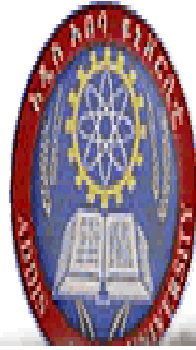


Addis Ababa
University



Assessment of the causes of troubled irrigation construction projects (A case of Megech Dam Construction Project)

A Research project submitted to Addis Ababa University School of
Commerce in partial fulfillment of the requirements for the Award of the
Degree of Master of Arts in Project Management

By: Alwoye Yigrem

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June, 2018

Addis Ababa

**ADDIS ABABA UNIVERSITY
GRADUATE STUDIES PROGRAM
MASTER OF ARTS IN PROJECT MANAGEMENT**

Assessment of the causes of troubled irrigation construction projects (A case of Megech Dam Construction Project)

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Declaration of Candidate

I hereby declare that this research project work is my own work and that it has not been submitted anywhere for any approval.

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LETTER OF CERTIFICATION

This is to certify that Alwoye Yigrem Alemu has conducted this project work entitled “Assessment of the causes of troubled irrigation construction projects (A case of Megech Dam Construction Project)” under my supervision.

This project work is original and suitable for the submission in partial fulfillment of the requirement for the award of Master of Arts Degree in Project Management.

Abdurezak Mohammed (PHD)

Date

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Acronyms & Abbreviations

DB- Design and Build

ECDSWC- Ethiopian Construction Design and Supervision Works Corporation

ECWC- Ethiopian Construction Works Corporation

EVA- Earned Value Analysis

GTP- Growth and Transformation Plan

ICID- International Commission for Irrigation and Drainage

IWMI- International Water Management Institute

MC- Management Contracting

MOWIE- Ministry of Water Irrigation and Electric

PMO- Project Management Office

SWOT- Strength, Weakness, Opportunities and Threats

PMBOK- Project Management Body of Knowledge

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Abstract

The purpose of the study was to assess the causes that make irrigation projects in trouble condition by taking the case of Megech Irrigation Dam Construction Project. Despite that the government is committed to develop large scale irrigation projects in different parts of the country, these projects are blamed for their stalling and slippages. The same is true for the ongoing project of Megech Irrigation Dam which is taking longer time. Therefore, this study is conducted to assess the causes related with management mistakes, planning mistakes and external influences that influence the performance of the project. It is a descriptive and explanatory type which employs both qualitative and quantitative approaches. Data is collected from both primary and secondary resources. Questionnaire and semi structured interview was used to collect data from the sample which are selected purposively because of their engagement in this project. The reliability test is done by Cronbach's Alpha test and yields 0.77 which is acceptable. Data analysis is by both qualitative and quantitative approaches in which mean, standard deviation are used for discussion. The findings revealed that the mistakes in the planning stages are significantly affecting the performance of the project. Failure to have a risk management plan, poor management of scope changes, lack of proper financing and forex, political unrest, poor estimation and complexity nature of irrigation projects make the management tough and troubled. Besides, the practice of having prevention strategies is insignificant rather it is intervention approach which is commonly used to recover projects. To alleviate these problems, it is essential to build the capacity of managing projects, involve stakeholders actively, and has a policy to manage risks, deploy effective cost controlling strategies and have public private partnership arrangements.

Key words; project slippage, management mistakes, planning mistakes, external influences

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Ethiopia is among the blessed land with untapped potential for the development of irrigation sector. A recent research done on its 12 major basins showed that the country has nearly 123 billion meter cubic surface water. Besides, the underground water potential is not significantly exploited for irrigation sector. With these two alternatives, it is estimated that the country has 5.3 million hectare of land which is ideal for irrigation practices. Yet, the existing irrigation development in Ethiopia, as compared to the resources it has, is negligible. It is only 6.16% of this land which is irrigated and indeed among the lowest index in the world (MOWIE, 2010).

Failing to develop this potential and having an agriculture which remains dependent on rainfall is a miserable reality. Because a research showed if successfully managed, irrigation in Ethiopia could represent a cornerstone of the agricultural development of the country, contributing up to ETB 140 billion to the economy and potentially moving up to 6 million households into food security (Irrigation potential in Ethiopia, Seleshi B.,2010).

Irrigation practice is one of the ancient practices of Ethiopians which is confined to small scale level and at fragmented approach. Irrigation development is key to the sustainable and reliable agricultural development, and thus for the overall economic development of the country. In order to ensure food security at the household level for Ethiopia's fast growing population, smaller, medium and large scale irrigation infrastructure needs to be developed.

For the wise and efficient management of the irrigation sector, Ethiopia has formulated and is implementing irrigation policy and strategy as part of the main water policy. The objective of the policy and strategy is to develop the huge irrigated agriculture potential for the production of food crops and raw materials needed for agro industries, on efficient and sustainable basis and without degrading the fertility of the production fields and water resources base (Ethiopian Water Sector Strategy, 2001). The main theme of the policy and the strategy is the necessity of developing irrigation at small-, medium- and large - scale level for food security and food self – sufficiency nationally including export earnings and to satisfy local agro-industrial demands with sustainable development framework.

Hence, in the national economic plan (GTP), irrigation development at different scales is one of the priority sectors. It is believed that the irrigation developments are to be done by all administrative levels of the country from the federal government to Woreda. The federal government is mainly working on development of medium and large scale irrigation projects while the regional, zonal and woreda administration deal with medium and small scale once.

In GTP 2 of the Ministry of Water, Irrigation and Energy is planned to develop 73 medium and large scale irrigation projects from surface and ground water. One of the notable irrigation projects with this framework was the “Megech Dam” with a capacity of developing more than 12,000 hectare of land (MOWIE, GTP 2, 2015).

Megech Dam is located on the Megech River, on the northern side of Lake Tana Sub-Basin, in North Gondar Zone of Amhara National Regional State. The Megech Watershed covers parts of three Woredas in the Zone, including Gondar Zuria, Lay Gayint, Wegera and Gondar town. It was believed that the introduction of irrigation will make farmers feel more secure about their basic food supply and enable them to diversify their crops based on local market demand and export opportunities. The Ministry of Water resources gave the feasibility study to WWDSE, Ethiopia in association with TAHAL GROUP, Israel in 2007.

Table 1: Description of the project

Project owner/client	Consultant	Contractor
Ministry of Water, irrigation and Energy	Ethiopian Construction Design and Supervision Works Corporation	Ethiopian Construction Works Corporation

Source: Feasibility study of the project, 2008

Initially, the project was intended to have an irrigation capacity of more than 7300 hectare of land (Feasibility study of Megech Irrigation Project, 2008). Later, in 2015 the GTP 2 document showed that the capacity of the dam will be 12000 hectare, and the other document which is released from the consultant showed as the project capacity is 17000 hectare of land. The project area is under rain fed farming and the scope of small scale irrigation in the catchment is very

limited and with the progressively increasing exploitation of the marginal land (Feasibility study of Megech Irrigation Project, 2008). The was intended to enhancement of agricultural production and ensure food security by introducing irrigation, securing water supply to Gondar town and its environs, reduce the risk of recurrent flooding in the Lake Tana flood plain and regulate the lake level.

To the dislike of owners, contractors and consultants, many government projects experience extensive delays and thereby exceed the initial time and cost estimates (Ramanathan, 2012). Any construction project comprises two distinct phases: the preconstruction phase (the period between the initial conceptions of the project, through the engineering design stage to awarding of construction contract) and the construction phase (period from awarding construction contract to when the actual construction is completed). In this regards, the Megech project dam is experiencing schedule slippage and cost increment as per the plan in both phases.

1.2 Statement of the problem

The level of development of irrigation in Ethiopia is low and among the lowest index in the world compared to its potential (MOWIE, GTP 2, 2015). Its irrigation potential was estimated at 5,161,649 hectares, but only 640,000 hectares have been exploited for agricultural production (Awulachew, 2010). The Ethiopian economy is highly derived by a huge public investment and projects run by the government itself. These investments and projects need to fulfill the promises as defined in the inception period since the ultimate success of an investment is largely determined by the quality of the upstream process of planning (World Bank Report, 2013).

Failing to do so will result in inability to meet the expectation which in turn leads public dissatisfaction. As a project it is pertinent to examine and understand the realities of projects to cure the existing problems. In line with the national ambition to ensure food security and have surplus of agricultural production, there are large scale irrigation construction projects which are run by the Federal government. Despite the efforts to deliver these projects to the communities certain factors mitigate the completion of these projects where the projects do not meet the schedule which leads to cost overruns and stalling of irrigation projects.

Stalled projects are not only symptoms of poor management of projects; they are depriving farmers of life-saving water for crops, weakening food security and pushing them to the brink of poverty. For this illustration, out of 5 irrigation projects which are completed in the last ten years, none of them are completed on schedule and budget in which they pass through distress situations (MOWIE Report, 2012). On- going irrigation projects like Megech River Irrigation project is also experiencing the same scenario with time and cost slippage as compared to its initial plan.

Robert K. Wysocki(2014), outlined that a running project is considered as in distress whenever the performance of a project falls outside nominal values. In this regard, the Megech Irrigation project is can be categorized as a distressed project since it is running outside of its schedule and cost. The documents from the project office (Project Progress Report, 2017) showed that the project was expected to be completed by 2017 but by this date its physical performance is nearly 50% only. Similarly, its initial cost was said to be 1.7 billion ETB to complete the project, but it is 1.2 billion ETB to complete the above mentioned portion of the project which is 50%.

Indeed, there is no probability that all projects will be successful and projects do not get into trouble overnight. There are early warning signs, but most organizations seem to overlook them or misunderstand them. Some of them simply ignore the tell-tale signs and continue on hoping for a miracle. Failure to recognize these signs early can make the cost of downstream corrections a very costly endeavor (Harold Kerzner, Recovery project management, IL).

Majority of irrigation construction projects in Ethiopia are criticized for their schedule slippage and budget escalation (MOWIE Annual Report, 2012). The same is true for those on going irrigation projects too. As it is described above, it was planned to complete the project within five years after its commencement (2013 to 2017). But it is at 50% on its schedule performance, which means there is 100% schedule overrun. There were previous studies that assess the factors that affect project performance in different sectors. To the researcher's best knowledge no specific study has conducted to investigate the causes that make the irrigation projecst troubled. This case study is seeking to grasp and analyze the factors that make Megech Irrigation Dam project in distress situation and come up with the remedial actions.

1.3 Research Questions

The study sought to answer the following research questions;

- To what extent does planning mistakes, management mistakes and external influences impact the Megech Irrigation Project?
- Why design changes were made frequently and scope creep is usual activity? What were the limitations to have a clear plan which is not subject to significant change?
- What were the strategies adopted to recover the project from its trouble situation?

