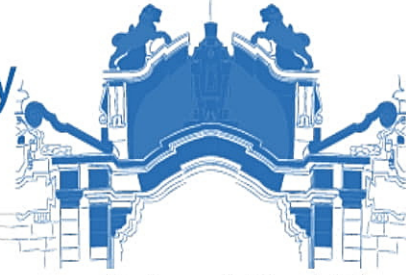




SEEK WISDOM, ELEVATE YOUR INTELLECT AND SERVE HUMANITY !

Addis Ababa University  
አዲስ አበባ ዩኒቨርሲቲ



## Assessment of Project Implementation Challenges at Balezaf Coal Fired Boiler Project

By Yilma Yisehak

GSD/2137/08

A Research Project Submitted in Partial Fulfillment of the Requirements for the  
Award of the Masters of Arts Degree in Project Management of the School of  
Commerce, Addis Ababa University

November 2018

## DECLARATION

This research project is my original work and has not been submitted for examination to any other university.

Signed-----

Date -----

Yilma Yishak

GSD/2137/08

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

Signed-----

Date -----

Worku Mekonnen (PhD)

Senior Lecturer

School of Commerce,

Addis Ababa University

This Research Project has been submitted for examination with my approval as the Chairperson, Business and Information System Department.

1. Signed -----

Date -----

Adane A. (PhD)

School of Commerce

Addis Ababa University

2. Signed -----

Date -----

Raju (PhD)

## DEDICATION

This project report is dedicated to my beloved family that is my wife and daughters for their support, morale and determination throughout my academic struggle and realizing my long cherished dream.

May Holy God bless Them

## ACKNOWLEDGEMENTS

The completion of this study would have been impossible without the material and moral support from various people. It is my obligation therefore to extend my gratitude to them. Firstly, I thank the Almighty God for giving me good health, and helping me through the entire life.

Secondly, I am greatly indebted to Dr. Worku Mekonnen who was my supervisor for his effective supervision, dedication, availability and professional advice. I extend my gratitude to Mr. Belay who supported me both financially and allowing work time to take courses and enriching my research with knowledge. The workers of Balezaf, and other customer company workers who were my respondents, deserve my appreciation for their support and willingness for providing the required information during my study. My appreciation finally goes to Ing. Habtamu and my classmates, with whom I weathered through the storms, giving each other encouragement and for their positive criticism.

## TABLE OF CONTENTS

	Page No.
Declaration .....	i
Dedication .....	ii
Acknowledgement .....	iii
List of Tables .....	vii
Abbreviations and Acronyms .....	iv
Abstract .....	x
CHAPTER ONE: INTRODUCTION .....	1
1.1 Background of the Study .....	1
1.2 The Background of Case Project.....	2
1.3 Statement of the Problem .....	3
1.4 Research Questions.....	4
1.5. General Objective .....	5
1.5.1. Specific Objectives.....	5
1.6 Significance of the Study .....	5
1.7 Scope of the Study.....	6
1.8 Limitations of the Study.....	6
1.9 Definition of Operational Terms .....	7
1.10 Organization of the Study .....	8
CHAPTER TWO: LITERATURE REVIEW .....	9
2.1 Introduction .....	9
2.2 Theoretical Review .....	9
2.3 Project Management .....	10
2.4 Project Implementation .....	11
2.5 Project Implementation Challenges and Success Factors .....	11
2.6 Empirical Review.....	15
2.7 Summary of the Literature Review.....	17

2.8 Research Gaps .....	18
CHAPTER THREE: RESEARCH METHODOLOGY .....	19
3.1 Introduction .....	19
3.2 Research Approach .....	19
3.3 Research Design .....	20
3.4 Population of the Study .....	20
3.5 Sampling Design .....	20
3.6 Data Collection and Collection Instruments .....	21
3.7 Validity and Reliability of the Questionnaire .....	22
3.8 Data Analysis and Presentation Methods .....	22
3.9 Ethical Considerations .....	23
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION .....	24
4.1 Introduction .....	24
4.2 Questionnaire Response Rate .....	24
4.3 Response Data Reliability Test Result .....	25
4.4 Profiles of Respondents .....	25
4.5 Current Status of Coal Fired Boiler Project .....	27
4.6 Evaluating Result of the Project from Perspective of Scope Triangle .....	28
4.7 Project Implementation .....	28
4.8 Project Implementation Challenges Faced by Balezaf Coal Fired Project .....	30
4.8.1 General Challenges Faced .....	31
4.8.1.1 The most Influenced Challenge Evaluation at Different stages of Implementation .....	33
4.8.2 Detail Evaluation of Each Implementation Challenges .....	34
4.8.2.1 Poorly Defined Scopes and Goals .....	34
4.8.2.2 Lack of Top Management Support and Follow-up.....	36
4.8.2.2.1 Level and Type of Support and Follow-up by Top Management .....	37
4.8.2.3 Project Team Structure and Composition .....	38

4.8.2.4 Evaluation Result on Challenges Related to Project Manager .....	40
4.8.2.5 Project Risk Management .....	42
4.8.2.5.1 Impact of Improper Addressing of Risks at Different Stages of Implementation.....	44
4.8.2.6 Project Communication Management .....	45
4.8.2.6.1 Most Lacked Communication Channels .....	48
4.9 Ranking of Major Implementation Challenges Using Relative Importance Index .....	50
4.10 Result of Correlation Analysis .....	51
4.11 Discussion .....	53
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	58
5.1 Introduction .....	58
5.2 Summary of the Study .....	58
5.3 Conclusions .....	59
5.4 Recommendations .....	60
5.5 Areas for Further Research .....	61
REFERENCES .....	62
APPENDICES .....	68
Appendix 1: Introductory Letter .....	69
Appendix 2: Research Questionnaire.....	70
Other important documents and credentials .....	71

## LIST OF TABLES

List of Tables	Page Number
Table 4.1: Questionnaire Response Rate .....	24
Table 4.2: Response Data Reliability Test .....	25
Table 4.3: Respondents Distribution by Department work Position/Organization, Experience and Deployment .....	26
Table 4.4: Response for Reason for not be Operational.....	27
Table 4.5: Summary of Respondents feedback on Implementation Performance from Perspective of scope Triangle.....	28
Table 4.6: Response Summary of Project Implementation Success Evaluation .....	29
Table 4.7: Descriptive Statistics Evaluation of Implementation Success in Department Basis .....	30
Table 4.8: Descriptive Summary of Challenges Impact Rating on Implementation in Department Basis .....	32
Table 4.9: Descriptive Statistics Summary of Respondents feedback on Ranking of Challenges anticipated .....	33
Table 4.10: Summary of Respondents feedback on the Impact of Poorly defined Scope and Goals on the project Implementation .....	35
Table 4.11: Descriptive Summary of Poorly Defined scope and Goal Distributed at Department Basis .....	35
Table 4.12: Project Impact Analysis of Top Management Support and Follow-up .....	36
Table 4.13: Descriptive statistics for Impact of Top management Support and Follow-up for Implementation .....	37
Table 4.14: Respondents feedback about Sufficiency of Support.....	38
Table 4.15: Summary of Project Team Competency Influence on Project Implementation .....	38
Table 4.16: Descriptive Summary of Project Team Competency Influence on Implementation	

Based on Department .....	39
Table 4.17: Respondents feedback for the most challenging Implementation stage for the team .....	40
Table 4.18: Summary of Response on Project Managers Effort Application and Competency in Different Stages of Implementation .....	41
Table 4.19: Descriptive Statistics for Table 4.18 in Department Basis .....	42
Table 4.20: Respondents feedback for Project Risk Management at the project .....	43
Table 4.21: Descriptive Statistics Summary of Table 4.20 in Department Basis .....	44
Table 4.22: Way of Communication in the Project Implementation Process and Stages at which Communication Gap was significant.....	46
Table 4.23: Communication Related Challenges Anticipated during Implementation .....	46
Table 4.24: Summary of Respondents feedback on Assessment of Project Communication.	47
Table 4.25: Descriptive Statistics of table 4.24 in Department Basis .....	48
Table 4.26: Most Lacked Communication Channel and Attention Level Needs .....	49
Table 4.27: Descriptive statistics of Table 4.26 in Department Basis .....	49
Table 4.28: Ranking of Implementation challenges Using RII .....	50
Table 4.35: Correlation between Measures of Project Success and Project Implementation.....	52

## ABBREVIATIONS AND ACRONYMS

<b>BALF</b>	<b><i>Balezaf Alcohols and Liquors Factory</i></b>
<b>EEPC</b>	<b><i>Ethiopian Electric Power Corporation</i></b>
<b>F</b>	<b><i>Frequency</i></b>
<b>N</b>	<b><i>Number of Respondent</i></b>
<b>PM</b>	<b><i>Project Manager</i></b>
<b>RII</b>	<b><i>Relative Important Index</i></b>
<b>SPSS</b>	<b><i>Statistical Package for Social Science</i></b>
<b>RQA1A</b>	<b><i>Project meets its Operational Performance goals</i></b>
<b>RQA1B</b>	<b><i>Project meet its technical performance goals</i></b>
<b>RQA1C</b>	<b><i>Project meet its Schedule Objectives</i></b>
<b>RQA1D</b>	<b><i>Project Stay within Budget Limits</i></b>
<b>RQA1E</b>	<b><i>Stakeholders are satisfied with project Result</i></b>
<b>RQA1F</b>	<b><i>The project Implementation Reflect company Business strategy</i></b>
<b>RQA1G</b>	<b><i>The Project Impact Exceeds Stakeholders Expectation</i></b>
<b><math>\alpha</math></b>	<b><i>Cronbach's alpha</i></b>
<b>%</b>	<b><i>Percent</i></b>

## ABSTRACT

*To comply with regulatory requirement and enhance service delivery to its customers, Balezaf alcohols and liquors factory was engaged in conducting expansion projects. Among them coal fired boiler is enumerable and thought to supply steam energy at cheap price using local coal as fuel; however due to different hindering challenges the company ambition couldn't come true. From this business ambition gap, the researcher initiated with general objective of the study to make implementation challenges visible that were faced by Balezaf moreover it recommended means that will solve problem at hand and prevent future occurrence of the given challenges in Balezaf as well as in other project endeavors. Specifically, the study sought to achieve the four objectives.*

*The given study followed inductive descriptive type of research and used both primary and secondary data obtained through two avenues, i.e. desk interview and structured questionnaire. The questionnaire contains both open ended questions and rating using Likert scale choice range from 1 to 5 (strongly disagree to strongly agree). To have better representation of respondents and to get reasonable feedback non-probability purposive sampling technique used they were grouped in three i.e. top management, project practitioners and external stakeholders, by giving quota of 5, 15 and 5 respectively and totaling 25 due to smaller project size. The respondents were carefully selected by considering their education, experience and frequency of deployment in project environment. All members of coal fired boiler project members, project practitioners and key external stakeholders taken as sample. After collection of necessary data, reliability test was conducted to check the consistency of respondent's feedback the result shows Cronbach's alpha value between  $(0.7 < \alpha < 0.8)$ .*

*The collected data through a structured questionnaire was analyzed using descriptive statistics and relative important index to rank different challenges. The strength of the resultant relationships, between the variables, was tested using parametric statistical methods such as correlation analysis coefficient. Then it was found that there were four critical challenges which were obtained after careful analysis of data from SPSS using questionnaire response. These challenges were poorly defined scopes and goals based on none realistic data, improper addressing of project risks, in effective communication among project stakeholders and none or unclear assignment of permanent head count project manager. In addition to these, other challenges, like insufficient support and follow-up from top management, team structure and insufficient resource were assessed and had low effect. The study concluded with, overall results indicate respondents were not satisfied with project implementation process with a composite mean of 1.76 out of a possible 5. This implies that project implementation in boiler project was not coordinated and led by competent project management; due to this, the company is bounded by cost and time overruns that need streamlining to enhance satisfaction. Therefore, to make the boiler operational the project leaders should find alternative fuel source, try to investigate ways to wash out soil particles from local coal and in collaboration with coal suppliers and other consumers find other coal sites and facilitate logistics by considering future benefit of local coal and expected expense.*

*Key words: Project management, Project implementation, Challenges, success factors,..*

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Initially, project success was referred to as reaching the objectives and the planned results in compliance with predetermined conditions of time, cost and performance. As knowledge in project management field developed, the “Golden triangle” was considered not enough to define project success. Project success recognized to be a complex, multi-dimensional concept encompassing many attributes (Mir, F.A. Pinnington, 2014). To increase complexity even more, within the last decades the concept of project success is approached in relationship with stakeholders’ perception (Davis, 2014), being accepted that success means different things to different people (Shenhar et al, 2001).

Projects implementation is usually preceded by a well defined project plan meant to guide during the implementation stage. However, there usually arise variations as activities progress. Gray and Larson (2003) in their focus on the implementation gap or variations defined it as the lack of consensus between the goals set by the top management and those independently set by lower levels of management. Three potential causes of project failure are the most important of all and if dealt with fully and completely, can help to avoid project failure. These are the project scope, risks and key assumptions.

Kerzner (2013) pointed out that project management is successful due to its methodological approach of process integration, process creativity, effective planning, execution, supervising and control, and lastly closure to accomplished completed projects.

Every industrial project is unique and has its own operating environment and sets of technical requirements. As a result, the execution of these projects subjected to numerous delay factors and leads to unexpected cost overrun. It is important to note that physical and economical scale of projects today is such that it is driven under the platform of profit to the parent organization, and national interest (for government project) by the degree of success defined within the iron triangle of cost, time and scope. It is much appreciated to look at some reasons of delays and cost overrun in projects and their management process to increase the perception of project success.

## **1.2 The Background of the Case Project**

Balezaf has been doing several expansion projects, which will increase its competitive advantage in its working industry. Among them Liquid waste treatment plant and Coal fired Boiler project are few innumerable projects. Initially the liquid waste treatment project was planned to use steam energy for evaporation unit from coal-fired boiler, which was thought the boiler could use Ethiopian coal as fuel. In preliminary survey on projects carried out at BALF, the study researcher has revealed that in the past project implementation history, Balezaf was not bad as the given integrated projects, which affected the company business strategy in wrong direction. The reason for this unexpected situation is due to different challenges anticipated on the coal-fired project.

The given project was launched September 2013, to use local coal from different sites in Ethiopia as source of fuel and it was assumed the project could cut fuel cost by 34% to produce a liter of liquor and run liquid waste treatment project. (Geological survey of Ethiopia Geochemical Lab report form GD0006, SUNITA IMPEX PVT. LTD 10TPH boiler Technical Specification, September 2013 and Balezaf Production Norm per Liter of Pure Alcohol issue#4). As it was said the project was taken as part of the environment pollution protection program by considering extra benefit by using local coal at cheap price. However after six years of delay the given project is not operational due to different challenges, originally it was expected that the boiler project could start steam supply in six months after launching. However, due to different problems encountered, it forced the company to revise the EMP (Environment management Program) five times and leads BALF to not to comply regulatory requirement by not running liquid waste treatment plant.

To make this project implementation challenges visible and overcome their negative impact the researcher tried to conduct in-depth study on the given coal fired boiler project. In addition to that, the findings from this research can be reference for future studies this kind of industrial projects and be guiding stone for Balezaf Top management while they are trying to conduct future projects.

### **1.3 Problem Statement**

In current competitive business environment, many business organizations are paying a significant attention to adopt Smart technology in their production system for improving the productivity, reducing risks and protecting the environment along with better quality products (Kolbers and Zuhlke,2015; Lu,2017; Stock and Seliger,2016; Varghese and Tander,2014).

To maintain the above saying Balezaf Alcohol and liquors factory on its EMP(Environment Management Plan) in 2013, put the launching of different projects which has direct impact on environment protection and enhance production efficiency with cost reduction. Starting from September 2013 the company has been conducting different projects, which could maintain protecting environment from pollution by erecting liquid waste treatment plant and producing liquor products with good quality and quantity at competitive price by cutting steam energy cost by 34 % (Technical specification document offered for 10TPH Boiler by SUNITA IMPEX PVT LTD. And Coal specification and consumption rate for 10TPH boiler by CHEEMA Boilers Limited on e-mail contact and coal purchasing invoice and furnace oil purchasing invoice). This was done by assuming locally coal is available at required quality and quantity at low purchasing price.

