



ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE

**Challenges Confronting Project Management Processes for the
Success of Hydropower Projects: A case study of Ethiopian
Electric Power (EEP)**

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**A Research Project Submitted in Partial Fulfilment of the Requirements
for the Award of Master of Arts Degree in Project Management (MAPM)**

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Success of Hydropower Projects: A case study of Ethiopian
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Statement of Declaration

I, Dawit Yibgeta, declare that this project work entitled “Challenges Confronting Project Management Processes for the Success of Hydropower Projects: A case study of Ethiopian Electric Power” is outcome of my own effort and that all source of materials used for the study have been duly acknowledged. I have produced it independently except the guidance and suggestion of the research advisor. This study has not been submitted for any degree in this University or any other University. It is offered for the partial fulfilment of the degree of Master of Arts in Project Management.

Dawit Yibgeta

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Statement of Certification

This is to certify that Dawit Yibgeta has carried out this project work entitled “Challenges Confronting Project Management Processes for the Success of Hydropower Projects: A case study of Ethiopian Electric Power”. The work is original in nature and is suitable for submission for the reward of the MA degree in Project Management.

Fesseha Afework (Ast. Professor)

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Date _____

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Acronyms/ Abbreviations

EETPC:	Ethiopian Electric Power Corporation	EETPCo:	Ethiopian Electric Power Corporation
RII:	Relative Importance Index	CRGE:	Climate Resilient Green Economy
GERD:	Grand Ethiopian Renaissance Dam	METEC:	Metal Engineering Corporation
GD3:	Genale Dawa 3	CGGC:	China Gezhouba Group Corporation
HPP:	Hydroelectric Power Project	MWH:	Montgomery Watson Hawksley
BSc:	Bachelor of Science	ELC:	Electro consult
BA:	Bachelor of Arts	KW:	kilo watt
MSc:	Master of Science	MW:	Mega Watt
MA:	Master of Art	GW:	Giga Watt
PMBOK:	Project Management Body of knowledge	KV:	Kilo Volt
SPSS:	Statistical Package for Social Sciences	GTP:	Growth and transformation pl
FEDRE:	Ethiopian Federal Democratic Republic of Ethiopia		

Abstract

The success of hydropower projects of Ethiopian Electric Power (EEP) can be aligned with the use of construction project management processes, although, the projects have been impacted by issues such as time overrun, cost overrun, poor quality and poor risk management. The aim of this study is to examine the challenges confronting project management practice for the success of hydropower projects in EEP. Research data was obtained by means of using questionnaire and interview. A sample size of sixty-one (61) Ethiopian Electric Power staffs was used for the study. Challenges such as misuse of time, bad management, inability to develop project knowledge and project management methodology, lack of developing integrated project management plan, inadequate project planning, inadequate project schedule management practices and political influence to change project scope and plans were identified as the most challenges confronting the project management processes for the success of hydropower projects of EEP. The study recommended that providing project management competency trainings, strengthening project monitoring and evaluation system, giving focus to the project management challenges, enhancing utilization of project management processes, developing organizational project management system and institutionalizing the project management competence in order to improve the challenges of hydropower projects in EEP.

Keywords: Challenges of project management, Hydropower projects, Ethiopian Electric Power.

CHAPTER ONE

INTRODUCTION

This chapter aims to identify the research problem, questions to answer and objectives for carrying out the study. The chapter begins with introductory background information about project management competency and the organization, the statement of problem, research questions, objectives of the study, significance of the study, delimitation and structure of the report are presented respectively.

1.1 Background of the study

Project management is defined as an application of knowledge, skills, tools and techniques to project activities to meet project requirements. This is accomplished through the application and integration of the project management processes of initiation, planning, executing, monitoring and controlling and closing (Project Management Institute, 2004). Project management is a discipline with set of methods, theories and techniques that have evolved to manage the complexities of work that is unique and temporary (Verzuh, 2008).

Project Management Institution (PMI) defines a project as a temporary endeavour undertaken to create a unique product, service or result, temporary means that the project has a definite ending point and unique means that the product or service differs in some distinguishing way from all similar products or services (Cobb, 2012).

When describing the functions of project management, reference is included to an objective or purpose, a time-frame, budget and resources as well as performance requirements (Larson & Gray, 2011). The reference to these elements, that include scope, time, cost, quality, human resources, communications, risk, procurement, stakeholder and finally how to integrate these elements to manage the project describe the ten knowledge areas of the Project Management Body of Knowledge (Project Management Institute, 2008). These knowledge areas provide a map to manage a project according to a five-step process of initiating, executing, monitoring, controlling, and closing a project to deliver an outcome.

Project management in organizations is managed within increasingly complex environments driven by regulatory changes and organizational restructuring. New product development, post deal integration, outsourcing and policy, implementation, in addition to traditional, but vital, system development and implementation, are amongst the current key project initiatives organizations must manage. It is mandatory not only for project-based organizations but also for any firm in order to survive in rapidly changing technological and market environment.

Nowadays, most firms are realizing that project management and productivity are related and businesses should be managed as a series of projects (Kerzner, 2009).

Timely and with budget completion of a construction project is frequently seen as a major criterion of project success by clients, contractors, consultants and related stakeholders (Luka & Muhammad, 2014). The primary challenge of a project is the handling of constraints to meet the desired goal where one aims to honour the primary constraints of time and budget to produce quality result (Warszawski, 1996).

We can say a project is successful when the objectives of the project have been achieved to the full satisfaction of the users, all closeout activities have been completed and all designated interest, including the project's sponsor and/or initiator officially accepts the project results or products and closes the project (Wideman, 2002).

Marnewick and Labuschagne (2009) suggest that many organizations invest resources in project management, believing that it can be used to complete all new initiatives successfully. However, several surveys have shown that many projects still fail to deliver expected results.

As needs change and challenges grow, project management continues to evolve to meet 21 century demands. It takes expertise in Complex Project Management (CPM) for an organization to thrive, indeed to survive, in today 's environment rife with uncertainty. But project failures worldwide are still significantly high, despite attempts by project management societies to provide project managers with frameworks, standards, techniques and methodologies to assist them in their activities (Smith, Bruyns & Evans, 2011).

The Standish Group (2013) highlighted the most important reasons for failures are inappropriate project scope definition; inappropriate project communication; and lack of appropriate project management competencies.

Project management in organizations is managed within increasingly complex environments driven by regulatory changes and organizational restructuring. New product development, post deal integration, outsourcing and policy, implementation, in addition to traditional, but vital, system development and implementation, are amongst the current key project initiatives organizations must manage. The ability to successfully execute these projects is what drives the realization of intended benefits and the achievement of business strategies. Organizations that execute projects successfully employ effective project management practices as a tool to drive change and achieve business objectives. Given the strategic impact that projects have on a business, organizations must follow effective project management processes that measure

progress and risks and ensure the right projects can be delivered in alignment with organizational priorities. Modern project management practices include agile project management, lean and extreme project management (Meredith, 2010).

Even though different theories are ensured that project management is important for successful implementation of projects, it doesn't necessarily mean that every organization is practicing project management principles, techniques, tools and templates properly.

Based on the company's information sources, the causes for not achieving projects implementation as per the plan are vary, regarding organizational performance to achieve organizational strategic goals through project implementation shows not successful. This is due to the reasons such as poor planning, poor procurement management and contract administration system, stockholder identification problems, poor project integration, etc

Ethiopia Electric Power has determined to play a major role in availing renewable energy sources to the regional markets that will extend cross-border electricity trading with the neighbouring countries and further to other nearby countries to enhance regional and continental economic growth through developments of the untapped hydropower and other renewable resources for electricity through implementation of different mega projects.

In order to attain the organizational strategic goal through the hydropower projects, systematic and sustained improvement effort for project management capability is required. The purpose of this study is to assess the challenges confronting project management practices for success of hydropower projects in EEP.

1.2 Background of the organization

Ethiopian Electric Power (EEP) is one of the two split companies of EEPCo (Ethiopian Electric Power Corporation). EEP which was established in 2013 by the Council of Ministers Regulation No.302/2013 is responsible for generating, transmitting and wholesale of electricity to be utilized nationwide as well as neighbouring countries.

Ethiopian Electric Power which is the sole public development enterprise, established to generate and supply electric power in accordance with national economic, social development policies and environmental protection need of the public with the priorities for budget allocation by the government to carry out the mission of fulfilling national power demand (Government Report for National Debt, 2018).

According to Ethiopian government's report, since 2011 Ethiopia has implemented the Climate Resilient Green Economy (CRGE) strategy, which substitutes conventional development by means of harnessing clean energy sources like hydropower, wind, geothermal, solar and biomass, and implementing energy-efficient technologies in the transport and industrial sectors.

In Ethiopia, many natural sites are well suited to create storage reservoirs at relatively low costs and with relatively little environmental and social disruption (World Bank, 2006). The country's abundant hydropower potential and the suitability of the country's land escape for building multipurpose hydraulic infrastructures, developing this resource potential is a sustainable solution for the country's energy and power shortage problems.

As per EEP's information sources, Ethiopia has 45,000 megawatts of hydropower potential. Currently Ethiopia gets 90% of its total electricity from 14 hydropower generating plants with a total of installed capacity of 3,807 megawatts (hydropower source). Out of hydropower potential of about, less than 10 % has been exploited by 2018. Considering the substantial hydropower resources, Ethiopia has one of the lowest levels of per capita electrical consumption in the world.

Hydropower, as a clean renewable resource, has two important roles to play in the socio-economic development to Ethiopia.

- i. To provide safe, reliable, sufficient and affordable electricity for domestic consumption, industrial use.
- ii. As an industry for earning revenue from export of hydroelectricity thereby providing the much-needed capital to finance social projects and achieve economic self-reliance.

The hydropower generation program is the main sector of power generation which covers 90% of power generation source for EEP also for Ethiopia, since EEP is the sole company for power supply. Thus, from among the many other sources of energy, the country identified hydropower to be the key to satisfy the current growing energy demand. When the government decided to develop huge hydropower projects on the country's major river basins, it not only considered the country's huge hydropower potential but also the additional social, economic and environmental benefits these multi-purpose hydropower projects bring.

Since establishment of Ethiopian Electric Power, four hydropower projects have been undertaken which are Gibe3 hydropower project, Grand Ethiopian Renaissance Dam (GERD), Genale Dawa3 hydropower project and Koysa hydropower project.

Hydropower projects such as Gibe3, Grand Ethiopian Renaissance Dam (GERD), Genale Dawa3 were on progress during the establishment of EEP whereas Koysa hydropower project has been planned and gone to execution after establishment of EEP. From the four projects Gibe3 is completed and the remaining three projects are under progress.

Gibe 3 hydroelectric project

The Gibe 3 hydroelectric project which is owned by Ethiopian Electric Power implemented for generating electric power from renewable source. The direct benefit of this project is generating capacity of 1,870 MW of electrical power.

The Gibe 3 Project is situated on the Omo River, at a distance of 390Km boundary of Welayita and Dawro Zones in the Southern Nations Nationalities and Peoples Region of Ethiopia.

The Contract Agreement was signed between the Ethiopian Electric Power Corporation (Employer) and Salini Impregilo of Rome (Contractor) on July 2006 which was amended on April 2008 and a joint venture of ELC-Electroconsult of Milan and Coyne and Bellier of Paris have been appointed as the employer's representative for the project.

Estimated cost of the project was 1.47 billion Euros and planned completion date of the project was July 2013 but the project had been come to operation on December 2016.

The scope of the project includes RCC dam, water way tunnels, pressure pen stock, power house, switch yard construction, camps and access roads.

Even though the project closure report showed the project has been implemented as per desired scope, required quality, good stakeholder management and resource management and procurement management process, but regarding time overrun, cost overrun and risk management issues were challenges of the project.

The project had cost escalated from 1.47 billion Euro to 1.55 billion Euro, the project delayed by more than three years and regarding financial risk management also the project faced challenges due to having secured financial source.

Grand Ethiopian Renaissance Dam Project

The Grand Ethiopian Renaissance Dam hydroelectric project which is owned by Ethiopian Electric Power is planned to provide electric power from renewable source. The direct benefit of this project is generating capacity of 6,000 MW of electrical power.

The Project is located on the Abay River in the Beneshangul Gumuz Regional State about 750

km from Addis Ababa via Debre Markos and Chagni.

The contract agreement was signed between the Ethiopian Electric Power Corporation (Employer) and Salini Impregilo of Rome (Civil Contractor) on December 2010, also contract was signed with Metal Engineering Corporation METEC of Ethiopia (electro mechanical contractor).

The project objective is to enhance the hydropower generation capacity of the country and fulfil the power sector five-year growth & transformation plan through hydropower development. And the project is to ensure renewable energy to the emerging agricultural industries and heavy industries of the country and also to secure the power trading between the neighbouring countries and even the regional and continental interconnection.

The scope of the hydro power project includes RCC dam, Rock fill saddle dam, pressure pen stocks, power house, camps, switch yard construction and access roads.

The project had been expected to be commissioned within five years at on December 2015 with the estimated cost of 80 billion birr. Currently the project found at 65% of work completion with 150-billion-birr progress cost within the last nine years of project progress.

Genale Dawa 3 Hydropower Project

The Genale Dawa 3 hydro power Project which is owned by Ethiopian Electric Power which is planned to generate electric power from renewable source. The direct benefit of this project is generating capacity of 254 MW of electrical power.

Genale Dawa3 hydro power project is located at the boundary of Guji and Bale Zones, in the State of Oromia where 650km from Addis Ababa.

