalation Related Factors Have a Significant Negative Impact on Project Completion.**

The results of multiple regressions, as presented in Table 4.11 above, revealed that cost escalation related factors had a positive and significant effect on project completion with values ( $\beta = 0.073$ ,  $t = 2.286$ ,  $p < 0.05$ ). Thus, proposed hypothesis was accepted. In this case the beta coefficient describe that keeping the other variables constant , in this model a one % unit change in the overall project cost escalation related factors, the consequence would be made change time in project completion by 7.3 %. Therefore, cost escalation related factors had a negatively and significant effect on project completion. The findings concur with Duran, 2006; Luu, et al. (2009) and Abdul Rahman (1993), Nihal Jawad (2015), that points out the causes always happen relate to cost escalation related factors are: budget deficit resulted from fluctuation and price escalation Al-Hindawi and Awad (2007), utilization of low unit price (unit rate) Al-Hindawi and Awad (2007) of civil works in estimating the cost and cost escalation on various items.

**Hypothesis 4: Suppliers Related Factors Expected to Affect Project Completion Negatively**

The results of multiple regressions, as presented in Table 4.11 above, revealed that suppliers related factors had a positive and significant effect on project completion with values ( $\beta=0.092$ ,  $t = 2.582$ ,  $p < 0 .01$ ). Thus, the proposed hypothesis was accepted. Here also the beta coefficient implies that if the supplier's related factors differ by one %, by keeping the other variables constant its project delay would increase by 9.2%. Therefore, suppliers related factors had a negatively and significant effect on project completion. The findings concur with Nihal Jawad (2015), Sambasivan and Soon (2007) that points out the factors always happen relate to suppliers related causes are shortage of foreign currency Shweiki (2013), delays in the procurement machineries and materials Tumi, et al (2009) required for the projects and late deliveries of materials Al-Najar (2008) and Al-Momani (2000).

### **Hypothesis 5: Government Office Related Factors Expected to Affect Project Completion Negatively.**

The results of multiple regressions, as presented in Table 4.11 above, revealed that government office related factors had a positive and significant effect on project completion with values ( $\beta=0.706$ ,  $t = 11.355$ ,  $p < 0 .01$ ). Thus, the proposed hypothesis was accepted. Here also the beta coefficient implies that if the government office related factors differ by one %, by keeping the other variables constant its project delay would increase by 70..6%. Therefore, government office related factors had a negatively and significant effect on project completion. The findings concur with Vidals and Najafi (2002) and Al-Najjar (2009), Wideman (1990) & Ahmed et al. (2003), Odeh & Battaineh (2002) and long et al (2004) that points out the factors always happen relate to government office related factors are delay in obtaining the required documents from concerned government offices, municipality, regional environmental offices & etc, lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, investment office, different ministerial offices, regional governments, EEPKO and ERCA etc, government's failure to avail the required infrastructures like road, water, power on time & poor customs clearing and inefficient logistics.

### **Hypothesis 6: Contractors and Consultant Related Factors Expected to Affect Project Completion Negatively**

The results of multiple regressions, as presented in table 4.11 above, revealed that contractors & consultant related factors had a positive and significant effect on project completion with values ( $\beta=0.097$ ,  $t = 2.115$ ,  $p < 0 .05$ ). Thus, the proposed hypothesis was accepted. Here also the beta coefficient implies that if the contractors related factors changed by one %, by keeping the other variables constant its project delay would increase by 9.7%. Therefore, contractors related factors had a negatively and significant effect on project completion. The findings concur with Nihal Jawad Albatsh (2015), Rashed (2008), Twort, (1975) and Oberlender (2006) that points out the factors always happen relate to contractors and consultant related factors are rework due to errors during construction Sambasivan and Soon (2007), conflicts between contractor, consultant and owner, poor communication and coordination Chan and Kumaraswamy (1998) and Tumi, et al (2009), failure to build as per the approved design and specification (Chesly and Ayers (1983) and poor qualification of the contractor's technical staff & failure to give the required technical advice and feedback.

Generally the results of multiple regression analysis supported the seven hypotheses constructed to test a positive and significant influence that each determinants have on project delay.