The level of success at project completion is thus based not only on time- and cost-based empirical criteria but also on an individual weighting of time, cost, and quality. Liu and Walker (1998) placed project success definitions in three categories: (1) “project goals,” (2) “satisfaction of the claimant(s),” and (3) “perception and awareness of different claimant(s).” Project goals represent those regarding the contract agreed time, cost and quality also known as the “iron triangle”. Long et al. (2004) define a successful project as one that is completed within agreed contract budget and deadline, in accordance with required specifications, and to the satisfaction of stakeholders. Similar related definition are also used by Avots (1969); Gaddis (1959); Handa and Adas (1996); Kerzner (1998); Morris and Hough (1987); Trauner (1993); Tuman (1983); Tuman (1986).

However, project implementation process is complex, usually requiring simultaneous attention to a wide variety of human, budgetary, and technical variables. Projects are often initiated in the context of a turbulent, unpredictable, and dynamics environment Jeffery and Slevin, (1987).

Since projects are initiated to bring about a new state for an organization, and therefore, projects are initiated for business results not for project results (Zwikael, et al.,2014). From this theoretical explanation and the given coal fired boiler project expected goals, we can say it is failed to maintain project goals at required time, budget and scope. To justify this with practical symptoms, the project is delayed for more than five years to engage in to operation due to different challenges and these also leads the company to spend more than expected cost.

When researching preliminary study survey on the project site, the mentioned problems anticipated on the project have shown certain practical challenges and problems. Some of the indicators for the challenges were, late electric power supply from national grid (after delay of 5years), poor quality of local coal which originally thought to be available in required quality and quantity, but test result shows some significant deviations on ash content observed and delays of civil construction due to suspended permeation of land for the given by local municipality.

BALF has been conducting wastewater treatment plant with coal fired boiler. However, after completion of liquid waste treatment and erecting of coal fired boiler, the treatment process has not operational and expected steam supply at relatively 34% cost reduction has not come to reality. Therefore the given research will try to assess what causes these challenges that have been occurred on the given coal fired boiler project and traced out means of solution by conducting in depth study on project implementation from beginning to current situation and fill gaps for non traceable challenges anticipated beyond from already researched by several project management scholars.

#### **1.4 Research Questions**

The main purpose of this study is to assess major challenges which BALF facing to make Coal fired Boiler project operational and to suggest possible means of solutions. Specifically this case study project will focus on implementation challenges from project specification/designing to commissioning stage.

## **Research Questions**

- What can we say about BALFs coal fired boiler project from perspective of project iron triangle?
- Does the project manager and project team structured based on the project complexity, what impact was anticipated at each phase of implementation?
- How was Pre-construction and Contract Execution carried out, project goals and scope defined and documented based on realistic information?
- After constructing and interconnecting necessary systems and equipments, what has been happened while the commissioning of project started; is all project risks properly addressed?

## **1.5 General Objectives**

The primary objectives of this study was assessing major challenges which BALF has been facing in the process of implementing coal fired boiler project and making them visible for finding means to tackle problems at hand. Moreover, to make the result and findings of this study future guidance and reference for both BALF and Project management endeavors.

### **1.5.1 Specific Objectives**

1. It evaluates the coal fired boiler project scope and goals against current situations,
2. It identifies critical issues regarding project performance metrics.
3. It identifies critical issues which were impacted the project implementation process,
4. Prepare a synthesis of findings for other project endeavors and
5. It finds and recommend means that could solve current projects problems at hand

## **1.6 Significance of the Study**

Since the given study is conducted on industrial project with complex and dynamics ends, it has significant impact on both BALF future expansion and other special projects.

This study was done for identifying several but significant challenges that cause the project became distressed and it also propose remedial solutions from study findings for the exiting

project as well as it could be roadmap for future projects before these challenges anticipated. Thus, significance for this study explained as flows:

1. By studying project implementation challenges and analyzing statistical results, future projects management may reduce the occurrence of that challenges and will accelerate the undone project works by giving immediate solution for problems at hands.
2. It helps management to priorterize challenges by considering their effects on the company overall performance.
3. Since industrial projects are repetitive, the study of implementation process result and finding will be future reference for project management professionals in similar industry as well as project managers of different fields in general.

### **1.7 Scope of the Research**

As it is delineated in the statement of the problem, the range of issues concerning the general topic of project implementation is vast defining criteria for project success/failure, identifying factors, investigating the reasons behind existence of these factors and bringing up solutions to tackle these causes, requires a large volume of research to cover. To narrow down this large array of issues and become more specific, this research aimed at addressing project implementation challenges at Balezaf Alcohol and Liquors factory coal fired Boiler project only. The study is academic research for the partial fulfillment of graduate degree with time limit maximum four months; hence it needs to evaluate the level of understanding and applying project implementation challenge concepts in designing, constructing and field operation of coal fired boiler project. The study based more on literature review and questioners, which were distributed to both internal and external stakeholders of the given project, key personal's, and selected people who worked on the same kind of projects in the past times and so on.

### **1.8 Limitation of the Study**

Since the study focused on single project with different stakeholders from different sectors data collection was difficult, and some stakeholders of the given project are segments of regional and Ethiopian governments, getting information was difficult and time consuming. Moreover, since

the research was conducted on industrial project, getting literatures and research articles for review was tedious.

### **1.9 Definition Operational Terms**

1. **Project-** defined as, possessing the following characteristics: A defined beginning and end (specified time to completion), a specific, predefined goal or set of goals, a series of complex or interrelated activities and a limited budget.
2. **Project delay-** is unplanned and unexpected deferment of a project because some event or occurrence that impedes the projects commencement or continuation.
3. **Cost overrun of project-** amount by which the actual cost exceeds the budgeted, estimated, original, or target cost.
4. **Project implementation-** is the phase where visions and plans become reality. This is the logical conclusion, after evaluating, deciding, visioning, planning, applying for funds and finding the financial resources of a project. Technical implementation is one of executing project.
5. **Implementation challenges-** refer to barriers to project implementation.
6. **Balezaf Alcohol and liquors factor PLC** – a company engaged in liquors production, largest in the industry and owned privately, and established at 1948 E.C.
7. **Pre-construction stage-** it includes, financial closing (if applicable), project kickoff, design and construction documents, plans/schedules, submittals.
8. **Contract execution stage-** contract oversight/quality control, change control
9. **Interconnection stage-** application review and approval process, final building inspection paperwork submittal to utility
10. **Project Construction stage-** Contract oversight/quality control and change control
11. **Commissioning stage-** Testing and verification, interconnection verification (utility) and utility permission to operate

## **1.10 Organization of the Study**

This study addressed introduction, a review of literature on project implementation challenge, the methodology and methods used to conduct the study, findings and results of the study and, finally, a discussion and implications of the study.

The introduction part includes background of the study, problem statement, research questions, objective of the study, significance of the study, scope and limitation of the study and definition of technical terms. I called this part as chapter one.

The review of literature (Chapter Two) covered some sayings on project in general, project implementation, project failure, the discourse concerning the definition of project-implementation challenges. The review of literature covered the authors' discourse on the efficacy of project implementation challenges, success factors on different sectors of project environment. The chapter also explored the discourse concerning the study of implementations to see what researchers have found regarding the challenges associated with implementing new projects at industrial projects. The literature review is theoretical and empirical, summary of conceptual review and concluded by research gap.

Chapter Three follows with details about the research methodology, the background and setting, information on the participant population, the data collection procedures through the questionnaire, and the methods for analyzing the data.

Chapter Four reviews the findings of the study, organizing the challenges, the project practitioners, top management and other stakeholders responses to the challenges.

Chapter Five concludes the study with implications of the study and recommendations for further research and future reference for future project endeavors.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter provides a through selective reference to some of the literatures related to the subject, a clearer understanding of theoretical review of the study subject, an empirical review, and a critique of the existing literature conducted by some scholars. Moreover, a summary of the literature review and in the end the chapter presents the research gaps, which the study tried to fill.

#### **2.2 Theoretical Review**

In today's business environment organizations are project based, meaning that they are doing several interlinked projects sequentially then we can say it program of projects designed to deliver the organization's business strategies and add value. Good management of these projects is essential if the organization is going to succeed. Equally important to individual project success is ensuring that the right projects are carried out. Jugdev and Muller (2005) in their article mentioned that in order to define what success means in a project context is like gaining consensus from a group of people on the definition of "good art." Generally, the views on project success have evolved over the years from simple definitions that were limited to the implementation phase of the project life cycle to definitions that reflect an appreciation of success over the entire project and product life cycle (Jugdev and Muller, 2005). However success without the satisfaction of external stakeholders leads to unexpected risks; therefore to me project success should be evaluated by considering both internal and external environment of the organization.

Organizations have varying levels of expertise in the project management function. Many of these organizations realize that to be successful, a better approach to project management is necessary. Project Management Maturity Matrix can help organizations improve the maturity of their project management processes, in terms of an evolutionary path from ad-hoc, disorganized processes to mature, disciplined project management processes (Kuen et al., 2009). As they pointed out, the matrix describes four levels of maturity in project management: at the first level,

projects are often delivered through the personal heroics and effort of the project manager and his/her team. They tend to be delivered in spite of the organization rather than because of it. At the second level, anybody can deliver here not just heroes, because there is an agreed methodology to be followed that helps repeat earlier successes from similar projects. Courses and training can help at this level. Thirdly, this is not only about delivering projects but also realizing benefits. This involves knowing what benefits are expected and when the project has delivered them. The concern at the fourth and final level is whether implementers are doing the right projects and how via those projects we can deliver the business strategy and add value. These sayings can work better when project implementers evaluated at the same project disciplines if not one project from another is quite different through its complexity, technology requirement, requirement human factors and level of resource needs; therefore level expertise in a certain organization to succeed in next project depends on situational factors.

### **2.3 Project Management**

According to Mpofu (2010), a project is a temporary endeavor undertaken to create a unique product or service or result; this can be taken place within stipulated time frames with a start and an end date as stipulated in the Project Management Body of Knowledge (PMBOK Guide, 2004). The project management process involves having a plan, which is then executed accordingly, in order to meet the objectives of the project. Studies by different scholars described that it is common projects completed by certain deviations from pre-stipulated budgets, schedule and scope but its success has to be seen from the significances of deviations.

Mpofu (2010) posits that project management has nine knowledge areas that have a relationship that is defined by one of its areas, called integration (coordinating of processes and activities in other knowledge areas), the other eight being scope, time, cost, quality, risk, human resources, and procurement management. These areas do not function in isolation, but require an understanding of systems thinking from the leadership at both top and project level for project execution to be realized. This saying is right however without the reasonable support and follow-up top management the project may stack somewhere in the middle of implementation.

Project management as a concept is an application of knowledge, skills, tools, and techniques to project activities to meet project requirements. As Cowie (2003, p. 256) quoted by Mpofu (2010)

argues: “Essentially project management allows the right people, with the right skills to come together at the right time to solve issues.” The question is how many of the right people were there at that organization (Balezaf) or system in general in view of the appointment of the team members and the selection of the project managers. It should be understood that the process to get the right people was set by top leadership either incompetent or unaware (to that specific project) top management of the company. Project management is executed through processes, namely, initiating, planning, execution, controlling, and closing, of which every task is managed following the five processes in proper participation of both top and project level leadership.

## **2.4 Project Implementation**

The execution stage of a project is the transformation of a theoretical and planned concept into physical and material structures. During this stage, we see the actual site preparation; buildings, equipment, and machinery constructed (systems) and begin functioning to deliver the project objectives. The organizational framework and structure (people) are developed, personnel are hired and trained to operate the project, and adequate systems for managing and operating the project are developed. Also, processes such as procurement (supply chain management), maintenance management, accounting, and marketing are developed to meet the operational needs of the project Lutchman (2016). During this stage of the project cycle, the project has the greatest potential for falling off the rails since both schedule delays and cost overruns generally occur in this stage. Here Lutchman wrote about practical tips on project execution he didn't explained about challenges of readiness as well as risks associated with scope changes, risks of the projects, effects of lack of readiness one of the three on the others two and conflicts among project stakeholders.

## **2.5 Project Implementation Challenges and Success Factors**

Kerzner (2013) pointed out that project management is successful due to its methodological approach of process integration, process creativity, effective planning, execution, supervising and control, and lastly closure to accomplished completed projects. Theoretically, this may sounds good but some situational factors significantly affect project management like policy changes, political and regulatory changes.

Project success 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 Yawet, et al. (2003). Delay 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 delayed start of an activity Sweis, et al. (2007). Sometimes technical performance differ from operational performance; for instance industrial projects success criteria is quite different from construction and IT projects because industrial projects are highly equipped with machineries and equipments synchronized carefully. If there is certain incompatibility in one of machineries at certain time the whole operational performance fails then organizational business strategy for the project fails.

Abebit H.M, (2013), on her MBA thesis of causes and effects of project implementation delay on loan recovery performance identified forty-two causes; like, conflict between joint-ownership of the project, lack of comprehensiveness of feasibility study, shortage of equity contribution, misapplication of the disbursed fund, low capacity of the promoter to cover unseen costs while planning the project, delay due to conditions for effectiveness of the loan were mentioned on her findings.

Ammeter and Dukerich (2002) observed that the process of project implementation, involving the successful development and introduction of projects in the organization, presents an ongoing challenge for managers. Jiang and Klien (2002) added that the project implementation process is complex, usually requiring simultaneous attention to a wide variety of human, budgetary, and technical variables. As a result, the organizational project manager commonly faced with a difficult job characterized by role overload, frenetic activity, fragmentation, and superficiality. Nwachukwu, et al. (2010) pointed out that often, the typical project manager has responsibility for successful project outcomes without sufficient power, budget, or people to handle all of the elements essential for project success.

According to Nwachukwu, et al. (2010), projects are often initiated in the context of a turbulent, unpredictable, and dynamic environment. Consequently, the project manager would be well served by more information about those specific factors critical to project success. The project manager requires the necessary tools to help him or her focus attention on important areas and set differential priorities across different project elements. If it can be demonstrated that a set of

factors under the project manager's control can have a significant impact on project implementation success, the project manager will be better able to effectively deal with the many demands created by his job, channeling his energy more efficiently in attempting to successfully implement the project under development.

From a global perspective, Kerzner (2003) has described a successful project with seven characteristics as 'critical success factors' (CSFs); within the planned time, within the predicted budget, aligned with expected performance and specification level, accepted by the client, minimum or mutually agreed on scope alterations, minimum disturbance of the main stream of work flow in the host organization, and finally the least effect on the corporate culture. The first four notations are those that have been norm during the last twenty years.

Kerzner (2003) discusses that in modern project management, it is almost impossible to see that a project is finished without any alteration in its initial scope which in turn might diminish the morale of the work or eventually even bring the project to a total halt. It is advisable to keep the level of change for project scope to its minimum and those really needed to be taken into account should be in complete consensus of both project manager and client. Possible disruptions occurring in the everyday's work flow in the host organization because of the ongoing project is the other issue. By mistake, many project managers might think of the project as a stand-alone entity happening in an organization which is not always possible. A viable project should be managed within the guidelines, policies, procedures, rules and directives of the host organization. Successful project notation and excellence in project management in an organization is only and only achieved through a continuous stream of managed projects, which requires strong and visible corporate commitment to project management concept.

On the other hand, from project users' perspective, where 'meeting user requirements' and 'staying in the planned budget' are recognized as criteria for both success and failure, they specifically identify their own 'happiness' as a success criterion and 'achieving project purpose' as a failure criterion. These results will bring out two main conclusions; firstly, the criteria for project success must be agreed on by all the engaged parties far before the actual project gets started and it should get reviewed constantly as the project goes ahead. Since most of the success criteria are subjective issues, they are strongly prone to change. Secondly, there is the question of

defining 'good quality'. The image of quality should be clearly depicted in the mind of all main stakeholders at the very beginning of the project.

According to Prabhakar, (2005), successful project implementation entails various stages arranging from brainstorming, project start, diagnosis, planning, formal start and implementation has been known as one of the requisites of a successful projects. He emphasized that in order to successfully conduct a project, the project team should be in total control of the implementation and the project itself must have implications to the client that are well comprehended.