1.4. Research Objectives

1.4.1. General objective

The main purpose of this study is to assess the causes that make the Megech Irrigation Dam Project in trouble situation.

1.3.2 Specific Objectives

- ✓ Analyze the extent in which planning mistakes, management mistakes and external influences affect project performance
- ✓ Identify the causes of frequent design changes and scope screeep
- ✓ Describe the strategies used by the project management to recover the troubled situation of the project

1.5 Significance of the Study

The study hopes to be of significance to policy and decision makers in the water resource development sector in identifying measures to improve successful implementation of irrigation projects. In addition, the study hopes to assist project managers by providing insight into what factors may contribute irrigation projects in trouble situation so that they can develop strategies and tactics to alleviate the problem. The study also hopes to be helpful to other researches who want to make further investigations and case studies related to irrigation projects.

1.6 Scope of the study

The study is specific to analysis of the factors that contribute the *Megech Irrigation Dam Project* to be in distress situation. It is ongoing project and will engage the Megech Irrigation Dam Project;

- Owner(MOWIE), Irrigation and Drainage Directorate and Megech irrigation project support office
- Contractor(ECWE), specific to Megech irrigation project
- Project consultant(ECDWC), specific to Megech irrigation project

The study is focusing on the assessment of the causes related with planning mistakes, management mistakes and external influences that make the project in trouble situation.

1.7 Limitation of the study

During the study, the respondents and participants seemed to think that they are being investigated or criticized. The researchers witness this during the early stage of the research work while collecting general facts about the project. And there were limitations related with lack of getting sufficient and consistent secondary sources to give details about the project performance.

1.8 Definition of key terms

Irrigation: It is a system for abstraction, conveyance and distribution of water for crop growth.(IWMI,2005)

Basins: An area occupied from the start of a given river and its catchments up to the end point (Dereje G/Michael, 2016)

Food security: It is a state of condition that a nation can substantially avail its food consumption from its domestic production.(own definition)

Growth and Transformation Plan: It is a national strategic and grand plan which is implemented for every five years to achieve the national goals (Own definition).

Project owner/client: This is the owner/sponsor of the project who has hired a contractor to construct the irrigation infrastructure and pays her in phases or upon completion or delivery of the project (Stanslaus Karoli Ntiyakunze,2011).

Consultant: A firm that takes the responsibility to study design and supervise the construction project (Stanslaus Karoli Ntiyakunze,2011).

Contractor: A company that enter into a contractual agreement with the client to build/install an irrigation infrastructure for a given irrigation project. (Stanslaus Karoli Ntiyakunze,2011).

Preconstruction phase: It is the period between the initial conceptions of the project, through the engineering design stage to awarding of construction contract (Loise Wanjiku Kahiga, 2015)

Construction phase: This is a period from awarding construction contract to when the actual construction is completed (Loise Wanjiku Kahiga, 2015)

Project: It is a temporary endeavor undertaken to create a unique product, service, or result. (PMBOK, 2015)

Distressed Project: A project that shows its performance falling outside nominal values. (Wysocki, 2014)

Scope creep: The uncontrolled expansion to product or project scope without adjustments to time, cost, and resources. (PMBOK, 2015)

Contract administration: It is the system at which we plan, implement and control the contractual agreement to deliver the intended work. (Own definition)

Troubled project: It is a project at which its performance is very poor and subjected to complaints among the parties and losing its trust from stakeholders. (Own definition)

Construction: putting in place infrastructure for irrigation use as per design and specification. (IWMI, 2010)

1.9 organization of the study

The study comprises of five chapters as described below.

The first chapter is all about description of the research overview, statement of the problem, objectives and the basic questions to be addressed. Besides, it highlights the significance of the study, its scope and limitations as well. Chapter two is the literature review part of the study that gives description about the theories related with the research topic. On the third chapter, it is briefly discussed about the research methodology/approach and the strategy of the study is being conducted. Chapter four presents the data analysis, presentation, interpretation and discussion part of the study while the fifth chapter is all about a summary of findings, conclusion as well as the recommendations by the researcher.

CHAPTER TWO: LITERATURE REVIEW

2.1 Theoretical Review

According to Awulachew (IWMI, 2010), Irrigation has so far not been very important in the development of agriculture in Ethiopia. Unfortunately, the country suffers from severe food shortage due to chronic droughts when there is a potential to develop over five million hectares by irrigation. Land under irrigation accounts for only 5% of the potential and nearly half of this is under traditional irrigation scattered all over the country. Due to its capital intensiveness and other related issues, development of middle and large scale irrigation and drainage development in Ethiopia is insignificant (MOWIE Annual Report, 2015). Recognizing the importance of these scale irrigation project the government gives prior attention; formulation of policies and strategies and allocation of budget for their development to mention a few initiatives. (MOWIE Annual Report, 2015).

The Ministry of Water, Irrigation and Electricity (2015) identified the most dominant factors that challenged the development of middle and large scale irrigation projects.

- ✓ Lack of sectoral program and project planning as well project management competencies.
- ✓ Low capacity of local companies which are working on study, design, construction and supervision on the sector.
- ✓ Absence of proper and integrated approach to use regional and federal resources in coordinated way
- ✓ Lack of skill, system, structure, technology and other inputs by the responsible organizations which are authorized to manage drainage development. Besides, these organizations lack effective project management competencies like planning, execution, controlling, formulation of standards and stakeholder management.
- ✓ Gaps in contract administration, procurement , logistics and supply chain management

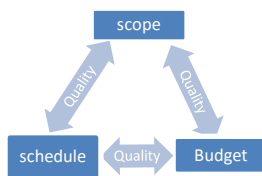
- ✓ Lack of proper planning between stakeholders and project implementers as well as weak coordinated effort among them.
- ✓ Project and strategic development goals were formulated with no sufficient research and achievable objectives. With the interest to achieve these unrealistic targets, there is wastage of resources and the diversion of focuses on urgent works than strategic issues.
- ✓ Lack of standard operating procedures and quality management practices.
- ✓ The culture of identifying project risks is not practical which in turn leads to ignorance of those preventive issues and waiting for their existence.
- ✓ Failure to secure project land on time and recognize social impacts as well as issues.
- ✓ Lack of sufficient government budget and limited involvement of private investment in the sector

Further the reports from the Ministry of Water, Irrigation and Electricity (2016), showed that all of the irrigation projects which have been constructed in the last ten years' pass through trouble situation. Neither of them was completed on time and budget which were criticized for wasting of resources which affects the national economy.

2.1.1 Nature of Irrigation Projects

According to Garold D. Oberlender(2000), like other projects a project in the context of irrigation has three components: scope, budget, and schedule. When a project is first assigned to a project manager, it is important that all three of these components be clearly defined. The term **Scope** represents the work to be accomplished, i.e., the quantity and quality of work. **Budget** refers to costs, measured in dollars and/or labor-hours of work. **Schedule** means the logical sequencing and timing of the work to be performed. The quality of a project must meet the owner's satisfaction and is an integral part of project management as illustrated in the following figure (Garold D. Oberlender, 2000).

Figure 1: Quality as integral part of project



Source: Garold D. Oberlender, 2000

The success of a project is therefore, compares with success criteria setted in relation to cost, schedule and scope that can meet customer expectation (quality issues).

2.1.2 Types of irrigation projects

International commission on irrigation and drainage (2010) has classified irrigation projects in three aspects namely; technical, ownership (end user) and scale. By technical view irrigation project can be either rice schemes or non-rice schemes. Rice scheme irrigation projects are those which need much more water thrive than others and the plantation tolerates waterlogging. It is proposed in humid areas where water is abundant and plentiful. Non rice schemes projects on the other hand recommended in drier and cooler parts. Hence irrigation projects design differs from the nature of the crop to be harvested and the water intake too.

On the perspective of ownership we can further classify irrigation projects as either public or private type. This classification is by the degree of end users' commitment of resources to, and control over the operation of the system. By public irrigation projects we mean the government has the dominant financial interest or management responsibility/control. In public irrigation it is the government that plans, finances and implements, and in most cases farmers effectively receive a subsidized service (International commission on irrigation and drainage, 2010).

On the other hand, private irrigation can be defined as any irrigation in which farmers (or a private sector group) have the dominant financial interest or management responsibility/control. In private irrigation, even though government may sometimes facilitate development or provide incentives, farmers take their own investment decisions, pay, implement, operate and maintain, and carry the risks. On scale of operation, irrigation works can be broadly classified as either small scale or large scale. A small scale irrigation project are less complex in their technical aspect and has limited scope where as large scale projects are broad, complex and diversified in their nature. (International commission on irrigation and drainage, 2010).

According to Garold D. Oberlender (2000), regardless of the method that is used to handle a project, the management of a project generally follows these steps:

Step 1: Project Definition (to meet the needs of the end user). It is a step at which the intended use by the owner upon completion of construction is defined and conceptually configured. The components to meet the intended use are also defined.

Step 2: Project Scope (to meet the project definition)

Define the work that must be accomplished and clearly identify the quantity, quality, and tasks that must be performed.

Step 3: Project budgeting (to match the project definition and scope)

Define the owner's permissible budget; determine direct and indirect costs plus contingencies

Step 4: Project planning (the strategy to accomplish the work)

Select and assign project staffing and identify the tasks required to accomplish the work

Step 5: Project scheduling (the product of scope, budgeting, and planning)

Arrange and schedule activities in a logical sequence, link the costs and resources to the scheduled activities

Step 6: Project tracking (to ensure the project is progressing as planned)

Measure work, time, and costs that are expended as well as compare "actual" to "planned work, time, and cost

Step 7: Project Close Out (final completion to ensure owner satisfaction)

Perform final testing and inspection, archive documents, and confirm payments. It is a step when the project turns over to the owner.

These steps describe project management in its simplest form. In reality there is considerable overlap between the steps, because any one step may affect one or more other steps. For example, budget preparation overlaps project definition and scope development. Similarly, project scheduling relates project scope and budget to project tracking and control.

2.1.3 Key participants and their roles in construction projects

The success of a construction project is depending on the efficiency and performance of the key participants (Stanslaus N.2011). Based on traditional procurement approach which is predominantly used in Ethiopian construction sector, the key participants in a construction project include: client / financier, contractors, sub-contractors, design team consisting of architect, engineers (structural, civil and services engineers), quantity surveyor, and a project manager may be involved in some projects(Ministry of Construction, 2016).

A. Client / Employer

The client is the owner or the developer of a building project, and when employs a contractor to undertake the works, is also referred to as the employer. In most projects the client is also the financier of the project although there are projects where the financier may be a different entity

(Stanslaus N.2011). Under the traditional procurement system, the client enters into a contract with the design team (consultants) for design work and supervision of construction works, and a separate contract with general contractor for construction works. The key role of a client when is also a financier in a building project is to finance the project. In our context it includes the Federal government through its various ministries and institutions, regional government through municipalities and district administrations, private organizations and individuals.