***Table 4.14. Summary of Hypothesis testing for Regression***

<b>H1:</b> Project owners' related factors have a significant negative impact on project completion as scheduled.	Multiple Regression	<b>Accepted</b>
<b>H2:</b> Bank (DBE) related factors have a significant negative impact on project completion as planned.	Multiple Regression	<b>Accepted</b>
<b>H3:</b> Cost escalation related factors have a significant negative impact on project completion as planned.	Multiple Regression	<b>Accepted</b>
<b>H4:</b> Supply related factors have a significant negative impact on project completion as planned.	Multiple Regression	<b>Accepted</b>
<b>H5:</b> Government Office related factors expected to affect project completion as planned negatively.	Multiple Regression	<b>Accepted</b>
<b>H6:</b> Contractors and consultant related factors expected to affect project completion as planned negatively.	Multiple Regression	<b>Accepted</b>

***Source: Own Survey (June, 2018)***

## CHAPTER FIVE

### SUMMARY, CONCLUSION ANDRECOMMENDATION

This chapter presents the conclusions on the finding of the research based on the literature review and a questionnaire survey. The main survey is owners, DBE and external related factor for delays is discussed in previous chapter related to causes of project implementation delay (the case of selected projects financed by head office of development bank of Ethiopia). This chapter deals also with the summary of major findings of the study and conclusions drawn from the analysis made. Furthermore, based on the findings of the study, possible recommendations are made.

#### 5.1. Summary of Major Findings

The main purpose of this study is to investigate the effect of promoter/owner related factors, bank (DBE) related factors; cost escalation related factors, supplier related factors, government office related factors, and contractors and consultant related factors on project implementation delay in the selected projects which are financed by Development Bank of Ethiopia at head office level. To examine the effect of causes of project delay, the specific objectives were formulated to investigate the causes of delay in project implementation phase.

Before going to the main analysis of the study, a reliability test was administered to check whether the questionnaire is reliable or not. In this regard, as table 3.2 illustrates, all the questionnaires were reliable and acceptable with Cronbach's Alpha result 0.953.

Related to the demographic characteristics, Table 4.1 specifies that majority of the respondents, 105 or (84%), were male and the rest are female. The majority of the respondents 65 (47.8%) were 26-30 years of age. Regarding educational level, majority of the respondents were degree holders. Regarding to work experience the table indicates that majority of the respondents, 68 or (50%), have less than six –twelve years of work experience.

In addition, the result of correlation analysis was made. In this regard table 4.9 shows that all the independent variables (promoter/owner related factors, bank (DBE) related factors; cost escalation related factors, supplier related factors, government office related factors, and contractors and consultant related factors) are positively and significantly correlated with the

dependent variable (project delay) at 1% level of significance ( $P < 0.01$ ). The highest correlation is attached to government office related factors ( $r = 0.952$ ), followed by contractor and consultant related factors ( $r = 0.866$ ), promoter related factors ( $r = 0.847$ ), bank related factors ( $r = 0.805$ ), supplier related factors ( $r = 0.708$ ), and cost escalation related factor ( $r = 0.713$ ).

Before performing multiple regressions analysis a test for the existence of multi-co-linearity was also made. As table 4.10 indicates, since all the Tolerance values are above 0.1 and almost all VIF values are less than 10, multi-co-linearity tests reflect that the variables used in the study are free from multi-co-linearity.

Finally, a multiple regression analysis was conducted to test the hypothesis. In this regard, Table 4.5 depicts the results of multiple regressions. The result shows that the model tested is significant ( $p < 0.05$ ) with the adjusted R square 0.926. This value indicates that 92.6 % of delay occurred is attributed to the six independent variables entered into the regression. The remaining 7.4 % of the variance in project completion may attribute to other factors. Regarding the hypothesis as table 4.13 illustrated, since the beta coefficients were found significant and the six hypotheses in the study are accepted as table 4:14. Moreover, the findings revealed that, government office related factor is found being the most dominant factor in determining project implementation delay of the project financed by the case DBE.