Besides using critical success factors (CSF), Kerzner (2003) believes that Key Performance Indicators (KPI) measuring the quality of the process used to achieve the end results, could be utilized to gauge the success of the project as well. KPIs are internal measures or metrics that can be looked over on a periodic basis across the life cycle of the project. Most prominent KPIs inform the project manager with the degrees of proper project management methodology usage, establishment of the control processes, usage of interim metrics, quality of resources assigned versus planned for, and finally client involvement.

Horine (2005) from an idealistic perspective summarizes a comprehensive score of qualities and traits common among those most successful projects. He believed that although no two projects are identical and each has its own set of unique challenges, there exists always a shared core of principles lying at the heart of any project success. A successful project should:

- be aligned with organizational objectives;
- have effective top-management support;
- have effective and competent leadership with competent project manager;
- address all key stakeholders' agreement on the purpose, goals, and scope of the project
- address all key stakeholders' shared common vision on the project results;
- address all key stakeholders' shared realistic expectations for the project results;
- have results that meet the expectations of the key stakeholders;
- be able to manage and validate stakeholders' expectations constantly all the way to the end
- make an investment in proper planning; have clearly defined and agreed upon scope, approach, and deliverables during planning;

- communicate clearly each stakeholder's and team member's role(s) and responsibilities; place a high priority on accurate and complete work effort estimates;
- develop and agree upon a realistic schedule;
- make the project team to have a strong results-focus and customer-orientation;
- provide consistent, effective, and focused on 'understanding' project communications;
- measure project progress consistently from the current baseline; pursue aggressively project issues and subsequent action items;
- foster a strong sense of collaboration and teamwork;
- closely manage expectations and changes surrounding scope, quality, schedule, and cost; provide skilled project resources when needed;
- identify proactively risk and determine mitigation strategies to reduce project exposure and
- Anticipate and overcome obstacles to ensure the project meets objectives.

Simplistically, the success of a project would be meeting the client's expectations within the limitations of time, cost and quality. This is considered a very crude standpoint because it would standardize the success as a 'point' on the time, cost and quality/performance scales which is basically unrealistic especially when dealing with accomplishing today's highly innovative and dynamic projects. With keeping in mind the necessity of lots of compromises and changes in scope during the accomplishment of a project, Kerzner (2003) claims that the success singular 'point' in terms of time, cost and quality would convert into a 'cube' containing that 'point' of success. More often, clients and even internal project sponsors target performance goals which are in essence totally unreasonable, though assume that only reaching 80 to 90 percent of them would be regarded as success.

## **2.6 Empirical Review**

### **Project Success in Industrial Projects**

There are many models and tools available for managing projects in the industrial world today, all of which have been used with varying levels of success across their relevant sector. In spite of the many choices, however, cost overruns and delayed schedules are not uncommon. This is particularly true in the energy industry. One needs only to look at the oil sands of Alberta to understand the magnitude of this problem. Large industrial organizations like Syncrude Canada,

Albian Sands, Canadian Natural Resources Limited (CNRL), and the Opti/Nexen Longlake projects have all experienced significant capital cost overruns on development projects. The Alberta Economic Development Authority (2004) pointed to “20–100% cost/schedule overruns” for large development projects across Canada, Lutchman, (2016).

A successful project manager must be a great communicator, Project management communication is a skill that is never perfected, can always be improved and is pivotal in being able to initiate and mobilize a project effectively. One out of five projects is unsuccessful due to ineffective communications; the PMI (Project Management Institute) suggest a project manager should spend 90 per cent of their time communicating, PMI(2013).

Risks are internal or external events that may occur during project implementation and could threaten the achievement of project objectives and the project as a whole. A risk could be, for example, a partner dropping out or a key change in policy that goes against what the project is trying to achieve. Basic risk management is important for every project, but the level of detail needed varies depending on the size of the project and the number of risks and possible impacts on the achievement of the objectives. Identifying risks and outlining contingency measures for when they happen should be a task for every partnership, regardless of whether this is required by the project or not.

### **Project Failure**

Over the years, a number of companies and governments all over the world have witnessed project failure (McManus & Wood-Harper, 2008; Ruska & Teiglanad, 2009; Liu et al., 2011; Havila et al., 2013; Patanakul, 2014). This has cost companies and governments huge sums of money. For example, a study conducted in 2001 by KPMG found that 56% of firms had to write-off at least one Information Technology (IT) project in 2001 as a failure (Eclectic News Business, 2002). The study, which covered 134 listed companies in the UK, US, Africa, Australia, and Europe, indicated that the average losses incurred as a result of these failures was estimated to be about €12.5m, with the single biggest write-off valued at almost €210m. A nationwide survey in New Zealand in 2010 found that two-thirds of organizations have experienced at least one project failure in the previous year, thereby losing approximately NZ\$15M on the average (KPMG, 2013). The same study shows that more than half of the respondents did not achieve their projected project results. A relatively recent study by the same

firm shows that “only 33% of projects were delivered on budget” (KPMG, 2013, p.18). The study also indicates that only 29% and 35% of projects were delivered on time and scope respectively.

These above findings only witness the loss of money due to project failure in the developed world, however there are other invisible losses like loss of trust by local communities, regulatory bodies and failure impact on the morale of company management and staff. At Balezaf these kind of problems anticipated due to the failure on coal fired boiler project in addition the failure impact is not limited one project rather it affected the company image from regulatory body respect, especially environment protection office and consumers who take environmentally friendly production as their priority.

## **2.7 Summary of the Literature Review**

In this section, it was clear that the criteria for project success must be agreed on by all the engaged parties far before the actual project gets started and it should get reviewed constantly as the project goes ahead. Is also clear that in modern project management, it is almost impossible to see that a project is finished without any alteration in its initial scope which in turn might diminish the morale of the work or eventually even bring the project to a total halt.

From the literature, it emerged that that although no two projects are completely identical and each has its own set of unique challenges, there exists always a shared core of principles lying at the heart of any project success. A successful project should: be aligned with organizational objectives; have effective top-management support; have committed and competent leadership; address all key stakeholders“ agreement on the purpose, goals, and scope of the project; address all key stakeholders“ shared common vision on the project results; address all key stakeholders“ shared realistic expectations for the project results; have results that meet the expectations of the key stakeholders; be able to manage and validate stakeholders“ expectations constantly all the way to the end; make an investment in proper planning; have clearly defined and agreed upon scope, approach, and deliverables during planning; communicate clearly each stakeholders and team member's role(s) and responsibilities; place a high priority on accurate and complete work effort estimates; develop and agree upon a realistic schedule; make the project team to have a strong results-focus and customer-orientation; provide consistent, effective, and focused on „understanding“ project communications; measure project progress consistently from the current baseline; pursue aggressively project issues and subsequent action items; foster a strong sense of collaboration and teamwork; closely manage expectations and changes surrounding scope, quality, schedule, and cost; provide skilled project resources when needed; identify proactively

risk and determine mitigation strategies to reduce project exposure and anticipate and overcome obstacles to ensure the project meets objectives. In the literature review, various factors responsible for successful project management and different challenges responsible for failure of project. These factors included realistic plan, and top management support and challenges include lack of top management support, incompetency of project manager, poorly structured project team, lack of proper communication, poorly designed goals and scope or non realistic and improper addressing of risks.

## **2.8 Research Gaps**

In the literature review, various factors responsible for successful project implementation included, top management support, competency of leadership/project manager with properly structured project team, situational factors or variables risks and assumptions and stakeholders requirements, commonly in Ethiopia to try and document the success or failure of projects implemented by private organizations; but failure is common in the middle of implementation.

Several researchers have conducted a number of studies on the initiatives to implementing industry but it is not common to identify and examine the challenges confronted by organizations when attempting to implement Industrial projects. This has warranted and motivated the need to carry out this research. For example, Waibel et al. (2017) investigated the effect of smart production systems in Industry whereas Stock and Seliger,(2016) ascertained the opportunities of sustainable manufacturing in Industry . Faller and Feldmüller, (2015) in their study, investigated the learning factor of Industry for regional Small and Medium Enterprises (SMEs). These are some latest examples of studies conducted that are relevant to Industry but the study lacks clear depicting of the challenges for the industry project implementation. As a gap success of industrial projects are different from construction and IT projects completing project at time, budget and technical requirement could not guarantee the future and project implementation process may be hindered by several challenges sometimes on factor may affect at a time and in some other times combination of factors affect. Therefore, this study proposes a framework to investigate the challenges and their impact level on the performance of project for implementing Industrial projects within the context of BALF coal fired boiler project.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter focuses on research methodology that was used in the study. It provides a detailed description of the research approach adopted in this study. Research approach, design, target population, sampling design, about validity and reliability, data collection and collection instruments and analysis and presentation methods used.

#### **3.2 Research Approach**

The research conducted in this study is inductive approach and follows descriptive design in nature; it is qualitative and both primary and secondary data used in the research and data obtained through two primary avenues, i.e. desk interview research and questionnaire. It did not use formation of hypothesis, only started with mentioned research questions at introduction section and aimed that need to achieve objectives.

Before starting the main research a pilot study was conduct in two selected project stakeholders, one with senior company manager and the other with one leader of the coal fired boiler project, the given pilot study helped to verify whether the question were relevant in respect to the objectives of the study or not. The result of the given pilot study was discussed with University professor/advisor of AAU, college of Business and Economics, School of commerce. The questionnaires included cover letter with enclosed questionnaire contains choices and open-ended questions, and it was sent to project practitioners, clients, contractors, suppliers and regulatory body consultants.

The questioner was divided in two main parts, part one includes the details of the respondent and organization in order to get the information about the respondent details and organization; and part two includes challenges that cause the given project delay or not operational, with two categories.

Under each category, main implementation challenge factors and their expanded impact details included. The questions based on the Likert scale of five ordinal measure from 1 to 5 ( very low

effect to very high effect) according to level of contributing from expected number of questioners 60% for client project practitioners, 20% for top management, 20% for external stakeholders distributed.

### **3.3 Research Design**

As it was mentioned on the research approach part, it was said the study highly tilted to descriptive research however, the lack/shortage of necessary literature and past research on industrial projects in Ethiopia I took it as “exploratory research”. Firstly, from in depth literature studies and discussing with some industrial project practitioners and secondly based on six identified general causes of delay and cost overrun. Questioner form developed in order to evaluate the significant effects of the implementation challenges that caused project to delay and cost overrun.

Descriptive research involves gathering data that describe events and then organizes, tabulates, depicts, and describes the data collection (Glass & Hopkins, 1984). It often uses visual aids such as graphs and charts to aid the reader in understanding the data distribution and therefore offered a better clarification on project implementation of industrial projects, and ultimately gives a clear picture of project implementation challenges and their effect on project performance in the case of Balezaf Coal fired Boiler project.

### **3.4 Population of the Study**

Balezaf Alcohol and Liquors factory has over five hundred of workers including workers at liaison office and marketing staffs; however, the project site for coal-fired boiler has 289 permanent and 25 temporary workers in existing plant. This study targeted project practitioners and top and middle level management members who were involved in different decisions of coal fired boiler project. Beyond this, other stakeholders which had direct and indirect influence on the given project performance included like senior staff of EEPC at Sebeta, Sebeta City Environment Protection Bureau, and coal supplier (East African holdings).

### **3.5 Sampling Design**

Sampling design was non probabilistic or purposive sampling which was given certain quotas for sampling departments and external organizations. One sample unit was a person who was

deliberately selected by researcher; have certain experience in Balezaf project environment certain deployment frequency, he/she either project practitioner, member of management or external stakeholder who have impact on coal fired boiler. Deliberately samples were selected by considering their impact on the subject project. Sampling was framed as from 314 project site workers only 35 were target population which were working in project implementation process and top and middle management with high impact on project progress. From the given 35 project participants or internal stakeholders of the subject project, only 20 samples were selected and 5 from external stakeholders totaling 25 representative samples. This sample was divided into three stratum, each of the strata contain five for top management, five for external stakeholders and 15 for project practitioners to come up with the representative sample of 25 for the entire population. To made the above sampling the following procedures were followed: after getting complete list of target population research samples were purposely stratified in three groups by considering the following factors: work position, degree of influence on the given project progress work experience, educational level and frequency of deployment in project environment. Then the number of participants quota was assigned for each stratum. After considering selection factors above and based on assigned numbers samples in each stratum were randomly selected.

### **3.6 Data Collection and Collection Instruments**

The research will use of both primary and secondary data, which will be collected using structured questionnaire distributed to the 25 respondents sampled from 15 from the project practitioners, 5 from top and middle managements and 5 from other external stakeholders. The administered questionnaires after completions were collected on the same day and their responses were used for analysis.

Both primary and secondary data used. Primary data collected using questionnaires. Interview was used as an option for non/poor speakers of English; to support the questionnaire. Questionnaires were administered on a drop-and-pick up later basis for top management and external stakeholders but for project practitioners administered at presence of researcher. The questionnaire had both open-ended questions to enable guide the respondent through filling of the questionnaire as well as probe them for more information.

### **3.7 Validity and Reliability**

Content validity refers to the extent to which an instrument represents the factors under study. To achieve content validity, questionnaires included a variety of questions on the knowledge of project practitioners about project implementation challenges. All the subjects except top management and external stakeholders completed the questionnaires in the presence of the researcher. This was done to prevent subjects from giving questionnaires to other people to complete on their behalf.

Reliability can be ensured by minimizing sources of measurement error like data collector bias. Data collector bias was minimized by the researcher's being the only one to administer the questionnaires, and standardizing conditions such as exhibiting similar personal attributes to all respondents, e.g., friendliness and support. Pilot testing was carried out by the order of research advisor, to make data obtained from questionnaire easy to analyze, identify any flaws on the questionnaire to reduce errors of measurement and test for consistency. It was assured using scientific consistency test of Cronbach's Alpha.

### **3.8 Data Analysis and Presentation Method**

Data collected through questionnaire forms and desk research analyzed using relative important index. That helped in giving recommendation for minimizing the impact of challenges on project delay and cost overrun. In addition to analyzing the effect of these challenges, agreement test between each two parties tested to have better validity for future reference. The following statistical techniques and index was used in analyzing data collected. The Qualitative Survey System has the ability to tally all closed questionnaire items numerically. The system presented the minimum and maximum value, the mean, variance, standard deviation and the total responses of the closed items. Data presented in tables, charts for analysis and interpretation. The open-ended items organized by theme then compared to the numerically grouped items for analysis and interpretation. More specifically, the data analysis method of the study followed the Typological Analysis method found in Hatch (2002).

#### **1. Relative Important Index**

The most infrequently used method to analyze both construction and industrial project delay and cost overrun called project failure is Relative Importance index RII. According to Fagbenle, et

al., (2004). the relative importance index (RII) have the following formula to rank different factors from various groups of causes.

$$RII = \sum \frac{W}{A*N} \quad (0 \leq RII \leq 1)$$

Where 'w' is the weight assigned to each factors by respondents (ranging from 1 very low effect to 5 very high effects)

'A' is the highest weight (i.e. 5 in this case) and 'N'= total number of respondents

Three key personnel of BALF was interviewed in addition to the commonly distributed questionnaire on the project management implementation challenges and difficulties experienced during the implementation of coal fired boiler. This was done to get what was learned from that challenges for future project endeavors as well as to complete the distressed project at hand.

### **3.9 Ethical Considerations**

In qualitative research, ethical principles are primarily centered on protecting research participants and the guiding foundation of "do no harm". Following is a list of core ethical principles were maintained:

1. Respondents right of their free will to decide to participate and respond were respected; their autonomy was highly respected by accepting their choices, suggestions for their explanation in the process of interviewing and questionnaire response; moreover past relations and friendliness with researcher was ignored for that specific time to maintain their dignity.
2. By explaining the benefit research respondents were motivated to participate in giving feedback and they were assured their feedback was confidential and only used for academic purpose and did not harm them physically, psychologically and socially.
3. Participants were selected based on their experience, educational level, frequency of deployment in project area and level expertise by informing the value of their feedback.
4. It was assured that the given research is only done for academic purpose do not harm both company image, culture and rather it will improve efficiency and effectiveness of future projects in the given company and other project endeavors.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research methodology. The results were presented on the assessment of project implementation challenges, the case at Balezaf Coal fired Boiler project. The study objectives were; to determine major challenges which BALF has been facing in the process of implementing the given project and gives means to tackle the challenges. Moreover, to make the result of this study future guidance and reference for both BALF and Project management endeavors.