The project has been signed between Ethiopia Electric Power Corporation and CGGC of China and a consultancy firm with an American firm MWH in joint venture with the local companies Integrated and Acute engineering on March 2011 with estimated project cost of USD 451.

The scope of Genale Dawa3 hydro power project includes Rock fill dam, water way tunnels, pressure pen stock, underground power house, switch yard construction, camps and access roads. The completion date of the project was planned for March 2015 but the project has not been come to operation till now.

As per the researcher observation, even though the project closure report showed that the project has been implemented as per desired scope and required quality but regarding time

overrun, cost overrun and poor stakeholder management about the project surrounding society issues are the major challenges of the project.

The project cost has been raised from USD 451 to USD 582 million, the project delayed by more than four years and regarding project compensation issues, the project has faced challenges from the surrounding people.

Koysha Hydroelectric Project

The Koysha hydro power project which is owned by Ethiopian Electric Power planned for providing electric power from renewable source. The direct benefit of this project is generating capacity of 2,200 MW of electrical power.

The Koysha hydroelectric project, located in the southwest of the country, it is the fourth cascade of dams along the Omo River, after Gilgel Gibe I, Gilgel Gibe II and the Gibe III hydroelectric project.

Ethiopia Electric Power signed contract with Salini Impregilo of Italy and with the consultancy firm ELC-Electro consult and Tractable engineering of Italy and France respectively on March 2016 for project completion period of five years.

The scope of the project includes RCC gravity dam, power station housing, concrete spillway, pressure penstocks, bridge over the Omo River, camps, access roads, switchyard and 400 KW transmission line from Koysha to Gibe 3 hydropower plant.

The planned completion date of the project is March 2021 thus, even if measuring the performance of the project is not appropriate but observations of project reports show that major activities of the project are suspended which may affect the project planned time and cost.

1.3 Statement of the problem

Ethiopia is a country with a big ambition to become a middle-income country by 2025 and the country wants to achieve its developmental goals by changing the concept of sustainable development into reality. The country's economy is currently growing very fast; it is among the fastest growing economies in world and will continue to be so (Climate Resilient Green Economy, 2011). This is in line with the country's ambition to become a middle-income country by 2025.

The Ethiopian Federal Democratic Republic Growth and Transformation Plan, FEDRE GTP (2010) states that it is crucial that building a 'Green Economy' is the sustainable way to achieve the country's developmental goals. Therefore, the country devised a strategy to gear the country's development plan into a sustainable path devised the Climate Resilient Green Economy Strategy which aims to protect the country from the effects of climate change and environmental damage that comes due to the implementation of rapid developmental projects which boosts agricultural productivity, strengthen the industrial sector and increase foreign export.

Due to the rapid growth in economy the country is facing a huge challenge to meet the fast-growing energy demand. The major demand comes from industrial, agricultural, service sectors and from the rising household consumption because of the rising standard of living. From the objective of enhancing power development, Ethiopian Electric Power has been trying to implement hydropower generating projects as the main sources of electric power.

In order to implement the strategy of government for hydropower development as the main energy source, major energy development plans had been implementing through hydropower projects construction. Gibe3, Grand Ethiopian Renaissance Dam (GERD), Genale Dawa3, Koyssha hydropower projects are those projects which has being implemented by EEP.

The Gibe3 hydropower project is completed in 2016 after 40 months of delay from the planned completion time and with cost overrun 80 million Euro.

The Grand Ethiopian Renaissance Dam (GERD) is on progress, even though the planned first commissioned time was at December 2015 the revised project first commissioning time is extended to September 2021 which is more than five years delay from the planned first commissioning time. The current progress status of the project is about 65% and 150 billion birrs is expended which is more than three times of the planned cost for such progress of the project.

The Genale Dawa3 hydropower project would be completed on March 2015 but the project is still on progress with more than four years delay and the construction cost of the project is escalated from USD 451 to USD 582 million for the current project progress of 99.5%.

The Koyssha hydropower project is started on March 2016 with planned completion date of March 2021 and project contract cost of 2.5 billion Euro. Since the project is on progress and within the project contract period, it is difficult to determine the success or failure of the project. Even though it is not the right time to measure project performance, project reports are showing

major works of the project are becoming suspended due to various reasons which may affect project completion time and cost.

Table 1: Performance of the projects during the study concerned

Project name	Estimated completion duration	Project duration at the study concerned	% completed at study concerned	Planned value for the specified progress	Actual cost for the specified progress	Budget at project completion	Estimated cost to complete	Estimated time to complete
Gibe3	5 years	8.3 years	100%	1.47 billion Euro	1.55 billion Euro	1.47 billion Euro	done	done
GERD	5 years	8 years	65%	52 billion birr	150 billion birr	80 billion birr	228.6 billion birr	12.5 years
GD3	4 years	9.3 years	99.5%	448.75 million USD	582 million USD	451 million USD	584.955 million USD	9.5 years
Koyscha	5 years	3.5 years	-	-	-	2.5 Billion Euro	-	-

Survey findings (2019)

The researcher used the “Golden Triangle” for measuring project success. It is evident that project success means different thing to different people. In project management literatures most of them agree on quality, cost and time are common criteria for project success. According to PMI, the guide published by the PMI, project success criteria include the project triple constraint (time, cost, scope) and quality. The relationship among the parameters is such that if any one of the three (triple constraint) changes, at least one other parameter is likely to be affected.

Thus, the researcher used those criteria in order to consider the hydropower projects of EEP are successful or not for this study. The following figure shows how project quality is affected by balancing the other three parameters.

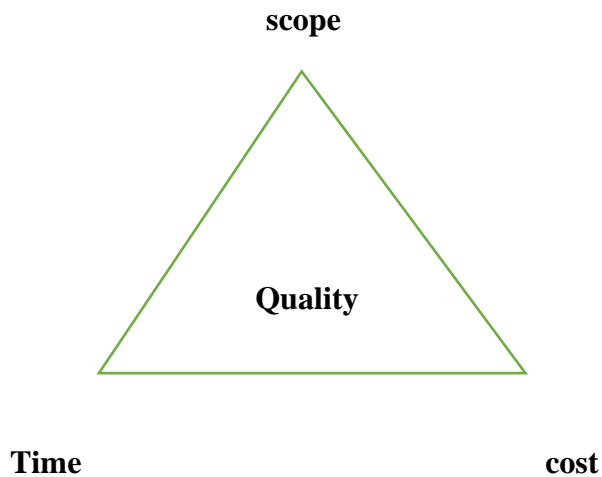


Figure 1, the PMI framework for evaluating success

Source: Adapted from Carvalho & Rabechini (2011, p.39)

According to the existing observation about the hydropower projects, project delay had been common problem in the above-mentioned hydropower projects of Ethiopia Electric power. Moreover, it is well known that the delays in hydropower projects were the major causes of project failure. If the delay is not identified and corrective project management decision is not taken in time, a project may incur extra cost and extension of project time, which causes rise to dissatisfaction for all parties who are involved on the project implementation. This problem is major obstruction for success of hydropower projects of Ethiopia Electric power.

Results from the problem of project delay, power shortage throughout the country is continued. The frequent power fluctuation has adverse effect on the development of the country such as affecting production and service delivery, the people are exposed for extra costs incurring such as expenditure for alternative power sources, costs for outsourced repair services, losing power-based business incomes, reducing national production rate of the manufactures and obligating to incur extra foreign currency to import more fuel for diesel generators.

Also cost overrun has been seen common problem for the hydropower projects of EEP. The hydropower projects are failing to reach their objectives within the predicted cost and are in challenges to complete with the allocated budget. Taking into account the scarce financial resources, it puts massive financial burden on the government. Thus, cost overrun is one of the major challenges for success of hydropower projects of Ethiopia Electric power.

The way of leading projects in this company shows lack of organized project management system, poor planning, poor resource management, problem of assigning the right person for

the right job, developing a matured workforce, poor project monitoring and evaluation, poor decision-making practice, weak procurement and contract administration system, poor employee retention system and weak capturing and sharing lessons learnt practices etc.

Even though the government has taken administrative decision on the GERD project due to the project criticality after wasting so many resources of cost overrun, time overrun, losing power generation gains etc. The main reason for not achieving what they had planned, the relevance of their project management methodology and the efficiency and effectiveness of what they have performed are not studied yet. The Project management practices on the remaining projects of hydropower projects and other projects in the EEP are proceeded on the same way as previous projects were being done.

Based on the existing project implementation trend, reports show that the company strategic goals are not being addressed and electric power deficiency is to be remained as the major problems of the country. Since conducting hydropower projects has been started, as far as the researcher knowledge is concerned, no research has been done on project management practice and performance except taking action by the government on the GERD hydropower project in 2018 due to the evaluation result for weak performance of the electromechanical contractor.

In order to lead projects properly and take out them from problems the stakeholders need to be conscious and must understand significance of project management process for tracking projects with project management principles and techniques for such energy sector which is blood vessel for the economy and strategic for national development. As stated by Lipovetsky, Tishler, Dvir & Shenhar (2002) “it is clear that unless there is a structured and scientific approach to the practice of project management, organizations would find themselves adrift in the ocean called organizational development and hence would be unable to meet the myriad challenges that the modern era throws at them”. Hence, the importance of project management to organizations cannot be emphasized more.

This study mainly placed the concern of assessing the challenges confronting project management process for the success of hydropower power projects of Ethiopian Electric Power and the success criteria of the hydropower projects is assessed.

Time, budget, scope and quality are the main dimensions which usually measure the performance of a project. These parameters are interdependent and, delay reasons leading to time overrun also cause cost overrun and quality problems in construction projects. Therefore, delays are one of the most important phenomenon of construction industry. Failure to achieve

project on the targeted time, budgeted cost, scope, required quality, will cause the company to bad reputation, cost overrun, time overrun are the most significant effects of project delay (Dinçer & Esma, 2018).

Thus, the researcher focused on the challenges confronting project management process for implementing hydropower projects successfully in terms of scope, time, cost and quality. The study analysed why the intended EEPs' hydropower projects goals are not achieved, it examined the project management practice of EEP, and it has recommended for improvement.

1.4 Research question

Based on the above statement of the problem, the study attempts to address the following questions:

1.4.1 Main research question

What are the challenges which confront project management practice for the success of hydropower projects in EEP?

1.4.2 Sub research questions

- i. What type of challenges are affecting the project management practice for the success of hydropower projects in EEP?
- ii. How does challenges of project management practice affect the success of hydropower projects in EEP?

1.5 Objectives of the Study

1.5.1 General objective of the Study

The general objective of the study is to identify the challenges which confront project management practice for the success of hydropower projects in EEP.

1.5.2 Specific objectives of the Study

- i. To identify the types of challenges that determine the project management practice for the success of hydropower projects in EEP.
- ii. To assess how challenges of project management practice affect the success of hydropower projects in EEP.

1.6 Significance of the Study

Studying the problem will have practical significance in order to assess the challenges confronting for project management process and to indicate decision makers for appropriate solutions to be implemented in project execution process for the accomplishment of projects within the right time, within estimated cost, required qualification, designed scope, appropriate resource and under controlled risk. Modern project constraints scope, quality, schedule, cost, resources, and risk (*PMI*, 2013).

In particular, EEP is set to enhance the capacity of power supply mainly from hydropower sources for filling the gap of highly rated national power demand and for addressing the exterior power demand market in the neighbourhood countries. This study can be helpful for the organization for identifying project management constraints and indicating mitigation solutions to improve the effectiveness and efficiency of ongoing and upcoming projects to be done in hydropower projects of Ethiopian Electric Power. Which is to contribute for attaining the strategic goals of the organization through maximizing utilization of the appropriate project management process for better project achieving performance.

The researcher believes that the study findings will contribute also to other organizations in order to have better understanding about the challenges of project management and how it can be over strand those constraints for project success. In addition, the study can serve as a future reference for researchers on the subject matter.

1.7 Delimitation of the Study

Due to locations of the projects are remote and far to each other, direct observation to some projects was difficult. Similarly, data collection had been challenging since the project members usually are going to the project site which are located in different regions of Ethiopia.

1.8 Organization of the Study

The thesis work included five chapters. The first chapter is introductory part with background of the study, background of the project, statement of the problem, research objective, research questions, significance of the study and limitation of the study. Chapter two is composed of the review of various books and journal articles to base the study on existing literature. This chapter discusses relevant issues to build understanding of the subject matter. Chapter three contained the details of the research methodology to gather and analyse data from which findings are being drawn. Chapter four is the analysis of the data gathered by means of data collection

methods and instruments indicated in the methodology part. The last chapter discusses about summary, conclusion and recommendation. The references which being used in the study, interview guide and questionnaire are included in the Appendix section.

CHAPTER 2

REVIEW OF RELATED LITERATURES

2.1 Introduction

This chapter is review of related literature which contains both theoretical and empirical parts which was used as a guide line to conduct the study. In my literature review, I have tried to see representative literature discussing about project management but relevant studies about the challenges of project management practice is inadequate.

In this section, issues related with project management, such as project, project management, project management processes, project management knowledge areas, project management in development countries and others are discussed.

2.2 Theoretical Review

2.2.1 Project

Many definitions had been given to project by different authors, due to the fact that project is a multidisciplinary word that has different meaning from different perspective and orientations.

Project management Institute (2013) define project as a temporary endeavour undertaken to create a unique product, service, or result. In this study, the PMI's definition of project is used as an operational meaning.

Larson and Grey (2011) stated, that like most organizational effort, the major goal of a project is to satisfy a customer's need.

A project is a temporary endeavour undertaken to create a unique product or service. Temporary means that every project has a definite beginning and a definite ending. Unique means that the product or service is different in some distinguishing way from all similar products or services. Projects are often critical components of the performing organizations' business strategy (Wideman, 2002).