## **5.2. Conclusion**

Delayed implementation gives a project a difficult start, unduly long time taken for project implementation results in time-overrun which is invariably followed by cost overrun. Cost-overrun has the ill effect of affecting the financial viability of the project. The problem of cost-overrun will get more compounded if the finance necessary to meet the increased cost cannot be arranged in time. Any delay in arranging for the finance needed to meet the cost overrun will only further tend to increase the cost and this may land the project in trouble leading eventually to the death of the project and the project may not take off.

The first and second objective of the study has been successfully identified. Most of factors that cause delays were identified. among these factors most important factors that contributed to the causes of delays include shortage of equity contribution , miss/diversion utilization of the disbursed fund, low capacity of the promoter to cover unforeseen costs while planning the project and lack of comprehensiveness of feasibility study submitted by the promoter, lack of

prudent pre- credit risk assessment, poor supervision, follow up and inspection by the bank, delay in disbursement of loan and equity by the bank, lack of comprehensiveness of appraisal report, budget deficit resulted from fluctuation and price escalation, utilization of low unit price (unit rate) of civil works in estimating the cost, underestimation of cost of projects, shortage of foreign currency, delays in the procurement machineries i.e. delay in supply of equipment by suppliers late procurement of machineries and materials, late deliveries of materials, poor customs clearing and inefficient logistics, delay in obtaining the required documents from concerned government offices. municipality, regional environmental offices & etc, lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, investment office, different ministerial offices, regional governments, EEPKO and ERCa etc, government's failure to avail the required infrastructures like road, water, power on time, Poor customs clearing and inefficient logistics, rework due to errors during construction, failure to build as per the approved design and specification, poor qualification of the contractor's technical staff and failure to give the required technical advice and feedback and poor communication and coordination among between owner, consultant and contractors. Sufficient evidence has shown that project financed by DBE their implementation schedules are influenced by above factors.

As the finding of correlation analyses confirmed, there is also a strong, positive and significant relationship between delay factors and project completion. Similarly, from multiple regression analysis result that variability in project completion is resulted from the variability in delay factors.

### **5.3. Recommendation**

The importance of adequate and timely provision of financial support to investors investing in government priority area projects cannot be over emphasized. Adequate finance is the hub around which everything else revolves. Everybody and everything connected with investing in manufacturing, agriculture and agro-processing sectors is adversely affected by lack of sufficient cash flow. The challenge to clients of the Bank and of course, project managers/promoters, is to identify ways to eliminate or at least reduce the occurrence of financial crisis during the project implementation process.

Aligned with the above conclusion, the researcher proposes the following recommendations that

should be considered by concerned stake holders in order to reduce project implementation delay regarding DBE financed projects. In that regard, the following recommendations are made.

- ❖ The DBE has to incorporate in its appraisal study which shows the amount of foreign currency required for a project and pre-plan the source of foreign currency required annually. The total foreign currency requirement should be planned along with the Bank's annual operational plan. The Bank should strengthen and support firms involving in export oriented businesses and must ensure that adequate foreign currency are available or adequate arrangements for funds are made before projects are started.
- ❖ The Bank should design appropriate mechanism to check that clients coming to the Bank in request for project loans have the required equity contribution at hand so that they will contribute the equity immediately after loan contract signing and get into projects implementation. Therefore, the Bank has to make sure that there is reliable source of equity before accepting the loan application and disclaimer agreement signed by the owner/ manager of the project in order to minimize project implementation delay.
- ❖ The government of Ethiopia has availed a number of investment incentives such as tax holidays, loan guarantees, land guarantees to investors involving in manufacturing, agriculture and agro- processing sectors. Such guarantees alone would not bring a change unless the required infrastructures such as power, telecom, water, road and other infrastructures are not complementarily availed on time along with the other incentives.
- ❖ The different stakeholder government organizations such as DBE, Investment Office, Different Ministerial Offices, Regional Governments, EEPKO and ERCA etc should be gleaned towards promoting the investment activities in Ethiopia. As shown in the results, shortage of foreign currency is the other cause/factors. Hence, these government organizations should work collaboratively to help the investing activities in projects whose products are meant for export market. This will help to increase the country's export earnings and improve the foreign currency reserve of the country.
- ❖ Cost escalation on various items, and budget deficit resulted from price fluctuation and price escalations are also other causes of projects implementation delay. Therefore, the Bank needs to be aware on this factor and revise its cost estimation technique. The Bank shall also incorporate contingency budget plan in the project cost determination during appraisal report in order give breathing time for projects.