#### 4.2 Questionnaire Response Rate

As it was mentioned on the sample size and sampling technique out of 35 project practitioners only 15 were selected as representative sample based on their educational background and experience level. From main players in the given project from project initiation to implementation five top management members taken to represent top management. From different external project stakeholders five had taken as representative, one from EEPC, one from civil contractor, one from Sebeta city Environment protection office, one from coal supplier East African Holdings and one from Indian Boiler Manufacturer.

**Table 4.1 Questionnaire Response Rate Data**

Organization	Number of Targeted Samples	Number of Response	Response rate (%)
Balezaf top Management	5	4	80
Balezaf Project Practitioners	15	15	100
External Stakeholders	5	4	80
Total	25	23	92

Source: field data,

The study targeted 25 respondents out of which 23 respondents responded and returned their questionnaires contributing to a response rate of 92%. This response rate was sufficient and representative that conforms to Mugenda and Mugenda (2003) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good while a response rate of 70% and over is excellent. The chapter covers the demographic information, and the findings based on the objectives. The findings were then presented in tables, graphs and charts as appropriate with explanations being given in prose thereafter.

### 4.3 Response Data Reliability Test Result

Cronbach's alpha is a tool for measurement of internal consistency of a test or scale. The acceptable value of alpha range from 0.7 to 0.95, (Tavakol and Dennick, 2011). The closer the reading of Cronbach's alpha to 1, the higher the reliability in internal consistency. According to Zikmund et al., (2007), scales with coefficient alpha between 0.6 and 0.7 indicates fair reliability.

**Table 4.2 Response Reliability Data**

Evaluation Criteria	Cronbach's Alpha	Number of Items
Project implementation success evaluation	0.798	7
Challenges faced by coal fired boiler project	0.714	7
Required competency for top management to ensure the project success	0.722	8
The most lacked top management competency while implementing coal fired boiler project	0.762	8
Project team structure and competency level evaluation	0.720	3
Project manager effort application and competency required evaluation in the implementation of the given project	0.704	7
Exercised Project risk management evaluation	0.729	3
Exercised project communication management evaluation	0.712	3
Choice of communication channel evaluation	0.723	5
Evaluation on Poorly defined goals and scope/ based on non realistic information	0.748	4

Source: field data,

As it is said by statistical solution dissertation published at 2016, Cronbach's Alpha value of 0.7 or higher to 0.81 is acceptable in most social science researches. As general rule of thumb if alpha of 0.7 and above is good, 0.8 and above is better and 0.9 and above is best.

### 4.4 Profiles of Respondents

The questionnaire covered aspects of the department or organization stake with the given project deployment and length of service in different projects. A characteristic sought from respondents was their department of deployment as this was key in capturing data because for better acceptance of findings due to their understandings on the status of project implementation in the

coal fired project. Distribution of respondents in relation to their department, experience and frequency of deployment is presented in Table 4.3.

**Table 4.3 Respondents Distribution by Organization/Department work position, Experience and Deployment**

Profile based on Department/Organization Position		
Organization/Departmental Work Position	Frequency	Percent (%)
Balezaf Top Management	4	17.4
Balezaf Project Practitioners	15	65.2
External stakeholders	4	17.4
Total	23	100
Profile based on Experience		
Years of Service/ Project experience	Frequency	Percent (%)
1-5 years	2	8.7
6-10 years	5	21.7
11-15 years	8	34.8
≥16 years	8	34.8
Total	23	100
Profile based on frequency of Deployment in Projects		
Project attending frequency	Frequency	Percentage (%)
First time	1	4.3
Rarely	2	8.7
Commonly	10	43.5
Almost in all	10	43.5
Total	23	100

Source: field data,

#### 4.5 Current Status of Coal Fired Boiler Project

It was surveyed that the opinions of different stakeholders of the given project through questionnaire whether it is operational or not, and the reason for not be operational.

As per the survey result, all respondents of the questionnaire said ‘No’, that means the project is not operational.

Following the above assessment it was surveyed for the reason for not operational and the result of the survey shown in the table below.

**Table 4.4 Response for Reasons for not be Operational**

Expected Reasons that hinder project performance	Frequency	Percent	Cumulative Percent
Improper Deliverable	16	69.6	69.6
Resource based	6	26.1	95.7
Project manager related	1	4.3	100.0
Total	23	100.0	

Source: field data,

From respondents feedback, nearly 70% of them says reason for not operational is improper deliverable. It was explored using face-to-face interview that, the given deliverable is improper design of boiler to accommodate Ethiopian coal and lack of alternative system to use other kinds of fuel.

It was investigated by making survey on which implementation phase is remaining to conduct; the response of 100% respondents feedback shows ‘commissioning’.

Commissioning phase remained due to poor quality of coal or it does not fulfill the requirement of specification especially, the Ash content is more than 35% but the maximum should be 24%.

Therefore the status of the project said to be non-operational due to improper deliverable and resource based problem (since coal is one of material resource). The remaining implementation phase is Commissioning.

#### 4.6 Evaluating Result of the Project from Principle of Scope Triangle

**Table 4.5 Summary of Respondents' Feedback on Implementation Performance from Perspective of Scope Triangle**

Deviation Evaluation	Frequency	Percent	Cumulative Percent
Few deviations	2	8.7	8.7
Has significant gap	16	69.6	78.3
Very big gap	5	21.7	100.0
Total	23	100.0	

Source: field data,

From the above summary report there is significant gap in the three project constraints; it is common that there is few deviations expected but in the case of Balezaf 91.3% respondents explained deviation bigger than expected few.

Since one the objective of the study was analyzing the implementation process from perspective of scope triangle, as per feedback from respondents that project has significant gap from the principle of iron triangle.

#### 4.7 Project Implementation

The given project implementation was assessed from the prospective point of iron triangle and found to be big deviation from expected few deviation; hence the next duty was to find out implementation challenges which influenced the process of implementation. To made challenges visible seven project implementation challenges taken in consideration, i.e. project team structure, top management support and follow-up, improper addressing of project risks, poorly defined goals and scope, inefficient project communication, resource shortage and clear or non-assignment of project manager. As the study's dependent variable (project implementation), it was measured using six (6) items informed by both theoretical considerations and descriptions of project implementation challenges found in the literature and observed as per the study context. A five point Linker scale was used to measure the items where 1 represented "strongly disagree" and 5 "strongly agree". The objective was to measure the extent to which respondents were satisfied with project implementation in the coal fired boiler project or not. Items in the scale measuring project implementation were expected to elicit positive responses thus a rate of 4 or 5

denoted a satisfaction with the project implementation process, while a rating of 1 or 2 representing negative response denoted dissatisfaction. A rating of 3 was neutral. Thus, the cutoff point between satisfaction and dissatisfaction was then placed at 3.5.

**Table 4.6 Response Summary of Project Success Evaluation**

Implemented Project Evaluation	Rating									
	Strongly disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	f	%	f	%	f	%	f	%
Project meet its operational performance goal	9	39.1	5	21.7	9	39.1	0	0	0	0
Project meet its technical performance goal	8	34.7	10	43.5	5	21.7	0	0	0	0
Project meet its schedule objectives	16	69.7	5	21.7	1	4.3	0	0	0	0
Project stay within budget limits	11	47.8	6	26.1	6	26.1	0	0	0	0
Stakeholders are satisfied with project results	13	56.5	5	21.7	5	21.7	0	0		0
The project implementation reflect Balezaf business strategy	10	43.5	8	34.8	5	21.7	0	0	0	0
The implementation of the project exceeds the stakeholders expectation	13	56.5	7	30.4	3	13.0	0	0	0	0

Source: field data,

The above table shows that more than 60% respondents disagree with output of project to maintain performance output. About 78% respondents disagree with project output to maintain its technical performance. Concerning meeting schedule objective about 95% of respondent's feedback shows they disagree. From the above table more than 73% of respondents replied disagree for project stayed within budget limit. Respondents feedback shows about 78% are not agree for project satisfied the stakeholders. The project implementation reflected beyond the business strategy of the company it was voted disagree by more than 78%. About 87% respondents said the project implementation was below stakeholder's expectation.

From overall result of seven criteria elements feedback it was analyzed that the project is failed one because about 78.4% respondents not satisfied with the result of project when it is compared with the principle of iron triangle.

**Table 4.7 Descriptive Evaluation of Implementation Success in Department Bases**

Implemented Project Evaluation	Statistical Measurement Parameters							
	Top mgt		Project practitioners		External stakeholders		Total	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev
Project meet its operational performance goal	2.25	0.96	1.80	0.94	2.50	0.58	2.13	0.91
Project meet its technical performance goal	2.50	0.58	1.67	0.82	2.00	0.00	1.96	0.76
Project meet its schedule objectives	1.00	0.00	1.47	0.92	1.75	0.50	1.44	0.79
Project stay within budget limits	1.75	0.96	1.73	0.88	2.00	0.82	1.78	0.85
Stakeholders are satisfied with results	1.50	0.58	1.80	0.94	1.25	0.50	1.65	0.83
The project implementation reflect Balezaf business strategy	1.25	0.50	2.00	0.85	1.5	0.58	1.78	0.80
The implementation exceeds the stakeholders expectation	1.25	0.50	1.6	0.83	1.75	0.50	1.57	0.73
Overall project implementation success	1.64	0.58	1.72	0.88	1.82	0.50	1.76	0.81

Source: field data,

The descriptive statistics result analyzed as overall success criteria mean of project implementation was 1.76; which means in dissatisfaction range,  $1.76 < 2.5$ , since overall mean is less than the cutoff point of 3.5 for dissatisfaction. Thus one can conclude that all project stakeholders were not satisfied with project output performed from perspective of scope triangle. For specific criteria the analysis result shows, 2.13, 1.96, 1.44, 1.78, 1.65, 1.78, and 1.57.

#### **4.8 Project Implementation Challenges Faced by Balezaf Coal Fired Boiler Project**

In both theoretical and empirical review of literature, there are different factors to hinder the performance of project implementation. To enumerate some; support and follow-up from top management, incompetency of project manager, poorly structured project team, risks were not addressed properly and communication gap among project stakeholders. To establish the extent to which these hindering factors are existent in the coal fired boiler twenty-nine 29 items related challenges were gathered and developed across the identified factors. A five point Linker scale was used to measure the variables where 1 represented “strongly disagree” and 5 “strongly

agree”. The objective was to measure the extent to which these challenges experienced and affected the performance of project implementation. Of the twenty nine (29), eight (8) measured the impact of lack of top management support and follow-up; four (4) measured the poorly defined scope and goals; three (3) measured team competency and structure; seven (7) project manager competency and effort delivery; three (3) measured improper addressing project risk and three (3) of them measure communication gap. Selection of the items for measurement was informed by both theoretical considerations and descriptions of challenges which were faced during the given project implementation process and found in the literature.

The scores “strongly disagree” and “disagree” represented an item of the challenges affecting project implementation experienced to a “Larger Extent negatively” (LE), equivalent to 1 to 2.5 on the continuous Likert scale ( $1 < SE < 2.5$ ). The scores of “neutral” represented an item of the factors affecting project implementation experienced to a “Moderate Extent” (ME). This was equivalent to 2.5 to 3.4 on the Likert scale ( $2.5 < ME < 3.4$ ). The score of “agree” and “strongly agree” represented an item of the factors affecting project implementation experienced to a “Large Extent positively” (LE). This was equivalent to 3.5 to 5.0 on the Linker scale ( $3.5 < LE < 5.0$ ). A summary of the descriptive statistics for analysis of challenges affecting project implementation performance is presented in this section.

#### **4.8.1 General Challenges Faced**

Here there are seven challenges identified by several scholars to hinder project implementation process at certain project. From these for this study I made survey for the given general challenges and detail study on six of them since at my preliminary study resource shortage was not issue in the given company.

Before evaluating and making visible each implementation challenges in detail, survey was conducted by ranking the degree of impact each challenge on the given project implementation. Table 4.11 shows rank given to each implementation challenges by project stakeholders from five (5); ranking five means, had very high impact and one (1) means, had least impact.

The table below shows that the main implementation challenge was come from the first four i.e. scopes and goals designed based on non-realistic data, Incompetent or project manager related challenge, improper addressing of project risks and communication gap among project

stakeholders. This ranked high and very high impact. Even though these four ranked high the others have also their own impact relatively.

**Table 4.8 Descriptive Summary of Challenges Impact Rating on Implementation in Department Bases**

Project Implementation Challenges	Statistical Measurement Parameters							
	Top management response		Project practitioners response		External stakeholders response		Total	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev
Poorly designed scope and goals or based on non realistic data	5.00	0.00	4.53	0.52	4.75	0.50	4.65	0.49
Incompetent Project Manager	4.00	0.00	3.73	0.46	4.00	0.00	3.83	0.39
Project risks were not addressed properly	5.00	0.00	4.53	0.64	4.75	0.50	4.65	0.57
In efficient project communication among stakeholders	5.00	0.00	4.53	0.52	4.75	0.50	4.65	0.49
Poorly designed project team structure	2.00	0.00	1.47	0.52	2.00	0.00	1.65	0.49
Lack of top management support and follow-up	2.00	0.00	1.67	0.49	2.00	0.00	1.78	0.42
Insufficient resource	2.00	0.00	1.67	0.49	1.75	0.50	1.74	0.45

Source: field data,

From the above table all respondents of top management rank poorly designed or defined scope was major challenge having ranking mean of 5.0 While Project practitioners rank 4.53 for the given challenge and external stakeholders rank 4.75 that mean this challenge was one of the hurdle that pulls back the project implementation process. The same kind of rank was given to project risk management and communication management that is these two were other major challenges for the given project; from other department respondents nearly same kind of response was given. An issue concerning project manager was also other influencing factor to rank 3.8 in average to affect the project. However, project team, support and follow-up from top

management and resource based problems were not influencing challenges for the given project implementation process.

**Table 4.9 Descriptive statistics summary of Respondents feedback on ranking of Challenges Anticipated**

Project Implementation Challenges	f	Minimum	Maximum	Mean	Std. Deviation
Poorly designed scope and goals or based on non realistic data	23	4.00	5.00	4.65	0.49
Incompetent Project Manager	23	3.00	4.00	3.83	0.39
Project risks were not addressed properly	23	3.00	5.00	4.65	0.57
In efficient project communication among stakeholders	23	4.00	5.00	4.65	0.49
Poorly designed project team structure	23	1.00	2.00	1.65	0.49
Lack of top management support and follow-up	23	1.00	2.00	1.78	0.42
Insufficient resource	23	1.00	2.00	1.74	0.45

Source: field data,

One can analyze from table 4.9 that mean score of challenges. analyzed results for the minimum and the maximum score was 4 and 5 respectively while the mean score was 4.65 or  $4 < 4.65 < 5$  for challenge1, for challenge2  $3 < 3.83 < 4$ , for challenge3  $3 < 4.65 < 5$ , for challenge4  $4 < 4.65 < 5$ , for challenge5  $1 < 1.65 < 2$ , for challenge6  $1 < 1.78 < 2$ , and for challenge7  $1 < 1.74 < 2$ .

The mean score less than 2.5 shows these challenges have less impact on project performance, and mean score 3.5 had significant impact on project performance.

#### **4.8.1.1 The Most Influenced Challenge Evaluation at Different Stages of Implementation**

To examine which challenge more at Pre-Construction respondents reply poorly defined goals and Communication gap affected more it is voted by 78.3% of respondents. In the token, it was examined which challenge influenced most at contract execution respondents reply was risks were not addressed properly and lack of competency by project manager; voted by 87% respondents. It was examined that which challenges have the most influence on interconnection,

reply of respondents show ineffective communication and composition of team structure, voted by 69.6% respondents. It was examined that which challenge most impact the implementation at project construction stage 65.2% of respondents replied team structure and incompetent project manager affected the most. Lastly it was examined which challenge affect most at commissioning, 82.6% replied communication gap and insufficient resource.