B. Contractor

The contractor carries out the actual physical construction works of the structure. Depending on the nature of project, there may be a general or main contractor who has a contract with the client. The contractor is fully responsible for undertaking the project works within time, cost and quality stipulated in the contract. However, depending on the complexity of the project, some parts of the work may require specialized skills, for instance electrical, plumbing and air conditioning installations that may demand involvement of a specialist or sub-contractor in a project.

There are two forms of subcontracting that are mostly used: (i) domestic sub-contracting used when the main contractor engages a sub-contractor who is fully under his control, and the subcontractor has no contractual relationship with the client. (ii) Nominated sub-contractor is another method in which the sub-contractor is nominated by the client through his consultants, and is approved by the contractor who enters into a contract with him. However, the nominated sub-contractor has some limited contractual links with the client.

C. Consultant

The consultant is appointed by the client / employer and normally is a team leader of a construction design team. The scope of the work undertaken by the consultant has two phases, the pre-contract and post-contract phases. During the pre-contract phase, the consultant based on the client's requirements often given in a project brief, formulates the project idea in terms of size, function and appearance then transforms these into plans that can be used for construction. During the post contract phase the architect is involved in supervision and administration of the project so as to provide the client with an acceptable and satisfactory output upon completion.

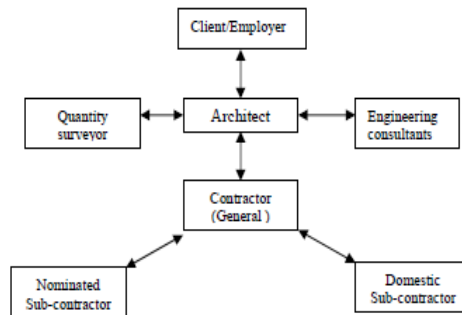
2.1.4 Project procurement system in construction projects

There are various contracting systems and different procurement options that can be adopted for a construction project. These includes: traditional procurement system, design and build, management contracting, project management, partnering and build-operate transfer approach.

- **The traditional procurement system**

This method separates the design and construction responsibilities. The client give the design works to design consultants and a contractor is appointed after a competitive tender or through negotiation to carry out the construction. It is a fragmented approach involving the client / employer, the design team (architect, engineers and quantity surveyor), the general contractor and sub-contractors. In Ethiopia it is the most widely used system. (Stanslaus N.2011)

Figure 2: traditional procurement structure

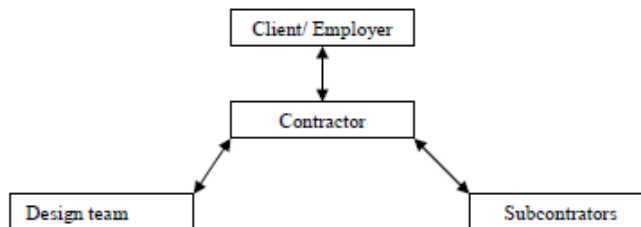


Source: Stanslaus N.2011

- **Design and Build(DB)**

In this system the contractor is responsible for design as well as construction. A single point responsibility of the contractor is given through the entire project execution by taking both roles. (Stanslaus N.2011).

Figure 3: D&B procurement structure

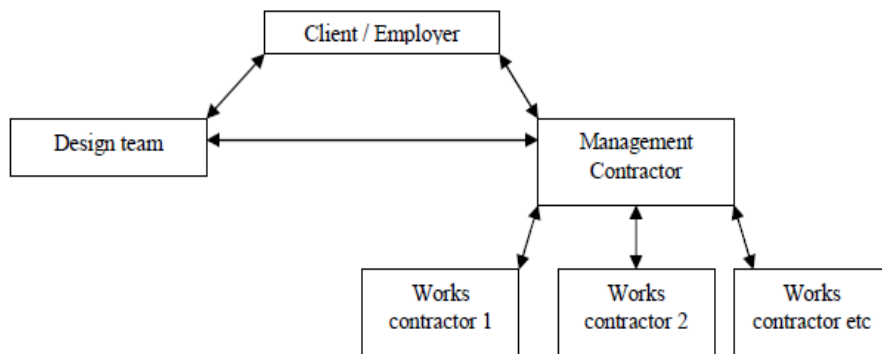


Source: Stanslaus N.2011

- **Management contracting(MC)**

It differs from other methods because it overlaps the design and the construction processes and it reduces the pre-contract period. In MC system the managing contractor acts as a link between the client/employer and the interfacing or works contractors in the project. This method is advantageous in such a way by reducing program time, value for money, flexibility in absorbing design changes during the construction period and bringing together a team chosen for their professional abilities to act together in the client’s best interest from inception to completion of the project (Stanslaus N.2011).

Figure 4: M&C procurement structure

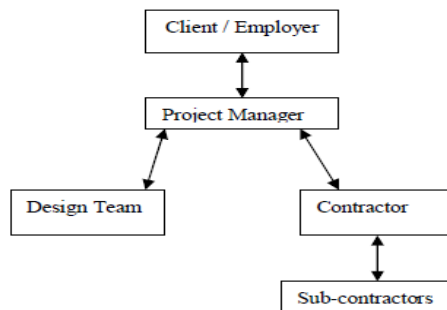


Source: Stanslaus N.2011

- **Project Management**

In this system the project manager is the client’s representative with the authority to supervise and control the entire planning and building operation from acquisition of the site to completion of the project and settlement of the accounts. As presented in the figure below the PM is in the middle for the interest of the client and facilitates the overall functioning of the project.

Figure 5: PM procurement structure



Source: Stanslaus N.2011

2.1.5 Keys to a successful project

There are several factors that are important in order to achieve a successful project during construction. Garold D. Oberlender(2010) outlined that a good field construction representative must be present to represent the interests of the owner and designer. He or she must know the requirements of the project and be readily available to answer questions and respond to situations as they arise. The field construction representative's authority and responsibility must be clearly defined to all parties including the owner, designer, and contractor. It should be recognized that this individual is an asset available to all the parties involved in the project: the owner, designer, and contractor.

Another important factor is a good, detailed construction schedule that is developed and used by the contractor who is performing the work, not the owner or designer. The owner should only define the start and/or end date of the project. Contractors know their capabilities, resources, and how they plan to coordinate the many activities required to build the project in the field. Thus, they are best qualified to develop a schedule to guide the numerous construction operations. A good project control system must be developed to monitor, measure, and evaluate the cost, schedule, labor-hours, and quality of work.

The most important key factor in a successful project is good communication. Most experienced project managers readily agree that the source of most problems can be traced to poor communications. People don't intend to do poor work or make mistakes. These types of problems are a result of misunderstanding of what is to be done and when it is to be done because of poor communications. There must be open lines of communications so the right people are available to respond when they are needed. A project organizational chart normally shows vertical lines of authority. However, strictly following vertical lines of authority sometimes is not responsive to dissemination of information in a timely manner. Thus, there is a need for communications that flow horizontally between people who are actually involved in the work.

2.1.6 Causes of project failure

The UK Office of Government Commerce (2011) identifies the common causes of project failure especially for the projects sponsored and delivered by the government bodies. These includes, lack of clear links between the project and the organization's key strategic priorities, including agreed measures of success, lack of clear senior management and ministerial ownership and

leadership, lack of effective engagement with stakeholders, lack of skills and proven approach to project management and risk management, Too little attention to breaking development and implementation into manageable steps, Evaluation of proposals driven by initial price rather than long-term value for money (especially securing delivery of business benefits), lack of understanding of, and contact with the supply industry at senior levels in the organization and Lack of effective project team integration between clients, the supplier team and the supply chain.

2.1.7 Distressed projects and strategies to recover

According to Robert K.(2014) a project is said to be in distress whenever the performance of a project falls outside nominal values. These types of projects are characterized by lack of stability and operating in trouble conditions. The followings can be considered as symptoms of a troubled project.

- **The project has exhibited a performance trend that, if continued, will result in its failure.** Whenever the cumulative history of one or both of the metrics exhibits certain trends, it suggests that the project is out of control, and the reason for the trends needs to be identified and a decision needs to be made as to how to proceed. A growing schedule slippage is one such trend that, if continued, will lead to failure.
- **The project's performance has exceeded one or more metric values and is a high risk for failure.** When any one of these metrics exceeds its trigger value, the project is at high risk for failure. That sets off a series of activities designed to identify the source of the anomaly and the corrective action that needs to be taken. A significant schedule slippage due to a bad estimate, a mistake, and serious vendor delays are three such events that may result in project failure.
- **The project has recently experienced some significant change that may result in failure.** Oftentimes these changes are related to personnel or other major organizational shifts. Even though the project performance metrics do not indicate any problem, the environmental change may be sufficient to throw the project off course. A change of sponsor and a loss of critical resources are two such changes that may result in a distressed condition and eventual project failure.

If any of the preceding situations happen, it should immediately trigger a project intervention process designed to discover the reasons for the distressed condition, fix the condition, and re-plan the project going forward.

2.1.8 Root Causes of Failure

Harold Kerzner (2016) clarifies the importance of checking the wellbeing of projects as follows. Projects like human beings need to be checked up periodically whether they are going healthy or not. These health checks, even when applied to healthy looking projects, can lead to the discovery that the project may be in trouble even though on the surface the project looks healthy. While we seem to have a reasonably good understanding of project success, we have a poor understanding of project failure.

The project manager and the stakeholders can have different definitions of project failure. The project manager's definition might just be not meeting the triple constraints criteria. Stakeholders, on the other hand, seem more interested in business value than the triple constraints once the project actually begins. Stakeholders' perception of failure might be; the project has become too costly for the expected benefits or value, the project will be completed too late, the project will not achieve its targeted benefits or value or the project no longer satisfies the stakeholders' needs. Harold Kerzner, identified 36 possible causes of a project failure which are sorted in three broad categories as follows.