- ❖ In order to avoid miss utilization of the disbursed fund, the Bank shall monitor the whole operation of the project and shall detect any deviation in the project against plan (without the consent of the Bank). Diversion of funds for unintended purpose by clients shall be subject for immediate action on the project to the extent of blocking subsequent disbursements and/or cancellation of the loan. The disbursement of funds shall be in such a way that the budget for building and construction is directly to contractors and the budget for machinery and equipments, vehicles and major inputs are directly to the suppliers.
- ❖ Delay/ Late procurement of machineries and materials, late deliveries of materials are significantly affecting the implementation of projects from scheduled time. Therefore, award of contracts for civil works/supply of machinery and equipment to experienced firms of repute on fair and equitable contractual obligations plays a vital role in the execution of works and implementation of projects for achieving the objectives conceived at the planning stage. As the implementation of the project in physical terms begins with the award of contracts, it should be concluded with maximum expedition.
- ❖ Like rework due to errors during construction, conflicts between contractor, consultant and owner, poor communication and coordination between contractors, owners and consultant, failure to build as per the approved design and specification and give the required technical advice and feedback as necessary are some factors for contractors and consultant related causes for project implementation delays. Therefore, in order alleviate/minimize the problem of stated problems qualified contractors and consultant should be selected project implementation get into start project implementation.
- ❖ Lack of comprehensiveness of feasibility study submitted by promoter's i.e. inadequate investigations and project formulation, frequent changes in scope and revision of drawings due to inadequate project preparation are also the other causes of delay. A feasibility study is, therefore, a pre-requisite for preparation of a major development project on sound lines, and is not ruled out even for a minor one. It is basically an in-depth "three-in-one" study consisting of the technical, financial and economic viability of a project. The study arrives at a definite conclusion about the feasibility of a project after considering the various options. Hence, it should be a through feasibility study which does not overlook any significant element affecting the project. Moreover, the Bank's project appraisal

directorate staff shall have the required project appraisal and analysis background. They should get the required trainings so that projects are properly appraised and all investment components that are required for a project are incorporated in the appraisal document. As far as those causes are identified as factors for project delay the lending bank and project owners should be committed to improve the deficiency and to enhance the project completion against its time schedule.

### **Suggested Further Research**

This study gave attention to the key institutional factors that influence timely completion of projects financed by Development bank of Ethiopia. The study could not exhaustively cover all these factors and therefore there is need for more research in this area. The study recommends the inclusion of additional players in the sector namely external factors like corruption, knowledge of project management, labour productivity and weighted factor for the unknowns in project implementation. This will ensure that a project implementation can be properly managed with more certainties and anticipated outcomes.

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## APPENDICES

### Appendix I

#### QUESTIONNAIRES

**Dear Respondents:** I am studying Masters of Project Management in Addis Ababa University School of Commerce. Objectives of this questionnaire are designed to collect data about the “*Causes of project Implementation Delay*” the Case of Selected Projects Financed By Development Bank of Ethiopia. The findings of the study will be used for academic purposes. The information that you offer me with this questionnaire will be used as a primary data in my study which I am conducting as a partial fulfillment of the requirements for the Masters of project Management (MP) degree. Therefore, this research is to be identifying the main causes of project implementation delays and to draw up possible recommendations for successful implementation of projects with respect to internal and external factors as well as to identifying some methods of minimizing project implementation delay should be done by Development Bank of Ethiopia. Therefore, your genuine, frankly and timely responses are quite vital for the success of this study. So, I kindly request your contribution in filling the questionnaire honestly & responsibly. If you have any further question, explanation or clarification, you can get me through my email address [abrahamkisi@yahoo.com](mailto:abrahamkisi@yahoo.com) or 0947855072. Dear respondent, I would like to express my deep appreciation for your generous time, honest and prompt responses.