The above findings only explain the most affect challenge on different implementation stages however there was possibility of more than one challenge anticipate in single implementation stage.

## **4.8.2 Detail Evaluation of Each Implementation Challenges**

### **4.8.2.1 Poorly Defined Goals and Scopes**

Project Scope is the detailed description of what will be achieved at the end of the project. This description includes the time frame, budget and any other parameters associated with the project. All too often, organizations do a poor job of defining a project's scope. The consequences of this oversight are tremendous and include major cost overruns, excessive delays, bad estimates and inadequate resource scheduling, to name a few. As Chrystal Richardson, (2013) blogged in fact, poor project scope is considered to be among the primary reasons for project failure. A major contribution to unsuccessful projects is the lack of understanding or defining project and product scope at the start of the project. A properly defined and managed scope leads to delivering a quality product, in agreed cost and within specified schedules to the stakeholders Muhammad et al., (2013). Project scope includes elements like project justification, project product, project deliverables, and project objectives. Survey was conducted to evaluate whether poorly defined scope and goals affected the project or not, the result of the survey is shown on table4.13 below.

**Table 4.10 Summary of Respondents Feedback on the Impact of Poorly Defined Scope and Goals on the Project Implementation**

Evaluation of predefined scope and goals	Rating									
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	f	%	f	%	f	%	f	%
The Company can get cheap steam energy from the given project at predefined amount	1	4.3	18	78.3	4	17.4	-	-	-	-
The given project can use Ethiopian Coal and utilities in timely manner	17	73.9	6	26.1	-	-	-	-	-	-
Project scope and goals defined based on realistic information	19	82.6	4	17.4	-	-	-	-	-	-
Project initiators were figure out necessary goals, assumptions, milestones and top level requirements carefully before project start	19	82.6	2	8.7	2	8.7	-	-	-	-

Source: research data,

The table above shows, 82.6% of respondents was disagree that the project can get cheap steam energy, the rest are neutral. Again all respondents agree project was not defined on realistic data. About 91.3% of respondents disagree that initiators were figure out necessary elements of scope. Thus one can analyze that poorly defined goals and scope on non-realistic information was one of the critical challenge for the project and hindered ambition to reality.

**Table 4.11 Descriptive summary of Poorly Defined Scope and Goal Distributed at Department Bases**

Department	Descriptive measures	Getting cheap steam Energy	Can use Ethiopian Coal	Scoped based on Realistic Information	Initiators figure out necessary elements
Top Management	Mean	2.00	1.00	1.25	1.00
	Std. Deviation	0.00	0.00	0.50	0.00
Project Practitioners	Mean	2.20	1.40	1.20	1.40
	Std. Deviation	0.56	0.51	0.41	0.74
External stakeholders	Mean	2.00	1.00	1.00	1.00
	Std. Deviation	0.00	0.00	0.00	0.00
Total	Mean	2.13	1.26	1.17	1.26
	Std. Deviation	0.46	0.45	0.39	0.62

Source: research data,

Similar to the frequency table there is clear agreement between respondents feedback, all representatives disagree with project can give cheap steam energy by using Ethiopian coal by scoring total mean of 2.13 which is less than 2.5. In addition, the same saying for whether to use Ethiopian coal and getting utility at any time disagrees by scoring total mean of 1.26. At start of project whether project initiators figure out necessary elements like deliverables, assumptions, goals, product, risk and other top-level requirements respondents disagree by scoring 1.26. Moreover, whether project initiated on realistic information, respondents disagree by scoring mean of 1.17. Again from the findings above one can analyze that the overall mean score was 1.46 and it significantly less than 3.5 and therefore stakeholders did not satisfied by the project scope definition. Thus it was one critical impendent for the given project implementation.

#### 4.8.2.2 Lack of Top Management Support and Follow-up

Compared to other implementation challenges the effect of limited support from top management less impact however, the impact of challenges were cumulative. In most industrial projects lack of top management support and follow-up is one of the critical challenges that impact the project performance negatively. For that survey was conducted, to evaluate what type support and follow-up lacked by considering the competency level of top management to apply at project environment; the response from respondent analyzed in the following table.

**Table 4.12 Project Impact Analysis of Top Management Support and Follow-up on Implementation**

Top management support and follow-up	Rating									
	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	f	%	f	%	f	%	f	%
Sufficient cost management	20	87	3	13	-	-	-	-	-	-
Sufficient scope management	18	78.3	5	21.7	-	-	-	-	-	-
Sufficient time management	19	82.6	4	17.4	-	-	-	-	-	-
Sufficient quality management	7	30.4	16	69.6	-	-	-	-	-	-
Sufficient HRM management	-	-	-	-	4	17.4	19	82.6	-	-
Sufficient communication management	17	73.9	5	21.7	-	-	1	4.3	-	-
Addressed risks properly	18	78.3	5	21.7	-	-	-	-	-	-
Sufficient procurement management	-	-	2	8.7	19	82.6	2	8.7	-	-

Source: field data,

From the table above all respondents replied cost was not managed in project implementation process, again all replied the scope of the project was not managed their feedback for scope management was disagree. Again all of respondents were not happy with time management of the project, concerning project communication all respondents were disagree with the effectiveness of the project communication. All of respondents were disagree with top management maintained project risk management. However, for procurement, and human resource management, respondents replied either neutral or agree with the effort and competency of top management. From findings above it can be analyzed that top management follow-up and support was not sufficient and influenced the project implementation performance even though the impact level compared to other challenges were low.

**Table 4.13 Descriptive Statistics for Impact of Top Management Support and Follow-up for Implementation**

Top management support and follow-up	N	Minimum	Maximum	Mean	Std. Deviation
Sufficient cost management	23	1.00	2.00	1.13	0.34
Sufficient scope management	23	1.00	2.00	1.22	0.42
Sufficient time management	23	1.00	2.00	1.17	0.39
Sufficient quality management	23	1.00	2.00	1.70	0.47
Sufficient HRM management	23	3.00	4.00	3.83	0.39
Sufficient communication management	23	1.00	4.00	1.35	0.71
Addressed risks properly	23	1.00	2.00	1.22	0.42
Sufficient procurement management	23	2.00	4.00	3.00	0.43

Source: field data,

To describe the respondent's feedback more clearly using descriptive statistics, the summary of respondent's feedback on top management lacked competency, the overall mean score value was 1.77, which is less than the satisfaction cut limit of 3.5 and above or it is in the limit less than 2.5 at dissatisfaction value;  $1 < 1.77 < 2.5$ . From this finding, it can be analyzed support and follow-up is insufficient.

#### **4.8.2.2.1 Level and Type of Support and Follow-up by Top Management**

It was surveyed that how top management support and follow the project progress and whether support level was sufficient or not; respondents gave feedback. Survey response about type of support and follow-up and its level shown on the table below.

**Table 4.14 Respondents Feedback about Sufficiency and ways of support**

Follow-up and Support Level	Freq.	Percent	Ways of support	Percent
Enough	2	8.7	By participating in key decisions	4.3
Extra support	18	78.3	Disseminating decided information	4.3
There was no support	2	8.7	Provide necessary resources and follow-up through formal report	13
Neutral	1	4.3	Combination of the above	78.3
Total	23	100.0	Total	100

Source: research data,

The findings on the above table shows about 78.3% of respondents suggest extra support required from top management; therefore for future project endeavors, Balezaf top management should increase its effort by providing necessary support for projects to better project outcome but more participation is required in key decisions.

#### 4.8.2.3 Project Team Structure and Composition

Like other challenges, poorly structured project team has certain negative impact on project implementation process. From faced challenges evaluation table, project team and its structure did not have significant impact on the project implementation process. However, challenges impact is cumulative therefore; to make these minor influences visible, survey was conducted for team competency and nature of structure. The impact level of project team structure on coal-fired project from response is analyzed in the following table.

**Table 4.15 Summary of Project Team Competency Influence on Project Implementation**

Project Team	Rating									
	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	f	%	f	%	f	%	f	%	f	%
Project team structured had required level of competency	-	-	-	-	16	69.6	5	21.7	2	8.6
Team was performed at required level	-	-	2	8.7	12	52.2	6	26.1	3	13
Team was solved problems anticipated by themselves	-	-	-	-	2	8.7	18	78.3	3	13

Source: field data

The above table can be summarized as team structure may have higher than average quality because when we look for data output from table about 30.3% of respondents were satisfied by team competency, some 69.6% of respondents were on average satisfaction and for team performance and about problem solving ability about 81% of respondents were satisfied and agree. From this, one can analyze that team structure and composition on project implementation was not significant as other critical challenges only needs suitable leadership.

**Table 4.16 Descriptive Summary of Project Team Competency Influence on Implementation Based on Department**

Project Team	Statistical measurement Parameters on responses							
	Top management		Project practitioners		External stakeholders		Total	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev
Project team structured hade required level of competency	4.0	0.82	3.19	0.40	3.5	1.0	3.39	0.66
Team was performed at required level	2.50	0.58	3.67	0.72	3.50	1.00	3.43	0.84
Team was solved problems anticipated by themselves	4.50	0.58	4.00	0.38	3.75	0.50	4.04	0.47
Overall team impact evaluation	3.67	0.66	3.62	0.50	3.58	0.83	3.62	0.66

Source: field data,

The total mean value 3.39, on team structures show respondents were neutral that means impact level is low, but the performance level on implementation process nearly average. However, team was solved problems anticipated and the respondents agree and ranked mean value of 4.05. The overall performance of the team measured neutral and slightly agree or mean value of 3.62. This implies that the effect of team structure on project implementation was not bad or significant like other critical challenges. Since project team was structured or set up based on the raised need by coal fired boiler project and it will dissolve after completion of the project, it cannot be taken as impact since BALF is not project based organization.

**Table 4.17 Respondents Feedback for the Most Challenging Implementation Stage for the Team**

Project Implementation Phases	Frequency	Percent	Cumulative Percent
Interconnection	12	52.2	52.2
Project construction	5	21.7	73.9
Commissioning	6	26.1	100.0
Total	23	100	

Source: Research data,

Desk interview and survey feedback shows Interconnection phase was selected as the most challenging by percentage vote of 52.2%, second challenging was Commissioning by 26% vote and project construction voted only by 21.7 % of respondents. From the given findings, one can analyze that there was certain gap of compatibility between jobs done and to be done in the process of implementation. It was explored that lay out drawing given to Civil contractor and actual set up of boiler was different hence when the team tried to connect boiler and utility system there were challenges and extra modification and rework was conducted. Another finding from desk interview shows difficulty of commissioning phase was come from lack of electric power connection from national grid and poor quality coal.

#### **4.8.2.4 Evaluation Result on Challenges Related to Project Manager**

Project manager competency is one the factors that determine the success of project implementation. Therefore to determine the impact level of project managers effort and skill application on the project survey was conducted, the summary of the respondents feedback shows they were not clear about the assignment of legitimate project manager the response distribution shows given 56.5% respondents replied the PM was left and the other 43.5% said there was no legitimate PM. From desk interview, the PM assigned was stayed for only two stages of implementation then after two functional managers assigned or delegated to perform the duty of the PM already left and it was additional task for them when they work at day shift.

This indicates that lack of legitimate and competent project manager was impacted project performance significantly.

**Table 4.18 Summary Response on Project Managers Effort Application and Competency in Different Stages of Implementation**

Project manager	Rating									
	Strongly disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	f	%	f	%	f	%	f	%
The project manager applied its full effort by being responsible, accountable and had mandate to take decision by him/herself if it was necessary	3	13	7	30.4	11	47.8	1	4.3	1	4.3
Competency of good leadership applied	9	39.1	11	47.8	3	13	-	-	-	-
Good communication skill of PM applied at required level	7	30.4	13	56.5	3	13	-	-	-	-
PM negotiated when required with enough skill	16	69.6	5	21.7	2	8.7	-	-	-	-
PM addressed risks properly before anticipated	6	26.1	15	65.2	2	8.7	-	-	-	-
PM had tried to control cost as minimum as possible	3	13	7	30.4	13	56.6				
PM had been conduit for technology	-	-	3	13	11	47.8	9	39.1	-	-

Source: field data,

Lack of the above competency and applying effort was evaluated by survey, the feedback shows that, about 43% of respondents replied disagree with effort application and 47.8 % were average. For evaluating competency level good leadership they replied 86.9 % of the were not satisfied with leadership; while concerning good communication skill 86.9 % were not satisfied the skill level; about 91% were not happy with negotiation skill of the PM. For risk management related 90.3% of respondents were not agreeing with skill level of PM.

The above findings imply that the delegated project managers were not competent enough to execute project at predefined scope indeed other challenges were there. The result found shows above 70% of respondents disagree with project managers competency and effort application level. Since project manager related challenges were analyzed as critical challenge that hindered the project performance, the above finding also supports lack of competency by delegated projected manager impeded the project implementation performance.

**Table 4.19 Descriptive Statistics for Table 4.18 in Departments Bases**

Effort Application and competency level Evaluation	N	Minimum	Maximum	Mean	Std. Deviation
Competency of project good leadership applied	23	1.00	3.00	1.30	0.56
Good communication skill of PM applied at required level	23	1.00	3.00	1.78	0.60
PM negotiated properly when need raised with enough skill	23	1.00	3.00	1.39	0.66
PM addressed risks properly before anticipated	23	1.00	2.00	1.26	0.45
PM had tried to control cost as minimum as possible	23	2.00	3.00	2.43	0.51
PM had been conduit for technology	23	3.00	4.00	3.35	0.49
The project manager applied its full effort by being responsible, accountable and had take decision by him/herself if it was necessary	23	2.00	4.00	2.78	0.67
Overall evaluation of PM competency and effort application				2.04	0.56

Source: field data,

The overall respondents response on PM effort application and competency level was show dissatisfaction  $1 < 2.04 < 2.5$  or they disagree with the output of delegated functional managers effort, this imply that project manager related problem was affected the project implementation process significantly.

#### **4.8.2.5 Project Risk Management**

According to the Project Management Institute’s PMBOK, Risk management is one of the ten knowledge areas in which project manager must be competent. Project risk management is the process of identifying, analyzing and then responding to any risk that arises over the life cycle of a project to help the project to remain on track and meet its goal Stephanie, (2017).

Survey was conducted to assess whether the given project have risk management plan, all respondents reply there was no risk management plan.

To examine the extent to which the given project risks whether addressed or not survey were conducted to assess respondent’s feedback. The table 4.25 shows the summary of respondents feedback in frequency distribution.

**Table 4.20 Respondents Feedback for Project Risk Management at Project**

Project Risk Management	Rating									
	Strongly disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	f	%	f	%	f	%	f	%
Project related risks properly addressed	4	17.4	19	82.6	-	-	-	-	-	-
The coal fired boiler necessary requirements understood	6	26.1	17	73.9	-	-	-	-	-	-
Lack of risk management plan and responsible person to take risk affected the company and the implementation process negatively	-	-	-	-	4	17.4	19	82.6	-	-

Source: field data,

The table above summarized responses, i.e. all of respondents replied risk were not addressed properly by selecting disagree and strongly disagree; on the other hand 95.7% respondents were agree that the given project requirements are understood. Again 95.7% respondents were not agree for the given project risks were addressed.

Project risks should be considered at project scope definition and follow careful attention on risks that may come with unexpected circumstances. Hence, lack of risk management process drives the project in to failure; as mentioned on the challenge identification part improper addressing risk was one critical challenge that coal fired boiler faced. Here it is found that results support risks were not addressed by lacking inputs of risk management.

**Table 4.21 Descriptive Statistics Summary of Table 4.20 in Department Basis**

Project Risk Management	Statistical measurement Parameters							
	Balezaf top management response		Project practitioner response		External stakeholders response		Total	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev
Project related risks properly addressed	2.00	0.00	1.81	0.41	1.75	0.50	1.83	0.39
Lack of risk management plan and responsible person to take risk affected the company and the implementation process negatively	4.00	0.00	3.8	0.41	3.75	0.50	3.83	0.39
The coal fired boiler necessary requirements understood	1.75	0.50	1.73	0.46	1.75	0.50	1.74	0.45
The overall impact from lack of project risk management	2.58	0.17	2.45	0.43	2.42	0.50	2.47	0.41

Source: field data,

From the given descriptive statistics table above, it is summarized as respondents of top management were disagree for risks related to the given project addressed by scoring mean value of 1.5. Concerning the requirements whether understood they disagree by scoring 2.0, and for lack of risk management plan and responsible person affected the project performance, respondents agree by scoring mean value of 4.0.