Many other scholars and books prefer to define and explain project by describing the common characteristics of projects instead of giving a direct definition so that anyone can define project by integrating these features of projects. Different scholars provide the unique features of projects, such as,

2.2.1.1 Characteristics of projects

Nicholas and Steyn (2008) have mentioned some specific characteristics of project such as:

- i. A project involves a single, definable purpose and well-defined end-items, deliverables, or results, usually specified in terms of cost, schedule, and performance requirements.
- ii. Every project is unique in that it requires doing something different than was done previously. A project is a one-time activity, never to be exactly repeated again. It is a step into the unknown, fraught with risk and uncertainty. No two projects are ever exactly alike, and even a repeated project will differ from its predecessor in one or more commercial, administrative or physical aspects.
- iii. Projects are temporary activities. Each is an ad hoc organization of personnel, material, and facilities assembled to accomplish a goal within a scheduled time frame; once the goal is achieved, the ad hoc organization is disbanded.
- iv. Projects cut across organizational and functional lines because they need skills and talents from multiple functions, professions, and organizations.
- v. it also involves unfamiliarity and risk. It may encompass new technology or processes and, for the organization undertaking it, possess significant elements of uncertainty and risk.
- vi. The organization usually has something at stake when doing a project. The work calls for special scrutiny or effort because failure would jeopardize the organization or its goals.
- vii. A project is the process of working to achieve a goal; during the process, projects pass through several distinct phases called the project life cycle. The tasks, people, organizations, and other resources involved in the project change as the project moves from one phase to the next.

There are a number of different project types that all have slightly different characteristics. In general, these project types can be divided into two categories; external and internal projects. In an external project the customer, or project sponsor, is outside the organization. These projects are often called delivery projects and starts with the signing of legally binding agreement. The agreement is drawn up between the customer and the supplier and it contains specific definitions of what work the project includes (Antvik & Sjöholm, 2007).

To terminate or delay an external project the sponsor must be involved and financial compensation can be necessary if the agreement have been breached by either party. Internal projects have a customer within the organization and starts with a decision from the own organization (Walker, 2007).

Internal projects often consist of development or change in work methods. These projects often have milestones or decision points where the project is evaluated, and the organization decides whether it will continue or be terminated (Antvik & Sjöholm, 2007).

Regarding the subject of this study, EEPs' hydropower projects are external delivery projects and to be conducted by signing of legally binding agreement. The projects are carried out by EEP as a customer and consultants and contractors as service provider and supplier.

2.2.1.2 Characteristics of construction projects

For successful management of construction projects considering the projects characteristics is important. Generally, different writers have characterized construction projects in various ways such as,

- i. Compared to most other industries, construction projects involve relatively intensive labour use, and consume large amount of materials and physical tools (Jekale, 2004).
- ii. unlike the management of many other projects, the project managers in construction project are often changed from one phase to another or some may specialize in only one phase of the construction project (Project Management Institute, 2007).
- iii. Construction project sites are generally complex because of the extensive use of sophisticated plant, equipment, modern methods of construction, multidisciplinary and multitasked aspects of its project workforce (Aftab, 2012).
- iv. Are usually capital intensive, complex; and require significant management skills, involvement and coordination of a wide range of experts in various field (Chartered Institute of Building, 2002).
- v. Are usually undertaken outside; hence, they are susceptible to many variables such as weather and traffic (Gould & Joyce, 2003).
- vi. Must address the geography and conditions of the project site and the relation of the project to the environment (Project Management Institute, 2007).
- vii. Are subject to a variety of laws and regulations that aim to ensure public safety and minimize environmental impacts (Bennett, 2003).

2.2.2 Project Management

Project Management Institute (2013) define project management is the application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project. Meeting or exceeding stakeholder needs and expectations invariably involves balancing competing demands among: Scope, time, cost,

and quality, stakeholders with differing needs and expectations and identified requirements and unidentified requirements.

Also, Project management is defined as an application of knowledge, skills, tools and techniques to project activities to meet project requirements (Kloppenburger, 2012). This is accomplished through the application and integration of the project management processes of initiation, planning, executing, monitoring and controlling and closing (Project Management Institute, 2004).

Mintzberg (1983) state that most of the emergent industries since world-war II are project intensive. This widespread use of projects in organisations demanded an approach that can efficiently manage these temporary endeavours which are critical to the organisation's strategic objectives. This led the researchers and professionals of the field to devise an approach that can efficiently manage the projects.

Though there are different indicated project management practices defined by different scholars, this study will be benchmarking the ten project management areas defined by PMI. The Project Management Body of Knowledge (PMBOK) published by the Project Management Institute (PMI) represents the knowledge and practice that is generally accepted and unique or nearly unique to the field of project management (Duncan, 1996).

2.2.2.1 Project management knowledge areas

A project management knowledge area is an identified area of project management defined by its knowledge requirements and described in terms of its component processes, practices, inputs, outputs, tools, and techniques. Although the knowledge areas are interrelated, they are defined separately from the project management perspective (PMI, 2017).

According to the PMI there are ten general project management knowledge areas which are: project integration management, project scope management, project schedule management, project cost management, project quality management, project resource management, project communication management, project risk management, project procurement management and project stakeholder management. These ten Knowledge Areas are used in most projects most of the time.

a. Project integration management

Project integration management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within

the project management process groups. In the project management context, integration includes characteristics of unification, consolidation, communication, and integrative actions that are crucial to controlled project execution through completion, successfully managing stakeholder expectations, and meeting requirements (*PMI, 2017*). Project Integration Management includes making choices about resource allocation, making trade-offs among competing objectives and alternatives, and managing the interdependencies among the project management Knowledge Areas. Project integration management Knowledge Areas includes the six processes (*PMI, 2017*)

- i. Develop project charter- it is the process of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities.
- ii. Develop project management plan- it is the process of defining, preparing, and coordinating all subsidiary plans and integrating them into a comprehensive project management plan. The project's integrated baselines and subsidiary plans may be included within the project management plan.
- iii. Direct and manage project work: the process of leading and performing the work defined in the project management plan and implementing approved changes to achieve the project's objectives.
- iv. Monitor and control project work-The process of tracking, reviewing, and reporting project progress against the performance objectives defined in the project management plan.
- v. Perform integrated change control-The process of reviewing all change requests; approving changes and managing changes to deliverables, organizational process assets, project documents, and the project management plan; and communicating their disposition.
- vi. Close project or phase- The process of finalizing all activities across all the Project Management Process Groups to formally complete the phase or project.

b. Project scope management

Project scope management Knowledge Area comprises the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Managing the project scope is primarily concerned with defining and controlling what is and is not included in the project. This Knowledge Area includes the six processes (*PMI, 2017*):

- i. Plan scope management- The process of creating a scope management plan that documents
- ii. how the project scope will be defined, validated, and controlled.
- iii. Collect requirements - The process of determining, documenting, and managing stakeholder needs and requirements to meet project objectives.
- iv. Define scope - The process of developing a detailed description of the project and product
- v. Create WBS - The process of subdividing project deliverables and project work into smaller, more manageable components.
- vi. Validate scope- The process of formalizing acceptance of the completed project deliverables managing changes to the scope baseline.

c. Project schedule management

Saylor.org (2009) the define project success often includes completing the project on time. The importance of ensuring work proceeds efficiently within individual tasks, along with the interfacing of related tasks, is a key message in project time management. The ultimate measure being project success, based on effective control of time management processes, tools and practices. The development and management of realistic project schedule and project plan is a primary responsibility of the project manager to complete the project on time. Accordingly, PMBOK Guide includes the processes required to manage the timely completion of the project.

- i. Plan schedule management: The process of establishing the policies, procedures, and documentation for planning, developing, managing, executing, and controlling the project schedule.
- ii. ii. Define activities: The process of identifying and documenting the specific actions to be performed to produce the project deliverables.
- iii. iii. Sequence activities: The process of identifying and documenting relationships among the project activities.
- iv. Estimate activity resources: The process of estimating the type and quantities of material, human resources, equipment, or supplies required to perform each activity.
- v. Estimate activity durations: The process of estimating the number of work periods needed to complete individual activities with estimated resources.
- vi. Develop schedule: The process of analysing activity sequences, durations, resource requirements, and schedule constraints to create the project schedule model.

- vii. Control schedule: The process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan.

d. Project cost management

The Knowledge Area include processes that required to ensure the project is completed within the approved budget. Here, costs for the project have to be calculated by developing an estimate of the Costs for the resources needed to complete project activities and resources have to be planned, by determining what resources (people, equipment and materials) and what quantities of each are needed to perform project activities. It includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget (*PMI, 2017*).

- i. Plan cost management-The process that establishes the policies, procedures, and documentation for planning, managing, expending, and controlling project costs.
- ii. Estimate costs- The process of developing an approximation of the monetary resources needed to complete project activities.
- iii. Determine budget-The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.
- iv. Control costs- The process of monitoring the status of the project to update the project costs and managing changes to the cost baseline.

e. Project quality management

Project quality management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. Project Quality Management uses policies and procedures to implement, within the project's context, the organization's quality management system and, as appropriate, it supports continuous process improvement activities as undertaken on behalf of the performing organization. Project Quality Management works to ensure that the project requirements, including product requirements, are met and validated. There are three processes which need to be included in this knowledge areas (*PMI, 2017*).

- i. Plan quality management: The process of identifying quality requirements and/or standards for the project and its deliverables and documenting how the project will demonstrate compliance with quality requirements. From quality control measurements to ensure that appropriate quality standards and operational definitions are used.

- ii. ii. Perform quality assurance: The process of auditing the quality requirements and the results
- iii. iii. Control quality: The process of monitoring and recording results of executing the quality activities to assess performance and recommend necessary changes.

f. Project resource management

Project human resource management includes the processes that organize, manage, and lead the project team. The project team is comprised of the people with assigned roles and responsibilities for completing the project. Project team members may have varied skill sets, may be assigned full or part-time, and may be added or removed from the team as the project progresses. Project team members may also be referred to as the project's staff. Although specific roles and responsibilities for the project team members are assigned, the involvement of all team members in project planning and decision making is beneficial. Participation of team members during planning adds their expertise to the process and strengthens their commitment to the project (PMI, 2017). This project management knowledge area includes the following four processes.

- i. Plan human resource management: The process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan.
- ii. ii. Acquire project team: The process of confirming human resource availability and obtaining the team necessary to complete project activities.
- iii. iii. Develop project team: The process of improving competencies, team member interaction, and overall team environment to enhance project performance.
- iv. iv. Manage project team: The process of tracking team member performance, providing feedback, resolving issues, and managing changes to optimize project performance.

g. Project communications management

Project communications management includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information. Project managers spend most of their time communicating with team members and other project stakeholders, whether they are internal (at all organizational levels) or external to the organization. Effective communication creates a bridge between diverse stakeholders who may have different cultural

and organizational backgrounds, different levels of expertise, and different perspectives and interests, which impact or have an influence upon the project execution or outcome (*PMI*, 2017). According to PMI there are three processes under this knowledge area.

- i. Plan communications Management: the process of developing an appropriate approach and plan for project communications based on stakeholder's information needs and requirements, and available organizational assets.
- ii. Manage communications: the process of creating, collecting, distributing, storing, retrieving and the ultimate disposition of project information in accordance with the communications management plan.
- iii. Control communications: the process of monitoring and controlling communications throughout the entire project life cycle to ensure the information needs of the project stakeholders are met.

h. Project risk management

Project risk management deals with the processes of ensuring a proper risk identification, analysis and control during different phases of project. It enables the project team to take proactive responses and control the impact of risk events (*PMI*, 2017). The key components examined are risk management plan, risk identification and analyses, risk response plan and control risks.

- i. Plan risk management- The process of defining how to conduct risk management activities for a project.
- ii. Identify risks-The process of determining which risks may affect the project and documenting their characteristics.
- iii. Perform qualitative risk analysis-The process of prioritizing risks for further analysis or action by assessing and combining their probability of occurrence and impact.
- iv. Perform quantitative risk analysis-The process of numerically analysing the effect of identified risks on overall project objectives.
- v. Plan risk responses-The process of developing options and actions to enhance opportunities and to reduce threats to project objectives.
- vi. Control risks- The process of implementing risk response plans, tracking identified risks, monitoring residual risks, identifying new risks, and evaluating risk process effectiveness throughout the project.

i. Project procurement management

This knowledge area deals with the processes involved in purchasing and acquiring the required resources from external suppliers. Procurement decisions depend upon the make or buy analyses in the initial phases of the project life cycle (*PMI*, 2017). The key components analysed in this knowledge area are procurement management plan, procurement contract, controlling and closing procedures and documents.

- i. Plan Procurement Management-the process of documenting project procurement decisions, specifying the approach, and identifying potential sellers.
- ii. ii. Conduct Procurements-the process of obtaining seller responses, selecting a seller, and awarding a contract.
- iii. iii. Control Procurements-the process of managing procurement relationships, monitoring contract performance, and making changes and corrections as appropriate.
- iv. iv. Close Procurements-the process of completing each project procurement.

j. Project stakeholder management

Project stakeholder management deals with the processes of identifying and managing different stakeholders during different phases of project lifecycle. Stakeholders may have an impact on the project or the project may impact their concerns. These stakeholders are further used to create an effective communication plan as well (*PMI*, 2017). The key components analysed are identifying stakeholders, management and engagement of stakeholders during different phases.