**Note:**

- No need to write your name
- Put tick (✓) mark in appropriate given box for your answer
- For question that demands your opinion, please try to frankly describe as per question on the provided pages

**Respondents ID. No** \_\_\_\_\_

**Section A: Respondents Background**

1. **Sex:** 0=Male  1= Female
2. **Age :** \_\_\_\_\_ in years
3. **Marital Status:** 1= Single  2= Married  3= Divorced  4=Widowed

**4. Your Current Position**

1= Managerial  2= Team Leader  3= Senior  4= Officer   
 5= Junior

**5. Educational Background**

1= Certificate  2=Diploma  3= BA/B.Sc  4= MA/M.Sc  5= PHD

6. **Your Experience in Years** \_\_\_\_\_

**Section B: Causes of Project Implementation Delay**

Please state your level of opinion for the Causes of project implementation delays by using the following rating scales: Please tick and fill the following. Each scale represents the following rating: 1= Strongly Disagree 2= Disagree 3= Neutral 4= Agree 5= Strongly Agree

Sr. No	Causes of Delay	Scale of Agreement				
		1	2	3	4	5
<b>Internal Factors</b>						
<b>Project Owner Related Factors</b>						
1	Diversion of the Disbursed Fund and scope change by clients					
2	Low Capacity of the Promoter to Cover Unseen Costs During the Project Planning and Lack of Comprehensiveness of Feasibility Study Submitted by the Promoter					
3	Failure to contribute equity contribution on time					
<b>DBE Related Factors</b>						
1	Lack of prudent pre- credit risk assessment					
2	Lack of Comprehensiveness of Appraisal Report					
3	Poor supervision, follow up and inspection by the Bank					
4	Delay in disbursement of loan and equity by the Bank					
<b>External Factors</b>						
<b>Cost Escalation Related Factors</b>						
1	Serious Budget Deficit Resulted from Fluctuation and Price Escalation					
2	Utilization of Low Unit Price (unit rate) of Civil Works in Estimating the Cost					
3	Cost Escalation on Various Items and underestimation of projects cost					
<b>Suppliers Related Factors</b>						
1	Shortage of foreign currency					
2	Delays in the procurement machineries and materials required for the projects.					
3	Late deliveries of materials					

<b>Government Offices Related Factors</b>						
1	Delay in Obtaining the Required Documents from Concerned Government Offices. Municipality, Regional Environmental Offices & etc					
2	Lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, Investment Office, Different Ministerial Offices, Regional Governments, EEPCO and ERCA etc					
3	Government's failure to avail the required infrastructures like road, water, power on time					
4	Poor customs clearing and inefficient logistics					
<b>Contractors and Consultant Related Factors</b>						
1	Rework due to Errors During Construction					
2	Conflicts Between Contractor, Consultant and Owner					
3	Poor Communication and Coordination among consultant, contractor and client					
4	Failure to build as per the approved design and specification					
5	Poor qualification of the contractor's technical staff and failure to give the required technical advice and feedback from consultant					

### Section C: Causes of Delay

Please state your level of opinion for the Causes of delays by using the following rating scales:  
Please tick and fill in the table below. Each scale represents the following rating:

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

Sr. No	Project Delay	Scale of Agreement				
		1	2	3	4	5
1	Project owner related factors are one of the causes for project implementation delay.					
2	Bank (DBE) related factors are the most determinant causes for project implementation delay those financed by DBE.					
3	Cost escalation related factors are the main causes for project implementation delay					
4	Supplier's related factors are one of the causes of the project implementation delay.					
5	Government office related factors are the most determinant causes of the project implementation delay					
6	Contractors and consultant related factors are the causes of project implementation delay.					