Responses of project practitioners were not significantly different from the response of top management, they scored nearly same mean value of 1.81 for whether risks properly addressed or not and agree for lack of risk management plan and responsible person by scoring 3.8. Concerning the coal fired boiler requirements understood or not they disagree by scoring mean value of 1.73.

Here one can analyze that overall mean of 2.47 shows there was dissatisfaction on risk addressing which is in the boundary of disagree or  $1 < 2.47 < 2.5$ . Therefore this factor impacted project implementation process significantly.

#### **4.8.2.5.1 Impact of Improper Addressing of Risks at Different stages of Implementation**

The impact of risks at different stages of implementation were evaluated through survey, survey result shows, about 87% of respondents reply scope related and extra budget needs affected the implementation at pr-construction stage. In contract execution stage extra budget needs and schedule delay was most affected the given stage, and voted by 78.3% respondents. At interconnection stage, scope related schedule delay were most challenges anticipated voted by

respondents of 69.6%. At project construction, schedule delay and extra budget needs were most challenging risks voted by 73.9% respondents. Moreover, commissioning stage was most influenced by risks of resource shortage and incompliance to regulatory body.

From these findings, one can analyze that scope related challenge was more dominant, risked the project to be delayed, and forced the company to expend extra cost. Since scope definition elements were not figure out, one element to addressed risk was not figured out properly hence it affected the project implementation process and taken as one of the critical impediment for project success.

#### **4.8.2.6 Project Communication Management**

Project communication management includes the process that are required to ensure timely and appropriate planning, collection, distribution, storage, retrieval, management, control, monitoring and the ultimate disposition of project information. Effective communication creates bridge between stakeholders who may have different culture, and organizational background, different level of expertise and different perspectives and interest which impact or have an influence up on the project implementation outcome Lewis, (2016). A successful project manager must be communicator. Project management communication is a skill that is never perfected, can always be improved and is pivotal in being able to initiate and mobilize a project effectively. The PMI (Project Management Institute) suggest a project manager should spend 90% of its time communicating. One out of five projects are unsuccessful due to in effective communications, Ensuring appropriate communication medium are used to fit the message contact result in communications efficiency and effectiveness. However, inappropriate communication mediums can result in communication breakdowns, mistakes, loss of trust and integrity and efficiencies, resulting in project issues (Building Integration, News article by Glen Phillips, May 2017).

To assess whether the given project have communication plan or not, the feedback of respondents were there was no communication plan.

To assess how communication carried out survey was conducted and their feedback shown on the table below.

**Table 4.22 Way of Communication in the Project Implementation Process and stages at which communication gap was significant**

Ways of Communication	Frequency	Percent	Implementation Stages	Percent
Oral discussion and meeting	1	4.3	Contract execution	4.3
Informal communication b/n team members and other stakeholders	11	47.8	Interconnection	47.8
Combination of all	11	47.8	Commissioning	47.8
Total	23	100.0	Total	100

Source: research data,

The feedback of respondents is shown in the table above that the common way communication were oral discussion and meeting, informal communication, electronic mail, and using of text data on hard copy when compared to other communication ways the result survey shows informal communication was dominated by about 48% of respondents. That means formal communication was lacked and has significant impact on the project output and implementation process.

It was surveyed for the impact of communication gap in each implementation stages, the result found shows in stages of interconnection and commissioning lack of effective communication affected project significantly and vote rate by about 48% respondent in each stages and it outcome explained by caused big problem while connecting utilities with boiler parts.

Assessment was conducted for which communication challenge mostly anticipated, survey result is shown on the following table.

**Table 4.23 Communication Related Challenges Anticipated during Implementation**

Communication related Challenges anticipated	Frequency	Percent	Cumulative Percent
Conflict among coal suppliers and boiler manufacturers	2	8.7	8.7
No communication templates	2	8.7	17.4
All	19	82.6	100.0
Total	23	100.0	

Source: field data,

‘All’ means conflict among documents, conflict among stakeholders, poor communication skill between project members and PM and lack of communication template.

Conflict of all the above-mentioned means it was difficult implement the high-level requirements of the project the information found that about 83% respondents voted there was no clear communication among project stakeholders, and no communication templates to interact in the process of implementation. This all means in effective communication using inappropriate channel leads the project to delay and cost overrun and even leads to overall failure.

To assess how these essential communications applied at coal fired boiler survey was conducted; the response of respondents is shown in the table 4.24 below.

**Table 4.24 Summary of Respondents Feedback on Assessment of Project Communication**

Project Communication Management	Rating									
	Strongly disagree		Disagree		Neutral		Agree		Strongly Agree	
	f	%	f	%	f	%	f	%	f	%
Lack of communication plan affected project implementation success	1	4.3	-	-	1	4.3	17	73.9	4	17.4
All project stakeholders communicated project information effectively	-	-	14	60.9	9	39.1	-	-	-	-
Right communication channel was used during project implementation process stages	2	8.7	20	87.0	1	4.3	-	-	-	-

Source: field data,

The result of table above shows, 91.3% respondents were agreeing that lack of communication plan affected the project implementation process. About 60.9% respondents were disagreeing that project stakeholders communicated key project information effectively but some 39.1% replied neutral. Concerning use of right channel of communication, respondents feedback was 95.7% of respondents disagree. From this, one can conclude there was no effective communication in the process of project implementation and can be taken as one critical obstacle to project success.

**Table 4.25 Descriptive Statistics of Table 4.24 in Department Basis**

Project Communication Management	Statistical measurement Parameters for responses of							
	Top management		Project practitioners		External stakeholders		Total	
	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev	Mean	Std.Dev
Lack of communication plan affected project implementation success	4.25	0.96	3.87	0.83	4.25	0.50	4.00	0.80
All project stakeholders communicated project information effectively	2.50	0.58	2.47	0.52	2.00	0.00	2.39	0.50
Right communication channel was used during project implementation process stages	2.00	0.00	1.93	0.46	2.00	0.00	1.96	0.37
Overall Impact of project communication gap in the project implementation process	2.92	0.51	2.76	0.60	2.75	0.17	2.78	0.55

Source: field data,

From the above descriptive statistics data there was clear agreement between project stakeholders lack of proper project communication for key project information because the mean value in each department nearly same . For instance for communication channel all scored 2.0 except 1.93 for project practitioners. For the impact of communication again 4.25 except for project practitioners 3.87. However, for effectiveness of communication, there was certain variation among departments but total mean is not far from each. Since the overall mean is below respondents satisfaction point of 3.5, there was clear failure in project communication management; it can be analyzed as  $2.5 < 2.78 < 3.5$ .

#### **4.11.1.1.1 The Most Lacked Communication Channel**

Survey was conducted to assess which communication channel lacked in the process of implementation; which channel needs immediate attention for future project undertaking.

Because instead of using formal communication channels, the most practiced way of communication was informal on which lacks accountability for which information generated apply the given information. In most project environment, there are different skill levels of expertise, different kinds of conflicts and interests going together; therefore to handle such differences situational and formal way of communication are advisable.

**Table 4.26 Most Lacked Communication Channel and Attention Level Needs**

Project Communication Management	Importance Level Rating									
	Immediate attention		Needs attention		Fair attention		Less attention		Least attention	
	f	%	f	%	f	%	f	%	f	%
Hard Copy	6	26.1	17	73.9	1	-	-	-	-	-
Telephone call	-	-	1	4.3	7	30.4	14	60.9	1	4.3
E-mail	-	-	5	21.7	16	69.6	2	8.7	-	-
Meeting	5	21.7	18	78.3	-	-	-	-	-	-
Oral discussion	-	-	6	26.1	17	73.9	-	-	-	-

Source: field data,

Findings from the table above shows, in the process of implementation, hard copy and meeting needs attention, oral discussion and e-mail needs fair attention and while telephone call needs less attention. This implies that hard copy and meeting lacked in the implementation process and needs extra attention in future project endeavors.

**Table 4.27 Descriptive Statistics of Table 4.26 in Department Basis**

Department		Hard Copy	Telephone Call	E-mail	Meeting	Oral Discussion
Balezaf Top Management	Mean	2.00	4.00	3.00	2.00	3.00
	Std. Deviation	0.00	0.00	0.00	0.00	0.00
Coal Boiler project Practitioners	Mean	1.60	3.60	2.87	1.73	2.80
	Std. Deviation	0.51	0.74	0.64	0.46	0.41
External stakeholders	Mean	2.00	3.50	2.75	1.75	2.25
	Std. Deviation	0.00	0.58	0.50	0.50	0.50
Total	Mean	1.74	3.65	2.87	1.78	2.74
	Std. Deviation	0.45	0.65	0.55	0.42	0.45

Source: field data,

The table above shows that hard copy was not used properly and had mean score of 1.74, shows dissatisfaction, telephone were used properly, e-mail was used fairly, meeting used below the required of mean score of 1.78, shows greater dissatisfaction and oral discussion was used fairly.

Thus from score it can be said that the most lacked channel of communication was hard copy and meeting; when we analyze the overall effective use of the above channels it was not satisfying to respondents with mean score of 2.56. From this improper use of communication channel affected project performance significantly.

#### **4.12 Ranking of Major Project Implementation Challenges Using Relative Important Index**

As it was said in Chapter Three, data analysis part industrial projects might be plugged with several challenges however to rank each of them and take necessary action RII is simple and preferable means. For the analysis survey data is used, highest weight score on Likert Scale was 5 and number of respondents known to be 23. The summary of the result is shown on table 4.28.

**Table 4.28 Ranking of Implementation Challenges using RII**

Anticipated Challenges	$RII = \sum \frac{w}{AN}$	Rank
Poorly defined Scope and goals	0.93	1
Project manager related Challenges	0.765	2
Project risks were not Addressed Properly	0.93	1
Project Communication Gap among Stakeholders	0.93	1
Project Team structure was not suitable	0.33	5
Insufficient Support and follow-up from Top management	0.36	3
Insufficient resource	0.35	4

While w is weight given by respondents, A higher weight which is 5 and N is number of respondents

Source: field data,

It was obtained on table 4.9 that mean score of challenges was analyzed the minimum and the maximum score was 4 and 5 respectively while the mean score was 4.65 or  $4 < 4.65 < 5$  for

challenge1, for challenge2  $3 < 3.83 < 4$ , for challenge3  $3 < 4.65 < 5$ , for challenge4  $4 < 4.65 < 5$ , for challenge5  $1 < 1.65 < 2$ , for challenge6  $1 < 1.78 < 2$ , and for challenge7  $1 < 1.74 < 2$ . These by using relative important index formula one can compute ranking value using mean values obtained from table 4.9. From the above table it is possible to analyze critical challenges at coal boiler project, i.e. poorly defined scopes and goal, improper addressing of project risks and communication gap among stakeholders. Secondly ranked is project manager related while others score least and their impact level is low. The given result shows similar output to result descriptive output on table 4.11.

#### **4.13 Results of Correlation Analysis**

This section presents the correlation analysis of various variables in the study. The Pearson's Product moment correlation, which is a non-parametric measure of the strength and direction of association that exists between two variables, was used. Although the 0.05 level of significance is considered better because it is neither too high nor too low, Kerlinger (1986) observed that reporting the significance of all levels is acceptable by scholars. Following this assertion, results of each significance level (0.05, 0.01 and 0.001) are reported.

**Table 4.29 Relationship between Measures of Project Success and Project Implementation**

**Correlations**

		RQA1A	RQA1B	RQA1C	RQA1D	RQA1E	RQA1F	RQA1G
RQA1A	Pearson Correlation	1	.375	.340	.062	.172	.216	.225
	Sig. (2-tailed)		.078	.113	.779	.433	.322	.303
RQA1B	Pearson Correlation	.375	1	.333	.553**	.545**	.708**	.556
	Sig. (2-tailed)	.078		.120	.006	.007	.000	.006
RQA1C	Pearson Correlation	.340	.333	1	.235	.033	.212	.387
	Sig. (2-tailed)	.113	.120		.281	.881	.331	.068
RQA1D	Pearson Correlation	.062	.553**	.235	1	.721**	.672**	.427
	Sig. (2-tailed)	.779	.006	.281		.000	.000	.042
RQA1E	Pearson Correlation	.172	.545**	.033	.721**	1	.654**	-.019
	Sig. (2-tailed)	.433	.007	.881	.000		.001	.933
RQA1F	Pearson Correlation	.216	.708**	.212	.672**	.654**	1	.362
	Sig. (2-tailed)	.322	.000	.331	.000	.001		.089
RQA1G	Pearson Correlation	.225	.556**	.387	.427*	-.019	.362	1
	Sig. (2-tailed)	.303	.006	.068	.042	.933	.089	

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

\* . Correlation is significant at the 0.05 level (2-tailed).

As reflected by the Pearson’s Product moment correlation results described in Table 4.29, there is positive relation between variables. The above table is presented as sample from analysis of SPSS data base, it shows the positive relation between variable even though the significant level is low due to few number of samples. To justify some RA1A and RQA1B (operational performance and technical performance evaluation variables) were correlated with positive value of 0.375 and near to 0.5 which shows correlated at significant level of 0.01. if we take RQA1B with RQA1F ( technical performance goal with reflecting company business strategy) it was

correlated significantly with Pearson's product of 0.708 at 0.001 significant level. Therefore one can analyze variables were reasonably correlated positive relationship with each other.

#### **4.14 Discussion**

1. To prepare synthesis of findings out of 25 distributed questionnaires 23 were filled and return back to researcher. Two of not returned were one for external stockholder (geological survey) and the other for senior welder and fitter, since 92% of questionnaires returned it fulfils 70% and above excellent Mugenda and Mugenda(2003),
2. Data filled was tested for its consistency by Cronbach's Alpha reliability test. Alpha for different responses were between  $0.7 < \alpha < 0.8$ . Which supports Zikmund et al., (2007) acceptable for social science researches,
3. Respondents were categorized in three strata; top management covers 17.4%, project practitioners cover 65.2% and external stack holders cover 17.4%.
  - Based on their experiences 8.7% of respondents have 1-5 years experience, 91.3% respondents have more than 6 years of experience.
  - About 87% of respondents have project experience.
4. One of the objectives of this study was to assess current situations of the project goals and scope, indeed the project three phases were completed only commissioning phase is not conducted fully. However as per scope, the project was designed to be operational in six months after purchase of boiler unit from India, and it was planned to use Ethiopian coal but the available coal specification and boiler requirements could not match.
5. Reason why project became stand still or not operational was assessed using questioner, it was found that:
  - About 69.6% respondents said improper deliverable is main reason not to operate the project it can be justified the boiler requirement for coal ash content should be maximum 24% but the Ethiopian coal ash content is more than 35%, therefore without coal treatment or boiler modification the scoped capacity of steam at rate of 10 Ton/hr with 10.4 Bar pressure is impossible.
  - About 26.1% respondents said the reason was resource based; it may be true because, it was taken five years to get electric connection from national grid, since utility one type of resource.

6. Analysis carefully conducted to evaluate the project from perspective of scope triangle, 91.3% respondents replay the projects has significant or very big deviation both in schedule, and cost from pre defined planed milestones.
7. To assess the success of project implementations process seven criteria were given and the result found are:
  - More than 60% of respondents disagree that project meet its operational performance goals,
  - About 78% respondents did not agree with project meet if technical performance goal,
  - About 95% respondents were disagree that project meet its schedule objective,
  - About 73.3% of respondents disagree with the project stayed within budget limits,
  - About 78% respondents disagree with the project output satisfy stakeholder,
  - About 86% respondents were disagree with implantation exceeds stakeholders expectation,
  - In addition, about 78% respondents disagree the implantation reflect Balezaf's business strategy.

From the above findings the project was failed to attain it predefined objectives hence it is failed project.

8. From the above summery report, the given project is failed in all three project constraints i.e. cost, schedule and scope. Then the study was triad to identify what kind of challenges was anticipated at Balezaf coal fired boiler project. Commonly every project was face about seven kinds of challenges, survey was done which challenges were critical and mostly affected the given project during implementations. Using Likert scale for rating respondents were given their feedback and processed on SPSS 20.