- i. Identify Stakeholders-The process of identifying the people, groups, or organizations that could impact or be impacted by a decision, activity, or outcome of the project; and analysing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success.
- ii. ii. Plan Stakeholder Management-The process of developing appropriate management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of their needs, interests, and potential impact on project success.
- iii. iii. Manage Stakeholder Engagement-The process of communicating and working with stakeholders to meet their needs/expectations, address issues as they occur, and foster appropriate stakeholder engagement in project activities throughout the project life cycle.
- iv. iv. Control Stakeholder Engagement-the process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders.

2.2.2.2 Project management processes groups

A project has a set of objectives, a start and end, and a budget. The purpose of project management is to achieve the project objectives on time and within budget. In reality, project management is an ongoing task of balancing the scope against time, cost, quality, and any other constraints placed on the project. A guide to the PMBOK provides best-practice approach to tackling project management challenges across the industry at all professional levels. The five PMBOK process groups outline the necessary competencies that must be achieved in order to secure the most effective use of project resources. The project management processes, according to PMBOK, can be organized into five groups (*PMI, 2013*).

a. Initiating process group

This process is officially committing to start a project. The anointed project manager unearths the real objectives of the project, identifies the potential project stakeholders, and works with the customer and other stakeholders to come up with an approach to achieve those objectives. This process involves setting clear phases for the work to be completed, initializing teams and having the budget in place before work.

b. Planning process group

This is working out the details of how you are going to solve the problem. During the planning phase, you identify all the work that must be done, who does it, when they do it, how long it takes, and how much it costs. This process group also addresses a narrower clarification of all project goals and expectations and puts in place the project infrastructure necessary to achieve those goals according to the timeline and budgetary constraints.

c. Executing process group

This process group involves managing teams effectively while coordinating time line expectations and reaching benchmark goals. Project managers utilizing this set of skills will demonstrate a high degree of organization and communication skills while addressing team concerns.

d. Monitoring and controlling process group

This process group focuses on monitoring and measuring project performance to see whether the project is on track with its plan. Processing change orders, addressing ongoing budget considerations, and mitigating unforeseen circumstances that may affect a team's ability to meet initial project expectations are all part of the core skills and competencies involved in this process group.

e. Closing process group

This process group includes officially accepting the project as complete, documenting the final performance and lessons learned, closing any contracts, and releasing the resources to work on other endeavours. It addresses the culmination of strong project management skills demonstrated throughout the other interrelated processes that guided the project. Good closure brings great reviews and can increase future word of mouth referrals.

2.2.2.3 Construction project management

Much of the content of PMBOK guide is also directly applicable to construction projects (*PMI*, 2007). Even though, management of construction project is similar to management of other kind of project in many respects, it has also some differences from managing other kind of projects (Hendrickson, 2007).

Hendrickson has summarized the functions of project management in construction projects as:

- i. Specifying project objectives and plans including defining the scope, preparing the budget and schedule, setting performance requirements, and selecting project participants.
- ii. Maximization of efficient resource utilization through procurement of labour, materials and equipment according to the prescribed schedule and plan.
- iii. Implementation of various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
- iv. Development of effective communications and mechanisms for resolving conflicts among the various participants.

2.2.2.4 The construction industry in the developing countries

- i. Jekale (2004) state construction is an industry that has a great impact on the economy of all countries. The role of construction industry plays in developing countries is quite significant. For example, in many developing countries, major construction activities account for about 80% of the total capital asset, 10 % of their GDP and; more than 50 % of the wealth invested in fixed assets.
- ii. Despite the industry's significant contribution, its development and efficiency are relatively low compared to other industries. High project performance and project success are not commonplace in the construction industry, especially those in developing countries (Longetal, 2004).
- iii. The nature and characteristics of the construction industry and construction projects in developing countries, is different from that of the developed countries in many aspects. The

Construction industry in many developing countries is characterized by too fragmented and compartmentalized; Public sector dominated market; considerable government interventions; considerable foreign finance (dependency for public construction), and low development of indigenous technology. Moreover, the construction industry in developing countries depend on imported input such as construction materials, machinery and skilled manpower (Jekale, 2004).

- iv. In addition, the industry is dominated by foreign construction firms; which execute almost exclusively all the major construction works (Adams, 1997). This is also the case in Ethiopia. Almost all major power projects and most of large road projects are constructed by foreign contractors.
- v. The nature of projects and the environment in which they are implemented in developing countries is different from that of the developed countries where project management is originated and developed (Jekale, 2004)).
- vi. Stated that most projects in both developed and developing countries are complex and operate in a dynamic environment. However, projects in developing countries are highly uncertain, operate in a highly unstable, unpredictable and poorly resourced environment. This poses a challenge on project manager in developing countries which is not seen by their counter parts in the developed nations (Jekale, 2004).

2.2.2.5 Project management in the context of developing countries

- i. For developing countries, the potential benefit of project management is extremely high and the proper application of it may even be critical; as in those countries; resources are extremely scarce and, achievement of project objective, in most cases, is extremely important. The work of (Voropajev, 1998) also indicated that PM is much more important in developing economy than it is in developed economies (as risk and change are extremely high in the developing countries).
- ii. In developing countries, project managers, and indeed managers in general, work in different context and face a different set of issues from those in industrialized countries (Avots, 1972). Although these issues differ greatly from country to country, they include social, political, and economic problems common to them.
- iii. Project Management in developing countries is facing many challenging problems and non-conducive environment (Jekale, 2004, Abbasi & Al-Mharmah, 2000). Many projects in such countries end up uncompleted, abandoned or unsustainable (Sonuga, Aliboh, & Oloke, 2002).

- iv. In Ethiopian case, some known projects have been either delayed, have had cost overruns, poor in quality, poor user satisfaction or did not meet the initial objectives (Fetene, 2008 & Tekalign, 2014).
- v. Tekalign (2014) identify 79.1 % of the construction project fails to meet its objectives in Ethiopia and if completed it is with an average cost overrun of more than 26.2%.
- vi. Project failures have significant effect from economic as well as political points of view. If the project takes longer time, it requires additional resources, and budgets and this increases labour, material, machinery and equipment cost. This affects the budget of other projects and in general, it affects the economy of the country and results in dissatisfaction of the society at large. This means, Projects are required to be completed within the time frame, budgeted cost and required quality so that to achieve its objective and satisfy stakeholders and users as well.
- vii. Voropajev (1998) Project management functions(processes) that are sensitive to changes such as management of risk, procurement, contracts, scope, configuration, communications, and information are more important in managing projects in developing countries than in developed countries context. The Project management functions less exposed to change such as management of quality, time, cost, human resources become more important in the developed economies than developing countries context.
- viii. Muriithi and Crawford (2003) state management of externality of projects and the political and risk management skill become very important in the context of the developing countries.

2.2.2.6 Challenges of construction project management in Ethiopia

A detailed literature on the management practices of construction projects in Ethiopia is difficult to find. As a result, research works in such industry is difficult or mystified (Jekale, 2004). Despite this, this review has tried to summarize existing literature on the subject area.

Like any developing country the construction industry in Ethiopia plays major role and contributes highly to the development of the economy of the country including provides largest employment opportunities as governmental reports showed.

Developing countries like Ethiopia, spend substantial amount of their budgets in infrastructure development that involve significant construction works in projects such as construction of roads, buildings, water works, hydropower projects etc.

FDRE Minister of Finance and Economic Development (2006) state the construction industry is still in the infancy stage, growing unfortunately, slowly both technically and financially.

Like the industry in other developing countries, the construction industry in Ethiopia is plagued by many problems. The description of the current state of the industry given in various studies is summarized here under: Generally, the current state of the industry is characterized by:

- i. An inadequate capital bases.
- ii. Old and limited numbers of equipment and low levels of availability and utilization.
- iii. Severe shortage of construction materials, most notably cement
- iv. Low level of management, especially project management knowledge and practice (Low level of Contract administration, Project planning and Project monitoring capabilities).
- v. Deficiencies in technical, financial management and entrepreneurial skills.
- vi. Small-scale local contractors which lack experience in construction management.
- vii. Limited experience and participation of the private sector in large Outdated technology (insufficient and ineffective labour-based construction technology).
- viii. Inadequate and inappropriate project organization structures, which lead to problems of authority, responsibility, communication and coordination, etc

Jekale (2004) identify there is not enough construction and management capacity in the country. The companies are less experienced in project management. As Jekale has stated the management of construction project is highly influenced by the utilization of scarce financial and physical resource with controlling activities limited to cost and time monitoring dimensions only. Contractors cannot properly administer contract, most of them are not properly trained to prepare cost and schedule reports, quality records, safety reports, change order records, claims records, progress reports, payment requisition, etc.

2.2.2.7 Importance of project management

- i. In recent years, project management has become an important part of any organization; as a result of the changing nature of managing organizations due to technological advancement, and a complex competitive global marketplace (Maylor, 2006).
- ii. Various evidences show that the knowledge and skill about project management in different organizations is inadequate in relation to its importance for effective project implementation. Recently companies increasing implementing projects in their daily work to achieve their organizational strategic goals.

- iii. According to various studies, projects are becoming basic for development. Without successful project identification, preparation and implementation, development plans are no more than wishes and developing nations would remain stagnant or regress.
- iv. Projects create productive assets. It is only through projects resources are converted into productive assets. Since projects convert resources that lie idle into productive assets, projects act as prime movers of economic development of any country (Nagarajan, 2012).
- v. As Wideman (2002) state project management effectiveness is a measure of the quality of attainment in meeting objectives. It is the extent to which the goals of a project are attained, or the degree to which a system can be expected to achieve a set of specific requirements.
- vi. There is a growing need for competent project management in various business organizations. In recent years researches on the importance of project management become increasing, however, there is little research that shows challenges of project management in a business organization. This study aims to partly fill this gap by presenting the result from a interviews and questionnaire made of project-based organization of EEP.
- vii. Professionals and experts have stated that project management is a crucial strategic view. Project management provides entities with influential set of tools that develop their ability to apply managerial functions to accomplish specific organizational objectives. But project management is more than just a set of tools; it is a results-oriented management style that places a premium on building collaborative relationships among diverse cast of characters. Exciting opportunities await people skilled in project management (Larson & Grey, 2011).
- viii. Although, many researches have been conducted on success factors of projects in many countries across the globe, very little has been done in Ethiopian context but project implementation problems of delay, poor quality and cost overrun are highly existed in Ethiopian projects.
- ix. Most of the researches which have been done in Ethiopia focus on success factors and project monitoring and evaluation practice. Thus, this proposal is planned to assess challenges confronting project management process for the success of hydropower projects in Ethiopian Electric Power context through survey.

2.3 Empirical Review

As tried to discuss on the above theoretical review, importance of effective project management is essential in order to accomplish projects successfully. Evidences showed that various studies have been conducted in this area, even though results of most studies indicated that most

projects were being faced different challenges due to lack of proper project management practices. In this part some studies which are relevant to the topic of Project Management practices are reviewed.

2.3.1 Project management in Bayelsa: issues and challenges

The study on “Project Management in Bayelsa: Issues and Challenges” was done by Ogege in 2011. The study tried to present the challenges of project management in Bayelsa which aimed that in order to identify and analyse the challenges of project management effectiveness in construction projects.

The researcher made survey and analysed for reaching to the research objective. The result of the study showed that challenges in project management were related to such as lack of clear definition of the project, deliberate exclusion of local professionals during the tendering, problem of procurement process, installation and commissioning stages of projects.

Other problems were also stated as lack of skilled man power, problem of lesson learnt issues, and poor bid evaluation, political interference for project selection, lack of commitment, motivation and discipline to lead project and problem of financial management. And also, problem in understanding for the importance of project management by the stakeholders are identified as main challenges by the writer.

2.3.2 An investigation into the causes and effects of project failure in government projects in developing countries: Ghana as a case study

The study “An investigation into the causes and effects of project failure in government projects in developing countries” was made by Isaac Sakyi Damoah, 2015 in Liverpool.

The researcher conducted about the extent of projects failure, causes and effects of projects failure in Ghanaian government projects through semi-structured interviews and questionnaire surveys with contractors and project management practitioners to evaluate about the extent of failure, causes and effects of Ghana government projects failure.

The study showed that Ghanaian government projects were failed on six criteria performing criterion in meeting the projected time, cost, deliverables, stakeholders’ satisfaction, contribution to national development and contribution to the sector where the project is implemented.

The study showed that the causes of Ghanaian government projects failure included: monitoring, corruption, political interference, change in government, bureaucracy, fluctuation of prices, lack of continuity, planning, delays in payment, release of funds, change in project

leadership, management practices, procurement processes, project funding, commitment to project, selection of project managers, project team formation, project management techniques, feasibility studies, communication, supervision, scope change, capacity, task definition, definition of specification, requirement, regulations, user involvement, labour, pressure groups (media, NGOs, political activities etc.) and natural disaster. And most of the causes of Ghanaian government projects failure were linked to political leadership.

The result of the study also identified that direct or indirect effects of project failure such as reduction of economic growth, loss of revenue by state, unemployment, bad image for government, collapse of local businesses, cost escalation, government sector underdevelopment, loss of foreign aid/grants, discourages investment, stricter donor regulations, loss of election, financial institutions lose confidence in the state, loss of revenue by the citizens, lack of capacity, sub-standard infrastructure, it slow down citizens' human empowerment, loss of worker hours, pollution, armed robbery and theft, relocation of services, denial of citizens' basic rights, loss of properties, emotional stress on citizens, accidents and deaths, imprisonment, and abandonment of homes.