- 1. Management mistakes:** These are due to a failure in stakeholder management perhaps by allowing too many unnecessary scope changes, failing to provide proper governance, refusing to make decisions in a timely manner, and ignoring the project manager's quest for help. This can also be the result of wanting to gold-plate the project. This is also the result of not performing project health checks. (Harold Kerzner, 2016)
- 2. Planning Mistakes:-** These are the result of poor project management, perhaps not following the principles stated in the PMBOK® Guide, not having a timely "kill switch" in the plan, not planning for project audits or health checks, and not selecting the proper tracking metrics. (Harold Kerzner, 2016)
- 3. External Influences:** These are normally the failures in assessing the environmental input factors correctly which includes the timing for getting approvals and authorization

from third parties, and a poor understanding of the host country (area) culture and politics, unanticipated issues. (Harold Kerzner, 2016)

Table 2: Root causes of troubled projects by Kerzner

Management Mistakes	Planning Mistakes	External Influences
End user stakeholders not involved throughout the project	Plan asks for too much in too little time	Staffing requirements are not fully known
Minimal or no stakeholder backing; lack of ownership	Project estimates are best guesses and not based upon history or standards	Enterprise environmental factors have changes causing outdated scope
Weak business case	Unclear stakeholder requirements	No one knows the exact major milestone dates or due dates for reporting
Corporate goals not understood at the lower organizational levels	Unclear expectations	People are shuffled in and out of the project with little regard for the schedule
Passive user stakeholder involvement after handoff	Assumptions, if they exist at all, are unrealistic	Each stakeholder uses different organizational process assets, which may be incompatible with the assets of project partners
Constantly changing resources	Plans are based upon insufficient data	Poor project management; team members possess a poor understanding of project management,
Lack of attention provided to the human and organizational aspects of the project	No systemization of the planning process	Technical objectives are more important than business objective
Budgets are exceeded and out of control	Planning is performed by a planning group	
Poor or fragmented cost control	Inadequate or incomplete requirements	
Weak project and stakeholder communication	Lack of resources	
Wrong type of contract	Assigned resources lack experience	
Team members working with conflicting requirements	Poor overall project planning	

	Lack of preplanning on a regular basis	
	Missed deadlines and no recovery plan	
	Poor assessment of risks if done at all	
	Not enough time provided for proper estimating	

Harold Kerzner, 2016

Kerzner further conclude that Projects do not become distressed overnight. They normally go from “green” to “yellow” to “red”, and along the way are early warning signs that failure may be imminent or that immediate changes may be necessary. The typical early warning signs includes different opinions on project’s purpose and objectives, continuous criticism by stakeholders, delayed decisions resulting in missed deadlines, finger-pointing and poor acceptance of responsibility, failing to close life cycle phases properly, high turnover of personnel, especially critical workers, surprises, slow identification of problems, and constant rework and poor change control process are among the notable once.

The earlier the warning signs are discovered, the more opportunities exist for recovery. This is the time when a project health check should be conducted. Successful identification and evaluation of the early warning signs can tell us that the distressed project can succeed according to the original requirements but some minor changes are needed or can be repaired but major changes may be necessary or cannot succeed and should be killed.

There are three possible outcomes when managing a troubled project:

- ✓ The project must be completed; i.e. required by law
These include compliance to government laws on environmental issues, health, safety, pollution, etc... For these projects, failure is not an option
- ✓ The project can be completed but with major costly changes to the requirements
- ✓ The project should be canceled because costs and benefits or value are no longer aligned or what was once a good idea no longer has merit

There is often a great deal of political and cultural resistance to kill a project. Stakeholder management and project governance play a serious role in the ease by which a project can be terminated. On the other view Robert K. Wysocki(2014) also identifies the possible causes of distressed projects as presented below. These possible causes are also related with Kezner's 36 factors that make projects in trouble.

Poor, Inadequate, or No Requirements Documentation

We should be reasonably certain that you have identified the necessary and sufficient set of requirements and only their detailed decomposition is suspect.

Inappropriate or Insufficient Sponsorship

Some sponsors take their job of sponsorship seriously. Others do not. In case of lacking the attention of the sponsor having a face to face meeting and briefing is essential.

Complexity of Requirements Not Recognized

Perception of a project like a simple and ordinary work leads to such situation. The risk management plan must anticipate the unusual and have the appropriate mitigation plans in place. As requirements become more complex or less complete and clearly documented, the risk of the project becoming distressed goes up.

Unwillingness to Make Tough Decisions

How easy it is to get a project approved, and how hard it is to pull the plug on the most distressed of projects.

Lag Time between Project Approval and Kick-Off

Getting a project approved is one thing. Getting it started is another. If the time between approval and startup is too long and the completion date is firm, project risk goes up.

No Plan Revision after Significant Cuts in Resources or Time

Budget cuts, staff cuts, and shorter deadlines are not unusual. Under those circumstances, many project plans are not changed. This will make our plan to be revised and a certain arrangements shall be made.

Estimates Done With Little Planning or Thought

Estimation is an input for all types of project planning components, hence, its weakness further aggravates the project management to be poor which in turn leads to having a troubled project. Estimates shall be from staff members who have done the tasks before or will be assigned to do

the task on this project. Unless they have been a credible source in the past, you will want some validation of the estimates they provide.

Over commitment of Staff Resources

Projects are often approved without assessing staff availability. You may have the skills needed, but the people with those skills are already committed to other projects and cannot work your project into their schedules. Dealing with this situation effectively requires a Human Resources Management System (HRMS) with skills inventories and staff scheduling capability.

Inconsistent Client Sign-Off

Some clients will fully participate in acceptance procedures and not be forced to sign off until they are completely satisfied that their requirements have been met and expected business value achieved. If they have been meaningfully involved throughout the project, that's a good sign that they will be meaningful participants in the acceptance procedures, and their signature is testimony that requirements have been met. Not all clients are like this, however. Some might sign off simply to get the project out of the way and get on with their business. Others might not really understand the project and sign off in ignorance rather than risk being exposed.

No Credibility in the Baseline Plan

If the baseline plan has undergone several revisions and changes at management's and the client's request, there may be serious doubt that it can be achieved. Estimates that are made and then changed to accommodate a tight deadline are sure signs of a weak plan and one that is destined for trouble. What may have been a solid and well-thought-out plan initially has undergone so many changes and patchwork fixes that it is now a jumbled mess and has lost its credibility with the team.

Unmanageable Project Scope

TPM projects do not expect scope change requests, so some control over the number and frequency must be in place. Management reserve is an effective tool and should be included in every TPM project plan.

2.1.9 Managing Distressed Projects

In general, there are two types of strategies for dealing with distressed projects (Robert K. Wysocki, 2014). Every project that becomes distressed was once not in distress, and there are prevention strategies to minimize the likelihood of projects becoming distressed. When the prevention strategies do not work due to prevailing conditions beyond our control, and the

project will still become distressed. If this happens, there are intervention strategies that you can use.

Prevention Management Strategies

Prevention strategies are proactive practices and processes that can be used to significantly reduce the number of projects that become distressed (Robert K. Wysocki, 2014). For the typical company situation, you may be able to enhance some of the processes.

Using Tools, Templates, and Processes as a prevention method

The followings are considered as irreplaceable tools for formulating prevention strategies to have a healthy project.

- Requirements gathering
- Work Breakdown Structure (WBS) construction
- Dynamic risk management process
- Scope change management process
- Milestone trend charts
- Earned value analysis

A. Requirement gathering

Giving extra care in identifying the list of requirements at the beginning of the project is very crucial issue. Preparation of requirement breakdown structure (RBS) is a template to be used that clarifies the requirements of the client.

B. Work Breakdown Structure (WBS) construction

Generating a clear and complete WBS is the most difficult part of the project planning process. Building the WBS is a very intense and tiring exercise. The entire project plan is based on the assumption that we have described on WBS. A scope change will be therefore the difference between our initial WBS and a complete WBS will probably be reflected in the number of scope change requests we get through. Obviously, processing those scope change requests will seriously compromise the project plan.

C. Dynamic Risk Management process

When we have effective risk management process, there is a greater probability to protect our project from becoming distressed. But it should be noticed that risk management plan is not a one-time task rather, it has to be monitored continuously for any changes that might suggest heightened attention to one or more risks. Besides, there should be a metrics-driven risk

monitoring and control process included in the risk management plan. Use tight control values around these metrics to alert the team to early warning signs of changing conditions.

D. Scope Change Management Process

Scope change is an area that often gives rise to most project problems. It doesn't really make a difference whether this is the result of doing a poor job on gathering and documenting requirements or dealing with a client who has lots of ideas. If there is no management control exercised over the frequency of scope change requests, there are going to be problems.

E. Milestone Trend Charts

The milestone trend chart is one of the few metrics that looks ahead in the project schedule for expected slippages and warns the project manager ahead of time that there may be problems later in the schedule if established trends persist. This information is made available early enough in the project time line to give the project team time to analyze and correct any anomalies. The milestone trend chart is an excellent early warning system and should be part of every monitoring and control process.

F. Earned Value Analysis(EVA)

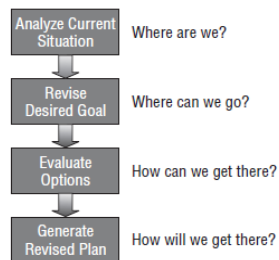
It is a tracking system that shows trends in schedule performance index (SPI) and cost performance index (CPI) values and displaying them in the form of a milestone trend chart. It is the most intuitive and popular metrics for early warnings of cost or schedule problems. Schedule performance index (SPI) measures how close the project is to performing work as it was actually scheduled and can be calculated as $SPI=EV/PV$, where EV is earned value and PV is perceived value. If SPI is greater than one, the project is ahead of schedule and if it is below one the work performed is less than the scheduled work (behind the schedule).

On the other side, cost performance index (CPI) is the measure of how close the project is to spending on the work performed to what you planned to spend. CPI is the ratio of Earned Value to Actual cost and the result shows the performance of cost to schedule of the work. If the CPI is greater than 1, The projects spends less than was budgeted for the work performed. If there is overspending for the work performed, the CPI will be less than 1. Trend plots (like the milestone trend charts) are intuitive displays of the project history with respect to schedule and cost variances from plan.

Intervention Management Strategies

Despite all of the protections against a project becoming distressed, it may still happen. Depending on the seriousness of the situation we can devise the strategies to recover. For serious and complex situation, postponing any further work on the project while corrective actions are formulated and implemented in a revised project plan might be a solution. For less serious situations and because of resource constraints and previous schedule commitments, we might continue the project work while a resolution is defined and implemented. Hence, intervention occurs when the project has been deemed to be in distress and it has a four step process as described in the following chart.

Figure 6: Intervention strategy steps



Source: Robert K. Wysocki, 2014

Analyze Current Situation: Where Are We?

Once a project has been determined to be distressed, the current status of the deliverables should be determined. This is the starting point for further analysis and eventual re planning of the distressed project. The most useful tool for analyzing causes of distressed projects is Root Cause Analysis. Knowing that an undesirable situation exists is the starting point for Root Cause Analysis. Root Cause Analysis is represented as a hierarchical chart and is very intuitive.

Revise Desired Goal: Where Can We Go?

Taking all of the previous root causes into consideration, the project team needs to figure out whether they will go forward with the project, and, if so, how to go forward. The first step in that decision is to revise the original project goal. That might be straightforward or very complex given the extent of distress in the project and the criticality of the project. Maybe the project should be decomposed into several shorter-duration projects or abandoned and restarted at a later date in an entirely different direction.