It is summarized as:

- 34.8% of respondents were given 4out 5 and 65.2% of respondents were given five out of five that poorly defined scope and goal influenced the given project significantly,
- Again improper addressing of project risks were influence the project performance extremely replayed by 95.7% respondents,

- And ineffective communications among project stakeholders affected project performance highly, replayed by all respondents rated four out of five 34.84% and five out of five 65.2%,
  - The four major challenges was project manager related, it was rated four out of five by 82.6% respondents that mean it was another critical challenge hindered project performance,
  - The rest three common challenges were rated two out of five that means from the scale value their impact was less.
9. After identifying critical challenges related to poorly defined goals and scope the study found that:
- There is no possibility of getting cheap steam energy at predefined amount and quality, without modifying the boiler system to use other alternative fuels,
  - Use Ethiopian coal is not possible without further treatment of the coal because of high ash content,
  - The main causes for the failure of the given project was scope and goals were defined based on non realistic data, and project initiators didn't figure out necessary elements, like risks, assumptions, high level requirements and deliverables.
10. It was examined risk related challenges in the given project, after careful analysis it is found that:
- Project risks were not properly addressed,
  - There was no any risk management plan and responsible person,
  - The requirements of the project did not understood by concerned peoples,
  - For this reason all loss of the project will be absorbed by Balezaf,
  - Risks like schedule delay, extra budget needs, scope related and resource shortages anticipated in different implementation stages; for justification lack fuel coal made commissioning phase impossible.
11. It was examined through questionnaire and desk interview carefully that communication gap is one of critical challenging factor during the given project implementation process; after careful analysis of questionnaire feedback it is found that:
- Communication was carried out using combination of using written document, through electronic communication channels, through oral discussion and meeting and informal

communication in project team members however about half respondents replied informal communication was dominant, and project stakeholders were not satisfied with that way,

- It was found that the given project did not have project communication plan and guiding templates,
- It was believed that lack of communication plan influenced project highly and even caused major problem at interconnection phase and commissioning phase,
- It was found that channel of communication used were not effective, and the most lacked channels were meeting and using of hard copy,
- Distribution of key project information was ineffective, it can be justified by not providing right Ethiopian coal specification result the project in failure,
- Due to communication gaps, conflict among documents, conflict among deliverables happened,
- Lack of communication templates causes delay and cost overrun.

12. Project Manager related challenge identified as one of critical factor that has big influence on project implementation process. From careful survey analysis and desk to interview it is found that:

- At start-up of there was legitimate project manager who was leading the first two phase of implementation processes called pre-construction and contract execution; however before civil work construction completed he left the company, and after that there were delegated functional managers to lead technical things of the project.
- It was found that the previous project manager and delegated managers did not applied their full effort for the success of the project and respondents agree that the given managers lack competency necessary for project success,
- It is again found that from skills required for project manager to drive the project in the boundary of scope triangle, good leadership, cost control, risk management and effective communication were the most lacked competencies,
- It was evaluated that different lacked competencies of project manager affect in each stages of implementation; there were six major competencies each have their level of importance in different stages. For instance in the given project at preconstruction skill of risk management and effective communication were lacked, as mentioned by

respondents, at contract execution, skill of negotiation and cost control were lacked. At interconnection stage skill of effective communication and good leadership lacked, at project construction skill of good leadership and cost control lacked and at commissioning stage skill of risk management, effective communication and conduit for technology lacked.

13. The variables were tested for their positive relation even though their significance of relation for some is below expected the relation positive and support each other; tested on SPSS 20 Correlation test.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents a summary of the findings, discussion, conclusions and recommendations for policy implications drawn in relation to the study objectives in addition to suggestions for further study.

#### 5.2 Summary of the Study

This section presents a short summary of the study findings in relation to study objective.

##### About the Study

- The study was descriptive research type with little number of samples due to small project size. Because of this there may be limitations on statistical measurements but may not hide the realities behind the study. The study as social science researches done has five chapters, first chapter is introduction, second chapter is literature review, it was found that literatures on the given kind of industrial projects are limited in number are not in-depth reviews, third chapter is about methodology, fourth chapter is data analysis and discussion and final fifth chapter is about conclusion and recommendations.
- The study was tried to answer all research questions and achieve the objectives of mentioned at introduction part.

##### About challenges Identification

- As it was mention in end of chapter four, the result study reveal that Balezaf Coal fired Boiler project was plugged with four critical challenges, which were, affected the given project negatively, while other three challenges like insufficient support and follow-up from top management, team structure and composition and insufficient resource was not affected much. However, challenges like poorly defined goals and scope on non-realistic data, inadequate addressing of project risks, ineffective project communication between project stakeholders and project manager related were most damaging ones both on overall project implementation and in different stages of implementation.

##### About case project status

- One of the objective of this study is to evaluate the boiler project scope against current situation, though the scope of the project was to supply cheap steam at rate of 10TPH and 10.4 Bar pressure by using Ethiopian coal as fuel for waste treatment and alcohol production in six months of time; however, after five years of delay and cost overrun, the project is not operational. Therefore, it is possible to conclude that the given project is failed one when evaluated from perspective of scope triangle.

### **Identifying Critical Issues**

- The other objective of the given study was identifying critical issues like why the project scope was limited to use only Ethiopian coal, why not the boiler design could not consider the ash content of Ethiopian coal, and what if the coal is not suitable to use. Is the boiler to be wasted or any modification will be there, for these issues, desk interview conducted and it reveals that modification required to use other alternative fuel source. However, to use local coal there has to be treatment to wash out the soil particles. For this all problem, lack realistic data about Ethiopian coal the main factor.

### **5.3 Conclusion**

Overall, results indicate that respondents were not satisfied with project implementation in this coal fired boiler project with a composite mean of 1.76 out of a possible 5. This implies that project implementation in boiler project was not coordinated and led by competent managers for project management; due to this, the company is bounded by cost and time overruns that need streamlining to enhance satisfaction. It is clear that the project faced critical and irreversible challenges related to risk of poor quality coal and limitation to predefined scope.

The first specific objective was to evaluate the predefined scope of the project to current situation, it was mentioned that the project is not operational due improper deliverable and future of the project is uncertain. Since it was initiated a ton of coal price in local market estimated to be ETB 1500 now it is about ETB 3000 (poor quality coal) the price of imported from south Africa by quarter greater than local coal and needs separate logistic to ship and store, further more hard currency is another big issue. If the boiler become modified it needs to take out water wall part, which reduces boiler capacity to 6TPH and will use wood as fuel. In all this, the company will expend money and another loss and time overrun. The other alternative is washing the local coal by own logistic but seems to be possible by considering future sustainability, social, and ecological issues.

Here the root cause for the given challenges were information gaps to underestimate project complexity, considering all projects as simple as the previous one and ignoring the importance of project manager. The other was information gap, projects are initiated in Ethiopia in ambitious

way; it was costed government now coming to business firms hence firms has to initiate their project based on realistic information and plan for risks.

In the given project top management support was not affected more however it was shadowed by major challenges; therefore top management has to facilitate involvement of skilled manpower in decision making before they face challenge of failure and understand the importance of project manager. Ammeter and Dukerich (2002) show that the degree of management support for a project will lead to significant variations in the clients' degree of ultimate acceptance or resistance to that project or product. From the results, management's inability to anticipate short-term disruptions, inability to encourage creativity and resourcefulness; inability to reveal the fulfillment of short-term deliverables to the beneficiaries; inadequate work inspection and poor relations between engineers and contractors are an impediment to project implementation in industrial projects.

To succeed in certain project top management should communicate with lower level managers instead of disseminating decided project proposals. In addition, they have to empower project managers with authority to decide by themselves and maintain effective communication. To ensure the sufficient follow-up and support from top management communication play pivotal role. Moreover, having communication templates in project environment minimize the effort use to project team members and facilitate ways to achieve a project at the boundary of scope triangle.

#### **5.4 Recommendations**

It is common practice that project complexity and cost are underestimated due to unrealistic plan and information, because of this several projects failed to attain their intended goals. Balezaf coal fired boiler project was an ambitious project that lacks clear leadership and detailed plan.

Therefore to be successful project, it is suggested that initiators should consider the following guidelines as basic criteria before launching a project.

1. Establish timelines and check points,
2. Establish clear leadership and accountability,
3. Start with effective and comprehensive feasibility study.

Beyond the above suggestions, the researcher of the given study recommends the following issues:

1. The importance of project manager was overlooked in coal fired boiler project hence to solve problems at hand and to complete the remaining phases of the project; it is strongly recommended to hire competent and committed project manager as soon as possible. While doing this top management support and follow up with necessary resource is must to alleviate anticipated problems.
2. To make the project operational two means that could alleviate the problem at hand was suggested. Therefore by evaluating the ultimate benefits of the project outcome and costs in managing the problems it is recommended to work on washing out soil particles from coal to lower ash content of local coal in collaboration with coal suppliers and other similar consumers.
3. It is highly recommended to find other alternative source of fuel that may comply with boiler requirements and work on finding other coal quarry sites in Ethiopia with better quality and logistics.

Adequate, suitable or appropriate factors of production (money capital, equipment, labor, and land) need to be optimized and timely deployed in the process of generating value projects. Without such necessary elements, project success is under question and projects should always comply with regulatory requirements. Here in this study, only current challenges only considered however future is uncertain due to other unexpected requirements which may come from legal and environment protection agencies.

### **5.5 Areas for Further Research**

Given that the study focused on single industrial coal fired boiler project, the results may not apply to all industrial projects owned by both private and public. It is common agenda that project delay and cost overrun in Ethiopia therefore it is recommended that a study be done cutting across all public and private industrial projects that would allow for broader generalization of findings.

## REFERENCES

- Abebit H.M, (2013). On her MBA thesis of causes and effects of project implementation delay on loan recovery performance (the case selected projects financed by Development Bank of Ethiopia)
- Ahsan, K & Gunawan, (2010), Analysis of Cost and Schedule Performance of International Development Projects, International Journal of Project Management, Vol.28, No.1; pp. 68-78,
- Ammeter, A. P., and Dukerich, J. M., (2002), Leadership, team building, and team member characteristics in high performance project teams, Engineering Management Journal, 14 (4), 3-10.
- Assaf, S. A., and Al-Hejji, S. (2006). "Causes of delay in large construction project." Int. J. Project Manage., 24(4), 349–357.
- Avots, I (1969), why does project management fail? California management review (Fall 1969 77-82
- Bean, A. S. and Radnor, M., (2002), "The Role of Intermediaries in the Implementation of Management Science," The Implementation of Management Science, pp. 121138.
- Bhavesh, .M. P., (2006), Project Management (Strategy Financial Planning, Evaluation and Control) PTV Ltd, New Delhi
- Cooke-Davies, T. J. and Arzymanow, A. (2003), The maturity of project management in different industries: An investigation into variations between project management models, International Journal of Project Management, 21 (6), 471-478.
- Cooper, A. and Schindler, P. S., (2003), Business Research Methods, 8th Edition, McGraw-Hill, Boston
- Cowie & J. Heathcott (Eds.), *Beyond the ruins: The meanings of deindustrialization* (pp. 1-15, Notes p. 306-307). Ithaca, NY: ILR Press. <http://digitalcommons.ilr.cornell.edu/cb/33/>
- Davis, K. (2014). Different stakeholder groups and their perceptions of project success, International Journal of Project Management 32, 189–201

Dvir, D., Raz, T. and Shenhar, A.J. (2003), "An Empirical Analysis of the Relationship between Project Planning and Project Success", *International Journal of Project Management*, 21, pp. 89-95.

Faller, C. and Feldmuller, D., (2015). *Industry Learning, Factory for regional SMEs*. Published by Elsevier,

Flyvbjerg, B., Holm M.K. S., and Buhl S. L., (2004), "„What Causes Cost Overrun in Transport Infrastructure Projects“. Department of Development and Planning, Aalborg University, Denmark, *Transport Reviews*, Vol. 24 No. 3-18,

Frimpong, Y., Oluwoye, J. and Crawford L. (2003), „Delay and Cost Overruns in Construction of Groundwater Projects in a Developing Countries; Ghana as a Case Study“, *International Journal of Project Management*, 21, 321-326

Gaddis, P. O. (1959). *The project manager*. In N. R. Augustine (Ed.), *Managing projects and programs* (pp. 145-162). Boston: Harvard Business School Press.

Glass, V.G. and Hopkins K.D., (1984). *Statistical Methods in Education and Psychology*.

Gray, Erik W. Larson, (2003), *Project Management: the managerial process*, Mc. Graw Hill...

Hammond, J. S., (2002), "A Practitioner-Oriented Framework for Implementation", *The Implementation of Management Science*, North-Holland, New York

Handa, V. and Adas, A. (1996). Predicting the level of organizational effectiveness: a methodology for the construction firm, *Construction Management and Economics*, 14, 341-352.

Hatch, J.A. (2002). *Doing qualitative research in Educational setting*, Suny press,

Hayfield, F., (2006), "Basic Factors for a Successful Project", *Proceedings at the 6th International Congress Garmisch, Partenkirchen, Germany*.

Heravi, A., Coffey, V. & Trigunarysyah, B. (2015), Evaluating the level of stakeholder Involvement during the project planning processes of building projects. *International Journal of Project Management*, Vol.33, No.5; 985-997

Horine, G., (2005), *Absolute beginner's guide to project management*, Indianapolis, UAS

Ioana Beleiu (Ph.D), Emil Crisan (Ph.D), Razvan Nistor (Ph.D), (2011), Main Factors Influencing Project Success, interdisciplinary management research, vol.11, 59-72

Jeffrey K.Pinto, Dennis P Slevin, (1987), Critical success Factors in Effective Project Implementation,

Jiang, J. J., and Klien, G., (2002), "Pre-project partnering impact on an information system project, project team and project manager." European Journal of Information Systems, 11: 86-97.

Jugdev K, Muller R (2005), "A retrospective look at our evolving understanding of project success", Project Management Journal, 36(4): 19 – 31

Kagiri, D. and Wainaina, G., (2008), Time and Cost Overruns in Power Projects in Kenya: A Case Study of Kenya Electricity Generating Company Limited

Kerlinger, F. N. (1986). Foundations of behavioral research (3rd ed.). Fort Worth: Holt, Rinehart and Winston, Inc.

Kerzner, H. (1998), In Search of Excellence in Project Management: Successful Practices in High Performance Organizations, Van Nostrand Reinhold, New York, NY.

Kerzner, H. (2013), Project Management: A Systems Approach to Planning, Scheduling, and Controlling, John Wiley and Sons, Inc., Hoboken NJ.

Kloppenborg, T. J. and Opfer, W.A. (2002), The current state of project management research: Trends, interpretations, and predictions. Project Management Journal, 33 (2), 5-18.

Kohli, U. (2002) "How to Minimize Time and Cost Over-Runs of Projects", Available at <http://www.shilpabichitra.com/shilpa.htm>.

Kolberg, D., Zühlke, D., 2015. Lean Automation Enabled by Industry Technologies. IFAC-PapersOnLine, pp. 1870–1875, <http://dx.doi.org/10.1016/j.ifacol.2015.06.359>.

Krahn, J., and Hartman, F., (2004), Important Leadership Competencies for Project Managers: The Fit between Competencies and Project Characteristics, Proceedings of the PMI Research Conference, London.

Kuen, C. W, Zailani, S. and Fernando, Y., (2009), “Critical factors influencing the project success amongst manufacturing companies in Malaysia”, *African Journal of Business Management*, Vol.3 (1), pp. 16-27

Kumar, R. L. (2002), *Managing risks in IT projects: Information and Management, an options perspective*, 40 (1), pp. 63-74 (12).

Lewis G., *PM BOK® Guid, Fifth Edition, June29/2016*

Long, N.D., Ogunlana, S., Quang T. and Lam, C.K. (2004), “Large Construction Projects in Developing Countries: a Case Study from Vietnam”, *International Journal of Project Management*, 22, 553-561.

Lu, Y., 2017. Industry: a survey on technologies, applications and open research issues. *J. Ind. Inf. Integr.* 6, 1–10, <http://dx.doi.org/10.1016/j.jii.2017.04.005>.