2.3.3 Project failure as a reoccurring issue in developing countries: focus on Anambra state, south east Nigeria.

The study “Project Failure as A Reoccurring Issue in Developing Countries: Focus on Anambra State, South East Nigeria” was made by Nzekwe, Justina U, Oladejo, Esther I, Emoh, Fidelis I, in 2015 Published by European Centre for Research Training and Development UK.

The study stated that project failure had become a recurrent feature of construction projects in developing countries. The manifests not only as abandonment of projects, but in the form of structural defaults leading to structural collapse, prolonged projects delivery time, cost overshoots and client dissatisfaction. The aim of the research was to analyse the factors that may lead to project failure in Anambra State, South East, Nigeria, with a view to ameliorating the high level of project failure.

The result of the study showed that the most important factor for project failure were increase in the price of raw materials, poor planning of project implementation, variation of project scope, award of contract without reference to availability of funds, political pressure.

2.3.4 Challenges of construction project management in Ethiopia

The study “Challenges of construction project management in Ethiopia” was made by Tadesse Ayalew¹, Zakaria Zakhli, Zoubeir Lafhaj, in 2016 Published by Journal of Architecture and Civil Engineering.

The study assessed the performance of Ethiopian construction industry with respect to construction project management practices and its challenges in order to identify the major issues for intervention.

The result of the study revealed that the level of construction project management practice in terms of adapting general project management procedures, project management functions, tools & techniques was unsatisfactory. Particularly, the level of practice in terms of time, cost, quality, resources and risk management was found to be very low. Karlsson (2011) also stated that many construction companies in Ethiopia have a short-time focus it is likely that most companies do not have an integrated management system. This leads to a project specific management where different managers within the same company, use different methods and have different approaches. This method of project management is according to International Project Management Association (2010) likely to result in low consistency and a highly varying level of professionalism in the project management.

Finally, the writer recommended for solutions to fill the gap through applying modern project management process, collaborating with stakeholders, sharing lesson learnt, enhancing project finances, capacity building, allocating sufficient time for design and planning.

2.3.5 Project management maturity in the construction industry of developing countries (the case of Ethiopian contractors)

The study “Project Management Maturity in the Construction Industry of Developing Countries” was conducted by Yimam, Abadir H. in 2011, it has studied about the maturity of project management in construction industry of developing countries. The researcher tried to identify the existing maturity models and proposed a project management maturity model to address the challenge of project management in the developing countries.

The study assessed the project management maturity of Ethiopian contractors were categorized under the level of informal practice of the basic processes which is low level of project management maturity level.

The writer showed that regarding issues such as contractors without ISO certificate and did not taken part for capacity building on project management maturity were higher in amount.

Also, relatively the project management maturity level of road contractors was found better than building contractors, and the project management maturity level on the area of schedule, cost, budget, procurement and human resource management found to be better matured than risk and safety management.

2.3.6 Critical factors necessary for a successful construction project

The study on “Critical Factors Necessary for a Successful Construction Project” was conducted by Jari and Pankaj in 2013.

It tried to present main factors that could influence project success. The aim of the study was to explore the causes of project failure and how to be managed and to identify factors which could lead to success in construction industry.

According to Jari &Pankaj, project success factors are the elements of a project that can be influence to increase the like hood of success which are independent variable that makes success more likely. In the study the ‘Triangle' success criteria’ cost, time and quality were mentioned the main success factors that lead project in to success. Also, the writer stated that project success could be determined by factors such as, clarity of project goals, top management support, detailed specification of the project activities, quality of team development, availability of the required technology and man power, good communication with in parties and risk management capability.

Also, Jari & Pankaj stated increasing the uncertainties in technology, budgets and development processes made construction industry dynamic and volatile.

2.3.7 The role of project management in achieving project success

The study “the role of project management in achieving project success” was made by Munns A K and Bjeirmi B F 1996 in Dundy.

The writer presented the role of project management in achieving project success. Also, they tried differentiate the objectives of project and project management.

The study showed that making the project management team totally responsible is inappropriate and that the client should take an increased interest in the development and use of the project.

The study also recommended to evaluate project success using three assessment criteria based not only on project management techniques but on other external criteria which are important for the successful implementation of projects, from conception through development and use,

to the final stage. In order to improve project successfulness, the writers showed that understanding for the significance of project management to be improved.

Also, the study recommended that the project manager must allow the client to contribute actively in the planning and execution phases and at the same time the project team involvement need to be extended into the operation phase. And economic and financial performance evaluation recommended for considering in addition to evaluation for implementation process of project.

Finally, the writer said that “the right project will succeed almost without the success of project management, but successful project management could enhance its success.”, even though on the previous part of the study the writer stated strongly about the significance of project management was high, but they finalized that since there is the right project the significance of project management is low, it is reverse to what strongly stated above. In my opinion even to select the right project, it can be done only through proper project management practice.

2.4 Conceptual Framework of the Study

The researcher has used PMI’s project definition that project is a temporary endeavour under taken to create a unique product, service. In this study, the temporary endeavours are the hydropower projects which are carried out by Ethiopian Electric Power. The unique products are the generating electric power. In order to perform the hydropower projects successfully, effective project management practice is important by every project stakeholder in every project task area.

The researcher used the challenges found from professional project management practices and its constraints in developing African countries (Ernest & Samuel, 2013), as shown in the following figure. In this framework, the independent variables such as project manager factors, client factors, consultant factors, technical factors, contractor factors, process factors and external factors limit the performance of projects which is the dependent variable in terms of the success attributes (i.e. quality, scope, time and cost) as specified on figure 2. In the framework the factors which constrain project success are indicated by the arrows pointing from these factors to the project performance or success factor.

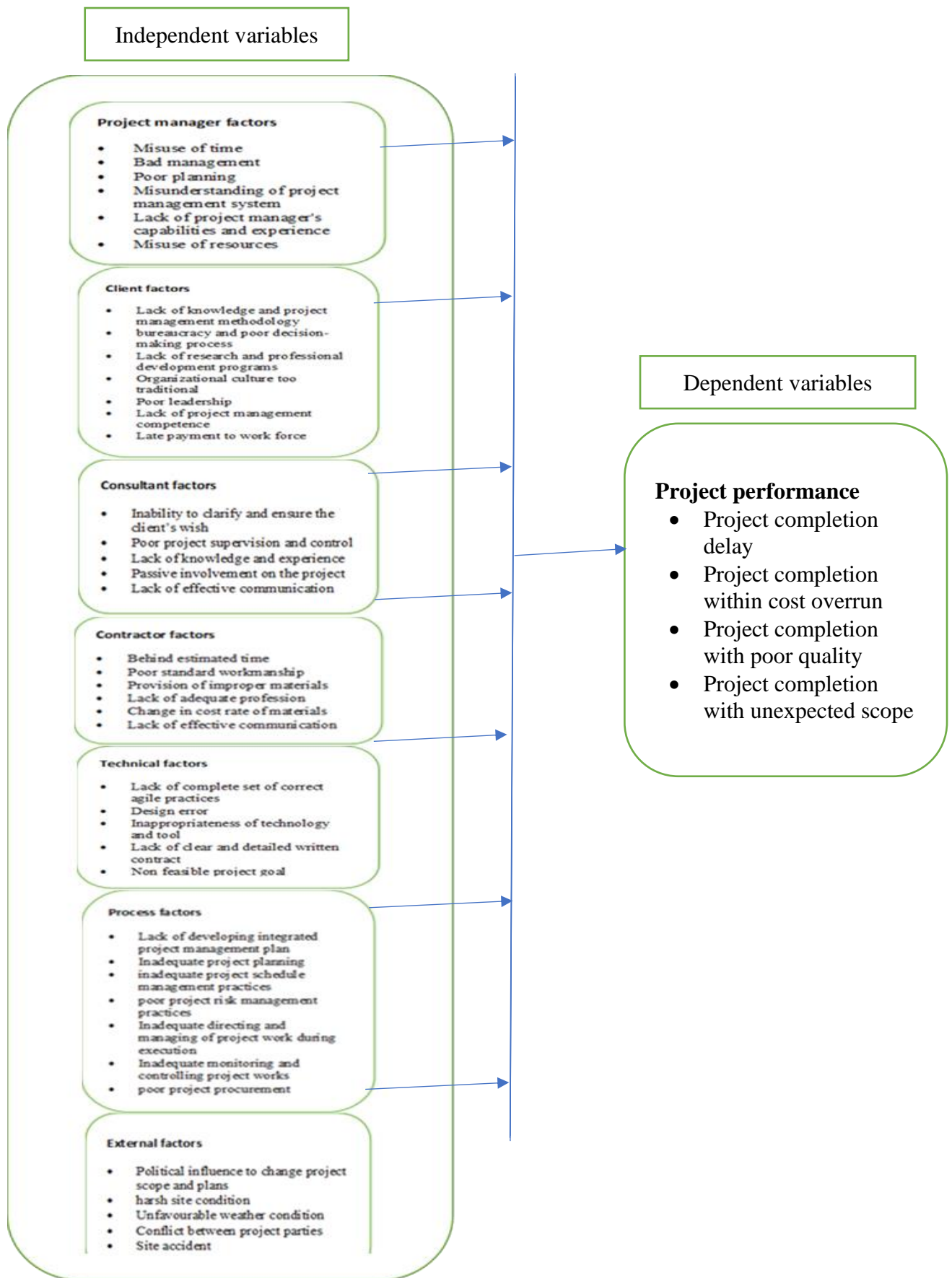


Figure 2: conceptual framework for factors affecting performance of hydropower projects of EEP, *Source: Ernest & Samuel (2013)*

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This part of the study attempts to describe the methods through which the research questions can be answered. Accordingly, it states about the research design, population and sampling procedures, data gathering methods, validity, reliability of the study and way of data presentation.

3.2 Research Design

According to Creswell (2014), research design is the plan and the procedure for the research to be conducted and it spans the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation.

The type of study is descriptive research. The researcher used structured questionnaires and open-ended interviews for collecting quantitative and qualitative data respectively, in order to analyse the challenges confronting project management process for the success of hydropower projects in EEP.

3.3 Population and Sampling

The population of the study was people who have been directly participated in various tasks of the hydropower projects such as planning, design, procurement, construction, supervision and contract administration activities of the four hydropower projects.

Purposive sampling was used for the qualitative data. Five program directors of EEP were involved on the interview for the qualitative data source based on their technical and managerial background in EEP.

Non purposive sampling technique was used for the quantitative data. Simple random sampling procedure was used to determine the sample size of the study. According to Saunders, Lewis, and Thornhill (2009) the size of sample should be optimum, which is neither excessively large nor too small. An optimum or adequate sample is one which fulfils the requirements of efficiency, representativeness, reliability and flexibility. For this research sample size will be determined using Yamane, 1967.

$$n = N / (1 + N(e)^2)$$

Where,

n = sample size

N = the population size

e = level of precision (0.05)

Thus, the sample size of the study is computed at a 95% confidence interval (most common in descriptive studies), 5% standard error, since with the total population size of the study area 80, hence sample size of the study is 67 as shown below.

So that

$$n = (80) / (1 + 80(0.05)^2)$$

$$n = 67$$

3.4 Data Source and Types

In order to answer the research questions of the study, both primary and secondary data sources were used. The primary data was obtained from semi- structured interview and close ended questionnaire.

The structured questionnaire and interview questions were adopted from various relevant literatures and books. The secondary data was gathered from project management books, reliable literatures, company brushers, project reports and company's website about the subject area.

3.5 Data Collection Procedure

The data collecting instruments being used for obtaining the primary data (semi- structured interview and close ended questionnaires) was prepared on the concern of challenges confronting project management process for the success of hydropower projects in EEP and project success criteria from various relevant literatures. Sixty-one questionnaire with seventy-nine questions were used to analyse the study. And also, semi-structure interview was done for five program directors to get further deep information about the subject matter.

The data to be collected through interviews and questionnaire responses can provide the right information about the subject matter of the study because the sample population was selected from among the main project participants in the different tasks of the hydropower project implementation in EEP.

Among the different data collection method, questionnaire was selected and to be used mainly due to reaching the sample population easily and economically whereas interview was selected to obtain more detailed information about the subject matter.

All selected sample population were requested to participate for the interview and questionnaire through email and telephone.

The qualitative data procedure was scheduled based on the convenience of the interviewees. A day before the appointment date, the researcher had sent a reminder to all participants for confirmation. The interviewees were being briefed about the study orally by a researcher at the beginning of the interview. Participants were informed about the voluntary character of participation and the possibility to skip the question if they had no clear information about the issues to be raised by the researcher. The participants were guaranteed anonymity. In addition to the oral briefing, participants had obtained written information about the problem statement of the study. All participants were interviewed within 5 days and all the relevant documents were gathered and reviewed within two weeks.

The quantitative data procedure was done through email and in person, it was collected back within fifteen days' time. The researcher had tried to clarify about the questionnaire to the participants by making calls.

3.6 Validity and Reliability

The validity and reliability of the study were considered. The researcher had given care for the research data, research process and analysis and result of the research.

For the purpose of this research the researcher had used different data collection techniques in order to ensure validity and reliability of data.

The researcher personally evaluated the validity of data measuring instruments are accurate and the advisor was involved in consulting and reviewing the validity of the questions used for questionnaire and interviews. The respondents selected for the interviews and questionnaire were also closely familiar with the areas to be studied.

Also, triangulation method was used in order to enhance the validity and reliability of data. Thus, data collection techniques such as questionnaire, interview and observation were used to fill the gaps of one technique with the others' strength. Together, these factors are expected to ensure the validity and reliability of the study.

3.7 Data Analysis and Presentation

For the purpose of this study, the descriptive survey method was adopted and data was obtained by means of using questionnaires and interviews.