Evaluate Options: How Can We Get There?

It is about determining the tactics and strategies to achieve the revised and desired goal in the second process. It needs further detail activities in order to make it more comprehensive and achievable. We have to ensure the new approach will not lead to distress situation again. The process includes, brainstorm potential project options, prioritize options, and conduct a SWOT analysis, frame the get well plan, and answer the question is the revised business case feasible?

Generate Revised Plan: How Will We Get There?

Using the results of the SWOT analysis, put together a high-level plan showing milestones, what will be delivered, and by when. The plan should also include the budget impact on both the client and the project team. The three steps for creating a new plan to bring the distressed project back to health are the same steps you used to first plan and launch a project. They are as follows:

1. Prepare a revised project plan.
2. Get management acceptance of the revised plan.
3. Prepare to restart the project.

2.2 Empirical Review

Different studies have been conducted on the factors that affect the completion construction projects. The study by Abubakir Jemal(2015) explores the factors that affect time and cost overrun in Road construction projects in Addis Ababa. Specific to irrigation construction projects the recent studies by Ramanathan(2012, India) , Loise Wanjiku Kahiga(2015, Kenya) and Simon M. Kamundia(2016, Kenya) investigated the factors that influences the construction of irrigation projects. They came up with the factors that make the projects not to meet their target in schedule, cost and scope indicators.

Abubakir Jemal (2015) identified 32 factors for time overrun and 15 factors for cost overrun by make a comparison among the client, consultant and contractor. The finding showed that delay to deliver the site is the influential factor that affect time overrun followed by financial problems and improper planning. Likewise, cost overrun is the result of design change, fluctuation in the cost of materials and other factors mentioned in the study.

Loise (2015) has studied the influence of contractor related factors, cost related factors and project supervision on the completion of irrigation projects. His conclusion is that cost-related

factors are the determinant factors influencing completion of irrigation projects. These costs are associated with price escalations which affect the project budget and cause poor implementation of projects which may lead to incompleteness. The study also concludes that project supervision was the second most significant factor influencing the completion of irrigation projects followed by contractor-related factors with the least significance influence.

Simon M.(2016) studied with the intention to investigate the factors influencing construction of irrigation projects. The factors that are identified in the study are managerial planning, financial resource, equipment and project staff. His finding showed that financial resource is significantly affecting the performance of irrigation projects. Besides, change order from the designer is the critical factor that hinders the proper implementation of irrigation projects.

Table 3: Summary of empirical studies on construction and irrigation projects

Author	Research Objective	Method	Result
Factors affecting time and cost overrun in road Construction projects in Addis Ababa, Abubeker Jemal(2015)	To identify factors influencing time and cost overruns in road construction in Addis and determine their effect	It is exploratory, descriptive and co-relational type of research by using both primary and desk study. Secondary sources are plans, reports and other supportive documents while the primary source is collected through questionnaire. The results are presented the result presented in descriptive statistics such as in the form of graphs, tables, percentages and frequencies with correlation tests.	Ten out of ten, (100%), road projects investigated in the research suffered time and cost overrun in their execution. The most common causes of time overrun are Delay to deliver the site (Right of way problem), financial problems of contractors, Improper planning, and Site management. And the most common causes of cost overrun are Design change, fluctuation in the cost of Materials and inadequate review for drawings and contract document.
Factors influencing completion of irrigation projects in kenya: a case of national irrigation board projects in mount kenya region Loise W.(2015)	The purpose of the study was to investigate factors influencing completion of irrigation projects in National Irrigation Board.	The research design for this study is descriptive type and data was collected from both primary and secondary sources. Primary data is through both questionnaire and key informant interview. The researcher conducted a pilot test to identify the concepts, statements and terms that may be problematic to the respondents which were modified before administration of the final instrument. Both descriptive	cost-related factors are the determinant factors influencing completion of irrigation projects followed by project supervision and contractor related factor

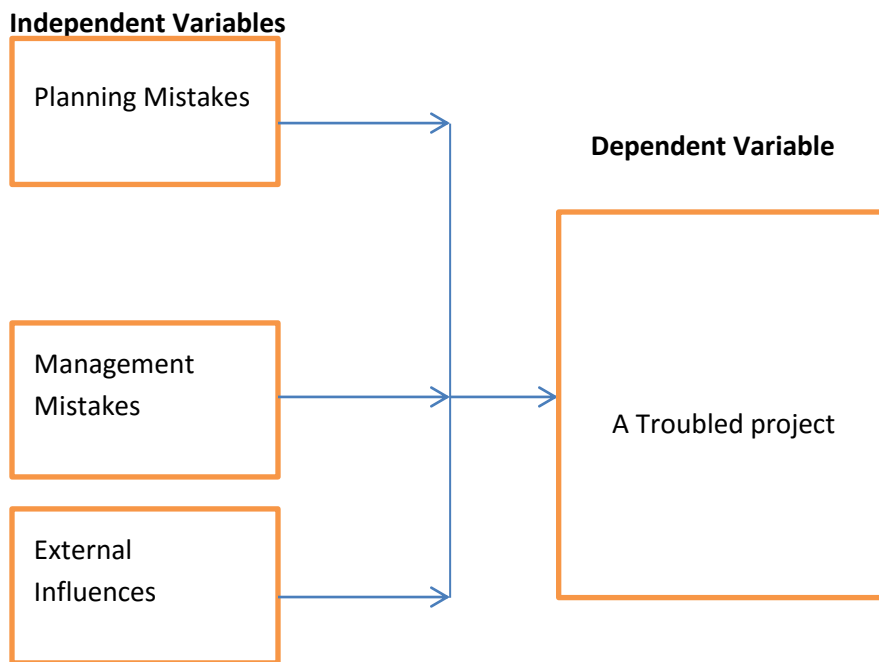
		and inferential statistics are applied using SPSS. Measures of central tendency, correlation and linear regression analysis were used to measure relationships between the independent and dependent variables.	
Factors influencing construction of irrigation projects: A case of National Irrigation Board, Simon Kamundia(2016)	To investigate factors influencing construction of irrigation projects(Managerial, finance, equipment and staff	It is descriptive type of research that analyzes the relationship between variables. Questionnaire, interview and observation were the data collection instruments. Mean, median, mode and standard deviation were used to analyze the data.	Financial resources are the significant factor that affects the completion of projects. Inadequate use of proper equipment, motivation of staff and change order are the prominent factors in their category

Source: Own Survey

2.3 Conceptual Framework

The above studies showed that there are factors that affect the construction projects at large and irrigation projects in particular. The analysis of factors that challenges the irrigation construction projects in Ethiopia is not well studied. Hence, this study will try to investigate the causes of troubled irrigation construction projects by taking the case of Megech Irrigation Dam. The study adopted the root causes of troubled projects identified by Kerzner(2016) which are clustered in three broad categories.

Figure 7: Conceptual framework of the study adopted from Kerzner



The planning mistakes, management mistakes and external influences are expected to be the causes of troubled projects in which its success is questionable and that need recovery strategy by the stakeholders.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter gives description about the procedures and techniques to be employed by the study. It includes research design, target population, sampling procedures and sample size, data collection methods, data collection procedures, validity, reliability and methods of data analysis.

3.2 Research Design

By research design we mean the approach that a researcher adopt in an attempt to achieve the study's objectives and fill the gaps identified in statement of the problem. The research design for this study is descriptive in nature as it involves the accurate description of the features of the population for the study in relation to the indicators of the study. The research is descriptive survey that deploys both qualitative and quantitative research approach.

3.3 Target Population

By population we mean any group that is the subject of research interest and the generalization of the finding is to be made on it. The primary focus of this study is the client (MOWIE), the supervisor (EDWSE) and the contractor (ECWC) who has direct involvement in the project that can be considered as the primary population with a total size of 32.

Table 4: Target Population of the study

Target population	Responsibility in the project	Population	sample	percent
Ministry of Water, Irrigation and Electricity, Irrigation and Drainage Directorate	Client	8	8	100
Ethiopian construction works Corporation, water infrastructure sector	Contractor	15	15	100
Ethiopian Construction Design Works and Supervision	Supervisor/consultant	9	9	100
Total		32	32	100

3.4 Methods of data collection and sources of data

For this research two types of data will be gathered and used. The first is the primary data, the data which are obtained for the first time for the statistical investigation, collected in a specialized way. The second one is secondary data were made available for statistical investigation. The primary data for this study is gathered using questionnaire and interview from all key actors of the project; contractor, client and supervisor. Besides, secondary data sources

like strategic plans and accomplishment reports, feasibility studies, project proposals, progress reports, reports, procedures, guidelines, procurement proclamations and other related materials will be used in this study. Mainly SPSS software applications will be used to sort and analyze the data.

The study will apply both approaches of data collection. These are qualitative techniques and quantitative techniques. Quantitative techniques are adopted to gather information from a larger sample of respondents whereas qualitative techniques will acquire in-depth information of the phenomenon under investigation from a relatively smaller sample (Loise W. 2015). The study adopted the questionnaire as the quantitative data collection technique and the key informant interview as the qualitative technique.

Questionnaire

The questionnaire contained four sections. The first section included the background information of the respondents. The second to fourth sections comprised of questions related to the research objectives. These include impacts of planning mistakes, management mistakes and external mistakes/factors on Megech Irrigation project performances (trouble situation) that are adopted by Kezner.

There are a total of 34 questions which are presented based on the 5- point Likert Scale, where respondents were asked to answer the questions in varying degrees; from “Strongly disagree” to “Strongly agree”. The Likert Scale has been recognized for its advantage to investigate the attitudes and beliefs of respondents on the phenomenon under study Kaizen related research. The questionnaire was administered to the project client, contractor, supervisor and project support office. The questionnaires will be self-administered in order to motivate the respondents to participate in the data collection activities.

Key Informant Interview

The key informants of the study will be the managers on the side of the client, contractor and supervisor. The researcher adopted the semi-structured interview approach to take the advantage that the interviewer can engage in a discussion with the interviewee on the subject under study. Such discussions allow the researcher to gather information that may not have been anticipated during the development of the proposal but may be significant to the study.

In order to ease the data collection process the researcher has an official letter from the university as the data is for study and confidentiality will be maintained. Besides, there will be research authorization letter from the Ministry of Water, irrigation and Electricity to make the research on the study area.

3.5 Validity of the instrument

Validity refers to the extent to which the research instruments measure what was intended. In order to ensure validity of the research instruments, the researcher developed a questionnaire which used items that have been used in previous studies and recommendations from project management professionals. More importantly, interview questions were developed with the help of expertise in the sector that can help easily examine the true nature of the scenario.