Lutchman, C. (2016) *Project execution, project cycle page7* .

Manavazhi, M.R. and Adhikari, D. K. (2002), “Material and Equipment Procurement Delays in Highway Projects in Nepal”, *International Journal of Project Management*, 20, 627-632.

Milosevic, D.Z., (2007), “Systems Approach to Strategic Project Management”, *International Journal of Project Management*, Vol.7 No.3

Mir, F.A., Pinnington, A.H. (2014). *Exploring the value of project management: Linking Project Management Performance and Project Success*, *International Journal of Project Management* 32, 202–217

Mobey, A. and Parker, D., (2002), “Risk evaluation and its importance to project implementation”, *International Journal for Productivity and Performance Manage.*, 51(4): 202 – 208.

Mpofu, N., (2010), *Strategic Leadership Challenges in the Management of Projects in the Parastatals*, PH.D. Thesis, University of the Witwatersrand, Johannesburg.

Muhammad, N. and Pourzolfaghar, Z. (2013). *Significance of scope in project success*, Elsevier publication,

Morris, P. W. G., & Hough, G.H. (1986). The preconditions of success and failure in major projects, Technical Paper#3, Major Projects Association, Templeton College, Oxford.

Mugenda, O. M. & Mugenda, A. G. (2003). Research methods: Quantitative and qualitative Approaches. Nairobi: African Centre for Technology Studies.

Nwachukwu, C.C; Ibeawuchi, E and Okoli, M.n(2010). Project management factors indexes: a constraint to project management success in the construction sector of a developing economy. European journal of Scientific research43(3); 392-405

Peter Mathenge, (2013), Challenges Facing Project Implementation in Selected Public Sector Organization in Kenya, Research Project work to fulfill Master Degree requirements,

Prabhakar, (2005). Switch leadership in projects: An empirical study reflecting the importance of transformational leadership on project success across twenty eight nations; pm journal 36(4)

Project Management Institute, The Essentials Role of Communications, May 2013.

Rountos Euripides A. (2008), Troubled Projects in Construction due to Inadequate Risk Management,

Project Management Institute (2013), The High Cost of Low Performance: The Essential Role of Communications, In-Depth Report,.PMI.org/Pulse

Ruuska and Teigland (2009). Ensuring project success through collective competence and creative conflict in public–private partnerships – A case study of Bygga Villa, a Swedish triple helix e-government initiative

Shenhar, A. J., Dvir, D., Levy, O., Maltz, A. C. (2001). Project Success: A Multidimensional Strategic Concept, Long Range Planning 34, 699–725

Shreekumar A Menon,(2015), Best Practices and Implementation Challenges in Effective Project Management,

Stock, T., Seliger, G., 2016. Opportunities of sustainable manufacturing in industry. Procedia CIRP, 536–541, <http://dx.doi.org/10.1016/j.procir.2016.01.12>.

Sweis, G., Sweis, R., Abu Hammad, A., & Shboul, A. (2008). Delays in construction projects: the case of Jordan. *International Journal of Project Management*, 26(6), 665–674. <http://dx.doi.org/10.1016/j.ijproman.2007.09.009>

Tasevskd, F Damij,T. & Damij, N. (2014), Project Planning Practiceis Based on Enterprise resource planning system in a small and medium Enterprises, *International Journal of Project Management*, Vol.32, pp. 767-786,

Tavakol, M., & Dennick, R. (2011). Making Sense of Cronbach's Alpha. *International Journal of Medical Education*, 2, 53-55.

Tom Kendrick, (2013), *Practical Advice for Handling Real World Project Challenges*,

Trauner, D. A., Ballantyne, A., Chase, C., & Tallal, P. (1993). Comprehension and expression of affect in language-impaired children. *Journal of Psycholinguistic Research*, 22, 445-452.

Tsveta Aleksandrova, (2017), *Project Implementation Challenges*, Interact Program,

Tuman, G.J. (1983). Development and implementation of effective project management information and control systems, in Cleland, D.I. & King, W.R. (eds.) *Project management handbook*. New York: Van Nostrand Reinhold Co., 495-532.

Varghese, A., Tandur, D., 2014. Wireless requirements and challenges in industry in: proceedings of 2014 international conference on contemporary computing and informatics. IC3I 2014, 634–638, <http://dx.doi.org/10.1109/IC3I.2014.7019732>.

Wood-Harper A.T. (2008). Action research, *Information system journal*.

Young Hoon Kwak,PhD, Min Liu, PhD, Peerasit Patanakul, PhD, Ofer Zwikael, PhD, PMP (2014), Challenges and Best Practices of Managing Government Projects and Programs, *Project Management Journal*,

Zikmund, William G.(2007). *Business Research Methods*. Chicago: Dryden Press, 1984. Print.

Zwikael, O., Pathak, R. D., Singh, G. & Ahmed, S. 2014. The moderating effect of risk on the relationship between planning and success. *International Journal of Project Management*, 32, 435-441.

**Addis Ababa University College of Business and Economics**  
**School of Commerce**

**A Research Questionnaire to Collect Necessary Data and Information to  
Conduct Study in Partial Fulfillment of the Requirements for the Award of  
Master of Arts Degree in Project Management**

Questionnaire to Employees of Balezaf Alcohol and Liquors  
Factory Coal Fired Boiler Project Participants and other Stakeholders

Dear \_\_\_\_\_,

I am interested in your opinions and suggestions. Although I understand that your schedule is busy, I am hoping that you will take the little time required to fill out the enclosed questionnaire. As you know, Balezaf Alcohols and Liquors factory is looking for ways to finish its Coal fired Boiler project to improve its energy economy and ultimately keep its competitive advantage in its industry. The questionnaire is designed to collect information in the research topic “Assessment of Project Implementation Challenges at Balezaf Coal Fired Boiler Project”, Sebeta, Oromia Regional State.

Your responses are valuable for both Balezaf and to the country in general, because it is customary practice that project delays and cost overrun in Ethiopia due to several retarding challenges. Therefore to make the given project implementation challenges visible and overcome their negative impact the study needs your kind co-operation to answer the enclosed questionnaire. Here I also assure you that your genuine response is highly confidential and only used for academic purpose.

I would be grateful for your support to this research by completing the attached questionnaire.  
Sincerely,

Yilma Yisehak

## General Information and Instruction

Dear respondent, this Questionnaire has two Parts the first part is about general information of Respondent and the second part is about the details of research study. The second part contains two types of questionnaires; i.e. choice and short answering questions.

N.B. Dear Respondent, make sure that this questionnaire has 10 pages, if the choices could not fulfill your opinion or become vague put your answer at the end of the questionnaire empty space provided.

### Part I

#### General Information about Respondent

**Instruction:** Please tick (✓) your right choice

1. Gender

Male

Female

2. Age

18-30

31-45

C. 46-54

3. Educational background

Master degree & above

Bachelor degree

Technical & vocational

12<sup>th</sup> grade complete

10<sup>th</sup> grade complete

8<sup>th</sup> grade & above

4. Experience level at project works

1-5 years

6-10 years

11-15 years

16 years and above

5. Your current job position at Balezaf Alcohols & liquor factory (fill both positions at functional department and project position if applicable)

---

6. How often do you attend project works conducted in the given company?

This is first time

Rarely

Commonly

Almost in all projects

7. Do you have any experience in this kind of project (complex like coal fired boiler project)?

Yes

No

## Part II

### Questionnaires about Details of the Study

#### A) Project Current Status and Implementation Challenges

1. Tick the Circle for your Choice, for which the question evaluates the project success by ranking from '1' strongly disagree / never, '5' strongly agree / always

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
A. Project meet its operational performance goals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B. Project meet its technical performance goal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C. Project meet it schedule objectives	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D. Project stay within budget limits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
E. Stakeholders are satisfied with project result	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
F. The project implementation reflect the Company business strategy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
G. The project impact exceeds stokeholds expectation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. What is the current situation of coal fired boiler project is it operational?

Yes  No

3. If your answer is 'No', what the reason for not be operational?

Improper deliverable  Resource based  
 Lack of top management support  Project manager related  
 Lack of regulatory requirement compliance

4. Which phase of implementation process is not conducted?

Pre-construction  Contract execution  Interconnection  
 Project construction  Commissioning

5. How do you evaluate project implementation practice at Balezaf coal fired boiler project from perspective of cost, schedule and scope compared to past other kind projects?

- Carried required level,  Few deviations  
 Has significant gap  Have Very big gap

6. What project implementation challenges were anticipated during executing the given project? Please give weight to the following factors from 5, how much these factors influenced the whole performance of the project.

- Goals and scope planning was poorly designed or not realistic  
 Incompetent project manager  
 Project risks were not properly addressed  
 Communication among project stakeholders were not maintained properly  
 Project team structure were not suitable to the given project complexity  
 Have not top management support.  
 Insufficient resource

7. Dear respondent in the following table you are expected to fill your letter of choice (the letters represent project implementation challenges) based on their impact level from 1 to 5 in each project implementation stages; filling at space 1 means strongly affected the given phase performance and 5 means have no effect. 'A' Poorly designed goals and scope planning, 'B' incompetency of project manager, 'C' Risks were not properly addressed, 'D' Communication gap among project stakeholders, 'E' Project team structure incompatibility with project complexity, 'F' Lack of top Management support, 'G' Insufficient resource. There is possibility to fill more than one letter because there may be multiple challenges in one phase with similar impact.

S/N	Project implementation Stages	Impact level of challenges on each process of implementation				
		1	2	3	4	5
1.	Pre-Construction					
2.	Contract Execution					
3.	Interconnection					
4.	Project construction					
5.	Commissioning					

### B) Top Management Support and Follow-Up

8. Who is making follow-up the overall project progress of the given coal fired boiler project?

- G/manager                       Project sponsor delegated by G/M  
 Assigned functional manager    Project manager

9. Do you think the follow-up and support of top management enough to execute the project at the boundary of iron triangle?

- Yes       Extra support required       There was no support  
 and follow-up while project was in progress.    Neutral

10. How was top management support and follow-up carried out?

- By participating project stockholders for key decisions  
 By simply disseminating decided information to project implementing team  
 By providing necessary resources and following through formal reporting  
 Combination of the above  
 Through the link of project sponsor

A. Based on your experience, rank each competency to indicate the most important to ensure the project success. Circle from 1 to 5 (1 most important, 5-least important)

S/N	Key managing areas	Most Important	Important	Neutral	Less Important	Least Important
1	Scope Mgt	1	2	3	4	5
2	Time Mgt	1	2	3	4	5
3	Cost Mgt	1	2	3	4	5
4	Quality Mgt	1	2	3	4	5
5	Human resource Mgt	1	2	3	4	5
6	Communication Mgt	1	2	3	4	5
7	Risk Mgt	1	2	3	4	5
8	Procurement Mgt	1	2	3	4	5

B. Which one competency most lacking in the given project and tick your choice in the box for attention level to improve further from 1 to 5 (1-need immediate attention, 5-no attention required)

1. Scope management
2. Time management
3. Cost management
4. Quality management
5. Human resource management
6. Communication management
7. Risk management
8. Procurement management

### C) Project Team and Project Manager

11. Please tick the appropriate choice that best describe the project team composition in the coal fired project.

- The project team is set up based on only when the need arise and dissolve when project completed.
- The project team is set up as a new functional depart to which is staffed by in house personnel transferred from various functional departments.
- There is a permanent department which is set up to implement the project independently when the need arise.
- Combination of the above

12. What is your opinion on the team competency to execute project assignments and to take necessary corrective actions, are you agree, team was capable for implementation of the given project?

- Strongly agree                       Agree but lack confidence
- Average competency               Not agree, needs additional expertise
- Strongly disagree, it was wrong structure

13. Which project implementation process stage was most challenging for the team and most affected team performance? Tick your choice on the box provided.

- Pre-construction       Contract execution
- Interconnection       Project construction       mmissioning

14. Please tick the appropriate choice that best describe the project manager's role in the given coal fired boiler project

- PM is permanent head count working full time.
- PM is permanent head count working part time.
- PM is a contractor, participate in special duties.
- A combination of the above
- The assigned project manager already left the company
- There was no assigned legitimate PM

15. Dear respondent what is your opinion on PM competency in executing the given project, do you agree the PM was strived the project to be implemented in the philosophy of scope triangle?

- Strongly agree, he/she was worked with full requirements from PM
- Agree, he/she did his best
- Neutral
- Disagree, Lacks competency

Totally disagree; he/she wasn't act as PM

16. Dear respondent select and fill letter of your choice in the table below to evaluate the most lacked competency by your project manager to implement project at required level 1 means very important but lacked and 5 less important.

'A' Good leadership, 'B' Effective communication, 'C' Risk management, 'D' Cost control, 'E' Negotiation skill, 'F' conduit for technology and 'G' Critical thinking.

Project Implementation process stages	Importance level of PM competency at different stages				
	1	2	3	4	5
Pre-construction					
Contract execution					
Interconnection					
Project construction					
Commissioning					

#### D) Project Risks

17. Do you agree all risks related to the given project properly addressed by top project leaders and other stakeholders?

- Strongly agree       Agree, but few were ignored  
 Neutral       Not agree, some major risks were not addressed  
 Strongly disagree, totally risks related to this project was not addressed

18. Do management have project risk management plan?

- Yes       No

19. Who is responsible to take risk for any uncertainty of coal fired boiler project?

- Senior manager       Contractor  
 Supplier       Project manager

20. Who will absorb losses due to uncertainties in the project?

- Client,     Contractor,     Insurance Company,     Shared

21. Do you agree all requirements of coal fired boiler project understood?

- Strongly disagree, Not all is understood  
 Disagree, only few understood

- Strongly agree, completely understood
- Neutral
- Agree most of requirements are understood

22. What type risks were anticipated and expected; fill in the table below your letter of choice (letters represent types of risk) in each project implementation stages, rank these risks based on their impact level on project performance, ranked 1 means has strong influence and 5 means less influence?

‘A’ Schedule delay, ‘B’ Extra budget need, ‘C’ Incompliance to regulatory body, ‘D’ Scope related, ‘E’ Resource shortage

Project Implementation process stages	Ranked Impact level of Risks for project performance at different stages				
	1	2	3	4	5
Pre-construction					
Contract execution					
Interconnection					
Project construction					
Commissioning					

**E) Communication Gap**

23. Do the coal fired boiler projects have communication plan and guiding document?

- Yes
- No

24. How was communication carried out?

- Formally through written documents
- Through electronic communication channels
- Through oral discussion & meeting
- Informal communication among project team members
- Combination of all

25. What is your opinion about distribution of key project information to important stakeholders, do you agree proper communication maintained?

- Strongly agree, it was effectively communicated
- Agree but not highly effective
- Disagree, Poor communication caused some problems
- Average
- Strongly disagree, caused major challenge

26. In which implementation stage was communication gap cause major challenge?

- Pre-construction     Contract execution     Interconnection  
 Project construction     Commissioning

27. Which communication channel most lacking in the given project. Fill attention level to improve further from 1-5 (1 need immediate attention, 5 no attention required)

- A. Hard copy                        
B. Telephone call                  
C. Voice mail                        
D. E-mail                              
E. Meeting                           
F. Oral discussion

28. Which kind of communication related challenges anticipated in the given project?

- Conflicts among documents of implementation at interconnection phase  
 Conflict among stockholders (coal supplier specification and boiler manufacturer,  
 Poor communication skill between project team members and project manager,  
 There were no communication templates.  
 All

### Short Answer Questions

1. What was the motivation factor for the project?

---

---

2. What expected features are in scope criteria in the coal fired boiler project?

a. Steam generation capacity ton/hr?

---

b. Row material / fuel type and consumption rate?

\_\_\_\_\_ and \_\_\_\_\_ kg/hr.

c. Steam pressure? \_\_\_\_\_ Bar

3. What are acceptance criteria for the given project and how much scope level is currently achieved?

---

---

4. What project phases or put in place? (Like, Civil, Utility and Interconnection)

---

---

Dear respondent if the questionnaire above could not properly explain or insufficient to get your thinking write down your opinion on the blank space provided.

---

---

---

---

---

---

---

---

---

---

---

**I thank you, this is the Last Page.**