Qualitative data from the interview was analysed through narrative analysis method. The qualitative data to be presented by interviewee, context of each case and different experiences of each respondent was taken into account.

The questionnaires for respondents was administered by direct contact and through email. The data collected from the administered questionnaire was analysed using the Statistical Package for the Social Sciences (SPSS) version 20 for analysis. A total of sixty-seven questionnaires were distributed. Charts and tables are used for the results. This study obtained primary data from professionals with their relevance in practicing project management in hydropower project implementation.

Descriptive statistics was used for ranking 5-point Likert Scale questionnaire format with a 1 for strongly disagree to 5 for strongly agree about the project success criteria and the challenging factors of the project management process for the success of the hydropower projects. Relative Importance Index (RII) was used mainly for comparing the contribution of each variable relative to others.

3.8 Ethical Consideration

According to Creswell (2014) in addition to conceptualizing the writing process for a proposal, researchers need to anticipate the ethical issues that may arise during their studies. Research involves collecting data from people, about people.

The researcher has followed ethical research procedures throughout the research process, respondents were clearly aware about the aim of the study, the data was collected with the full willingness of the participants and their confidentiality and secrecy of the respondents kept guaranteed. And also, all information and data from the company were used confidentially without any disclosing to public.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

This chapter presents the data analysis and discussion of the research findings. For the purpose of this study, the descriptive survey method was adopted and data were obtained by means of inquiries using questionnaires and interviews.

Qualitative data from the interview was analysed through narrative analysis method. The qualitative data presented by interviewee, context of each case and different experiences of each respondent was taken into account. The quantitative data analysis was made with the help of Statistical Package for Social Science (SPSS) version 20. The first part of the chapter discussed about the distributed and returned questionnaires. The second part is about the demographic profile of the study sample and responses received about the project success criteria, challenges confronting project management processes for the successes of hydropower projects and strategies for project management improvement for project success.

The questionnaires for respondents were administered by direct contact and email. This study obtained primary data from professionals with adequate experience in construction industry in Ethiopian Electric Power. Secondary data from textbooks, journals, articles, reports from within and outside the Ethiopian Electric Power and webs. A total of sixty-seven questionnaires were distributed while sixty-one questionnaires were returned at 91% response rate. The charts and tables were used for the results. Relative Importance Index (RII) was used for ranking the 5-likert scale questionnaires. Relative Importance Index (RII) was used mainly for comparing the contribution of each variable relative to others. The RII is based on the formula below:

$$\mathbf{R.I.I = (5(a)+4(b)+3(c) + 2(d) + 1(e))/(5(a+b+c+d+e)),}$$

Where:

a = number of respondents that strongly agree

b = number of respondents that agree

c = number of respondents that are neutral

d = number of respondents that disagree.

e = number of respondents that strongly disagree.

The factors are ranked from the highest to the lowest based on the frequency index

Table 2: Distribution and response rate of administered questionnaires

Project type	Questionnaires Administered	Completed Questionnaires	Response Rate (%)
Koysha	23	22	95.7%
Gibe3	10	8	80%
GERD	24	22	91.7%
GD3	10	9	90%

Source: Survey findings (2019)

4.2 Demographic information of the respondent

The study attempted to ascertain the background information of the respondents involved in the study. The background information points at the respondents' relevance for answering the questions.

Table 3: Demographic information of respondents

		Age				Total
		up to 30 years	31 to 40 years	41 to 50 years	Above 50 years	
Gender	Female	2	3	1	0	6
	Male	14	29	11	1	55
	Total	16	32	12	1	61

Source: Survey findings (2019)

The above table shows the survey includes a higher percentage of male participants (90.2%) than female participants (9.8%).

The findings indicate that, respondents (26.3%) were aged below 30 years, 52.5% were aged between 31 to 40 years, and 19.8% were aged between 41-50 years and there was 1.6% aged respondent above 50 years.

Respondent's educational status

The respondents were requested to indicate their education status. The findings are as presented below,

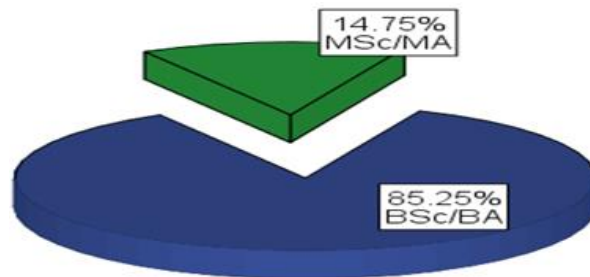


Figure3: Educational background of respondents
Source: Survey findings (2019)

From the findings, majority of the respondents (85.25%) had BSC/BA, (14.75%) had MSc/MA. Thus, majority of the respondents are well trained, therefore there was high probability for getting reliable information.

Working Experience

In order to find out the period in which the respondents had worked for the company, the respondents were asked to indicate the duration in which they have been working in the construction industry. The findings are as shown below,

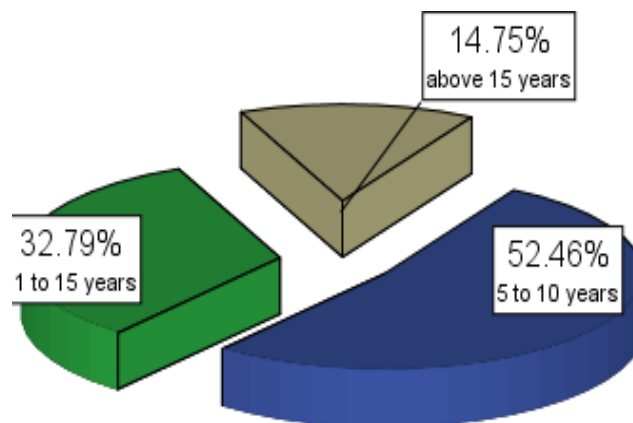


Figure4: Respondents' experience in construction industry
Source: Survey findings (2019)

From the findings, majority of the respondents (52.46%) had a working experience of between 5 to 10 years, 32.79% had a working experience of 11 to 15 years and 14.75% had working experience of above 15 years. Therefore, all respondents had an extensive experience with minimum of five years, hence it increases the reliability of the information given.

Number of construction projects participated by respondents in EEP

In order to find out the period in which the respondents had involved in construction projects of EEP, the respondents were asked to indicate their involvement in numbers of projects in EEP. The findings are as shown below,

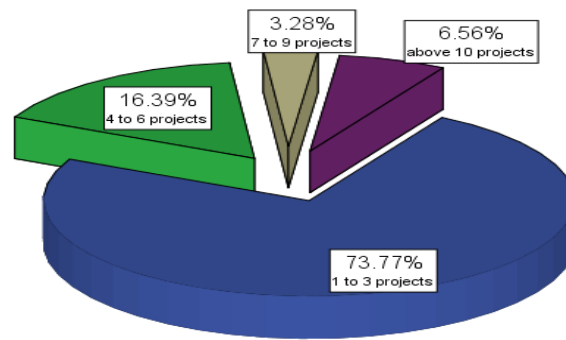


Figure 5: Number of projects participated by respondents in EEP
 Source: Survey findings (2019)

From the findings, majority of the respondents (73.77%) had participated in 1 to 3 projects, 16.39% had participated in 4 to 6 projects, 3.28% had participated in 7 to 9 projects and 6.56% had participated in more than 10 projects. Therefore, all respondents had participated in the projects of EEP, hence it increases the reliability of the information given.

Respondents job category (position) in EEP

In order to find out the respondent's job category (position) in EEP, the respondents were asked to indicate their current job position in EEP. The findings are as shown below,

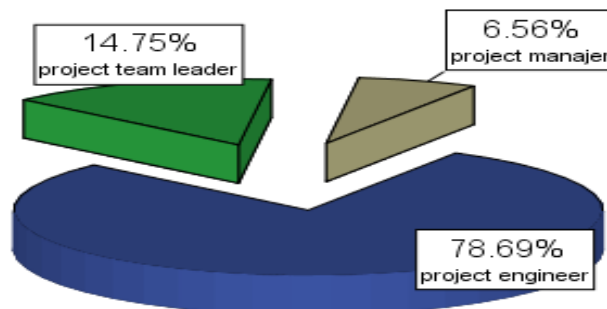


Figure 6: Respondents' job position in EEP
 Source: Survey findings (2019)

From the findings, majority of the respondents (78.69%) were project engineers, 14.75% were project team leaders and 6.56% were project managers. Therefore, respondents are from all job categories of projects of EEP, hence it increases the reliability of the information given.

4.3 Project success criteria

The study sought to determine the extent to which project success measurement was done for the hydropower projects implementation in EEP. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The results are as presented on table below,

Table 4: shows project success criteria

project success criteria	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Time, cost, and quality are used as set of criteria for measuring projects' success.	28	25	6	2	0	0.86	1
Project performance is measured with standard criteria.		18	14	20	9	0.53	2
There are number of published documents on project success rates.		10	16	23	12	0.48	3
There is definition of project success in your organization.		4	12	24	21	0.4	4

Source: Survey findings (2019)

The literature review highlighted project success criteria needed to be used for project monitoring and evaluation. This section tested the perception of hydropower project construction participants to these project success criteria and respondents highlighted that time, cost, and quality were used as set of criteria for measuring projects' success but issues such as using standard criteria for project success, publishing documents on project success rates and having definition of project success in the organization was achieved low value by the respondents.

Under the Project success criteria utilization of time, cost, and quality as a criterion is ranked 1st (RII = 0.86), measuring project performance with standard criteria is ranked 2nd (RII = 0.53), availability of published documents for project success rates ranked 3rd (RII = 0.48), and using definition for project success in the organization is ranked 4th (RII= 0.4).

The interviewee also stated that even though time, cost, quality and scope were mainly used to monitor and evaluate project execution, but there was no common organizational definition of project success in EEP.

Also, the interviewee reveal that cost and scope were used frequently for measuring each activities of project than schedule and quality, whereas measuring of project performance with standard criteria was not common practice in EEP. In addition, there was no published documents on project success rates as stated by the interviewee.

4.4 challenges of project management processes for the success of hydropower projects in EEP;

This study examined the various challenges confronting project management practices for the success of hydropower projects in EEP. The challenges were divided into seven sections based on the contributions such as project manager factors, client factors, consultant factors, contractor factors, technical factors, project management process factors and external factors. The challenges were derived from different literature review in relation to this study. Each section was linked to the major challenges, which was done by the use of the Relatively Importance Index (RII).

The responses were placed on the five Likert scale where 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree. The RII indicates to what extent the sample group averagely agrees or does not agree with the different statement. The lower the RII, the more the respondents disagree with the specified factor. The higher the RII, the more the respondents agree with the specified factor. The factor ranked first from each section is considered to be the major challenge confronting construction project management system.

Project manager factor

The project manager as defined in this study is the person in charge of managing of the hydropower project by using the available skills and tools in his disposal to help reach for organizational goal.

The study attempted to determine the extent to which project manager is a challenge for project management for the success of project. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The responses were placed on the five Likert scale on the table below,

Table 5: Ranked challenges faced in project management by project manager factors

Project manager factor	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Misuse of time	29	23	6	2	1	0.85	1
Bad Management	25	23	5	7	1	0.81	2
Poor planning	20	20	6	10	5	0.73	3
Misunderstanding of project management system	18	15	14	9	5	0.71	4
Lack of project manager's capabilities and experience	12	13	12	17	7	0.62	5
Misuse of resources	9	12	17	20	3	0.61	6
Project manager's poor goal commitment	1	15	17	19	9	0.53	7
Passive participation	4	11	8	23	15	0.49	8
Average	14.8	16.5	10.6	13.4	5.8	0.67	

Source: Survey findings (2019)

The result of the survey indicates that misuse of time by the project manager is ranked 1st (RII = 0.85). It means that without using proper time schedule for each project activities project management practices would be faced in order to achieve project success.

Bad management is ranked 2nd (RII = 0.81), when improper management procedure and techniques are practiced this may lead to poor standard of project outcome. Bad management from the project manager affects other factors like poor decision making, poor communication with project stakeholders, improper control of resources, quality and time of the project.

Poor planning is ranked 3rd (RII = 0.73). It is obvious that in all types of projects without the proper planning the project is bound to fail. Project management requires planning of cost of the project through which cost budget of the project is considered. Risk assessment of the project is equally important for proper procedure objectives outline with clear goals.

Other factors ranked include misunderstanding of project management system (RII = 0.71), lack of project manager's capabilities and experience (RII = 0.62), misuse of resources (RII =

0.61), project manager's poor goal commitment (RII = 0.53) and project manager passive participation (RII = 0.49) which were ranked 4th, 5th, 6th, 7th and 8th respectively.

Client Factors

The importance of the client organization in the construction process of hydropower projects is significant. Even though the client assigned consultants in order to control technical issues of the project, without proper project managing practices such managing and controlling project schedule, project costs, quality, risk, stakeholder management, contract administration and procurement process by the clients' project office, it is impossible to handle project implementation properly.

The study attempted to determine the extent to which client factors were challenged to project manage practices. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The results are as presented in table below.