3.6 Reliability

Reliability refers to the extent to which data collection techniques or analysis procedures will yield consistent findings for other similar researches. Therefore, having a reliable instrument is the fundamental issue in studies as unreliable result brings wrong conclusion and decision. Cronbach's Alpha was computed to assess the internal consistency of the research instrument, which is the survey questionnaire. Cronbach's Alpha coefficient of 0.77 shows good internal consistence of the items in the Scale used (George & Mallery 2003).

The below reliability measures show that the internally consistent measure results are greater than the acceptable level, which is 0.70. The result of five scales (measurement units) is well above the minimum range.

Table 5: Reliability test by Cronbach's Alpha

Group	Variables	Cronbach's Alpha
I	Management mistakes	0.711
II	Planning mistakes	0.792
III	External Influences	0.812

3.7 Data Analysis and Presentation

Data analysis refers to the process of making sense of collected data for the reader whereas data presentation refers to the graphical illustration of research findings. The first step of data analysis

was to check for completeness, accuracy and consistency in the administered questionnaires. This was done in the field after administration of the questionnaires at the end of each day of data collection. The next process included the coding and entering of data into the Statistical Package for Social Sciences (SPSS). The researcher used descriptive statistics to measure the central tendency and deviations among the respondents. The data was presented in tables and graphs as well as comparing to the reviewed literature and accompanied by the researchers own interpretation.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the results from the data collection which is presented in terms of the study objectives. It analyses and give detail explanation of the findings in relation to the research problem, objective and purposes. The data is presented in tables and also by the researchers own interpretation. The researcher adopted the census sampling technique as the target population was not relatively large.

4.2 Results of Desk Study

Before proceeding to analyze the causes that make the project in trouble situation, it is very practical to give overview about the project nature, current status and other related aspects. The data was collected by reviewing the project documents. In this regard, it is notified that the project has experienced major change in design and scope creep. Especially the excavation works have experienced unanticipated soil formation which results in a project scope creep mainly in the main dam (293.5%), spill way (6.2%), intake tower (355.9%) and draw of culvert (1584.6%).

In relation to the schedule of the work, in the first contract it was expected to finalize the project between 2013 to 2017. But the current physical performance is only tapping 52% and the financial performance is around 33.6% up to April 2018. The research has found comparing the physical performance with financial performance is essential to show the status of the report as follows.

Table 6: comparison between physical and financial performance of the project

No	Activities	Physical Performance by March, 2018		Financial performance by March, 2018
		Weight of the task	Total Executed	
1	General provision	3.00 %	3.00%	80.56%
2	Site investigation	-	-	0.00%
3	Site clearance & river diversion	NA	NA	76.07%

4	Coffer dam	1.5%	0.5%	35.73%
5	Main Dam	53.02%	24.08%	33.07%
6	Spillway	25.7%	16.1%	56.38%
7	Intake Tower	0.7%	0.7%	3.60%
8	Draw off conduit, Dry season channel and water supply pipe	6.21%	3.11%	21.15%
9	Downstream works	-	-	-
10	Instrumentation	0.5%	0.01%	3.7%
11	Hydro mechanical and Electrical works	-	-	-
12	Access road	NA	NA	77.88%
9	Project manager's requirement			31.33
10	Provisional sums			-
11	Day Works			6.11

From the table it is clear that the overall performance of the project in regard to schedule is lagging by more than 100% and the financial performance is not also healthy. There are some tasks that have been completed and the finance is either not reported or payment is not made. On the contrary some tasks have poor physical performance while the finance is utilized, for example, the case of access road. Generally stalling is the feature of the Megech River Irrigation project from the indicators.

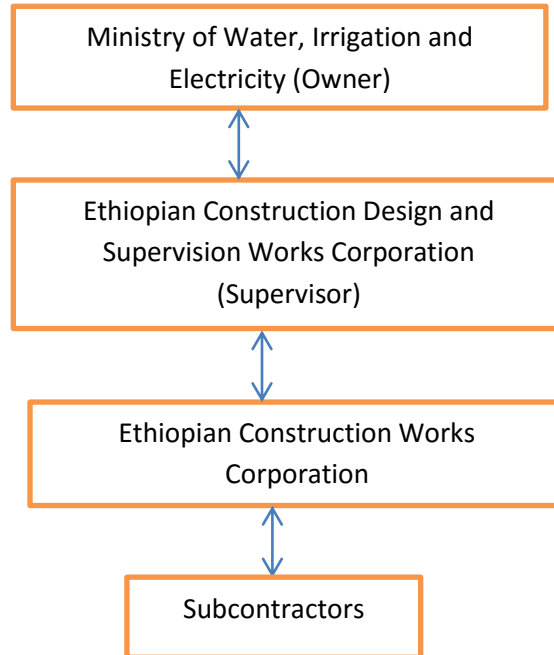
Nature of the Project

The Megech Irrigation Project can be considered as a non-rice scheme type of irrigation. These types of projects are recommended in dry places where water is not abundant in the area (**ICID, 2010**) The design considers the nature of the irrigation type to be practices and water availability (Feasibility study, 2008). The project is owned by the government and can be considered as large scale irrigation projects since its potential of irrigation exceeds 3000 hectare of land.

The procurement method of the project is purely traditional type that involves three parties namely; the client, contractor and consultant. In traditional method of procurement, the client engages an architect and other design consultants to design a building or any form of structure and a contractor is appointed after a competitive tender or through negotiation to carry out the construction.

It is a fragmented approach involving the client / employer, the design team, the general contractor and sub-contractors as described below.

Figure 8: structure of the project



Source: Feasibility study of the project (2008)

This is the most common method in the construction sector in Ethiopia where the supervisor takes the role of controlling the project according to the specification agreed on the contract. Both the supervisor and the contractor are government owned companies working on the sector. It is time to think other types of procurement methods preferably management contracting as the irrigation project is complex and need to be completed within short period of time. Because management contracting method overlaps the design and the construction processes and by that it reduces the pre-contract period (Stanslaus N.2011).

4.3. Results of Questionnaire Response Rate

Success with surveys often depends on good response rates, which is the number of respondents divided by the number approached (John Adams, 2007). It was able to collect 28 complete questionnaires which were used in the data analysis from the sample size of 32 respondents.

Hence, the response rate is 87.5 % which is acceptable in research as recommended by Nulty (2008) that a response rate of above 50 % is acceptable.

Table 7: Response rate

Organization	No. of Questionnaire distributed	No. of Questionnaire returned	Response Rate
Client	8	7	87.5%
Contractor	15	12	80%
Consultant	9	9	100%
Total	32	28	87.5%

4.4 Background Information

The first section of the questionnaire deals with the demographic pattern of the respondents that includes gender, educational background, experience in the project and their role as presented below.

Table 8: Gender of Respondents

Gender	Frequency	Percent
Male	23	82.1
Female	5	17.9
Total	28	100

The above table shows that the majorities of respondents were male and represented 82.1 % of the sample while the female population represented 17.9 %. The findings show that the majority of the respondents were male that shows the female participation in this specific project is limited.

Table 9: Educational Background of the respondents

Education Level	Frequency	Percent
Diploma	2	7.1%
Bachelor Degree	15	53.6%
MSC/MA and above	11	39.3%
Total	28	100

In terms of the education level, the study found that 7.1 % are diploma holders, 53.6 % Bachelor Degree and 39.3 % had Msc and above. Majority of the respondents had a Bachelor Degree and

above level of education and is attributed to the nature of irrigation construction projects which requires upper level of education in various disciplines including; surveying, geologist, civil engineer, environmentalist, economist, sociologist and others.

Table10: Working experience of the respondents in the project

Experience in the project(Years)	Frequency	Percent
Less than one year	0	-
One year to three years	6	21.4%
Four years to six years	19	67.9%
More than six years	3	10.7%
Total	28	100%

Having a project team from its inception to close out has a significant role for the success of the project. The table showed that 10.7% of the respondents were part of the inception period since the project feasibility study was conducted in 2008, while, the majority of the respondents have an experience between four to six years which are part of project kickoff (commencement) in 2013. Besides 21.4% of them have an experience between one to three years which of course experience the troubling condition of the project.

Table 11: Distribution of respondents by their role in the project

Organization	Frequency	Percent
Client	7	25%
Contractor	12	42.9%
Consultant	9	32.1%
Total	28	100%

The study includes the respondents from the client, contractor and consultant side of the project to examine the findings since they are part of the project implementation. Out of the total sample size 25%, 32.1% and 42.9% of the respondents belongs to the client, consultant and contractor respectively.

4.5 Assessment of the causes of troubled projects

The study variables are sorted in to three broad categories as Kezner identified them the possible causes of troubled projects. The questionnaire that has been distributed to the respondents is divided

into two major parts. The first part is about the respondents' demography and the second part consists of three sections focused on the respondents' views on the causes that make the project in trouble. These categories are listed below and they are used as measurement variables.

- **Management Mistakes:** - They are related with the limitations to execute the project consciously and failure to manage properly.
- **Planning Mistakes:** - It is the failure to properly grasp the expectations, requirements and assumptions so that the planning will be unrealistic and unmanageable.
- **External Influences:** These influences arise as a result of poor assessment of environmental input factors which might significantly affect the project performance.

4.5.1 Management Mistakes as a cause of troubled project

One of the objectives of the study is to examine the extent at which management mistakes make the Megech Irrigation Project in trouble. Kezner emphasis that management mistakes are among the root causes of projects which are under their performance. Simon K. (2016), has also identified management issues are one of the factors that influence the completion of projects.

In this regard, the following table is the result of the survey data collected through questionnaire.

Table 12: Responses on the impacts of management mistakes

Questions	N	Mean	Standard Deviation	Rank
End user stakeholders not involved throughout the project	28	3.96	0.79	3
Minimal or no stakeholder backing; lack of ownership	28	2.71	1.05	8
Corporate goals not understood at the lower organizational level	28	2.96	0.92	7
Constantly changing scope	28	4.11	0.50	2
Lack of attention provided to the human and organizational aspects of the project	28	3.79	0.96	6
Budgets are exceeded and out of control	28	3.89	0.92	4
Poor or fragmented cost control	28	3.89	0.79	4
Weak project and stakeholder communications	28	2.61	1.10	10
Wrong type of contract	28	2.71	1.18	8
Team members working with conflicting requirements	28	4.54	0.51	1

The above table presented the respondents view about the effects of management mistakes to make the project in trouble condition. Higher mean by this context showed that the respondents

perceive the factors are significantly affecting the projects' performance practically. The lower the mean, the weaker the variable is impacting the performance of the project.

Hence, the nature of the project team has a fundamental influence on the performance of the project with a mean value of 4.54 and a deviation of 0.51 that shows there is a relatively common acceptance from respondents. According to PMBOK (2013), the project team needs to be able to assess the situation, balance the demands, and maintain proactive communication with stakeholders in order to deliver a successful project. A team which is functioning in conflicting requirements is subjected to loss of strategic issues and working in a fragmented way.