**Section D: Other Opinion of Respondents**

If you have other opinion on causes of delay in project rather than mentioned above kindly request to add here

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_
- d) \_\_\_\_\_

**Thank you again for your cooperation!!**

## Appendix II

Mean Standard Deviation and level of agreement results of owners' related factors

### Descriptive Statistics

	N	Mean	Std. Deviation
Diversion of the Disbursed Fund and scope change by clients	136	3.45	1.258
Low Capacity of the Promoter to Cover Unseen Costs During the Project Planning and Lack of Comprehensiveness of Feasibility Study Submitted by the Promoter	136	3.66	1.097
Failure to contribute equity contribution on time	136	3.51	1.241
Valid N (listwise)	136		

Mean Standard Deviation and level of agreement results of Bank (DBE) related factors

### Descriptive Statistics

	N	Mean	Std. Deviation
Lack of prudent pre- credit risk assessment	136	3.24	1.314
Lack of Comprehensiveness of Appraisal Report	136	3.21	1.302
Poor supervision, follow up and inspection by the Bank	136	3.24	1.278
Delay in disbursement of loan and equity by the Bank	136	3.25	1.413
Valid N (listwise)	136		

Mean Standard Deviation and level of agreement results of cost escalation related factors

### Descriptive Statistics

	N	Mean	Std. Deviation
Budget Deficit Resulted from Fluctuation and Price Escalation	136	3.42	1.303
Utilization of Low Unit Price (unit rate) of Civil Works in Estimating the Cost	136	3.29	1.349
Cost Escalation on Various Items and underestimation of projects cost	136	3.54	1.240
Valid N (listwise)	136		

Mean Standard Deviation and level of agreement results of supply related factors

### Descriptive Statistics

	N	Mean	Std. Deviation
Shortage of foreign currency	136	3.60	1.285
Delays in the procurement machineries and materials required for the projects	136	3.17	1.342
Late deliveries of materials	136	3.44	1.287
Valid N (listwise)	136		

Mean Standard Deviation and level of agreement results of Government Office related factors

### Descriptive Statistics

	N	Mean	Std. Deviation
Delay in Obtaining the Required Documents from Concerned Government Offices. Municipality, Regional Environmental Offices & etc	136	3.54	1.122
Lack of cooperation and insufficient communication among different stakeholder government organizations like the DBE, Investment Office, Different Ministerial Offices, Regional Governments, EEPKO and ERCA etc	136	3.38	1.288
Government's failure to avail the required infrastructures like road, water, power on time	136	3.71	1.198
Poor customs clearing and inefficient logistics	136	3.89	1.120
Valid N (listwise)	136		

Mean Standard Deviation and level of agreement results of Contractor & consultant related factors

### Descriptive Statistics

	N	Mean	Std. Deviation
Rework due to errors during construction	136	3.64	1.257
Conflicts between contractor, consultant and client	136	3.52	1.271
Poor Communication and Coordination among consultant, contractor and client	136	3.32	1.245
Failure to build as per the approved design and specification	136	3.60	1.290
Poor qualification of the contractor's technical staff and failure to give the required technical advice and feedback from consultant	136	3.54	1.338
Valid N (listwise)	136		

Correlations between causes of project implementation and project delay

		<b>Correlations</b>						
		PORF	DBERF	CERF	SRF	GORF	CRF	PD
PORF	Pearson Correlation	1	.654**	.591**	.624**	.855**	.766**	.847**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	136	136	136	136	136	136	136
DBERF	Pearson Correlation	.654**	1	.686**	.819**	.806**	.787**	.805**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	136	136	136	136	136	136	136
CERF	Pearson Correlation	.591**	.686**	1	.655**	.671**	.776**	.713**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	136	136	136	136	136	136	136
SRF	Pearson Correlation	.624**	.819**	.655**	1	.755**	.664**	.708**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	136	136	136	136	136	136	136
GORF	Pearson Correlation	.855**	.806**	.671**	.755**	1	.840**	.952**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	136	136	136	136	136	136	136
CRF	Pearson Correlation	.766**	.787**	.776**	.664**	.840**	1	.866**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	136	136	136	136	136	136	136
PD	Pearson Correlation	.847**	.805**	.713**	.708**	.952**	.866**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	136	136	136	136	136	136	136

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

**Multiple Regression analysis**

<b>Descriptive Statistics</b>				
	N	Mean	Std. Deviation	
PORF	136	3.54	.975	
DBERF	136	3.24	1.124	
CERF	136	3.42	1.055	
SRF	136	3.40	1.067	
GORF	136	3.63	.860	
CRF	136	3.52	1.015	
PD	136	3.75	.857	
Valid N (listwise)	136			