Table 6: Ranked challenges faced in project management by client factors

Client Factors	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Inability to develop project knowledge and project management methodology	25	22	7	5	2	0.81	1
Organizational bureaucracy and poor decision-making process	19	26	9	7	0	0.79	2
Lack of focus on leadership research and professional development programs	21	20	14	4	2	0.78	3
Organizational culture too traditional	20	22	9	10	0	0.77	4
Poor leadership and organizational culture	20	24	7	8	2	0.77	4
Lack of project management competence	19	20	11	10	1	0.75	6
Late payment to work force	25	24	6	6		0.74	7

Lack of management commitment	14	23	18	4	2	0.74	7
Lack of adequate budget	14	25	10	10	2	0.73	9
Organizational culture too political	14	21	13	10	3	0.71	10
Lack of competent team members	12	20	12	15	2	0.68	11
Lack of knowledge and skill in the construction industry	7	21	12	17	4	0.63	12
Ineffective monitoring and control of the project and bribery and corruption	15	9	12	19	6	0.63	12
Lack of executive sponsorship	6	23	11	15	6	0.63	12
Complex process, procedures, and rigorous reporting requirements.	7	13	15	19	7	0.58	15
Poor treatment for work force	7	17	6	22	9	0.57	16
Lack of project team motivation and goal orientation	6	14	11	20	10	0.55	17
Resistance to change from groups or individuals	5	8	23	18	7	0.55	17
Alteration of original idea	3	11	16	22	9	0.52	19
Lack of sufficient resources	1	13	18	18	11	0.52	19
Late delivery of site	4	11	12	22	12	0.51	21
Lack of team work	4	10	13	24	10	0.51	21
Average	12.2	18.1	12.1	13.9	4.9	0.66	

Source: Survey findings (2019)

The finding shows that inability to develop project knowledge and project management methodology is ranked 1st (RII = 0.81), organizational bureaucracy and poor decision-making

process is ranked 2nd (RII = 0.79), lack of focus on leadership research and professional development programs is ranked 3rd (RII = 0.78), organizational culture too traditional and poor leadership and organizational culture are ranked 4th (RII = 0.77), lack of project management competence is ranked 6th (RII = 0.75), late payment to work force and lack of management commitment are ranked 7th (RII = 0.74), lack of adequate budget is ranked 9th (RII = 0.73), organizational culture too political is ranked 10th (RII = 0.71), lack of competent team members is ranked 11th (RII = 0.68), lack of knowledge and skill in the construction industry, ineffective monitoring and control of the project and bribery and corruption lack of executive sponsorship are ranked 12th (RII = 0.63), complex process, procedures, and rigorous reporting requirements is ranked 15th (RII = 0.58), poor treatment for work force is ranked 16th (RII = 0.57), lack of project team motivation and goal orientation and resistance to change from groups or individuals are ranked 17th (RII = 0.55), alteration of original idea and lack of sufficient resources are ranked 19th (RII = 0.52), late delivery of site and lack of team work are ranked 21st (RII = 0.51).

Since the client is the owner of the projects, it involved in key activities and financing the project in order accomplish the goal, thus developing capable project management system by the client is the core unit of project implementation. The four hydropower projects examined by this study were constructing by buying service providers of contractors and design approval and supervision work were done by the client and consultant jointly, therefore the capacity of the client could determine the achievement of goal by way of supervision and contract administration for the consultants and the contractors.

Consultant Factor

A consultant is a professional who provides expertise services for the projects on behalf of the client. The study sought to determine the extent to which consultant factors were facing the project management practice of the hydropower projects of EEP. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The responses were placed on the five Likert scale. The results are as presented on table below,

Table 7: Ranked challenges faced in project management by consultant factors

Consultant factor	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Inability to clarify and ensure the client's wish	16	18	10	14	3	0.7	1

Poor project supervision and control	15	15	13	15	3	0.68	2
Lack of knowledge and experience	11	24	6	11	9	0.66	3
Passive involvement on the project	6	15	5	23	12	0.53	4
Lack of effective communication	3	8	18	24	8	0.52	5
Average	10.2	16	10.4	17.4	7	0.62	

Source: Survey findings (2019)

The finding shows that inability to clarify and ensure the client's wish is ranked 1st (RII = 0.7), poor project supervision and control is ranked 2nd (RII = 0.68), lack of knowledge and experience is ranked 3rd (RII = 0.66), passive involvement on the project is ranked 4th (RII = 0.53) and lack of effective communication is ranked 5th (RII = 0.52).

As shown on the above table 4, the result of the survey revealed that the relative highest score of the consultant factor are inability to clarify and ensure the client's wish, poor project supervision and control and lack of knowledge and experience which indicates the organization did not get the required service from the consultants for regarding those mentioned issues. During the interview with the directors, it was identified that there was limitation of obtaining the appropriate services from the consultants due to various reasons such as assigning less capable experts for supervision work and lacking the initiation for ensuring implementation of technical and contractual issues on behalf of the client.

The experts further explained that most of the consultants were more focused on developing reports than controlling for project schedule, project costs and required quality. Also, the interviewee revealed that even if the organization planned to obtain knowledge and build man power capacity through the experts, it could be found difficult to get what had been planned due to the performance and initiation of the experts and due to lack of contract administration by EEP.

Contractor factor

The constructor is a group of professional business entity which put the project design on the ground. The study attempted to determine the extent to which constructor factor were challenge of project management for the success of hydropower projects of EEP. The respondents were

asked to indicate the extent to which they agreed with statements in relation to this. The responses were placed on the five Likert scale as shown below,

Table 8: Ranked challenges faced in project management by contractor factors

Contractor factor	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Behind estimated time	19	22	9	11	0	0.76	1
Poor standard workmanship	15	21	13	12	0	0.73	2
Provision of improper materials	3	14	18	22	4	0.57	3
Lack of adequate profession	6	9	15	26	5	0.55	4
Change in cost rate of materials	1	17	15	22	6	0.55	4
Lack of effective communication	3	9	12	29	8	0.5	6
Lack of materials availability	5	5	15	24	12	0.49	7
Average	7.4	13.9	13.9	20.9	5	0.59	

Source: Survey findings (2019)

The finding shows that behind estimated time is ranked 1st (RII = 0.76), poor standard workmanship is ranked 2nd (RII = 0.73), provision of improper materials is ranked 3rd (RII = 0.57), lack of adequate profession and change in cost rate of materials are ranked 4th (RII = 0.55), lack of effective communication is ranked 6th (RII = 0.5) and lack of materials availability is ranked 7th (RII = 0.49).

Technical factors

The study attempted to determine the extent to which technical factors were challenged to project manage practices. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The results are as presented in table below.

Table 9: Ranked challenges faced in project management by technical factors

Technical factors	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Lack of complete set of correct agile practices	8	13	26	13	1	0.65	1

Design error	2	18	16	23	2	0.58	2
Inappropriateness of technology and tool	3	8	21	27	2	0.54	3
Lack of clear and detailed written contract	1	5	21	24	10	0.48	4
Non feasible project goal	4	5	14	22	16	0.47	5
Average	3.6	9.8	19.6	21.8	6.2	0.54	

Source: Survey findings (2019)

The result of the survey indicates that lack of complete set of correct agile practices is ranked 1st (RII = 0.65), design error is ranked 2nd (RII = 0.58), inappropriateness of technology and tool is ranked 3rd (RII = 0.54), lack of clear and detailed written contract is ranked 4th (RII = 0.48) and non-feasible project goal is ranked 5th (RII = 0.47),

Process Factors

The study attempted to determine the extent to which project management process factors were challenge of project management for the success of hydropower projects of EEP. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The responses were placed on the five Likert scale as shown below,

Table 10: Ranked challenges faced in project management by project management process factors,

Process factors	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Lack of developing integrated project management plan	24	21	12	4	0	0.81	1
Inadequate project planning	24	23	6	8	0	0.81	1
inadequate project schedule management practices	25	18	10	8	0	0.8	3
poor project risk management practices	24	18	11	7	1	0.79	4
Inadequate directing and managing of project work during execution	21	21	10	8	0	0.78	5

Inadequate monitoring and controlling project works	24	20	4	13	0	0.78	5
poor project procurement management practices	23	19	11	7	1	0.78	5
poor project quality management practices	20	22	9	9	1	0.77	8
inadequate project resource management practices	21	20	9	10	1	0.76	9
inadequate project cost management practices	22	17	11	10	1	0.76	9
inadequate project stakeholder management practices	18	20	17	6	0	0.76	9
Increasing projects complexity and scarcity of human capital	13	25	15	7	1	0.74	12
Not awarding bids to the right designer and/or contractor	12	26	10	13	0	0.72	13
poor project scope management practices	2	21	23	14	1	0.63	14
Average	19.5	20.8	11.3	8.9	0.5	0.76	

Source: Survey findings (2019)

The finding shows that lack of developing integrated project management plan and inadequate project planning are ranked 1st (RII = 0.81), inadequate project schedule management practices is ranked 3rd (RII = 0.8), poor project risk management practices is ranked 4th (RII = 0.79), inadequate directing and managing of project work during execution, poor project quality management practices and inadequate monitoring and controlling project works are ranked 5th (RII = 0.78), poor project quality management practices is ranked 8th (RII = 0.77), inadequate project resource management practices, inadequate project cost management practices and inadequate project stakeholder management practices are ranked 9th (RII = 0.76), increasing projects complexity and scarcity of human capital is ranked 12th (RII = 0.74), not awarding bids to the right designer and/or contractor is ranked 13th (RII = 0.72), poor project scope management practices 14th (RII = 0.63).

As per the results of this study, issues regarding the project management knowledge areas and process groups such as project integration, project planning, project risk management practices, project monitoring and evaluation practices, project procurement management practices, project quality management practices, project resource management practices, project cost management practices and project stakeholder management practices were seen as challenges for the project management process and proper improvement is required in order to accomplish projects successfully through appropriate project management practice.

External factor

These types of challenges faced in project management by external factors such as natural factor, political factor and workforce. The study attempted to determine the extent to which external factors were challenge of project management for the success of hydropower project in EEP. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The results are as presented on table below,

Table 11: Ranked challenges faced in project management by external factors,

External factor	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Political influence to change project scope and plans	22	23	10	6	0	0.8	1
harsh site condition	11	17	12	20	1	0.66	2
Unfavourable weather condition	5	19	18	16	3	0.62	3
Conflict between project parties	1	9	24	20	7	0.52	4
Site accident	1	9	15	30	6	0.5	5
Problem on job security	3	5	13	31	9	0.48	6
Average	7.2	13.7	15.3	20.5	4.3	0.59	

Source: Survey findings (2019)

The finding shows that political influence to change project scope and plans is ranked 1st (RII = 0.8), harsh site condition is ranked 2nd (RII = 0.66), unfavourable weather condition is ranked 3rd (RII = 0.62), conflict between project parties is ranked 4th (RII = 0.52), site accident is ranked 5th (RII = 0.5) and problem on job security is ranked 6th (RII = 0.48),

Strategies for project management practice improvement

The study attempted to determine the extent to which improvement strategies for project management practice of hydropower project in EEP. The respondents were asked to indicate the extent to which they agreed with statements in relation to this. The results are as presented on table below,

Table 12: Ranked strategies in order to improve the project management practice

Improvement strategies for Project Management practice	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	RII	Rank
Ensuring of documented procedure to be used as reference	30	24	5	2		0.87	1
Assigning the right person for the right job	32	23	2	2	2	0.87	1
Capture and share lessons learnt	32	24	1	2	2	0.87	1
Enforcing of standard setting to be practiced	24	26	10	1	0	0.84	4
Government supervision on setting standard	17	22	17	4	1	0.76	5
Early detailed course on project management for early awareness	18	26	8	5	4	0.76	5
Transfer of project management technique from another field profession	14	23	18	6	0	0.75	7
Monthly regulatory body inspection to ensure standard practice	8	22	10	12	9	0.63	8
Average	21.9	23.8	8.9	4.3	2.3	0.79	

Source: Survey findings (2019)

The finding shows that ensuring of documented procedure to be used as reference, assigning the right person for the right job and capturing and sharing lessons learnt are ranked 1st (RII = 0.87), enforcing of standard setting to be practiced is ranked 4th (RII = 0.84), government

supervision on setting standard and early detailed course on project management for early awareness are ranked 5th (RII = 0.76), transfer of project management technique from another field profession is ranked 7th (RII = 0.75) and monthly regulatory body inspection to ensure standard practice is ranked 8th (RII = 0.63).

4.5 Discussions of Findings

The study shown that project success was defined with the completion of project with the required technical and functional features and within the budget, timely completion and without hesitation of quality. The success criteria of project were time cost, quality and scope. The definition of time was seemed vague since the time usually were started to be monitored on the construction stage of the execution phase. Regarding the importance of time, cost and quality, using time for success criteria was very important in project implementation. Without specified time schedule the project may not be feasible for implementation and operation of the project. The direct and indirect cost of project were highly dependent on the duration of the project execution.

Cost as success criteria was also important for project implementation. The financial feasibility and finance sourcing for the project was based on the estimated cost of the project. Thus, the cost of project was highly affecting the satisfaction of the client. Quality as project success criteria was also very important. It was major issue since it determined how long the project to be functional after the project becomes functional.

The study examined the challenges confronting project management practice in hydropower projects of Ethiopian Electric Power. The study posits that the performances of hydropower projects implementation were affected by the challenges of project management processes.

The challenges of project management practice in the hydropower project execution were categorized into seven sections based on their contribution for the project implementation, namely project manager factors, client factors, consultant factors, constructor factors, technical factors, process factors and external factors.

Project management challenges such as misuse of time and bad management by the project manager, inability to develop project knowledge and project management methodology by the client organization, lack of developing integrated project management plan, inadequate project planning and inadequate project schedule management practices of the project management process and external factors such as political influence to change project scope and plans were

identified the most challenges facing the project management processes of the hydropower projects' success in the study.