Besides, it is shown that the project scope change is also a significant factor with a mean of 4.11 and a deviation of 0.5. As it is shown in the desk study review part there are project components with a creep of 1584% which is indeed the worst scenario. The survey also supports this reality as scope changes and creep is the second most significant issue in this project. The limited involvement of stakeholders, poor and fragmented cost control and lack of attention to organizational and human aspects are also substantially recognized for their impact on the project.

The survey identified that the least significant factor in relation to management mistakes is weak project and stakeholder communication with a mean value of 2.61. But it can be noticed that the relatively high SD (1.10) indicates that there are still some who perceive that poor communication impacts the project performance. Project success depends on carrying out the required tasks in a logical sequence, utilizing the available resources to the best advantage (Garold D., 2000).

The response definitely agrees that there are unique aspects of irrigation construction projects that make them complex to execute. Primarily, irrigation covers large area that is interconnected in a structured system. Hence, any minor failure and mistake in the construction might stop the whole system at all. Besides, there are issues related with gravity, load, pressure that need to be considered properly. To eliminate these failures, the system shall be developed with great care and quality parameters. The other issue is the involvement of multi-disciplinary experts in the irrigation projects unlike other construction projects. These include civil engineers,

environmentalist, geologist, electro mechanical engineer, surveyor, sociologist, economist to mention a few. Any wrong analysis and decision from either of the expert will totally affect the construction. As to the respondent, irrigation construction project needs to be managed by expertise project management or construction management professionals with the expected attributes.

Findings from Key informants about management mistakes

According to key informant responses, there were several management mistakes which impact the performance of the projects. These factors included;

- ✓ Poor management support(An ambition to get results with poor support)
- ✓ Failure to make decisions and approval on time
- ✓ Procurement management problems(instruments and laboratory equipment are not avail on time)
- ✓ Lack of skilled and experience project managers
- ✓ Frequent design changes(consultant side)
- ✓ Financing problem(inadequate funding and payment delay)
- ✓ The uniqueness of irrigation projects from other construction projects in different aspects. They are approaching to agile in their nature as the underground earth works are significantly unknown properly.
- ✓ Lack of integration and coordination with the Regional Government.

Both the quantitative and qualitative results have many factors in common as presented with illustrations.

4.5.2 Planning Mistakes as a cause of troubled project

Planning in the project is the stage at which we in place every resource to achieve the deliverable with effectiveness and efficiency. It is indeed a stage in which we plan to fail or succeed as our fate is on the curiosity we give in the planning process. The planning process should therefore give specific attention to an analysis of institutional capacity, and to providing a detailed plan to enable the implementers to prepare themselves for carrying out the tasks expected of them.

Table 13: Responses on the impacts of planning mistakes

Questions	N	Mean	Standard	Rank
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			Deviation	
Plan asks for too much in too little time	28	4.07	0.90	3
Project estimates are best guesses and not based upon history or standards	28	3.68	0.98	10
Unclear stakeholder requirements	28	2.64	1.25	14
Unclear expectations	28	3.71	0.76	9
Assumptions, if they exist at all, are unrealistic	28	4.00	1.15	4
Plans are based upon insufficient data	28	3.96	0.79	5
No systemization of the planning process	28	2.71	1.05	12
Planning is performed by a planning group	28	2.96	0.92	11
Inadequate or incomplete requirements	28	4.11	0.50	2
Lack of resources	28	3.79	0.96	8
Assigned resources lack experience	28	3.89	0.92	6
Poor overall project planning	28	3.89	0.79	6
Lack of preplanning on a regular basis	28	2.61	1.10	15
Missed deadlines and no recovery plan	28	2.71	1.18	12
Poor assessment of risks if done at all	28	4.54	0.51	1

The objectives of project risk management are to increase the likelihood and impact of positive events, and decrease the likelihood and impact of negative events in the project. To be successful, an organization should be committed to address risk management proactively and consistently throughout the project. A conscious choice should be made at all levels of the organization to actively identify and pursue effective risk management during the life of the project (PMBOK, 2013).

As presented in the above table, factors related to planning mistakes have significantly impacts the project to be in troubled condition. These are related with poor assessment of the existing condition that makes the planning naïve. From the survey, poor assessment of risks is a significant factor with a mean value of 4.54 and a deviation of 0.51. The result showed that the project risk assessment practice is null and almost not existed. For a project which is subjected to constraints and challenges, failure to have a risk plan and starting implementation is totally unacceptable.

Besides, incompleteness of requirement documentation is also the second factor according to respondents (mean; 4.1 and standard deviation 0.5). Changing the project expectation or

objectives leads to project scope change which in turn may create additional risks. It is also noticeable that the schedule is not in line with the workload that requires too much work. Poor assumptions, plan with insufficient data and best guess and lack of experience have their own influence on the project. Comparatively, lack of re-planning and recovery plan and stakeholder requirements have the lower mean value. But, generally, it is acceptable that planning related mistakes are very significantly affecting the project since all factors rate above the median (central tendency).

Failures in design and implementation of projects have often caused low or even negative returns on investment, emergence of environmental and health problems, lack of sustainability, subsequent collapse of infrastructure, and emergence of a rehabilitation(IWMI,2005). The respondent has recognized that the major design change has been made once but minor changes were made often. The reason for the design and scope changes was the poor assumptions in the first study. The nature of soil, rock and other important aspects were significantly differing from the study that enforces to redesign and make scope creep too.

Having a completed plan by initial plan seems impossible, but, it is ideal to have a comprehensive study to minimize such risk. Here, there are two chances to select. The first one is to have a sample test on the soil and rock and have estimation which is the common approach. The second one is to have a detail and comprehensive study that can minimize poor assumptions. As to the respondent, although it is relatively costly, the second option is preferable since it minimize the risks that irrigation projects are experiencing. Because of the cost of redesign and rework is much higher than the current approach.

Findings from Key informants about planning mistakes

Key informants identified the significant planning related mistakes that hamper the smooth implementation of the project as described below.

- A perception that the government will finish the project regardless of poor assumptions and associated risks
- Failure to develop a structured framework/plan to manage the projects.(An intention to manage as other ordinary operations and lacking of sense of urgency)

- Unrealistic plan and assumptions
- Poor price estimation(Increase from 2.45 billion birr to 5.67 billion birr)
- The failure of the feasibility study to show the true nature of the project site. The samples done were not representative and a significant changes in the assumptions (soil structure, rock type.). To illustrate, the feasibility study showed that the excavation work was expected to be 800 thousand cubic meters of soil and rock and the contract was made by this assumption. But on the reality, it is more than 3 million cubic meter excavation work carried out.
- Multiple interests from government authorities and structures
- Absence of risk management plan at all
- Lower emphasis is given to socio economic and environmental impacts of the project. They need to be settled before the project started, but, on the reality they are still the challenges of the project.

Generally, the project highly experienced planning challenges that hinders its execution properly since it is supported by both qualitative and quantitative data collected from the respondents.

4.5.3 External influences as a cause of troubled project

Implementation of any plan is subjected to both internal and external influences. External influences are out of our assumptions and control which can influence our performance. The table below present the factors related with external influences that influence the execution of Megech Irrigation Dam project.

Table 14: Responses on the impacts of external influences

Questions	N	Mean	Standard Deviation	Rank
Financial constraint and lack of forex	28	4.11	0.50	1
Unanticipated climate condition	28	3.68	0.98	6
Political unrest	28	4.07	0.90	2
Enterprise environmental factors have changes causing outdated scope	28	3.71	0.76	5
No one knows the exact major milestone dates or due dates for reporting	28	4.00	1.15	3
Resource requirements are not fully known	28	3.96	0.79	4
People are shuffled in and out of the project with little regard for the schedule	28	2.71	1.05	8

Each stakeholder uses different organizational process assets, which may be incompatible with the assets of project partners	28	2.96	0.92	7
Poor project management; team members possess a poor understanding of project management	28	2.64	1.25	9

A project is an initiation expected to be completed within specified time, cost and scope so as to meet the expectation of the client. Therefore, it requires us to properly deal with uncertainties and constraints and be alert to those scenarios. These constraints and uncertainties can be either internal or external which might occur at any stage of the project. The survey result presented in the above table showed the extent of external factors in curbing the projects performance using the listed variables.

Obviously, the financial constraints and lack of foreign exchange to procure items on time become the dominant factor related with external factors. Its mean value is approaching 4.11 with a deviation of 0.5 that has a relative common response among the respondents. It is well known that in the last two years, there was political turmoil in some parts of Ethiopia. Public strikes and demonstrations were the common phenomenon. The respondents recognized that this unrest around the project site was affecting the performance of the project significantly as the mean is 4.07 having a deviation of 0.9. Generally, it can be conclude that the above mentioned external factors have their impact significantly since the mean is above 2.5.

Findings from Key informants about external influences

Key informants identified the external factors that make the project in troubled situation which are described below;

- Failure to finalize the resettlement issues by the Regional Government.
- Financial constraints on the side of the contractor to kick off the project after contract approval. It is almost two years that elapsed because of financial and construction machinery related issues.
- Lack of construction inputs in the nearby places and frequent machine breakdown.
- To recover the project from slippage and complete by the revised plan (2019 G.C), there shall be strategies to deploy. In this regard, the respondent expressed that prevention strategy is poorly practical in the project. Having a dynamic risk management process

will help us to have effective risk management which is probably your best weapon to protect the project from becoming distressed with close monitoring for any changes (Robert K. Wysocki, 2014). Unfortunately, the project lacks structured way of managing risks. It is indeed similar with the result of the questionnaire respondents as they prioritize lack of risk planning a significant factor.

- On the other hand, there are intervention strategies that are applied to complete the project with its obstacles. Some of the notable strategies are having 24 hour construction, resource mobilization and replanning.

4.6 Average mean of the causes

The main objective of this study is to assess the causes that make the Megech Irrigation Project in distress situation. And the main question to be addressed was to what extent does planning mistakes, management mistakes and external influences impact the performance of Megech Irrigation Project? Therefore, these specific factors with their variables were assessed in terms of their potential impact in the performance of the project. The average mean score of the factors is categorized under the range; mean score 3.80 is high, 3.40 – 3.79 is moderate and below 3.39 is low.

Table 15: Summary of mean by cause

Factors	N	Mean	Standard deviation
Planning Mistakes	28	3.55	0.92
External influences	28	3.54	0.90
Management Mistakes	28	3.52	0.87

According to the table, planning mistakes are the most significant cause that makes the project in trouble condition with the mean score of 3.55 followed by external influences and management mistakes. Wysock(2014) described the importance of planning as follows. A Project with good plan would finish earlier than a project with poor plan .The project with a higher plan has a higher probability of finishing successfully than does the poorly planned project. It can be further phrased that planning is the head of the project and its healthiness greatly matters the coming phases in the project. The above data showed that the planning mistakes worsened the other factors.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of the findings

The summary of the study findings are presented according to the questions of the study as follows.