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.964 <sup>a</sup>	0.93	0.926	0.233	0.93	283.72	6	129	0

a. Predictors: (Constant), CRF, SRF, PORF, CERF, DBERF, GORF

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	92.232	6	15.372	283.720	.000 <sup>b</sup>
	Residual	6.989	129	.054		
	Total	99.221	135			

a. Dependent Variable: PD

b. Predictors: (Constant), CRF, SRF, PORF, CERF, DBERF, GORF

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.329	.091		3.616	.000		
	PORF	.087	.041	.099	2.135	.035	.252	3.972
	DBERF	.084	.039	.110	2.157	.033	.210	4.764
	CERF	.073	.032	.089	2.286	.024	.358	2.792
	SRF	.092	.035	.114	2.582	.011	.280	3.573
	GORF	.706	.062	.708	11.355	.000	.140	7.119
	CRF	.097	.046	.115	2.115	.036	.184	5.438

a. Dependent Variable: PD

## Reliability

### Case Processing Summary

		N	%
Cases	Valid	136	100.0
	Excluded <sup>a</sup>	0	.0
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
.940	6

### *Owners related factors*

#### Case Processing Summary

		N	%
Cases	Valid	136	100.0
	Excluded <sup>a</sup>	0	.0
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
.741	3

### *Bank (DBE) related factors*

#### Case Processing Summary

		N	%
Cases	Valid	136	100.0
	Excluded <sup>a</sup>	0	.0
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
.868	4

### *Cost Escalation related factors*

#### Case Processing Summary

		N	%
Cases	Valid	136	100.0
	Excluded <sup>a</sup>	0	.0
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
.743	3

### *Supply related factors*

#### Case Processing Summary

		N	%
Cases	Valid	136	100.0
	Excluded <sup>a</sup>	0	.0
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
.753	3

***Government Office related factors***

**Case Processing Summary**

		N	%
Cases	Valid	136	100.0
	Excluded <sup>a</sup>	0	.0
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
.701	4

***Contractors and consultant related factors***

**Case Processing Summary**

		N	%
Cases	Valid	136	100.0
	Excluded <sup>a</sup>	0	.0
	Total	136	100.0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
.852	5

## Factor Analysis

Pattern Matrix <sup>a</sup>								
	Factor							
	1	2	3	4	5	6	7	8
CRF2	<b>.822</b>	.127				.141		
CRF4	<b>.800</b>							
CRF3	<b>.758</b>				-.158		.205	
CRF5	<b>.721</b>							
CRF1	<b>.713</b>	-.115	.201					
DBERF8	.394	.213	-.190		.192			-.153
CERF2	.102	<b>.771</b>		.113		-.183		
CERF3		<b>.743</b>		.123				
CERF1		<b>.685</b>	.125					
SRF2		<b>.583</b>		-.175		.102	.347	
SRF1		.361		-.130	.248		.293	.110
GORF2			<b>.812</b>				-.135	
DBERF4			<b>.672</b>		.207			
GORF1		.155	<b>.655</b>					
GORF5	.135		<b>.564</b>					-.180
DBREF7		.139	.334			-.187		.169
PORF1				<b>.884</b>			.137	
PORF3	.105		-.179	<b>.499</b>		.159	-.144	.248
DBERF3		.172		.354		-.159		.142
DBERF7	.221		.202	.338		-.294	.112	
DBER2					<b>.869</b>	-.147		
DBERF5			.135	-.117	<b>.623</b>	.126		.100
DBEF1	-.194	.107	.140	.256	<b>.532</b>			-.135
PORF5	.326		-.115	-.124	.436			
PORF2			.117			<b>.509</b>		
SRF3				.179	-.111	.331	<b>.748</b>	
SRF4	.176	.137	-.121		.125		<b>.688</b>	
DBERF6		-.154		.259	.216	-.198	.300	
GORF4	-.108			.185		.156		<b>.910</b>
PORF4	.179		.179			.172		.284

Extraction Method: Maximum Likelihood.

Rotation Method: Promax with Kaiser Normalization.

a. Rotation converged in 10 iterations.

Using factor analysis the loaded data result which is greater 0.5 is acceptable and 0.475 is tolerable.