The study shown that, since the client (EEP) recognized that the project managers play a critical role in the success of the hydropower projects implementation, the project managers were required to deliver projects that meet the needs of the client organization. The project manager was considered to be one of the most important people who can lead and drive the projects in the right direction and conclude the hydropower projects successfully. Turner and Muller (2006) stated that a project manager's success at managing his or her project is dependent on his/her competence, particularly in regard to leadership style, comprising emotional intelligence, management focus and intellect. The study revealed that the project managers must use; proper project schedule, project management methodology, detail planning, have to project management capabilities and experiences and also need to utilize project resources effectively in order to ensure the required project performance regarding project schedule, estimated cost, required quality and determined scope. PRINCE2 (2007) defined that "The project manager has the authority to run the project on a day-to-day basis on behalf of the Project Board within the constraints laid down by the Board. The project manager's prime responsibility is to ensure that the project produces the required products to the required standard of quality, within the specified constraints of time and cost". Also, Rawlinsons (2003) stated that a project manager should have the following skills: a high level of leadership and communication skills; ability to manage the client issues; ability to manage the local government approval process; ability to manage the design process; ability to manage the construction process; and ability to manage risks. So, it could be concluded that the project manager factors of project management process such as misuse of time, bad management, poor planning, misunderstanding of project management system was considered to be the main challenge of project management practice which was strongly affected delivering of the hydropower projects successfully.

The project client (EEP) was stated as the main initiator, assigned project manager, made important decisions, budget allocating, selecting competent consultant and contractor, supporting project team functionality, provided the necessary resources, ensuring that the project is managed properly including monitoring and evaluating the project performance. Clients who are closely involved in managing a project are usually the most satisfied with the project quality (Bubshait and Al-Musaid, 1992). The study revealed that the client should have an improvement on issues such as: using project knowledge and project management

methodology, improving organizational bureaucracy and decision-making process, encouraging leadership researches and professional development programs, upgrading organizational culture, utilizing project management competence, timely payment to work force, improving management commitment, allocating adequate budget, avoiding political culture from the organization, developing competent team members, enhancing knowledge and skill in the construction industry, developing effective monitoring and controlling system and avoiding bribery and corruption problems in order to reduce the challenges of project management processes for the success of hydropower projects of EEP.

On the study the consultant was stated as the employer's agent. He should ensure that the project was completed to the right quality against technical specifications and design standards, on time and within budget. With the main duties of the consultant reviewing and updating design details; monitoring contractor's operations to ensure timely commencement of operation; reviewing contractor's programme; carrying out quality control tests; reviewing contractor's monthly invoices and certifying for payment; evaluating all claims for additional payment and applications for extension of time; and preparing monthly, quarterly and annual progress reports. Thus, consultant factors such as inability to clarify and ensure the client's wish, poor project supervision and control and lack of knowledge and experience could affect the success of hydropower projects of EEP. The study shown that consultants who are able to clarify and ensure the client's wish, with good supervision and controlling practice and who have adequate knowledge and experience can solve the challenges of project management regarding to the consultant factors.

The study shown that contractors with adequate plant resources, the adequacy of labour resources, the adequacy of plant resources, quality policy, financial performance of the contractor, turnover history of a contractor were significant predictor for the success of project regarding contractor issues. Yawei (2005) stated that appointment of the right contractor will not only ensure the overall quality of the project but also have the opportunity of saving on costs. Thus, contractor factors of project management challenge such as being at behind estimated time, poor standard workmanship, provision of improper materials, lack of adequate profession, and change in cost rate of materials were strongly affect the success of hydropower projects of EEP.

The study stated that the appropriate project management structure, selecting the right contract type, technical, economic and financial feasibilities, utilization of the right and updated science

and technology issues should be considered in order to meet the project goal. Thus, technical factors of project management practices such as lack of complete set of correct agile practices, design error, inappropriateness of technology and tools and lack of clear and detailed written contract could affect the success of hydropower projects of EEP.

The study revealed that economic, social and political issues were significant for the project implementation. Thus, political influence to change project scope and plans, harsh site condition, unfavourable weather condition could have relative impact on the success of the hydropower projects of EEP.

On the study project management process such as process of managing project time, cost, quality, scope, resource, procurement, planning and monitoring and evaluation processes were the significant activities which determined the performance of the hydropower projects regarding the project management processes factors.

Thus, as shown on the result of the study process challenges of project management such as lack of developing integrated project management plan, inadequate project planning, inadequate project schedule management practices, poor project risk management practices, inadequate directing and managing of project work during execution, inadequate monitoring and controlling project works, poor project procurement management practices, poor project quality management practices, inadequate project resource management practices, inadequate project cost management practices and inadequate project stakeholder management practices had affected the success of hydropower projects of EEP. As per Project Management Institute (2017) stated the purpose of project management process is to achieve the project objectives on time and within budget. In reality, project management is an ongoing task of balancing the scope against time, cost, quality, and any other constraints placed on the project.

The study revealed that most of the challenges were due to poor performance of the client for utilization of proper project management system and due to limitation of project management knowledge. The challenges of project management process on the hydropower projects were identified as, improper way of project manager selection, late starting of the project execution after long time feasibility study and planning was done, lack of project management knowledge and methodology, complex organizational bureaucracy, poor decision making practice and poor project performance measurement practice were mentioned as the main challenges of project management. The main challenges of project management which affected the success of project were time overrun, cost overrun and less efficiency of project.

The study revealed that ensuring of documented procedure to be used as reference, assigning the right person for the right job, capture and share lessons learnt, enforcing of standard setting to be practiced and government supervision on setting standards, developing standard project success measuring criteria and project performance measuring system, enhancing the understanding of project team about project management knowledge areas and project management process, avoiding political interference from projects, developing strong accountability system for each project implementation unit, establishing well organized organizational project management system were mentioned as improvement strategies in order to efficiently and effectively tackle those project management challenges.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The study identified various challenges of project management process which affect the success of the hydropower projects. Challenges such as misuse of time and bad management by the project manager, inability to develop project knowledge and project management methodology by the client organization, lack of developing integrated project management plan, inadequate project planning and inadequate project schedule management practices of the project management process and external factors such as political influence to change project scope and plans were identified as major challenges facing the project management processes for the success of hydropower projects .

Since the critical activities of the project were authorized to be done by the project manager, miss leading of the project manager could affect the overall result of the project performance. Also, major decision making was done by the client, lagging for taking the appropriate role on the project implementation could affect the performance of the hydropower project. The consultants and contractors also identified as parties of the project implementation unit, thus falling to perform the required responsibilities specified in the contract might affect the success of the projects. External factors, technical and process factors also could affect the project performance due to the nature of the project which is exposed for various circumstances.

The study also indicated that the challenges of project management practice for the success of hydropower project can be improved through developing organizational standard project success measuring criteria and project performance measuring system, enhancing the understanding of project team about project management knowledge areas and project management process, avoiding political interference from projects, developing strong accountability system for each project implementation unit, establishing well organized organizational project management system, assigning the right person for the right job and improving the practice of capturing and sharing lessons learnt with in projects.

5.2 Recommendation

Based on the findings explored, the study recommended that,

- i. Providing trainings about project management knowledge areas, project management processes, organizational standards, project management tools such as earned value

analysis, Gantt chart and Microsoft Project Management software, to the client project management teams in order to develop project management knowledge and project management methodology, to improve organizational capacity of the hydropower projects implementation.

- ii. Project implementation performance should be monitored and evaluated regularly and mitigation measures need to be done on time.
- iii. The organization should make an improvement to the high scored project management challenges, such as poor project scope management practices, poor project quality management practices, inadequate project schedule management practices, inadequate project cost management practices, inadequate project resource management practices, poor project risk management practices, poor project procurement management practices, inadequate project stakeholder management practices, lack of developing integrated project management plan, inadequate project planning, inadequate directing and managing of project work during execution, inadequate monitoring and controlling project works, not awarding bids to the right designer and/or contractor, scarcity of human capital, misuse of time, poor planning, bad management and misunderstanding of project management system in order to take out the hydropower projects in to better performance in project duration, project cost, quality and to meet the scope.
- iv. Project managers should adopt the project management competence in order to lead their projects successfully through the appropriate project management knowledge, skills, tools and techniques.
- v. The client organization (EEP) should institutionalized project management office in order to enhance organizational capacity for leading the hydropower projects successfully through developing the understanding and utilization of project management knowledges, skills, tools and techniques.

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Appendix 1

Questionnaire

Part A: Questions related to the respondent's personal profile.

1. Gender

Male Female

2. Age

Up to 30 years Between 31 – 40 years
Between 41 – 50 years Above 50 years

3. Educational background

BSC/BA MSc/MA
Other (Specify).....

4. Experience in construction industry

Between 5 – 10 years Between 11 – 15 years
Above 15 years Other (Specify).....

4. Number of construction projects participated by respondents in EEP

1 - 3 projects 4 - 6 projects
7 - 9 projects 10 and above projects

5. Job category (position) in EEP

Project manager project team leader
project engineer

Part B: Questions related to project success criteria, challenges confronting construction project management process and improvement strategies for project management practice.

The following statements are about project success criteria, project management challenges and improvement strategies for project management practice which are adopted from various literatures such as; professional project management practices and its constraints in developing African countries: a literature review (Ernest & Samuel, 2013).

Please tick appropriately according to the level of agreement on each specified project management challenge.

The level of agreement is represented by:

Strongly disagree = 1

disagree =2

neutral =3

agree =4

strongly agree = 5

No.	Project success criteria	strongly agree	agree	neutral	disagree	strongly disagree
1	There is definition of project success in your organization.					
2	Project performance is measured with standard criteria.					
3	Time, cost, and quality are used as set of criteria for measuring projects' success.					
4	There are number of published documents on project success rates.					
Challenges confronting construction project management process						
	Project Manager Factor	strongly agree	agree	neutral	disagree	strongly disagree
5	Passive participation					
6	Bad Management					
7	Poor planning					
8	Misuse of time					
9	Lack of project manager's capabilities and experience					
10	Project manager's poor goal commitment					

11	Misuse of resources					
12	Misunderstanding of project management system					
	Client Factor					
13	Lack of adequate budget					
14	Lack of knowledge and skill in the construction industry					
15	Late delivery of site					
16	Alteration of original idea					
17	Lack of project management competence					
18	Lack of team work					
19	Lack of project team motivation and goal orientation					
20	Resistance to change from groups or individuals					
21	Lack of executive sponsorship					
22	Lack of management commitment					
23	Organizational culture too traditional					
24	Organizational culture too political					
25	Late payment to work force					
26	Complex process, procedures, and rigorous reporting requirements.					
27	Poor leadership and organizational culture					
28	Inability to develop project knowledge and project management methodology					
29	Organizational bureaucracy and poor decision-making process					
30	Ineffective monitoring and control of the project and bribery and corruption					

31	Lack of focus on leadership research and professional development programs					
32	Lack of sufficient resources					
33	Poor treatment for work force					
34	Lack of competent team members					
	Consultant Factor					
35	Lack of knowledge and experience					
36	Lack of effective communication					
37	Poor project supervision and control					
38	Inability to clarify and ensure the client's wish					
39	Passive involvement on the project					
	Construction Team Factor					
40	Poor standard workmanship					
41	Lack of adequate profession					
42	Lack of effective communication					
43	Behind estimated time					
44	Provision of improper materials					
45	Change in cost rate of materials					
46	Lack of materials availability					
	Technical factors					
47	Lack of complete set of correct agile practices					
48	Inappropriateness of technology and tool					
49	Design error					

50	Lack of clear and detailed written contract					
51	non feasible project goal					
	Process factors					
52	poor project scope management practices					
53	poor project quality management practices					
54	inadequate project schedule management practices					
55	inadequate project cost management practices					
56	inadequate project resource management practices					
57	poor project risk management practices					
58	poor project procurement management practices					
59	inadequate project stakeholder management practices					
60	Lack of developing integrated project management plan					
61	Inadequate project planning					
62	Inadequate directing and managing of project work during execution					
63	Inadequate monitoring and controlling project works					
64	Not awarding bids to the right designer and/or contractor					
65	Increasing projects complexity and scarcity of human capital					
	External Factor					

66	Unfavourable weather condition					
67	Conflict between project parties					
68	Problem on job security					
69	Site accident					
70	harsh site condition					
71	Political influence to change project scope and plans					
	Improvement strategies for Project Management practice					
72	Monthly regulatory body inspection to ensure standard practice					
73	Government supervision on setting standard					
74	Enforcing of standard setting to be practiced					
75	Ensuring of documented procedure to be used as reference					
76	Transfer of project management technique from another field profession					
77	Early Detailed course on project management for early awareness					
78	Assigning the right person for the right job					
79	Capture and share lessons learnt					

Appendix 2

Interview questions

The following questions are about project success criteria, project management challenges and improvement strategies for project management practice which are adopted from various literatures.

1. How do you define project success in your organization?
2. What project success criteria is your organization using, and how are these measured?
3. What do you think about the importance time, cost, and quality as a set of criteria for measuring projects' success?
4. How do you identify the project management practice on your hydropower project?
5. How do you express the project management process groups of project initiation, project planning, project execution, project monitoring and evaluation and project closure practice in your hydropower project?
6. How do you express the project management knowledge areas such as;
 - identifying and coordinating project management activities
 - defining and managing project scope
 - planning and managing project schedule
 - estimating and managing project costs
 - defining and managing project quality
 - allocating and managing project resources
 - managing project communications
 - identifying and managing project risk
 - planning and managing Project Procurement
 - identifying and managing project stakeholder?
7. What type of project management challenges are facing on your hydropower project?
8. How does the challenges of project management practice can affect the success of the project?
9. Do you think the challenges of project management practices need to be improved, how?