The nature of Megech Irrigation project and its organizational structure

The Megech Dam Construction Project is found Amhara National Region State, north Gonder Zone, at the north side of Lake Tana. It has three basic objectives namely; expansion of large scale irrigation, securing water supply to Gondar town and a means of excursion through the formation of artificial lake. In relation to the schedule of the work, in the first contract it was expected to finalize the project between 2013 to 2017. But the current physical performance is only tapping 52% and the financial performance is around 33.6% up to April 2018.

The project owner is Ministry of water, irrigation and electricity while the consultancy is given for Ethiopian construction design and supervision works. And the construction is awarded to Ethiopian construction Works Corporation, through the traditional procurement method. It is a non-rice scheme, publicly owned and large scale project with a capacity of more than 17,000 hectare of land.

Why design changes were made frequently and scope creep is usual activity? What were the limitations to have a clear plan which is not subject to significant change?

There was a major design change has been made once but minor changes were made oftenly. The reason for the design and scope changes was the poor assumptions in the first study. The nature of soil, rock and other important aspects were significantly differing from the study that enforces to redesign and make scope creep too.

Having a completed plan by initial plan seems impossible, but, it is ideal to have a comprehensive study to minimize such risk. Here, there are two chances to select. The first one is to have a sample test on the soil and rock and have estimation which is the common approach. The second one is to have a detail and comprehensive study that can minimize poor assumptions.

Although it is relatively costly, the second option is preferable since it minimize the risks that irrigation projects are experiencing. Because of the cost of redesign and rework is much higher than the current approach

The extent at which planning mistakes, management mistakes and external impacts the Megech Irrigation Project performance.

Planning mistakes

Wysock(2014) described that a project with good plan would finish earlier than a project with poor plan .The project with a higher plan has a higher probability of finishing successfully than does the poorly planned project. Planning is a significant cause that affects the performance of projects (Simon K, 2016). The survey showed that planning is the significant cause of that makes the project in trouble conditions. Poor assessment of risks is a significant factor with a mean value of 4.54 and a deviation of 0.51. The result showed that the project risk assessment practice is null and almost not existed. For a project which is subjected to constraints and challenges, failure to have a risk plan and starting implementation is totally unacceptable.

Besides, incompleteness of requirement documentation is also the second factor according to respondents (mean; 4.1 and standard deviation 0.5). Changing the project expectation or objectives leads to project scope change which in turn may create additional risks. It is also noticeable that the schedule is not in line with the workload that requires too much work.

Management mistakes

The value of management mistakes is relatively the lowest compared to planning mistakes and external forces. But it is not exaggerated gap there is among the causes. In relation to management poor assessment of risks, incompleteness of requirement documentation, changing the project expectation or objectives a schedule that is not in line with the workload, poor assumptions, plan with insufficient data and best guess and lack of experience have their own influence on the project are identified as the main factors.

External factors

Financial constraints and lack of foreign exchange and political unrest are significant factors that are externally influencing the project execution.

The results associated with the three factors agree with the study of Louis Kahiga (2015). He examined the extent at which different factors affect the completion of the project.

Are there factors that make irrigation construction projects unique from other constructions?

The choice of efficient irrigation system that improves water efficiency is the priority agenda by this time (ICID, 2010). Having a project completed by itself cannot be a guarantee rather it shall be beyond completion. Therefore, critical consideration of irrigation projects is very essential to ensure a project is successful. The findings showed that there are aspects that make irrigation construction projects unique from other type of constructions. These aspects include the large areal coverage of the construction, it is a structured system that requires critical review of works, and it demands the participation of diversified professionals. Therefore, management of irrigation project requires having the capability to deal with these issues.

What were the strategies adopted to recover the project from its trouble situation?

According to Wysocki(2014) there are two types of strategies for dealing with distressed projects. These are prevention and intervention strategies. The study has found out that the project does not have a structured prevention strategy to deal with such kind of projects. Projects are treated as normal operations and mostly the intervention strategy is practical. Resource mobilization, working time extension (24 hrs a day) and having recovery plans were some of the tactics used by the project office.

5.2 Recommendations

The country is financing large scale irrigation projects hugely with the intention to alleviate the existing problems related with food security and market deficit. This investment shall deliver the expected return to the society and the economy. On the contrary irrigation projects are largely blamed for their long slippage and unable to meet the expectations. Changing this reality shall be indeed among the top issues of the stakeholders of the sector. Based on the findings, the researcher makes the following recommendations for future improvements and to help address the problems identified. The recommendations will aid all parties involved (client, contractor and consultant) to have effective irrigation project implementation so that they can realize the national goals and targets in the sector.

- It is ideal to start the construction process with detail and sufficient information about the site and finalizing the general provisions like resettlement
- It is time to think other contract administration methods like CM than the traditional approach. Because irrigation projects are complex in their nature that demand efficient project management system.
- The very nature of irrigation projects have to be recognized by the contractors before the commencement of the project
- There is a need to have strict and efficient cost controlling practices by aligning physical and financial performance
- Have an effective risk management strategy and make it culture in the sector
- There must be strong coordination and integration among the stakeholders in the sector
- Technical studies need to be comprehensive and realistic; therefore, special emphasis should be given so that the planning process is getting effective.
- Effective team development and scope change management practices need to be improved by giving an emphasis.
- Aside from intervention strategies, the planning has to consider the prevention strategies too. Prevention strategy is indeed related with planning aspects, hence, special focus has to be given to be given to develop the current challenges.
- Increase the involvement of stakeholders from the early stage of the project to closeout to increase sense of ownership. Especially to make the projects sustainable and have the sense of ownership from local and regional administrations, it is essential to have a strong and effective stakeholder management strategy.
- Develop public private partnership in the sector so that financing issues can be minimized

5.3 Recommendations for future research

Compared to other sectors project management practices in the irrigation construction sector is still unresearched. This study had some limitations. Primarily, since the study was confined to the Megech Dam Project, the conclusions in this study cannot be generalized to all projects. Second, the scope has confined to management mistakes, planning mistakes and external influences that impact the performance of the project. Hence, other perspectives can be derived and researched for the future.

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ANNEX
QUESTIONNAIRE
ADDIS ABABA UNIVERISTY
SCHOOL OF COMMERCE

Dear: - Respondent

I am a student at Addis Ababa University, School of Commerce, pursuing a Master of Arts Degree in Project Management. As a requirement for my studies, I am undertaking a study on *“ASSESSMENT OF THE CAUSES OF TROUBLED IRRIGATION CONSTRUCTION PROJECTS. A CASE OF MEGECH DAM CONSTRUCTION PROJECT”*. As a participant in this project, you have been selected to participate in the study by answering the attached questionnaire. The study is purely for academic purposes and is voluntary. The information provided will be held in confidentiality by the researcher and will only be used for analysis.

The information should also be provided anonymously and does not require your identification. The final report can be shared with you through the contact information of the researcher provided. For any queries, please contact me on the following address. Thank you in advance for your time

Yours Sincerely

Alwoye Yigrem

Mobile:+251 09 36 66 21 42

Email: alwoye@gmail.com

Section one: Background Information

Please tick (√) where appropriate

1. What is your gender?

Male () Female ()

2. What is your highest level of education?

Diploma () BA Degree () MSC/MA and above ()

3. How long have you been involved in this project?

Less than one year ()

Four years to six years ()

One year to three years ()

More than six years ()

4. What is your role in the project?

Contractor ()

Consultant ()

PSO staff ()

Client ()

5. What type of irrigation project is megech dam intended to be?

A. Rice Scheme ()

B. Non Rice Scheme ()

A. Public ()

B. Private ()

A. Small Scale ()

B. large Scale ()

Section 2: Management mistake as a cause for making the project in trouble

The following statements are related with management mistake that might make the project troubled, please put (√) where appropriate.

Statement	Strongly Disagree(1)	Disagree(2)	Undecided(3)	Agree(4)	Strongly Agree (5)
End user stakeholders not involved throughout the project					
Minimal or no stakeholder backing; lack of ownership					
Corporate goals not understood at the lower organizational level					
Constantly changing resources					
Lack of attention provided to the human and organizational aspects of the project					
Budgets are exceeded and out of control					
Poor or fragmented cost control					
Weak project and stakeholder					

communications					
Wrong type of contract					
Team members working with conflicting requirements					

What other management mistakes you perceive that impacts the project implementation

Section 3: Planning Mistakes as a cause that make the project in trouble situation

The following statements are related with planning mistake that contribute the project troubled, please put (√) where appropriate.

Statement	Strongly Disagree(1)	Disagree(2)	Undecided(3)	Agree(4)	Strongly Agree (5)
Plan asks for too much in too little time					
Project estimates are best guesses and not based upon history or standards					
Unclear stakeholder requirements					
Unclear expectations					
Assumptions, if they exist at all, are unrealistic					
Plans are based upon insufficient data					
No systemization of the planning process					
Planning is performed by a planning group					
Inadequate or incomplete requirements					
Lack of resources					
Assigned resources lack experience					
Poor overall project planning					
Lack of replanning on a regular basis					

Missed deadlines and no recovery plan					
Poor assessment of risks if done at all					

What other planning mistakes you perceive that impacts the project implementation

Section 4: External influences as a cause for making the project in trouble

The following statements are related with external influences that make the project troubled, please put (√) where appropriate.

Statement	Strongly Disagree(1)	Disagree(2)	Undecided(3)	Agree(4)	Strongly Agree (5)
Financial constraint and lack of forex					
Unanticipated climate condition					
Political unrest					
Enterprise environmental factors have changes causing outdated scope					
No one knows the exact major milestone dates or due dates for reporting					
Resource requirements are not fully known					
People are shuffled in and out of the project with little regard for the schedule					
Each stakeholder uses different organizational process assets, which may be incompatible with the assets of project partners					

Poor project management; team members possess a poor understanding of project management					
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What other planning mistakes you perceive that impacts the project implementation

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KEY INFORMANT INTERVIEW GUIDE

1. How many times design change has been made and why? What was the challenge to have a one-time plan with no subject to scope change and creep?
2. Are there unique feature of irrigation projects from other construction projects, if any?
3. What are management mistake related factors that influenced the status of the project?
4. What are planning related factors that influenced status of the project?
5. What external influences do you think that influence the completion of the project?
6. What were the strategies adopted to recover the project from trouble? Do you have the, prevention and intervention approaches/strategies? Which one you are using by now?

Project Site

